

Identity, Psychological Safety and Social Capital: A mixed methods examination of their influence on knowledge use in the context of LEARN Communities of Practice

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

There is a strong push in public health for multi-faceted partnerships to develop practice-relevant evidence that effectively address complex risk factors like tobacco use. Consequently, new partnership structures that cross-cut different social groups are emerging to harness their distinct knowledge and generate actionable breakthroughs. Little is known about these structures, particularly informal ones that hinge on voluntary group membership like Communities of Practice (CoPs). Specifically, little is known about the factors/processes that enable people representing different social groups to translate their knowledge across group boundaries and co-create knowledge that informs action in these informal structures. Calls to develop/test theories, frameworks, and models are made to enlighten these gaps. This study responded to these calls by developing and testing a conceptual framework. The framework asserts that a shared identity, member identification / sense of belonging, social capital and psychological safety contribute to diverse people cohering into a collective, which was deemed important to enable knowledge to translate across group boundaries. The study examined how each factor influenced and inter-related to influence the use of CoP-related knowledge and its different types (with an emphasis on conceptual and instrumental uses). The study also examined what factors contributed to or detracted from these relationships in the context of the Program Training and Consultation Centre's tobacco control specific Learning through Evidence and Action Reflection Network (LEARN) Community of Practice (CoP) project.

Following a pragmatist orientation, a two-phased quant-QUAL sequential, explanatory mixed-methods embedded case study design was employed. The LEARN CoP project formed the case study and two CoPs that comprised that project formed the embedded units. Phase I of the study involved a quantitative survey that was completed by 35 of 58 eligible LEARN CoP members. The Phase II dominant qualitative study involved ~90 minute audio-recorded telephone interviews of 14 LEARN CoP members (seven per embedded unit) who comprised a subset of Phase I survey respondents (nested sampling approach). CoP documents (meeting minutes, audio-recorded meetings, Community Charters and Learning Agendas, WebEx™ discussion posts) served as supplementary data sources. Phase I quantitative analyses examined whether each factor of interest predicted knowledge use using simple and multiple linear regression, tested an analytic model that proposed shared identity led to knowledge use via the mediators member identification, social capital and psychological safety using Baron & Kenny's (1986) mediation approach and Goodman's Test (1960) for confirmation. As a prelude to the Phase II qualitative study, descriptive statistics, t-tests and ANOVA were conducted to discern how the LEARN CoP and more specifically each of its embedded units (CoP A and CoP B) were developing with respect to the factors of interest and what differences existed between the two communities. Phase I findings loosely informed the focus of the Phase II qualitative study and data were coded and analysed using open, axial and selective coding procedures (Strauss & Corbin, 1990). Phase I and Phase II data were compared and contrasted in the discussion, with greater emphasis placed on the qualitative findings.

Overall findings revealed that in the LEARN CoP case, each factor in the conceptual framework influenced how members used knowledge gained in the CoP. These factors also inter-related in ways that helped diverse members to cohere in ways that influenced knowledge use. Shared identity, member

identification / sense of belonging and psychological safety were related to conceptual types of knowledge use (increased awareness, learning as a result of CoP knowledge). Social capital was the only factor that was related to both conceptual and instrumental types of CoP knowledge use (e.g., knowledge gained from the CoP was used to inform decision making or applied in some fashion in practice). However, member identification / sense of belonging emerged as an important theme that motivated members to interact and build social capital which in turn led to instrumental types of knowledge use. A superordinate identity (shaped by a common and actionable purpose) helped members to jell together despite representing different social groups by serving as an anchor point for member identification / sense of belonging. The CoP's 'alignment' with the philosophies, culture and priorities of important entity's that shaped the CoP's work (e.g., government and the organizations that members represented) also influenced the use of CoP knowledge. Other factors including relevant knowledge, leadership (including member roles), and a variety of mechanisms that enabled interaction (i.e., in-person meetings, WebEx, teleconferences, structured time for practice sharing, working groups) contributed to or detracted from the relationships found in the study.

Solving complex problems like tobacco-related chronic diseases necessitates building multi-faceted partnership structures that connect different configurations of an existing or desired system and their respective knowledge. This is not an easy task because it requires bringing together people representing potentially different social identities that possess their own ways of thinking and doing, which can limit knowledge use. This study sought to understand how factors that help diverse people to cohere into a collective enhance knowledge use. The study highlights the need to understand identity-based issues at play when people from different social groups are brought together in partnership structures like the formally instituted, voluntary CoP examined. Cultivating a shared identity and sense of belonging can bridge silos and motivate people to engage in behaviours that build rich pools of social capital. These factors together can enhance the co-creation and use of evidence and collective action that can save lives.

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1.0 Introduction

Canada is experiencing a “tsunami of chronic diseases” (Butler-Jones, 2009). Chronic diseases can be prevented and yet account for 89% of Canadian deaths (World Health Organization, 2008). Tobacco use is one of the leading causes of chronic disease in Canadians with upstream ripple effects that burden our health care system, national productivity and life expectancies (Ministry of Health Promotion, Standards, Programs & Community Branch, 2010; Mirolla, 2004). Despite important reductions, tobacco use persists (Canadian Tobacco Use Monitoring System, 2012). Solutions that reverse its negative impacts are imperative, but remain elusive.

The problem? Despite an abundance of sound health research on how to promote health and prevent tobacco-relevant chronic disease, getting that knowledge used in practice remains a challenge. Why? Scientific evidence is not always relevant to practice: the right questions aren't asked, research methods don't fit real-world settings, and investigations limit insights into what works for different settings/populations (CIHR, 2008; Green, Ottoson, Garcia & Hiatt et al., 2009; Mitton, Adair, McKenzie, Patten, Wayne Perry, 2007; Graham, & Tetroe, (2007). Consequently, change agents are not equipped with the evidence they need to make wise public health decisions (Riley, Cameron, & Reid, 2009; Dobbins, Ciliska, Cockerill, Barnsley & DiCenso, 2002; Green, et al., 2009; Landry, Amara & Lamari, 2001).

The solution? To generate evidence that is relevant to practice, researchers from different disciplines must engage with practitioners and policy-makers. Through interactions, researchers and the intended users of their work can gain insight into one another's worlds and exchange their respective knowledge to bridge the research-practice gap (Caplan, 1979; Mitton et al., 2007).

In this way, a mutually beneficial exchange occurs whereby research becomes informed by practice and practice makes use of this knowledge (Green, 2006; Kerner, 2006; Walter, Davies & Nutley, 2005). As such, knowledge is broadened to include knowledge from both research and practice.

Multi-faceted collaborative partnerships are marked as the mechanism through which these benefits can be achieved and funding agencies are making calls for their formation (CIHR, 2004; Currie, King, Rosenbaum, Law, Kertoy & Specht, 2005; Canadian Partnership Against Cancer, <http://www.partnershipagainstcancer.ca/priorities/primary-prevention/>).

Consequently, new informal structures that cross-cut social groups (i.e., disciplines, sectors) are emerging to harness their distinct knowledge and generate actionable breakthroughs (Best & Hall, 2006). However, knowledge gaps exist about how to mobilize this potential. Specifically, little is known about the factors/processes that enable people representing different social groups to translate their knowledge across these group boundaries and co-create knowledge that informs action (Kiefer, Frank, DiRuggiero, Dobbins, Manuel & Gully, 2005; Bartunek, Trullen, Bonet, & Sauquet, 2003). Calls to develop/test theories, frameworks, and models are made to enlighten these gaps (Kerner, 2006; Estabrooks, Thompson, Lovely & Hofmeyer 2006). While formal collaborative structures that focus on relationships between organizations tend to dominate health research, there are also recommendations to examine informal and voluntary collaborative structures such as communities of practice (CoPs), which highlight collaboration within and between organizations (Best & Hall et al., 2006). CoPs are defined as groups of people who voluntarily come together and interact regularly around a common concern or passion to learn from one another and create, share and apply knowledge to advance their practice area (Wenger, 1998, Wenger, McDermott & Snyder, 2002).

This study responds to the above calls by advancing a framework that identifies factors that help people who represent different social groups to cohere and examine how these factors

influence knowledge use. These factors include: organizational context characteristics (e.g., shared identity, psychological safety), individual characteristics (e.g., member identification), and interactive processes (e.g., social capital). The framework is examined in the context of the Learning through Evidence, Action and Reflection Networks (LEARN) Communities of Practice (CoP) Project. The LEARN CoP aims to build capacity among health practitioners, their community partners and researchers to integrate evidence from research and practice through connecting and supporting relationship-building among these players to facilitate knowledge exchange, translating research evidence for practitioners, documenting practice-based evidence to inform research, and conducting community-based health research (Program Training and Consultation Centre, <https://www.ptcc-cfc.on.ca/learn>). Given the emphasis on partnership formation, there is a need to understand what makes them work and how this contributes to knowledge use. The factors identified in the framework guiding the study have been drawn from different literatures and few of them have been examined in relation to knowledge use.

Additionally, no studies were found that bring these factors together into a unified framework for testing and exploration in the context of CoPs or the field of public health (or beyond). Thus, this dissertation is the first known study to contribute knowledge to this gap. Using a sequential mixed-methods (Creswell & Plano Clark, 2011) embedded case study design (Yin, 2009) the quantitative study: 1) examined how shared identity, psychological safety, member identification, and social capital each influence knowledge use, and 2) tested an analytic framework that posits how these factors inter-relate to influence knowledge use. The qualitative study built on the quantitative findings to: 1) gain greater depth of understanding of these relationships, and 2) identify what supports or detracts from their development. The study findings aimed to illustrate whether and how the factors examined influenced knowledge use and what other factors played a role in enhancing knowledge use in the context of the LEARN CoPs.

2.0 Literature Review

This section of the dissertation provides an overview of knowledge utilization (the main study outcome), communities of practice, and the importance of cohesion as a prelude to the conceptual framework that guides the study. The review then describes the theoretical background that underpinned the development of the conceptual framework.

2.1 Knowledge Utilization

An extensive history of debate has centred on what constitutes knowledge. While these debates are beyond the scope of this dissertation, this study would be remiss if it did not provide a definition of knowledge. For purposes of this study, knowledge is seen as a phenomenon that is developed and shaped through social experiences and encompasses both explicit (tangible, codifiable, “know what”) and tacit (intangible, experience-based, “know-how”) knowledge (Nonaka, 1994) that can come from research and practice. Knowledge utilization (herein termed knowledge use) refers to the user’s application of existing or new knowledge (Manske, 2001), derived from research and practice to solve social problems (Backer, 1991).

Knowledge use has been conceived as a process (Belkhdja, Amara, Landry & Ouimet, 2007) and can occur in different ways. Instrumental use reflects acting on knowledge in ways that lead to changes in behaviour and practice (Manske, 2001; Kramer & Wells, 2005). Three types of instrumental use consist of:

- effort to use, which involves making plans about how knowledge might be used and can include collaborative problem solving that marks knowledge exchange (CHSRF, cited in CIHR, <http://www.cihr-irsc.gc.ca/e/39033.html>),
- procedural use or decision-making (incorporate knowledge into decision making, or the creation of procedures that facilitate the use of knowledge, and

- structural use (implementing and adapting knowledge to the relevant context (Manske, 2001; Skinner, 2007; Bonin, 2007)).

Instrumental use is desired because it is tangible and impact-oriented; however studies often measure only this type of use. Broader conceptualizations are recommended (Landry et al., 2001) and include the conceptual, deliberate non-use, and symbolic uses that are described below.

Conceptual knowledge use encompasses what others term knowledge transfer - that is, the imparting or sharing of knowledge from the producer to potential user (Best, Hiatt & Cameron, 2008), increased learning, or changes in understanding or attitude, but does not have an immediate effect on one's behaviour (Manske, 2001; Beyer & Trice, 1982). As conceptual knowledge accretes it can lead to instrumental use. Tracing what pieces of learning lead to instrumental use, however, is challenging. Deliberate non-use occurs when a person or organization deliberately chooses not to use certain knowledge (Skinner, 2007). Symbolic use reflects the use of evidence to justify decisions or actions that were taken for other purposes (Weiss, 1979; Lavis et al., 2003).

Three models of knowledge use have predominated in the literature. These models have evolved over time from a focus on knowledge producers pushing knowledge to users (*science-push model*), to one where users tell producers what knowledge they need (*demand-pull model*), and a focus on tailoring knowledge to user audiences (*dissemination model*), (Lomas, 1990 Landry et al., 2001; Frenk, 1992; Orlandi, 1996). Accumulating evidence illuminates the deficiencies of these approaches. First, pushing or disseminating knowledge does not automatically lead to use by intended recipients who are in a position to affect change (Dobbins, Ciliska, Cockerill, Barnsley & DiCenso, 2002; Green et al., 2009; Landry, Lamari and Amara, 2003). Second, intended users of the knowledge are not engaged in the knowledge development process. Lack of engagement has been identified as perpetuating the “two communities problem”

(Caplan, 1979), which challenges users' understanding about the approaches used to generate the knowledge, including how to properly interpret or apply findings, and has led to research that does not capture users' needs. Consequently, a large supply of sound research has accumulated that lacks relevance to users and does not adequately address real-world conditions (e.g., research emphasizes randomized controlled trials) (CIHR, 2008; Green et al., 2009; Mitton et al., 2007; Graham et al., 2007). A fourth model - the *interaction model* emerged to fill this gap. This model integrates earlier models and expands it by emphasizing the co-creation of knowledge that is informed by both knowledge producers and users, with the assumption that knowledge use will increase when greater linkages are made between these parties (Landry et al., 2001; Manske, 2001).

These models have identified and tested a number of predictors or factors that influence knowledge use at different levels of analyses. Some key findings that have emerged across studies of hospitals, government agencies, research institutions, provincial health promotion resource centre and local public health agencies are grouped here: (1) characteristics of the information (e.g., relevance, timeliness, content) and its source (e.g., credibility); (2) individual characteristics (e.g., commitment-receptiveness, time spent on internet, emotional exhaustion), (3) internal context (e.g., group or organizational commitment-receptiveness, mandate and priorities, leadership, organizational size, professional development opportunities, positive work culture); (4) external context (e.g., partnerships, external resources, external mandates and priorities, trends relating to practice area), and (5) interactive processes (e.g., ongoing engagement, knowledge brokers, multiple forums for exchange, communities of practice) (Manske, 2001; Bonin, 2007; Landry et al., 2003; Landry et al., 2001; Dearing and Meyer, 1994; Backer, 1991; Cummings, Estabrooks, Midodzi, Wallin & Hayduk, 2007; Estabrooks, Midodzi, Cumming & Wallin, 2007).

A review commissioned by the Canadian Institutes for Health Research – Institute for Population and Public Health on knowledge utilization (with an emphasis on research utilization specifically) surmised:

“After decades of research evaluating the impact of dissemination strategies on research utilization, there are very few definitive answers as to how to promote the effective use of research evidence in practice, program planning, and policy development. The focus, therefore, has turned toward the underlying processes and factors that significantly impact on decisions to incorporate research evidence into policy and program decisions, as well as on the impact of increased interaction between research producers and research users on uptake.” (Kiefer et al., 2005).

Communities of practice (CoPs) have gained attention from scholars and practitioners as structures that can facilitate increased interaction between knowledge producers and intended users and the co-creation of actionable knowledge within and across organizations (Wenger, 1998; Wenger et al., 2002; Best et al., 2006; Brown & Duguid, 1991). Increased attention has been directed to understand whether and how CoP serve as an effective vehicle for knowledge use in health sectors (e.g., Conklin, Kothari, Stolee, Chambers, Forbes & Clair, 2011; Manske, Lambraki & Morrison, 2005; Diemert, Manske, Lambraki, Harvey, Moyer, Lovato, Sutherland-Brown, Morris & VanderMeer, 2002; Gabbay, le May, Jefferson, Webb, Lovelock, Powell & Lathlean, 2003). A systematic review of literature on health care sector CoPs affirm CoP as a social structure with the potential to facilitate knowledge use. However, the authors identified that more work was necessary to specify characteristics of CoP throughout their lifecycle and to understand what it is about CoP that enhance their knowledge use potential (Li, Grimshaw, Nielsen, Judd, Coyte, & Graham, 2009). Wenger (2000) also asserts that to develop capacity to use knowledge, greater understanding is needed of the processes that underpin how communities of practice evolve and interact.

2.2 Communities of practice

CoPs presents a social theory of learning that sees learning as a complex process that is embedded in social interaction (Wenger, 1998).

Three dimensions characterize CoPs (as specified by Wenger and colleagues):

What it is about: Members develop and continually renegotiate a *shared enterprise* or *knowledge domain*. This helps to orient member interactions and activities;

How it functions: Relationships of *mutual engagement* bind members to ensure active interaction around the joint enterprise; and,

What capability it has produced: As members engage around their joint enterprise they develop, over time, a *shared repertoire* of communal resources (e.g., routines, artefacts, shared language, styles) (Wenger, 1998).

These self-organized and informal entities tend to cut across traditional boundaries such as organizational units, organizations and geography (Moingeon, Quélin, Dalsace & Lumineau, 2006). CoPs can be in-person, distributed or a combination of the two (Wenger et al., 2002; Guldberg & Mackness, 2009). While CoPs are said to resist, even wither, when supervised or controlled (Thompson, 2005), organizational leaders and managers can promote and support their formation (Wenger et al., 2002). This study is interested in such CoPs.

CoPs are important because they centre on the co-creation, exchange and use of knowledge to improve their practices within a situated context (Wenger, 2000). CoPs achieve this by providing a site for: problem identification, collaboration and social construction where members learn from one another via the exchange and validation of ideas and expertise and in so doing build a collective knowledge base. They also offer an opportunity for knowledge transfer as members tend to belong to other CoPs that can benefit from their knowledge (Brown et al., 1991; Wenger, 2000). With respect to the latter, CoPs may serve as a linking mechanism that contributes to knowledge integration, which takes a systems view and is defined as “the effective

incorporation of knowledge into the decisions, practices and policies of organizations and systems” (Best et al., 2008).

CoPs are increasingly comprised of professionals belonging to different organizations, professional affiliations, disciplines, and sectors and as described above, a community may connect people that span a number of geographic boundaries (Moingeon et al., 2006). Different communities of people tend to operate within their own paradigms, have their own identities, languages and ways of doing business. When different communities work together these differences may impact how knowledge is exchanged and used. Studies suggest that knowledge generated from CoPs ‘leak’ or spread more easily across similar communities, but they have a tendency to ‘stick’ or not spread to dissimilar communities (Brown & Duguid, 2001; Bartunek et al., 2003; Willem, Scarbrough & Buelens, 2008; Hong & O, 2009; Ren, Kraut & Kiesler, 2007).

What happens when members from dissimilar CoPs come together within one community of practice (CoP)? Key authorities on CoPs note that coalescing into a cohesive collective is important for members to exchange and use knowledge. They also acknowledge that diversity exists within a given community and assert the importance of multidimensional membership (Wenger, 1998; Wenger et al., 2002). Their work points to important factors/experiences to cultivate in CoPs to unify a diverse membership in their efforts to move their shared practice area/enterprise forward. However, these authors highlight the relative ease with which community members cohere to share tacit and explicit knowledge through joint practices and view conflict caused by diversity as a source of innovation (Wenger, 1998; Wenger et al., 2002).

Cohesion

Engaging in the social participation processes that are essential to a CoP's functioning, however may present difficulties to the community cohering into a collective and to knowledge use when its members represent different social organizations (e.g., sectors, professions, organizations) (Handley, Sturdy, Fincham, & Clark, 2006; Brown et al., 1991; Hong & O, 2009). A CoP cohering into a collective is defined as the forging of social bonds that result in members sticking together and remaining united in the pursuit of its goals and objectives (Carron, 1982: 213). Community coherence is important because it enables different people to get on well together as they work toward their collective goals (Casey-Campbell & Martens, 2009). CoPs are also self-forming entities and their viability hinges on the voluntary participation of its members. Without community coherence, there may be little that will entice members to stay engaged. Studies have found that highly cohesive groups experience greater enthusiasm, engage in frequent and positive interactions with other members, exhibit prosocial behaviours (e.g., cooperation, knowledge exchange), and devote more efforts to achieve collective goals than do members in non cohesive groups (Isen & Baron, 1991). Positive group performance has also been found in highly cohesive groups (Casey-Campbell et al., 2009), but has also been linked with groupthink behaviours (Janis, 1982 cited in Edmondson, 1999).

Diversity and Cohesion

How diversity influences cohesion has also been examined largely in non-health related work team contexts (Casey-Campbell et al., 2009; van Knippenberg & Schippers, 2007; Webber & Donahue, 2001). While CoPs are distinct from team structures¹ (Wenger, 2000), these studies

¹ A community of practice differs from a team. Communities of practice are defined by knowledge, exists because members see value in participating and its lifecycle is dependent upon this value. It can function for a short to indefinite time or disband quickly and it emphasizes joint learning. In contrast, a team is instituted by organizational elites and are task-oriented. The lifecycle is often

may offer insights into how diverse people work together. Overall, the literature on cohesion in the presence of diversity and its impact on cohesion and performance in team contexts is equivocal. Some studies suggest that more homogeneous groups experience greater cohesion and higher performance than diverse groups. Other studies suggest opposite results or no relationship at all (van Knippenberg et al., 2007; Webber et al., 2001; Harrison, Price, Gavin & Florey, 2002; van Knippenberg, De Drue & Homan, 2004). Similar findings have been found in health services research on interprofessional collaborative teamwork (i.e., collaboration between different professions, sectors, and / or disciplines) (Mitchell, Parker, Giles, & White, 2010). Differences in findings may be due to the type of diversity studied. Diversity tends to be conceptualized as “differences between individuals on any attribute that may lead to the perception that another person is different from self” (van Knippenberg et al., 2007: 517). Aspects of group composition examined are primarily based on one or a combination of readily observable demographic attributes, such as gender, age, educational background, and job-related attributes (e.g., differences in education or functional background). Others have examined diversity in attitudes and values (Milliken & Martins, 1996; Williams & O’Reilly, 1998). How diverse members cohere and the influence this has on knowledge use has received limited research attention (Ren et al., 2007), particularly in CoPs and more specifically CoPs in public health contexts.

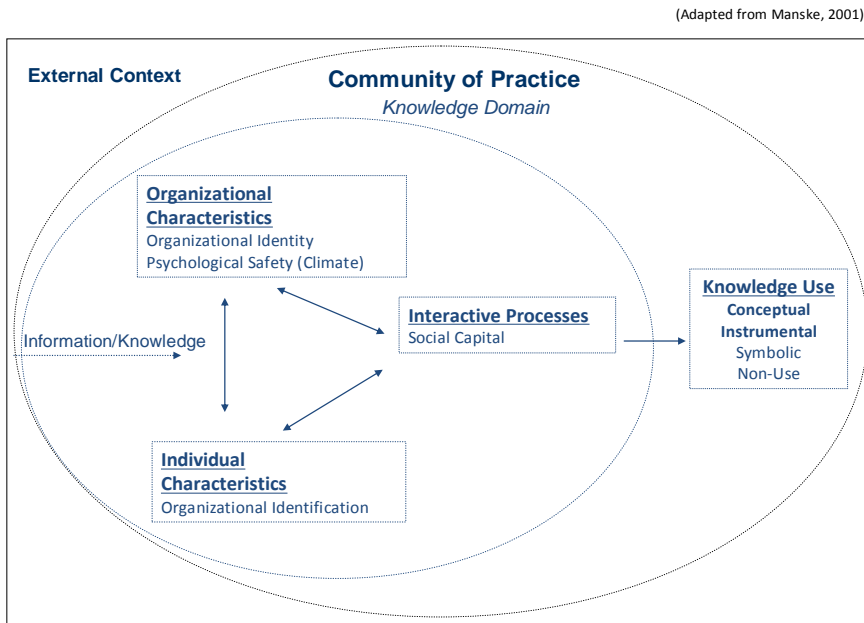
To better understand this issue, the literature was examined to identify factors that are suggested to be important to social organizations cohering and ascertain whether these factors influence knowledge use. Literatures on CoPs (and more specifically Wenger (1998) and Wenger et al., (2002) definitions and descriptions of CoPs, group cohesion, and knowledge utilization were used as starting points. Findings from this scan led to the identification of four concepts or factors²: organizational identity, organizational identification, social capital and psychological

dependent on the duration of a project or solution of a problem (Wenger, 2000).

² These terms are used interchangeably in this dissertation.

safety. Literatures pertaining to these factors were explored to examine their relevance to both helping different people to cohere and use knowledge. A conceptual framework was developed based on the literature findings and is presented below in Figure 1.

Figure 1 Framework Guiding the Study



2.3 Description of Conceptual Framework Guiding Study

Figure 1 is an adapted version of Manske’s (2001) Knowledge Exchange Framework. Manske’s (2001) framework was adapted from the education sector (Cousins & Leithwood, 1993). It has been examined and refined in the contexts of a health promotion resource centre (Manske, 2001), Tobacco Control Area Networks (Westhaver, 2008), local public health agencies (Bonin, 2007), education (Lambraki, Manske, Lovato, Cameron, Cumming & Jolin, 2004; Lambraki, Manske, Morrison & Doucet, 2004; Lambraki, Manske & Morrison, 2006; Lambraki, Morrison, Manske & Barry, 2005), and provincial-level tobacco control communities of practice in Canada (Diemert et al., 2002). The framework focuses specifically on factors that influence knowledge use and include: (1) characteristics of the information and source; (2) characteristics of the context (at individual, group, organizational and broader community levels) and (3) interactive

processes. However, it does not give specific attention to factors important to the formation of a cohesive organization (in this case, a CoP) and the influence this has on knowledge use which is of interest to this dissertation.

The adapted framework used in the current dissertation expands Manske's (2001) work by examining factors between related, but not fully connected, literatures that fit within his organizational context characteristics, individual characteristics and interactive processes categories. Figure 1 presents these factors, which include: (1) organizational characteristics, (shared CoP identity, and a climate of psychological safety), (2) individual characteristics (member identification with the CoP), and (3) interactive processes (development of social capital as a result of CoP participation). As stated earlier, these factors are posited to contribute to diverse people cohering (and thus are encapsulated by a dashed circle) and knowledge use. Knowledge use (conceptual and instrumental uses in particular) reflects the outcome variable of interest. These factors are all embedded within the CoP structure and unfold as members interact around the knowledge domain / shared enterprise that brings them together.

Figure 1 also depicts Information / knowledge (reflecting the characteristics of the information and source in Manske's 2001 model, but not explicitly examined in the current dissertation) as flowing into the community from the diverse members who comprise it and from external sources. Finally, the CoP is embedded within a broader external system and this relationship is depicted by a dashed circle to denote the fluid boundary between the CoP and the external environment. The dashed circle illustrates that the CoP is shapes and is shaped by the external environment.

The framework takes a Social Ecological Perspective (Stokols, 1992; McLeroy, Bibeau, Steckler, & Glanz, 1988) by presenting bi-directional arrows between the proposed factors. From a social ecological perspective, behaviour is viewed as being affected by, and effecting, multiple levels of influence (e.g., individual, group, organization, external environment). In terms of

Figure 1 then, changes in any aspect of the framework (e.g., interactive processes) are proposed to set the stage for corresponding changes in the others (e.g., organizational context characteristics and individual characteristics). The Social Ecological Perspective considers interactions of multiple levels of a system, While Figure 1 presents multiple levels (individual characteristics, interpersonal (i.e., interactive processes), CoP (i.e., organizational characteristics) and external context), this study specifically focuses on the first three levels – that is, the posited inter-relationships between individual characteristics, interpersonal and organizational characteristics that transpire *within* a CoP context. The next section describes a review of the literature with respect to a shared CoP identity, member identification, social capital, psychological safety and their relationship with knowledge use.

2.3.1 Shared Community Identity

Wenger et al. (2002) assert that building a CoP requires its members to interact regularly on issues important to their knowledge domain. As members interact, they “develop and maintain a shared sense of identity that is rooted in a shared understanding of the community’s knowledge domain” (Wenger et al., 2002: 31). Through ongoing engagement in a process called ‘legitimate peripheral participation’ (akin to the apprenticeship learning model) (Wenger, 1998), CoP members develop into a cohesive collective by developing a shared community identity, practices and relationships of mutuality and shared understanding (Lindkvist, 2005) that enable them to undertake collaborative learning activities (Wenger, 1998). A shared CoP identity combined with individual perspectives on problems being worked on is said to create a social learning system that is greater than the sum of its parts (Wenger et al., 2002; Wenger, 2000). To understand what a shared CoP identity is and why it is important, a review of the organizational identity literature was undertaken.

Organizational identity is the self-reflective question ‘who are we’ as an organization and reflects members’ shared understandings of what is central and distinctive about their organization (Albert & Whetten, 1985). The dimension of *centrality* reflects the essence or core characteristic(s) that defines what the organization represents (Whetten & Godfrey, 1998; Corley, Harquail, Pratt, Glynn, Fiol & Hatch, 2006). The *distinctive* dimension reflects how an organization is similar to or different from other organizations in its field (Albert et al., 1985; Whetten, 2006). An organization’s culture is said to be the context through which salient organizational identity attributes emerge (Hatch & Schultz, 2002) and as such tend to embed important values, beliefs and norms (Fiol, Pratt, & O’Connor, 2009). What identity attributes guide an organization and how widely held and deeply shared it is among members (Martins, 2005) contribute to cohesion and knowledge exchange and use.

Shared Identity and Cohesion

Survey based studies and case studies suggest that a shared organizational identity provides a framework that guides consistent sense-making and action for top managers and other members of a social organization by orienting them to what information or events to pay attention to and what to act on in ways that are consistent with the shared identity (Dutton & Dukerich, 1991; Gioia & Thomas, 1996; Voss, Cable & Voss, 2006; Martins, 2005; Brown, Humphreys & Gurney, 2005; Alvesson & Robertson, 2006; Alvesson & Empson, 2008). What is paid attention to, in turn, influences learning. Thus, a shared organizational identity (herein referred to as shared identity) is said to “shape the learning process” (Lesser & Storck, 2001: 832).

A common understanding of what information and issues to attend to and how to act on those issues also contribute to the development of a cohesive collective. When members are oriented around and exert action in identity-consistent ways, behaviours and actions tend to be

more harmonious than if members are not oriented to such a guiding framework (Hogg & Terry, 2000). A shared identity also strengthens members' commitment to stay with the organization (Cole & Bruch, 2006; Alvesson et al., 2008) and makes it easier to resolve conflicts (Haddow, O'Donnell, & Heaney, 2007). Conversely, lack of shared identity has reverse effects (Humphreys & Brown, 2002; Brown & Humphreys, 2002; 2006; Maguire & Phillips, 2008).

Shared Identity and Knowledge Use

Shared identity has also been linked to knowledge use. Nieminen (2005) proposes that a shared identity is also an important factor that influences an organization's absorptive capacity – that is, their receptiveness and ability to absorb new knowledge (Cohen & Levinthal, 1990). Quantitative, qualitative and mixed-methods studies provide some support for this suggestion. Specifically studies found that a strongly shared organizational identity renders its members resistant to change (Martins, 2005; Nag, Corley & Gioia, 2007; Brown et al., 2002; Maguire et al., 2008). For instance, Martins (2005) found that a deeply held and widely shared identity made top business schools refuse to change their practices even when faced with damning evidence (i.e., information from business school reputation rankings). Top managers were less likely to initiate change. Even when some of these top managers advocated for change, other business school members resisted. Similarly, Nag et al., (2007) examined a failed transformative change effort in a high-technology R&D organization that attempted to graft new knowledge (i.e., new practices) that threatened to destabilize scientists' strongly shared identity. In an effort to maintain their collective sense of “who we are,” the scientists resisted adopting the organization-imposed change. Instead they adapted the new knowledge in ways that preserved their strongly valued shared identity.

Brown & Starkey (2000) offer a psychoanalytic perspective to explain this phenomenon. They assert that organizational members may engage in up to 48 identified ego defenses (e.g.,

denial, rationalization, fantasy) to retain salient but potentially outdated organizational identity claims. This helps members to maintain their valued identity and the collective self-esteem it engenders (see organizational identification below for elaboration). Moreover, organizations with a strongly shared identity tend to be comprised of members who share the same knowledge and practices and may lack tolerance for difference. These features may render the organization too internally focused and thwart the injection of new knowledge (from newcomers or external environment) (Coleman, 1988; Onyx & Bullen, 2000). This could lead to narcissism (Hatch et al., 2002) and a disconnect between the organization and its broader environment, which hampers organizational learning, innovation and needed continuous change (Brown et al., 2000).

Taken together, these studies suggest that a shared identity contributes to cohesion (e.g., by increasing member motivation, commitment and conflict resolution). In the context of communities of practice, motivation, commitment and conflict management are critical as these entities are dependent on members' voluntary participation and contributions in order to thrive (Ren et al., 2007; Gibson & Meacham, 2009). Additionally, shared identity influences knowledge use although too strong an identity may constrain use of new and potentially better knowledge. How shared understandings of "who we are" as a CoP influences knowledge use has received limited examination. Calls have been made to better understand this relationship (Nag et al., 2007). While shared identity has been linked to cohesion and knowledge use, the literature also suggests that it exerts its effects through other factors of interest to this study, organizational identification, social capital, and psychological safety, which are described below.

2.3.2 Identifying with the Community (Organizational Identification)

CoPs are places where members create new identity and social norms (Postmes, Spears, & Lea, 1998) and offer the opportunity for member identification (Wenger, 1998; Moingeon et al., 2006). According to Wenger (1998), when members identify with a group to which they belong,

this process gives rise to functional necessities, such as solidarity and commitments that make communities cohere. The Social Identity Approach, (which combines Tajfel's Social Identity Theory and Turner's Self-Categorization Theory), provides a process theory that can shed insights into issues pertaining to member identification.

Social Identification and Cohesion

According to Social Identity Theory (Tajfel & Turner, 1979), people tend to classify themselves and others into different social categories/social groups based on the prototypical characteristics of members that comprise these groups (e.g., gender, age cohort, organizational membership). This process enables people to cognitively segment their social environment by defining who belongs to what social category. It also enables a person to define where (s)he fits into the social landscape in which the person is embedded. According to the Social Identity Theory, a person's self-concept encompasses not only their personal identity (e.g., based on psychological traits, interests, abilities), but also a social identity that encompass the salient social categories they belong to. When a person classifies (i.e., identifies) as belonging to a social group, (s)he perceives him/herself to be an actual or symbolic member of that social entity and perceives the fate of that group as his/her own. Thus, social identification is the cognitive perception of oneness or sense of belonging to a social group (Ashforth et al., 1989). Since member's definition of self is in part defined by the social group they belong to, a person who identifies with a social group perceives him or herself as psychologically intertwined with the fate of the group, as sharing a common destiny, and experiencing its successes and failures as their own (Ashforth et al., 1989: 21). The person will also positively differentiate their social group (the ingroup) from (and at the expense of) a comparable outgroup in order to achieve a positive social identity and in turn positive self-esteem (Hogg et al., 2000). Members of an ingroup also perceive one another as independent individuals and external others as homogeneous. The latter can lead

to stereotypes and conflict (Haslam, 2001; Bartel, 2001) and block the ingroup's uptake of outgroup knowledge because the messages are understood to reflect an outgroup-based bias (Wilder, 1990).

Self-Categorization Theory (Turner, 1982; Turner, Hogg, Oakes, Reicher, Wetherell, 1987) extends Social Identity Theory to explain how different members of a social group are cognitively able to move beyond their personal identity to a social identity in ways that make them become, act, think and feel as a psychological group. When members self-categorize/identify themselves into a social group, they cognitively assimilate the self to the ingroup prototype and as such undergo a process of depersonalization of their self-concept (Hogg et al., 2000). This means that the person embodies the relevant prototypical characteristics (e.g., shared norms and beliefs, attitudes, feelings, behaviours) of the social group and self-regulates behaviours in group identity consistent ways (Stets & Burke, 2000; Tseng & Kuo, 2010; Hogg et al., 2000). Coordination and prosocial behaviours that contribute to cohesion such as cooperation, efforts to work through conflict and helping others out to realize collective goals occur in efforts to reinforce the group's distinctiveness and personal self-esteem (Hogg, 1992; Hogg et al., 2000; Bond, Huston & Tang, 2008; Bartel, 2001; Bhattacharya, Rao, & Glynn, 1995; Haslam, 2001; Pratt, 1998; Tyler, 1999; van Knippenberg, 2000; Cole et al., 2006; Ashforth et al., 1989; Phua, 2004; Dutton et al., 1991). Even personally irrelevant or harmful activities are seen as worthwhile because they aid the larger self and identification can persist even when group affiliation is personally painful and group failure is likely (Tajfel, 1982; Mael & Ashforth, 1992). While these group prototypes are stored in memory, they are also maintained and modified by their social interactive context and what outgroup the social group chooses as a legitimate comparison group (Hogg et al., 2000; Haslam, 2001).

Social Identification and Knowledge Use

Social identification has also been linked to knowledge use. A laboratory experiment found that a group accepted a rotating member's superior (but not inferior) knowledge (i.e., routine) when both shared a superordinate identity. Conversely, groups that did not share a superordinate identity with a rotating member rarely adopted any routine (superior or inferior), even when the superior one had been demonstrated to increase productivity (Kane, Argote, & Levine, 2005). Similarly, a lack of shared identity between two interdependent IT CoPs led to identity-based conflicts and asymmetric power distribution that compromised communication, and the sharing and exchange of needed knowledge that would have improved their shared enterprise (Hong et al., 2009). Willem, Scarbrough & Buelens' (2008) multiple case studies found that a dominant organizational identity increased knowledge integration (i.e., the sharing, transferring and collective application of knowledge in cooperative activities). Conversely, the organization not unified by a dominant identity (i.e., had multiple identities where specific groups within the organization had their own dominant identity and was not bridged to other identities within the organization) created distrust, disloyalty, different mindsets, in-group favouring and bias that led to deliberate blocking of inter-unit knowledge integration. Other studies suggest that when members identify with/belong to a group, it renders them more likely to view their knowledge as the property of that group. Members, then, more readily accept that their knowledge should be made available to others and also use group knowledge to benefit collective goals (Jarvenpaa & Staples, 2001; Tyler & Blader, 2001).

Organizational Identity and Organizational Identification

Organizational theorists have examined the ways that people define themselves in terms of their relationships to organizations, and have applied the Social Identity Approach to such contexts (Ashforth et al., 1989; Dutton, Dukerich & Harquail, 1994; Elsbach, 1999; Haslam, van

Knippenberg, Platow, & Ellemers, 2003; Pratt, 1998). There are two paths to identifying with an organization. The first path involves identifying when an organization has values that are similar to aspects of one's own identity (Ashforth et al., 1989; Kreiner & Ashforth, 2004). The second involves changes in an individual's values so that they become more congruent with their organization's (Whetten & Godfrey, 1998). Thus, attractive, socially desirable, and / or unique characteristics of an organization can induce member identification (Dutton et al., 1994; Pratt, 1998). Members may identify with the organization at a global level ("I identify with my organization") (Kreiner et al., 2004) and / or with salient organizational attributes (i.e., what is central and distinctive) (Albert et al., 1985). For instance, the perceived attractiveness of organizational attributes such as quality patient care predicted physician identification with their respective medical organizations (Dukerich, Golden & Shortell, 2002). Others have found that members identified with culturally valued attributes that defined the organization's identity (e.g., elitism, family-oriented) (Chreim, 2007; Alvesson et al., 2006; Hatch et al., 2002).

Organizational identification, then, is a specific type of social identification where a person defines himself or herself in terms of membership with a particular organization (Cornelissen, Haslam, & Balmer, 2007). Thus, "who we are" as an organization may provide one answer to the question, "who am I?" (Hatch & Schultz, 2004; Ashforth et al., 1989), and as such, organizational identity can be examined in tandem with organizational identification (Cornelissen et al., 2007). Stated another way, organizational identity provides an anchor point for member identification (Cornelissen et al., 2007; Ashforth et al., 1989; Kreiner et al., 2004), which puts in motion the processes described by the social identity approach.

However, organizations are typically characterized by a number of segmented groups that may possess their own identity (departments, divisions, units, teams, hierarchy levels, occupational or professional affiliations, communities of practice, cliques, etc). Organization members, therefore, have the potential to identify with one or more of these nested configurations

(multiple identities) (Riketta et al., 2007; Bartel, 2001). While laboratory studies have demonstrated that arbitrary and anonymous assignment of people into groups automatically led to member identification and in-group favoritism (Tajfel, 1982; Vaughn, Tajfel, & Williams, 1981; Castelli, DeAmicis, & Sherman, 2007), scholars also argue that the diverse groups that comprise an organization may invoke inter-group comparisons as a means to enhance group distinctiveness, positive status, and enhance self-esteem. Inter-group comparisons can negatively impact identification with the organization as a whole and create “us” and “them” distinctions between groups that comprise the organization potentially hindering knowledge use or causing conflict (Fiol et al., 2009; Nahapiet & Goshal., 1998; Bartunek et al., 2003). Qualitative field studies of intentional organization change contexts provided support for these claims (Mills, Bettis, Miller & Nolan, 2005; Nag et al., 2007). Identity-based conflicts are asserted to be the hardest conflicts to resolve and can lead to the dissolution of potentially fruitful inter-group, inter-organizational collaborations (Fiol et al., 2009).

Member identification may be important given new configurations that have emerged for conducting work. Strategic alliances, collaborative networks, and CoPs increasingly bring together people from diverse organizations, sectors, or professions that may not have interacted before and this may invoke social comparisons (Bartel, 2001). Bartunek et al., (2003) use social identity as a lens to discuss this issue in the context of researcher-practitioner collaborations. The authors assert that researchers and practitioners represent distinct CoPs, each with their own identity, norms and knowledge. These differences can invoke social comparisons that frustrate collaborative work and knowledge use. The authors recommend building a relationship between these different groups such that members from each group appreciate one another and their knowledge more fully and not stereotypically.

As some studies discussed above suggest, one way to achieve this is to create a superordinate identity that melds salient identity attributes of diverse groups.

Experimental, survey-based, and qualitative case studies in group, organizations, and cooperatives provide support for this assertion. A dominant organizational identity or superordinate identity that was congruent with the identity of sub-groups that comprised it was found to influence member identification, which in turn influenced more harmonious intergroup relations, motivation to work on the organization's behalf, commitment to the organization (Kramer & Brewer, 1984; Hornsey & Hogg, 1999 cited in Hogg & Terry, 2000; Foreman & Whetten, 2002; Riketta et al., 2007; Phua, 2004), and positively influenced knowledge sharing and adoption of new practices (Willem et al., 2008; Kane et al., 2005).

A key limitation of research on social or organizational identification is how it is conceptualized. Some researchers define identification as solely members' perceptions of oneness with a group while others incorporate in their definitions its potential antecedents and consequences (e.g., engaging in prosocial behaviours). The former approach is followed in this study to better understand how member identification influences knowledge use. Theoretical and conceptual papers describe the importance of identity issues in the context of CoPs (e.g., Wenger, 1998; Nahapiet et al., 1998; Lesser & Prusak, 1999; Moingeon et al., 2006), but few research studies have been conducted in this area. Specifically, little is known about intra-group social comparisons that may be invoked by diverse membership (e.g., members representing different organizations or sectors) or whether a dominant and shared identity helps to resolve potential identity-based conflicts that could hinder community coherence and its consequences and how this influences knowledge use. Only one published article was identified in the health literature that described their future plans to examine these relationships in the context of CoPs that bridge university – clinical practice divides (Kislov, Harvey & Walshe, 2011). Moreover, studies using the Social Identity Approach equate member identification as shared identity, but fail to examine what it is about the social entity that motivates member identification. Organizational identity

(i.e., identifying what is central and distinctive about a social organization) may provide a way to understand this.

2.3.3 Social Capital

Nonaka (1994) asserts that knowledge creation is largely a *social process* and is enhanced when people interact to exchange knowledge. Knowledge exchange implicitly makes one's contributions subject to the reactions and critiques of others and, as such, is a 'fragile process' (Nonaka & Konno, 1998). Mutual trust, cooperation, shared understanding of issues being addressed, and continuous dialogue among group members are posited to help overcome this fragility (Nonaka, 1994; Nonaka et al., 1998). In the context of CoPs, Wenger (1998) and Wenger et al. (2002) emphasize that developing relationships that encompass the above features are necessary to discuss practice problems and that trust is paramount in the coalescing process.

Social capital encompasses the features of social organization, such as networks of social relations, trust and reciprocity, and may provide useful insights into how diverse members of CoPs cohere to exchange and use knowledge (Lesser et al., 2001; Nahapiet et al., 1998). CoPs have been characterized as the "engine" through which social capital can emerge (Lesser et al., 2001). Social capital embedded in CoPs, in turn, is said to contribute to knowledge creation, exchange and use and to be an important resource to collective action (Nahapiet et al., 1998; Lesser et al., 1999).

Social capital has gained widespread interest; it is explored from a number of disciplinary perspectives (e.g., sociology, political science, public health), at different levels of analysis (e.g., individuals, community, nation) and has resulted in slightly different definitions (Portes, 1998; Schaefer-McDaniel, 2004; Szreter & Woolcock, 2004; DeRose & Varda, 2009). Social capital has been defined as the features of social organizations, such as social networks, trust and norms such as reciprocity that facilitate coordination and cooperation for mutual benefit (Putnam, 1995:

67). The central premise of social capital is that involvement and participation in groups can have positive consequences for individuals and communities (Portes, 1998; Nahapiet et al., 1998). As members interact, they develop shared understandings of how to coordinate their actions to achieve collective goals (Putnam, 1995). Resources (e.g., information, knowledge, support) also accrue and become embedded within these networks of relationships. Members draw on these collective resources to realize positive consequences (Nahapiet et al., 1998; Scott & Hofmeyer, 2007).

Two dimensions of social capital are structural and cognitive³. Structural social capital reflects the tangible aspects of social organizations such as networks and strength of ties (weaker to stronger ties to other members), which enable people of a group, community or organization to access resources and collaborate to realize collective goals (Granovetter, 1973; Dudwick, Kuehnast, Nyhan Jones & Woolcock, 2006). Cognitive social capital reflects the less tangible aspects of interpersonal relationships that help keep network ties going (Lesser et al., 2001). Key components that comprise cognitive social capital include trust and norms of behaviours such as reciprocity (Stone & Hughes, 2002). Trust involves the predictability of another person's actions across different situations (Edmondson, 2002). Reciprocity occurs when members return a favour with a favour (Lesser et al., 2001; Nahapiet et al., 1998).

Social Capital, Cohesion and Knowledge Use

Literature suggests that structural and cognitive social capital bind people together and can contribute to knowledge exchange processes and collective action in a CoP context (Derose & Varda, 2009; Daniel, Schwier & McCalla, 2003; Cohen & Prusak, 2001; Nahapiet et al., 1998; Lesser et al., 2001). The literature also suggests that network ties provide the channels for knowledge exchange (Inkpen & Tseng, 2005) and cognitive social capital fosters these processes

³ Some use the term relational social capital to reflect this dimension (Nahapiet et al., 1998; Lesser & Prusak, 1999; Lesser & Storck, 2001).

(Lesser et al., 2001). Social capital is also suggested to interact with the elements in Figure 1 to strengthen cohesion and knowledge exchange which may apply to CoPs. The following summarizes these inter-relationships.

Social Capital, Shared Organizational Identity and Member Identification

According to Wenger, (2000), CoPs “define themselves in the doing, as members develop among themselves an understanding of what their practice is about (Wenger, 1998: 4). To elaborate, it is through ongoing participation with one another in a collective process of learning that members develop shared practices, trust, reciprocity, and values that help to define their identity as a community and guide their behaviour (Wenger, 2000; Hatch et al., 2002). Thus, participation in a CoP is not a simple process of doing things together. Rather, members are bound together by their collectively developed understanding of what their community is about (Wenger, 2000: 229). This understanding determines “what matters and what does not, and with whom we must share what we understand” (Wenger, 2000: 239). For instance, Kärreman & Rylander (2008) found that through social interactions around work practices, members of an organization developed shared understandings of “who we are” and this understanding guided their sensemaking activities and directed actions of how to conduct work. A shared community identity, then, can develop through social interactions and provides a framework that members orient their continued interactions around. This shared identity also forms an anchor point for member identification.

Recall that “who we are” as a social group/organization (e.g., a CoP) can partly answer the question “who am I” among its members (i.e., social identification) (Wenger, 2000; Ashforth et al., 1989; Kreiner et al., 2004). Granovetter’s (1973) seminal work on the strength of social ties suggests that strong relationship ties tend to develop among people who share a social identity and this contributes to the development (and reinforcement) of social capital (Granovetter, 1973;

Coleman, 1998; Onyx et al., 2000). When members identify with a social group/organization, they are more likely to engage in behaviours that reflect the values, beliefs, norms and demands of that social entity (Terry, Hogg & White, 1999). Members are also likely to interact with co-members in ways that benefit their group. These behaviours can build trust and reciprocity (Bond et al., 2008; Kramer, 1991 cited in Bartel, 2001; Borgen, 2001; Puusa & Tolvanen, 2006; Kramer, Hanna, Su & Wei, 2001) and strengthen member identification with the social group/organization (Ashforth et al., 1998; Bond et al., 2008). Member identification and ongoing interaction can also, as already stated, reinforce shared understandings of “who we are” as identified members tend to interact in identity consistent ways and engage in activities that reinforce the social group/organization’s identity (Dutton et al., 1991; Ashforth et al., 1989).

Strong ties among members who share a common identity facilitates the transfer, exchange and otherwise use of knowledge, particularly complex knowledge (e.g., tacit, ambiguous) (Granovetter, 1973; Nahapiet et al., 1998; Levin & Cross, 2004; Cross & Cummings, 2004; Hansen, 1999; Reagans & McEvily, 2003; Hyder & Ghauri, 2000; Dhanaraj, Lyles, Steensma, & Tihanyi, 2004; Choi, Pang, Lin, Puska, Sherman, et al., 2005). This is because members who share a social identity tend to develop the richer patterns of relationships that are necessary to transfer and exchange knowledge (Nahapiet et al., 1998; Cohen et al., 1990; Nonaka, 1994).

Bond et al., (2008) study on knowledge exchange networks found that social networks provide a portal through which knowledge travels and is exchanged. However, member’s identification with this social network moderated the relationship between network centrality (how closely a member is connected to others in the group) and knowledge exchange. This suggests that identification provides the motivation to engage fully in interactions with others in the network and realize the potential for acquiring knowledge. In inter-organizational, organizational and CoP contexts comprised of diverse members, strong ties reduced uncertainties

of working together by familiarizing members with one another and making members more aware of each other's knowledge, skills and abilities (Lesser et al., 2001). It also rendered them better equipped to access and evaluate the quality and trustworthiness of knowledge they received and norms of reciprocity which enhanced knowledge sharing, and exchange (Hyder et al., 2000; Dhanaraj et al., 2004; Liu, Ghauri & Sinkovics, 2010; Lesser et al., 2001; Cross et al., 2004; Daniel et al., 2003). Trust mediated the relationship between strong ties and knowledge sharing (Levin et al., 2004). Trust is argued to activate social processes such as intensive social relationships, high confidence in others, help-seeking behaviour, and knowledge exchange (Jones & George, 1998). Conversely, mutual mistrust (e.g., between researchers and policy makers) has been noted as a barrier to research use (Choi et al. 2005; Trostle, Bronfman, and Langer 1999).

Overall, the above findings suggest that social capital contributes to cohesion and knowledge sharing and exchange, even in the presence of diversity. Strong ties tend to exist in groups or communities with a strong sense of identity (Granovetter, 1973; Coleman, 1988; Onyx et al., 2000). Such communities tend to be more cohesive and more easily transfer and exchange complex knowledge among members. While social capital is often viewed as beneficial, it can also exert negative outcomes (Szreter et al., 2004; Derose et al., 2009). Recall that a strongly shared identity can render the community too internally focused and this can limit members' openness to new (external) information or knowledge that may be relevant to their practice. This is associated with low levels of social capital (Coleman, 1988; Onyx et al., 2000).

While a vast array of studies on social capital exists, these studies use different definitions so measurement of the concept is complicated and confusing. Moreover, studies either emphasize structural (often through social network analysis) or cognitive aspects of social capital but less frequently examine both. Consequently, there is a lack of understanding of whether structural versus cognitive social capital is most influential in facilitating diverse members cohering into a collective and knowledge use and the inter-relationships between these two

dimensions (Daniel et al., 2003; Nahapiet et al., 1998). While some studies have discussed or examined member identification and social capital, few have examined its links to knowledge use, particularly in CoP contexts. Also, some scholars theorize member identification as a dimension of social capital (e.g., Nahapiet et al., 1998) while others view it as an antecedent (Kramer, 2006). In this proposal, identification is a *cognitive perception* of oneness with a community of practice. Thus, a member's perception forms the basis of incorporating aspects of the community into his or her social identity (Ashforth et al., 1989). Recall that identification with a social group can occur even in the absence of interpersonal relationships (Tajfel, 1982; Vaughn et al., 1981; Castelli et al., 2007), although interpersonal interactions and relationships can strengthen identification (Ashforth et al., 1989). Thus, for purposes of this proposal, identification is treated as separate from, but related to, social capital. Furthermore, the psychological antecedents of social capital (e.g., member identification) have received limited research attention. Kramer (2006) proposes examining the inter-relationships between identification and social capital to better understand what motivates members to participate, cooperate and contribute knowledge with others in their CoPs.

2.3.4 Psychological Safety

CoPs are a mechanism or structure where members engage around an area of common interest to learn from one another and advance their practice area (Wenger, 2000; Wenger et al., 2002). Learning is defined as “a process of change and improvement in a social group/organization's (e.g., a CoP) actions through better knowledge and understanding” (Carmeli, 2007: 32). Through these processes, knowledge is acquired, exchanged, combined into new knowledge and applied in some way (Argote, 1999; Carmeli, Brueller & Dutton, 2009). Engaging in effective learning, however, tends to necessitate risky behaviours (e.g., challenging the status quo, experimentation that can lead to failures, admitting lack of knowledge or errors)

that can invoke fear of negative consequences to self-image, status, or career (Edmondson, 2002; Kahn, 1990). A climate of psychological safety, defined as the shared belief that it is safe to engage in interpersonal risk taking (Edmondson, 1999: 354), can help overcome these fears and allow the associated benefits of learning to occur even when the outcomes of such risks have unpredictable consequences (Edmondson, 2002; May, Gilson & Harter, 2004; Kahn, 1990: 708).

Psychological Safety and Cohesion

Edmondson (1999) asserts that psychological safety does not equate to group cohesion. Strongly cohesive groups can lead to groupthink behaviours (Janis, 1982 cited in Edmondson, 1999), such as reduced willingness to disagree or challenge another's views. Conversely, psychological safety may involve disagreements and the challenging of views as members try to prevent or solve practice-related problems and accomplish shared goals (Edmondson, 2002). However, it is the contention of this study that while psychological safety is not the same as cohesion, it can contribute to the development of cohesion while overcoming the potential for groupthink. If members feel confident that they will not be embarrassed, rejected, or punished for speaking up (Edmondson, 1999), then they may feel more accepted by and connected to their group, be willing to interact with them more, and contribute to the group in ways that reinforce the positive social bonds that keep members unified (Casey-Campbell et al., 2009). Confidence that it is safe to speak up renders members more willing to inject their differing perspectives and knowledge into discussions that challenge status quo, allow for innovation, and improve collective learning and thus, overcome groupthink tendencies.

Psychological Safety and Knowledge Use

Psychological safety has been identified as important to learning behaviours in work settings (Carmeli et al., 2009; Edmondson, 1999; 2004; Kahn, 2000; Carmeli, Brueller & Dutton, 2009; Carmeli & Gittel, 2009) and organizational learning (Edmondson, 1999; Gibson & Vermeulen,

2003; Zellmer-Bruhn & Gibson, 2006; Tucker, Nembhard & Edmondson, 2007; Lipshitz, Popper & Friedman, 2002). Psychological safety has been examined in a variety of medical, business, educational and camp settings. Edmondson's (1999) mixed-methods study of different types of teams in a manufacturing firm found that psychological safety promoted team learning, which in turn facilitated team performance throughout the organizational hierarchy. Psychological safety was also positively associated with learning behaviours in multi-disciplinary medical course development teams (Stalmeijer, Gijsselaers, Wolfhagen, Harendza & Scherpbier, 2007). The presence or absence of psychological safety has also been found to influence interpersonally risky learning behaviour such as seeking help, experimentation and discussion of errors in contexts characterized by hierarchical status or professional status differences. For instance, Kahn's (1990) qualitative study of an architectural firm and a summer camp found that lower status informants expressed lack of confidence that higher status individuals would not embarrass or reject them for sharing contradictory ideas or knowledge, indicating a lack of psychological safety. Conversely, cross-disciplinary medical teams characterized by status barriers (chief surgeon, nurses, anaesthesiologists) but had a climate of psychological safety were better able to renegotiate status boundaries compared to teams that did not. Status boundary renegotiation enabled team members to speak up about their observations, questions or concerns about a new technology even if it meant correcting a supervisor (Edmondson, Bohmer & Pisano, 2000). Psychological safety has also been found to enhance employee engagement at work, knowledge seeking, sharing and exchange behaviours, predict implementation of new innovations by engaging in iterative trial and reflection as it was used in practice, and stimulate innovation in business, medical and virtual settings (May et al., 2004; Edmondson et al., 2001; Edmondson et al., 2000; Tucker et al., 2007; Edmondson, 1999; D'Andrea-O'Brien & Buono, 1996; West & Anderson, 1996; Gibson & Gibbs, 2006; Nemanich & Vera, 2009).

Leadership values and their behaviours have also been identified as important to the development of psychological safety (Nemanich et al., 2009; Wong, Tjosvold & Lu, 2010; Naot, Lipshitz & Popper, 2004; Nembhard & Edmondson, 2006). Drawing from and expanding upon the literature, this study also proposes that a shared identity, member identification and social capital inter-relate with psychological safety to influence knowledge use.

Psychological Safety and Shared Identity

No studies that discuss or examine a link between shared identity and psychological safety were located. This study proposes to examine that link. Recall that organizational identity reflects members' shared understandings of what is central and distinctive about their organization. These defining attributes provide a framework that guides what members pay attention to, with whom they should interact, what they should take action on and how to take action (Albert et al., 1985; Dutton et al., 1994; Wenger, 2000). The intent of CoPs is for members to exchange ideas, information and knowledge, learn from one another and apply knowledge to advance the shared enterprise. Thus, knowledge exchange and learning may be inherent identity attributes that define a CoP.

Additionally, organizational culture is said to provide the context through which organizational identity emerges (Hatch et al., 2002). As members interact around their practice area, salient norms, values and beliefs that guide their work tend to become absorbed into members' shared conceptions of what is central and distinctive about their organizational identity (Albert et al., 1985; Hatch et al., 2002). A culture of learning has been asserted and found to contribute to the development of psychological safety which in turn influenced learning behaviours in teams and organizations (Nemanich et al., 2009; Naot et al., 2004). A CoP that values learning may come to define itself with attributes that support interpersonal risk taking for purposes of learning. These attributes may guide members' sensemaking and actions. Thus, a

shared CoP identity that encompasses learning may enable an environment that is primed for and guides behaviours that reflect psychological safety. Reciprocally, engaging in interpersonal risk taking behaviours may reinforce shared norms, beliefs and values that define the community as learning oriented.

Psychological Safety and Member Identification

When members identify with their CoP, they see their co-members as similar to themselves. This may enhance feelings of mutual liking and acceptance among members and may make them feel safer in their presence (Roberge & van Dick, 2010). Additionally, member identification enhances willingness to engage in prosocial behaviours (e.g., collaborate, reciprocate, and work through interpersonal conflicts) (Ashforth et al., 1989; Onyx et al., 2000). These behaviours may give rise to a climate that is conducive to interpersonal risk taking, creating the sense that members' contributions are valued, respected and safe from ridicule. These processes may be enhanced if members identify with community identity attributes that reflect learning.

Psychological Safety and Social Capital

Factors associated with social capital have been linked to the development of psychological safety and its effects on learning behaviour (Edmondson, 2002; Kahn, 1990; Edmondson & Moingeon, 1998; Carmeli, 2007; Carmeli et al., 2009; Carmeli et al., 2009). For instance, Edmondson (1996) found that the quality of interpersonal relationships was positively and significantly related to reported errors in a hospital setting. She noted that as relationship quality improved, employees' shared beliefs regarding whether mistakes would be held against them (i.e., psychological safety) were lowered. This enabled members to speak up and report on errors. However, she did not define quality relationships or examine how and why they fostered psychological safety and learning behaviours. Others have examined this issue.

Social capital directly and indirectly led to failure-based learning through psychological safety. Carmeli (2007) and Carmeli et al., (2009) delved deeper to understand how high quality relationships influence psychological safety and learning behaviours. They found that high quality relationships enabled members to express a range of emotions (including negative), endure times of conflict, and encourage openness to new ideas. This induced feelings of psychological safety which contributed to learning behaviours. Additionally, they found that when members felt respected and valued for their contributions this promoted psychological safety. Carmeli et al., (2009) also found that high quality relationships gave rise to relational coordination (i.e., shared goals, shared knowledge, and mutual respect). Relational coordination in turn fostered psychological safety which enabled organizational members to engage in learning from failures.

Trust has also been linked to psychological safety, which in turn enhanced learning behaviours (Edmondson, 2002; Stalmeijer et al., 2007). Trust also contributed to psychological safety in different organizational contexts (May et al., 1999; Kahn, 1990). Support, mutual respect, and valuing one another's contributions engendered trust between co-workers and their supervisors in an insurance firm. This, in turn, heightened perceptions of psychological safety and members' engagement in their work (May et al., 2004). Building trust is important. It generates a willingness to take risks based on a sense of confidence that other members will respond as expected and act in mutually supportive ways, or at least not intend to harm (Onyx et al., 2000).

While psychological safety has received attention in a variety of team and organizational contexts, there is limited understanding of its role in CoPs. While studies have examined various antecedents of psychological safety and its influence on learning behaviours, there is limited understanding as to why and how these antecedents contribute to this relationship. There is also limited understanding of how psychological safety leads to learning behaviours although some

studies suggest that vitality and confidence in one's knowledge mediate this relationship (Kark & Carmeli, 2009; Siemsen, Roth, Balasubramanian & Anand, 2009). Additionally, studies on psychological safety focus on its effects on learning behaviours. No studies were located that explicitly examine how psychological safety influences different types of knowledge use (i.e., conceptual, instrumental, etc).

2.3.5 Summary of Gaps

Reducing non-communicable chronic diseases caused by risk factors like tobacco use and exposure necessitates the development and use of practice-based evidence. Developing evidence that is relevant to practice necessitates interactions between diverse people. Consequently, partnerships have become a priority. Structures that bring together researchers, practitioners, policy makers and other players are being deliberately formed. CoPs are one such structure and have received attention in the Ontario tobacco control community (Norman & Huerta, 2006; McDonald & Viehbeck, 2007; McDonald, Viehbeck, Robinson, Leatherdale, Nykiforuk & Jolin, 2009; Program Training and Consultation Centre, <https://www.ptcc-cfc.on.ca/learn/>). However, there is limited understanding of the underlying processes and factors that enhance the use of knowledge developed within this structure (Kiefer et al., 2005; Wenger 2000).

This study attempted to contribute knowledge to this gap by examining factors that help people representing different social groups to cohere and the influence these factors have on knowledge use. These factors include a shared CoP identity, member identification with a CoP, social capital and psychological safety. Limited studies have examined the relationship between each of these factors in relation to knowledge use, particularly with respect to shared CoP identity, member identification and psychological safety. Moreover, no studies were located that examined how these factors inter-relate to influence knowledge use. The study attempted to shed insights on the 'softer' and often overlooked aspects that inspire diverse members to engage in

voluntary social structures like CoPs and work well together to achieve collective goals. Understanding these softer factors and their inter-relationships may shed deeper insights into what makes multi-faceted partnership structures thrive and how this can contribute to the generation and use of evidence that is relevant to practice to reduce tobacco-related chronic diseases.

3.0 Purpose of Study, Rationale and Research Questions

Purpose Statement

This study examined how factors posited to contribute to cohesion (i.e., a shared CoP identity, member identification, social capital and psychological safety) inter-relate to influence knowledge use in a tobacco-specific CoP context. A sequential, explanatory quan-QUAL mixed methods (Creswell & Plano Clark, 2011) embedded case study design (Yin, 2009) was used and involved two Phases. The Phase I quantitative study involved a one-time cross-sectional web-based survey that (1) examined the relationship between each factor of interest and its influence on knowledge use, (2) tested an analytic framework of the factors of interest to this study and their influence on knowledge use using mediation analysis (Baron & Kenny, 1986), and (3) examined how each embedded case was developing with respect to factors of interest to the study. The dominant Phase II qualitative study helped to explain significant findings from the quantitative phase. It also revealed other results that were relevant to the study using semi-structured interviews with a subset of Phase I survey respondents, supplemented by relevant documents. The intent of the qualitative study was also to build a deeper understanding of the factors under investigation, their inter-relationships, and what facilitates or detracts from their development. Findings from Phase I and II of the study were compared and contrasted in the discussion section. A review of research conducted in the health sector found that studies on CoPs and their effects used qualitative methods but none use quantitative approaches (Li, et al., 2009). Guided by a pragmatist orientation, this study used both approaches. When used in combination, quantitative and qualitative methods complement each other and provide a more complete picture of the phenomenon of interest than is possible through reliance on quantitative or qualitative methods alone (Creswell, 2003; Creswell et al., 2011; Collins, Onwuegbuzie & Jiao, 2007).

Rationale

Much emphasis is placed on the formation of partnerships that bring together people within and across different sectors / groups (e.g., research, local public health, government) to generate relevant evidence that can achieve desirable public and population health impacts. However, these different groups may embody their own set of paradigms, philosophies, norms of behaviours and priorities that define their identity and shape how they think and do business. Little is known about how players who belong to these different social groups cohere when brought together in partnership structures in ways that enable their knowledge to easily flow along identity-based boundaries. This study examines this issue in the context of a voluntary CoP that seeks to reduce tobacco use in efforts to improve the public's health. Examining this issue in a CoP context is important because generating innovative solutions that target risk factors like tobacco use is a current public and population health priority. This requires people from different groups to work together and integrate their diverse perspectives and approaches. Examining these issues in a CoP context is also important because they are deemed powerful vehicles for knowledge exchange and are receiving increased attention in health research (Best et al., 2006; Ranmuthugala, Cunningham, Plumb, Long, Georgiou, Westbrook, Braithwaite, 2011; Kislov et al., 2011; Li et al., 2009). However, memberships in CoP structures are voluntary, not mandated, and as such may present interesting insights into what is needed to inspire people from different social groups to work together (Moingeon et al., 2006).

This study strived to:

- Contribute to science by identifying how organizational characteristics (shared identity, psychological safety), individual characteristics (member identification / sense of belonging) and interactive processes (social capital) each influence specific types of knowledge use (conceptual, instrumental) and how they inter-relate to influence these knowledge use types in deliberately formed, voluntary CoPs with diverse membership.

- contribute to improved public health practice through a better understanding of how to effectively bring together people representing different social groups (i.e., disciplinary, organizational, sector) in deliberately formed, voluntary CoP structures in ways that enhance the development and use of practice-based evidence; and
- contribute to methods by seeking to understand how combining quantitative and qualitative data can provide a more complete and richer understanding of the phenomenon of interest to this study than relying solely on one form of data.

Research Questions

To understand the factors of interest to this study and their influence on knowledge use, the following research questions were developed. Research questions one and two pertain to both the Phase I quantitative and dominant Phase II qualitative studies. Question three is specific to the Phase II qualitative Study.

1. How do shared identity, psychological safety, member identification, and social capital each influence knowledge use in the context of the Learning through Evidence, Action and Reflection Networks (LEARN) Communities of Practice?
2. How do shared identity, psychological safety, member identification, and social capital inter-relate to influence knowledge use in the context of LEARN Communities of Practice?
3. What contributes to and detracts from the development of shared identity, psychological safety, member identification, social capital and knowledge use?

4.0 Context of Study

Learning through Evidence, Action and Reflection Networks (LEARN) Project formed the context of this study. With government funding, The Program Training and Consultation Centre (PTCC)⁴, Cancer Care Ontario in partnership with the Ontario Tobacco Research Unit (OTRU) conceived, developed and implemented the project in 2008. One key activity of the LEARN Project was to establish and support CoPs that focused primarily on tobacco-specific issues of interest to Ontario public health practitioners and their stakeholders. This activity is herein termed the LEARN CoP (or LEARN CoP Project). The LEARN Team (housed in PTCC and OTRU at the time of the study) was responsible for the overall LEARN CoP, which included the development and implementation of the CoPs that comprised the LEARN CoP. LEARN team conducted consultations with the seven Tobacco Control Area Networks (TCANs) and the tobacco control practitioners from the Ontario local public health agencies that the TCANs oversee. Consultation findings coupled with literature on CoPs guided the development and implementation of the LEARN CoP by informing what tobacco specific topics these CoPs should focus on, the type of structure the CoPs should have, and learning needs of the practitioners⁵. As a result, the LEARN team used the same model to develop and implement each of the CoPs that comprised the LEARN CoP (or LEARN CoP Project). Key elements of this model will be described under Section 5.0: Methods. At the time of this study, the LEARN CoP had developed and implemented four different provincial CoPs. The intent of the LEARN CoP was to create a ‘platform’ that builds capacity among Ontario public health practitioners, their community partners, and researchers to integrate and use evidence from science and practice in their work by:

⁴ The Program Training and Consultation Centre is a resource centre of the Smoke Free Ontario Strategy.

⁵ A report on the TCAN Consultation Findings for developing the L.E.A.R.N Communities of Practice can be accessed at: http://www.otru.org/pdf/learn/learn_tcan_final_report.pdf.

- facilitating knowledge exchange, innovation, and engagement among local public health practitioners, their community partners, and researchers;
- supporting the building and/or enhancement of relationships among local public health practitioners, their community partners, and researchers;
- generating practice-based evidence via the LEARN Team documenting innovative or effective local public health agency's practices so others could replicate in their own communities; and
- strengthening the link between research and practice by supporting the use of research-based evidence in practice and the use of practice-based evidence for research.

The focus on Ontario tobacco control-specific CoPs has relevance. While tobacco use remains the number one cause of preventable disease and morbidity in Ontario and smoking rates have levelled off in recent years (Ontario Ministry of Health Promotion, 2010; Ontario Tobacco Research Unit, 2009; Smoke-Free Ontario - Scientific Advisory Committee, 2010), notable progress in comprehensive tobacco control has been made. Government prioritizing tobacco control, increasing provincial funding on comprehensive tobacco control efforts, the implementation of Smoke Free Ontario Act (SFO), legislation and regulations to ban smoking in public places and workplaces and that alter the way retail markets display tobacco products have contributed to reduced smoking rates in the province (Ontario Ministry of Health Promotion, 2010; Ontario Chronic Disease Prevention Alliance, 2010).

Collaborative partnerships with and coordinated actions among different partners across the Ontario tobacco control system, guided by the SFO, has been crucial to tobacco use reduction achievements (Ministry of Health Promotion, 2008). These partners include federal, provincial and municipal governments, local community coalitions such as TCANs and the local public health agencies they oversee, non-governmental health organizations (NGO), community partners (e.g., hospitals, community health centres), and advocacy groups (Ministry of Health Promotion, 2008; Ministry of Health Promotion, 2010). This history of multi-faceted collaborative partnerships provide a rich opportunity to better understand how diverse people

(e.g., representing different sectors and levels of the tobacco control system) can successfully work together to develop and take action on knowledge that can improve public health.

5.0 Methods

5.1 Study Design

As already stated, this study employed a sequential quantitative - QUALitative mixed-method (Creswell et al., 2011) embedded case study design (Yin, 2009) to understand how factors theorized to be important to diverse people cohering into a collective influences knowledge use in the context of a tobacco-specific CoP. The case study will be described first, followed by the mixed-methods approach.

5.1.1 Embedded Case Study

A case study is an empirical inquiry that pursues “how” or “why” questions in order to understand complex social phenomena within their real-life contexts (Yin, 2003). It is noted as “an extremely useful technique for researching relationships, behaviours, attitudes, motivations, and stressors in organizational (and other) settings” (Berg, 1995: 219). By gathering detailed information, case studies can illuminate the factors and processes about the phenomenon of interest within a particular context (Berg, 1995; Yin, 2003; Creswell, 2003; Flyvbjerg, 2006). Case studies have also been identified as an important way to unfold the processes involved with different forms of knowledge use (Landry et al., 2001). Case studies present a relevant approach to understand the factors and underlying processes involved in getting different people to cohere in ways that lead to increased knowledge use. An embedded case study is a type of case study design that allows pre-specified components of selected to case be examined in order to shed deeper insights about the issue under investigation. According to Yin (2009), embedded units of a case can “add significant opportunities for extensive analysis, enhancing the insights into the single case” (Yin, 2009: 52-53). For the purpose of this study, an embedded case study was

selected because it offered an opportunity to examine how the conceptual framework guiding the study unfolded in embedded units (i.e., selected CoP) that comprised the LEARN CoP case.

5.1.2 Case Selection

The Case:

The LEARN CoP formed the *case* (introduced in Section 4: Context of the Study). The case was bounded by defining the LEARN CoP as encompassing each CoP that comprised the case that was developed, implemented and in operation for at least one year at the time of the study. This excluded:

- the broader LEARN Project (which involved other activities);
- the LEARN Team (which provided secretariat support to the LEARN CoP, including managing funds, overseeing logistic issues, and provision of scientific evidence to support member learning or other CoP-relevant needs); and,
- the CoPs that were no longer operating or operating for less than a year.

The Embedded Cases:

In this study, two CoPs fit the above criteria and were selected to represent the embedded units (also referred to as the CoP A and CoP B in this study) of the broader LEARN CoP. Table 1 presents the basic characteristics of these embedded units. A description of these embedded units and why they were selected follows.

Table 1: Basic Characteristics of LEARN CoP Case's Embedded Units

Characteristics	CoP A	CoP B
Funding	Provincial Government	Provincial Government
Secretariat Support	LEARN Team: Manage funds Provide logistical support Support CoP knowledge needs	LEARN Team: Manage funds Provide logistical support Support CoP knowledge needs
Date Instituted	Fall 2008	Spring 2009
Type of CoP	Deliberately instituted, distributed geographically, thus predominately virtual	Deliberately instituted, distributed geographically, thus predominately virtual
Frequency of Interaction	Monthly via teleconference / online technology WebEx™ and bi-annual fully funded in-person meetings	Monthly via teleconference / online technology WebEx™ and bi-annual fully funded in-person meetings
Practice Area	Tobacco Control, Topic A ⁶	Tobacco Control, Topic B
Membership Type	Voluntary	Voluntary
Membership Cap	50 members	50 members
Membership Size (at time of Phase I Study)	40	30
Eligible Membership	Primarily individuals with interest and experience in CoP topic area that come from local public health agencies. Local public health agencies' partners that have interest and experience in the CoP topic area.	Primarily individuals with interest and experience in CoP topic area that come from local public health agencies. Local public health agencies' partners that have interest and experience in the CoP topic area.
Membership Composition	Primarily local public health sector. Representation from research, government, community organizations, NGO, private business	Primarily local public health sector. Representation from research, government, community organizations
Leadership Roles within the CoP	Co-Chairs to liaise between CoP and LEARN Team	Co-Chairs to liaise between CoP and LEARN Team

⁶ Each CoP deals with a particular topic within tobacco control, consistent with public health interest in Smoke Free Ontario. For confidentiality, these details are not provided.

As illustrated in Table 1, CoP A and CoP B were similarly structured and implemented enabling data to be compared between the embedded units, pooled at the level of the LEARN CoP to answer the research questions and develop deeper understanding of how the conceptual framework that guided the study (Figure 1) works. These embedded units were distributed (i.e., relied primarily on monthly teleconference/WebEx™ meetings and two fully subsidized in-person meetings per year in Toronto, Ontario. Online technology (WebEx) was also available for members to interact between meetings). WebEx also housed all CoP related information (e.g., meeting and member contact information, and a knowledge repository for all science and practice generated documents and resources that was shared in or generated by the CoP. Membership was voluntary. PTCC engaged TCAN to make calls to invite members from local public health agencies in their jurisdiction to participate in the CoP if they had experience in or an interest in addressing the CoP topic area. PTCC also directly approached members they felt might have an interest in the CoP topic area (e.g., researchers or NGO) and also asked members who joined to identify additional people or organizations they felt should sit at the table. Each CoP had a membership cap of 50 members. At the time of the Phase I study, CoP A had 40 members and CoP B had 30 members. CoPs were primarily comprised of tobacco control practitioners from the 36 local public health agencies across Ontario and as such linked practitioners across the seven TCANs in Ontario. Representatives from research, non-governmental, governmental, community-based organizations and / or private business were also members, but to a lesser extent. Within each LEARN CoP, temporary leadership roles (i.e., Co-Chairs) were assumed by elected or voluntary members to shape CoP direction based on member needs and serve as a communication channel between the LEARN Project Team and CoP members. The embedded units were selected because they had been instituted approximately six months of one another and at the time of the study were operating for at least one year. These CoPs were also selected because they were more likely to have developed the factors of interest to this study (i.e., shared

CoP identity, member identification / sense of belonging, social capital, psychological safety), which was important to better understand their influence on knowledge use.

5.1.3 Mixed-Method Approach

Quantitative and/or qualitative methods can be employed to gather needed information in (embedded) case study designs (Yin, 2003). Mixed-methods designs enable the use of quantitative and qualitative methods to derive more complete knowledge about the phenomenon of interest (Creswell, 2003). A mixed-method approach collects, analyzes and integrates quantitative and qualitative data at some stage of the research process within a single study (Creswell et al., 2011).

The proposed study adopted a pragmatist orientation. Pragmatism has evolved from works from Pierce, James, Dewey and Rorty among others and takes different forms (Cherryholmes, 1992; Van de Ven, 2007). Despite differences among these authors, there are some common ideas. Pragmatism involves testing hypotheses and providing multiple perspectives. Epistemologically, the orientation is one that focuses on the research question and seeks to answer it by using whatever works (Creswell et al., 2011). This means that the researcher chooses methods, techniques, and procedures that best meet the needs and purposes of the research study in order to derive knowledge about the problem (Patton, 1990). Thus, pragmatism is not committed to any one system of philosophy and reality. Rather, it draws liberally from and values both quantitative and qualitative assumptions in research. In line with pragmatism, the methods used in this study will be quantitative (survey data) and qualitative (texts based on interviews and supplemented with documents) to gain better understanding of the research question. Different mixed-methods design strategies exist and are recommended for different research purposes.

The sequential explanatory quan-QUAL mixed-methods approach employed in this study, consisted of two distinct phases. Phase I involved collecting, and analyzing quantitative data via a survey. The dominant Phase II qualitative study occurred after Phase I was complete and involved collecting and analyzing text data via interviews supplemented by CoP documents (recorded meetings, meeting minutes, discussion posts, CoP Charters). At the outset of this study, results from Phase I were intended to inform the selection of interview participants for Phase II using a nested sampling relationship (Collins et al., 2007). Phase I findings were also intended to inform what areas the interviews would focus upon. Phase II qualitative study was prioritized because it focused on explaining and expanding on the Phase I quantitative results and involved extensive data collection from different sources. Results of the Phase I and II study findings were integrated during the discussion of the outcomes of the entire study (Creswell, 2003; Creswell et al., 2011), again with an emphasis on the qualitative results (see Appendix 1 for a visual model of the sequential explanatory mixed-methods design procedures proposed for this study). A strength of the sequential mixed-methods design is that it is easy to implement, analyze and report findings because the steps fall into distinct stages. A drawback is the time intensiveness involved in carrying out the two phases. The remainder of the methods section will describe some background information on the investigator that pertains to the study, ethics procedures for both study phases, a description of the Phase I quantitative study (data collection methods and procedures, sample and analysis), followed by a similar description of the Phase II qualitative study.

5.2 Study Procedures

5.2.1 Access to the Case

The investigator of this dissertation had been involved with the LEARN Project since its inception. At the time of data collection, the investigator served as the Developmental Evaluator

for the LEARN CoP. She conceptualized and implemented the evaluation and requested PTCC's approval to dovetail her dissertation with the evaluation efforts. PTCC kindly agreed. Thus, the investigator had a solid understanding of the LEARN CoP and access to members that comprised its embedded communities. Most members from both of the embedded cases (i.e., CoP A and CoP B) were familiar with the investigator through her attendance at meetings and efforts to engage them around the planning and periodic feedback of the evaluation findings.

5.2.2 Ethics Approval and Sample Recruitment for Study Phase I and II

Ethics approval from the University of Waterloo, Office of Research Ethics was sought and received prior to commencing data collection for both Phase I and Phase II, respectively. Informed consent was a condition for study participation. In the Phase I study, each CoP was informed about the impending study in one of their respective regularly scheduled meetings. PTCC also provided a list of members from each CoP and their current email addresses. The investigator used participation logs to determine eligible participants (i.e., members that had attended at least one CoP meeting). An information letter and consent form was sent to eligible members via email that included detailed information regarding the purpose of the study, confidentiality, that participation is voluntary, and withdrawal from the study is possible at any time. The letter also informed that all data obtained through the survey would be password protected and stored on a computer and back-up CD at Propel Centre for Population Health Impact (Propel), University of Waterloo (UW). Willing respondents returned the consent form to Propel electronically.

Active and passive consent procedures were used for different aspects of the Phase II study. Passive consent was used to identify participants who were willing to have the investigator use CoP documents, observe meetings, interview them, and / or use unattributed quotations. Selected members who had passively consented to be interviewed were approached to actually

participate in the interview process. Active consent procedures were used for those members. Details of the procedures used to obtain consent are described here.

Following Phase I, and prior to launching the Phase II qualitative study, the study investigator debriefed members in each CoP about the Phase II qualitative study during one of their regularly scheduled meetings. The purpose of the Phase II study, data collection methods that would be used, confidentiality, voluntary participation, and withdrawal from the study at any time were covered. Each CoP was also informed during their respective meeting that all members (in attendance or not) would be emailed after the meeting an information letter that described the study and a passive consent form. Members who were not interested in participating in semi-structured interviews, the investigator potentially observing meetings, using CoP documents (Community Charters, meeting minutes, WebEx discussion posts, audio-recorded CoP, and / or having unattributed quotations derived from these sources and used in future papers, presentations or other knowledge products) were informed to sign and return the consent form electronically via email. An email was sent immediately after the meeting to all CoP members with the information letter and consent form attached along with the same instructions for providing consent as described during each CoP meeting. Declining members returned the signed consent form electronically.

Members selected for interviews (see Sections 5.6.2, 5.6.3 for sample selection and outcomes) were contacted via telephone with email follow up to describe the study purpose, what participation in the interviews would involve, and obtain their consent to: participate, audio-record the interview, use of non-attributed quotations in future reports and possibly have follow-up calls should clarification of information gathered be needed during the analysis or additional data gathering was deemed necessary. A follow-up email containing the information letter and consent form was sent to these selected members. Active consent was confirmed via email. At the start of the interview, member's permission was obtained again and captured on audio-

recording. Appendix 2 contains the information letters and consent forms for Phase I and Phase II studies. Study findings were presented to the members of the LEARN CoP (i.e., members from CoP A and CoP B, respectively) and LEARN Team after each distinct study phase was complete.

5.3 Phase I: Quantitative Study Overview

The Phase I quantitative study employed a one-time, cross-sectional, web-based survey design. The survey was selected because it offered an opportunity to collect large amounts of data in a short time frame and enabled easy access to the geographically dispersed members in Ontario that comprised the LEARN CoP. Seventy members comprised the LEARN CoP (n=40 in CoP A and n=30 in CoP B). Members who had participated in at least one of their CoP's meeting were eligible to complete the survey. This accounted for 56 of the 70 members across both CoPs (n=34 in CoP A and n=22 in CoP B). This criterion ensured that participating members had at the least a basic level of experience with their respective CoP.

The purpose of the survey was to: (a) determine whether a relationship existed between the factors of interest to this study (shared identity, psychological safety, social capital and member identification) and the outcome variable knowledge use, (b) test an analytic framework that proposed how shared identity, psychological safety, member identification and social capital inter-relate to influence knowledge use (see Figure 2 below) using Baron & Kenny's (1986) approach to mediation analysis, and (c) develop an understanding of each embedded case by examining to what extent each CoP had developed a shared identity, psychological safety, social capital, and member identification, the types of knowledge use (conceptual and instrumental uses in particular) had occurred, and identify differences between the embedded cases (i.e., CoP A and CoP B) with respect to the above factors and on demographics using descriptive, t-tests, ANOVA tests.

5.4 Data Collection

5.4.1 Survey Development and Measures

Appendix 3 presents the survey developed for this dissertation. Measures for each variable of interest to this study (shared identity, psychological safety, member identification, knowledge use) were identified from a scan of public health, social psychology, and organizational / business literatures. Efforts were made to use psychometrically tested measures. The social capital measure was constructed by the investigator. The following describes the measures.

Survey Measures

Strength of Organizational Identity. Strength of organizational identity was defined as the “extent to which individual member’s perceptions of their organizational identity are widely held and deeply shared” (Martins, 2005; Gioia et al., 1996; Cole et al., 2006). While organizational identity reflects shared understandings among organizational members regarding the features believed to be central and distinctive about their organization (Albert et al., 1985), strength of organizational identity how organizational identity is frequently operationalized in quantitative studies (Martins, 2005; Cole et al., 2006). (As an aside, in the Phase II qualitative study, what members perceived to be the central and distinctive attributes that defined their respective CoP and how common these attributes were across interviewed members and supporting data sources was an approach used to gain insights not only into strength of CoP identity but also what it was that members felt best defined their CoP). In the Phase I quantitative study, strength of organizational identity was measured using a six-item scale used in prior research on organizational identity in academic (e.g., Martins, 2005; Gioia et al., 1996) and business (Cole et al., 2006) contexts. Items were modified to fit the LEARN CoP context. Sample items include: “Members seem to have a strong sense of this (community of practice’s)

origin and purpose” and “Members think this (community of practice) has carved out a unique place for itself in the Ontario tobacco control community.” The items were measured on a 5-point scale (1= strongly disagree to 5 = strongly agree). Martins (2005) reports high reliability for the scale (Cronbach alpha coefficient = 0.86). This is comparable to the standardized Cronbach alpha estimate for internal consistency of .90 for this measure in the present study.

Organizational Identification. Organizational identification was defined as the cognitive perception of oneness with or belongingness to the CoP, where the individual defines him or herself at least partly in terms of its membership with the CoP (Ashforth et al., 1989; Mael et al., 1992). Organizational identification was assessed using the 11-item Mael Scale (Mael et al., 1992) and adapted to fit the study context. Sample items included “this (community of practice) successes are my successes,” and “when I talk about this (community of practice), I usually say ‘we’ rather than ‘they.’” Items were measured on a 5-point scale (1= strongly disagree to 5 = strongly agree). Cronbach alpha coefficient of .87 was reported in Mael et al., (1992) study of university alumni. This study had a standardized Cronbach alpha of .94 for this measure.

Psychological Safety. Psychological safety was defined as a shared belief that it is safe to take interpersonal risks in the CoP without excessive fear of other’s reactions (Edmondson, 1999: 354). Psychological safety was assessed using seven items derived from Edmondson’s (1999) “Team Psychological Safety Scale” modified to fit the LEARN CoP context. Sample items included, “members of this (community of practice) are able to bring up problems and tough issues,” and “working with members of this (community of practice), my skills and talents are valued and utilized.” These items were measured using a 5-point scale (1 = very inaccurate to 5 = very accurate). The scale had high internal consistency in a sample of 51 teams of four different types in a manufacturing firm (Cronbach alpha coefficient = .82). In this study the standardized Cronbach alpha estimate was .79.

Social Capital. Social capital was defined as the extent to which CoP members interact with one another and feel they can trust and rely on one another for assistance (Dudwick et al., 2006). The social capital measure was developed by the investigator and encompassed features of structural and cognitive social capital. Sample items included how many people from the CoP do you “regularly interact with during organized meetings,” and “experience a high level of trust with.” Items were measured using a 5-point scale (1=none to 5= all). Standardized Cronbach alpha coefficient for the internal consistency of the scale in this study was .92.

Knowledge Utilization. Knowledge Utilization or knowledge use as referred to in this study was measured using Belkhdja et al (2007) seven-item “Utilization of Research Index.” The measure assesses conceptual and instrumental types of knowledge use. All items were modified to the LEARN CoP context and measured using a 5-point scale (1 = never to 5 = always). A sample item of *conceptual knowledge use* included: “I have read and understood the evidence that I received as a member of this (community of practice).” Sample items of *instrumental knowledge use* include: Due to my participation in this community of practice “I have made efforts to promote the adoption of evidence (e.g., research and/or practice) in my field”, and “I have received evidence that has led me to make professional decisions that I would not have made otherwise.” Belkhdja et al, (2007) reported a Cronbach alpha coefficient of .87 for their index among managers and professionals from ministries, regional authorities, and hospitals in Canada, which was comparable to what was found in this study (.93).

Control Variables. Several control variables were used in the analysis that may also influence knowledge use. These variables included the type of organization/sector members represented on the LEARN CoP (TCAN/local public health agency, university/research institution, government agency, non-governmental agency, community-based organization),

length of experience in tobacco control (months or years), time in current tobacco control position (months or years), length of CoP membership (months or years) as well as education.

5.4.2 Pilot Testing

The quantitative survey was pilot tested for face and content validity by one researcher at Propel at UW, two members of the LEARN Team (one researcher and one member deeply familiar with the LEARN CoP context), and one tobacco control practitioner from an Ontario local public health agency that was not involved with the LEARN CoP. Feedback informed survey revisions. The visual display (e.g., how items looked and fit on the screen) and functionality of the web-based survey was also pilot tested by staff at PTCC who were not involved in the LEARN Project.

5.4.3 Survey Implementation

The survey was implemented in April 2010. Propel, UW forwarded a link to the online survey via email to eligible and consenting members. Participants had an opportunity to complete the 20-minute survey during a three week time frame. The web-based survey provided an overview of the survey study, prompted participants to provide their consent again, and gave instructions of how to complete the survey. Hard copies of the survey were also available upon request.

To increase survey response and completion, the online survey allowed participants to return to their survey as many times as needed to complete it. Two weeks after the launch of the web-based survey, an email reminder was sent to eligible participants to complete the survey. One week after that, participants were followed-up with a reminder phone call during which they were asked if they had any questions about the survey.

5.4.4 Phase I: Sample

As previously stated, 70 members comprised the LEARN CoP. Fifty-six of these members (n=34 from CoP A and n=22 from CoP B) were eligible to participate in the study (based on the initial criterion of at least one CoP meeting attendance). Of the 56 eligible participants 35 members completed the survey, representing a 63% response rate. Twenty-three of the 34 CoP A members completed the survey (68% response rate) and 12 of the 22 CoP B members completed the survey (55% in the CoP B). Overall, fifty-two percent (52%) of survey respondents had been participating in the LEARN CoP for up to 1.5 years. The sample was predominately women (77%), between the ages of 31 and 40 years of age (42%) or 20 and 30 years (27%), had either a graduate level education (58%) or undergraduate degree (42%), and primarily represented the TCAN/Ontario local public health agencies sector (77%). The remaining respondents represented university/research institutions, provincial government, or non-governmental agencies. Respondents largely reported up to two years of experience in tobacco control (44%), 28% reported between two to six years of experience, while 12% had up to 10 years of experience, and 16% had more than 10 years of tobacco control experience. Similar trends were found with respect to length of time in their current work position, with most members reporting assuming their current position for the past two years (58%).

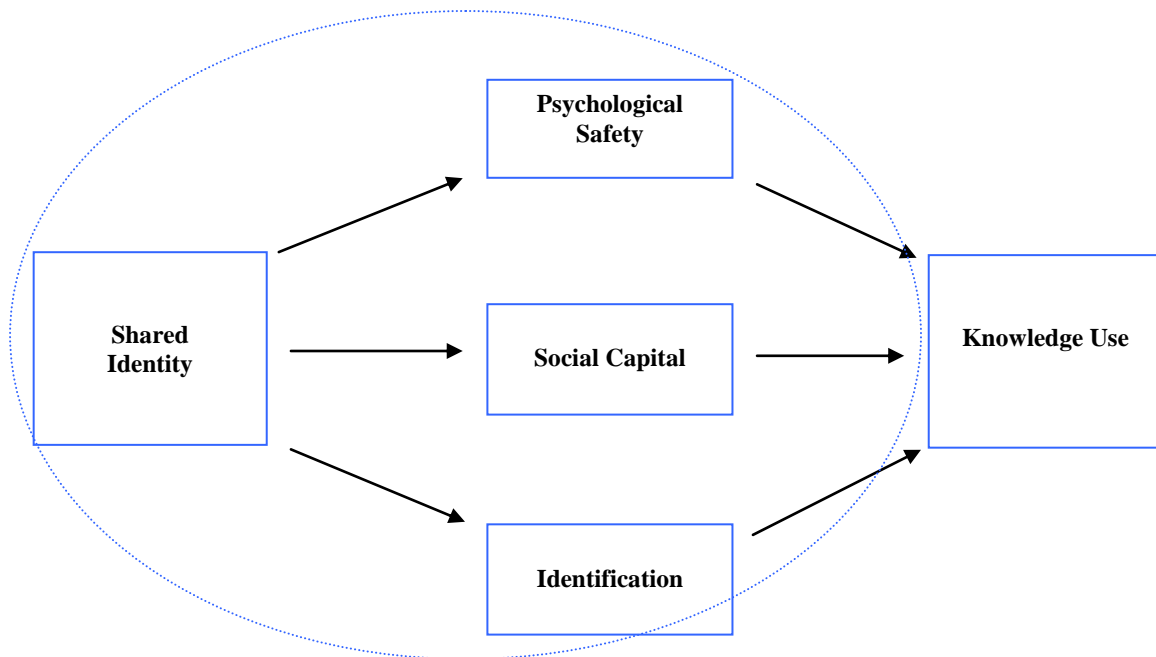
In order to assess whether there are differences between the participants who responded to the survey (n=35) versus those who did not (n=22), respondents were compared to non-respondents based on available demographic information. Several t-tests analyses showed that there were no significant differences based on sector represented or gender.

5.5 Phase I: Quantitative Analysis

Pooled LEARN CoP data (i.e., data from CoP A and CoP B) were used to determine whether shared identity, psychological safety, member identification, and social capital each

were independently related to knowledge use using a series of simple regression analyses that were conducted as part of the mediation analysis to be discussed next. Pooled data were also used to test an analytic framework (see Figure 2 below) that posited how shared identity, psychological safety, member identification and social capital inter-relate to influence knowledge use using Baron & Kenny's (1986) approach to mediation analysis. A mediator represents the mechanism through which an independent variable is able to influence the dependent variable of interest. Mediation, therefore, is one way to explain the process through which the independent variable influences the dependent variable (Baron & Kenny, 1986; MacKinnon, Fairchild & Fritz, 2007).

Figure 2 Analytic Framework Guiding Phase I Study



The analytic framework in Figure 2 uses a dashed circle to feature the factors that contribute to a community cohering into a collective and that each of these factors influence knowledge use. The analytic framework posits that a shared CoP identity influences knowledge use and this is mediated or explained by members identifying with the community of practice, psychological safety, and social capital. Recall that a shared identity defines 'who we are' as a

group and has been found to guide consistent sensemaking and action. Studies also suggest that it influences knowledge use (Kane et al., 2005; Willem et al., 2008; Haddow et al., 2007; Hong et al., 2009). Shared identity is positioned as an independent variable in Figure 2 because it provides an orienting framework that guides what information community members pay attention to, with whom to share what they know, what to act on, and how to act (Wenger, 1998; Albert et al., 1985).

One mechanism through which a shared community identity leads to knowledge use is member's identification with their CoP. Applying the Social Identity Approach (Tajfel, & Turner, 1979) to the context of LEARN CoP, member identification reflects a member's psychological entwined with the community, creating a sense of 'oneness' or 'belongingness' (Ashforth et al., 1989). Members identify with their CoP when they define themselves at least partly in terms of the CoP (e.g., 'who I am' is reflected in 'who we are' as a CoP) (Kreiner et al., 2004). Thus, a shared CoP identity is posited to provide an anchor point with which members can identify. When members identify with their CoP, they are more likely to want to play out the normative behaviours that characterize the CoP and feel motivated to take actions that ensure CoP success. Thus, members are more likely to engage in prosocial behaviours that engender cooperation and trust, which can enhance the use of CoP knowledge in efforts to achieve collective goals (Hogg et al., 1985; Phua, 2004; Mael et al., 1992; Ashforth et al., 1989). Thus, identification is theorized to influence knowledge use and to also act as a mediator that explains how shared identity leads to knowledge use in CoPs.

Another mechanism through which a shared CoP identity leads to knowledge use is through the development of social capital. Social capital reflects network ties, normative behaviours such as reciprocity as well as trust that develop through member interactions (Putnam, 1995). Resources (e.g., information, knowledge, shared understandings) accrete, become embedded in, and flow through these networks of relationships and are used to take

action in identity-consistent ways to advance their shared enterprise (Nahapiet et al., 1998). Thus, social capital is posited to directly influence knowledge use. A strongly shared identity directs members' actions in identity-consistent ways to advance their shared enterprise (Nahapiet et al., 1998). Thus shared understandings of 'who we are' as a CoP shape what information members pay attention to and act on and how to act (i.e., what norms of behaviour are appropriate to reinforce the CoP identity). High levels of social capital are found in social entities that share a strong sense of identity and this helps members to 'jell' together and enhances the use of complex tacit knowledge (Coleman, 1988; Onyx et al., 2000). Thus, social capital is posited to explain how shared identity leads to knowledge use.

Finally, a shared CoP identity is theorized to lead to knowledge use through psychological safety. Psychological safety exists when there is a shared belief that it is safe for members to take interpersonal risks (e.g., speak up) without excessive fear of members' reactions (Edmondson, 1991). Psychological safety has been linked to learning behaviours. Learning behaviours (e.g., sharing ideas and errors, experimenting and adapting innovations through their use in practice) encompass knowledge use. The relationship between shared identity and psychological safety has not been examined. As stated earlier, salient beliefs, values and norms of behaviour often become embedded into members' shared identity (Hatch et al., 2002). Since CoPs are intended to help members to learn by exchanging and building on one another's ideas and knowledge, the norms, beliefs and values that are consistent with learning behaviours may be a salient attribute that defines a CoP. A learning-consistent identity, then, may provide a framework that enhances members' confidence that the climate is safe for them to take learning-conducive risks. Thus, psychological safety is posited to explain how shared identity leads to knowledge use.

Examination of these effects followed Baron & Kenny's (1986) approach to mediation analysis using a series of regression analyses including the following steps:

1. Assessing whether the independent variable (i.e., shared identity) has a main effect on the outcome variable (i.e., knowledge use). This step established that there is an effect that may be mediated.
2. Assessing whether the independent variable (i.e., shared identity) has a main effect on each of the mediators (i.e., psychological safety, identification, and social capital, respectively).
3. Assessing whether each of the mediators (i.e., psychological safety, identification, social capital respectively) significantly correlate with the outcome variable (i.e., knowledge use) when the independent variable is controlled. These criteria will informally judge whether or not mediation is occurring.
4. Using the Goodman test (Goodman, 1960), which is recommended for small sample sizes, to verify the mediation analysis. More specifically, this test examined whether the indirect effect of the independent variable (i.e., shared identity) on the dependent variable (i.e., knowledge use) via each of the moderators (i.e., psychological safety, social capital, and identification, respectively) was significantly different from zero at $p < 0.05$ (MacKinnon, Warsi & Dwyer, 1955).

As a prelude to the Phase II Qualitative Study, the quantitative analysis also attempted to get a snapshot of how the LEARN CoP overall and its embedded cases were using CoP knowledge (i.e., conceptual and instrumental in particular) and developing with respect to shared identity, psychological safety, member identification, and social capital. Statistically significant differences were also examined between the two embedded cases (CoP A and CoP B) with respect to the above stated factors and to determine whether demographics accounted for any differences. Descriptive statistics, t-tests and ANOVA were conducted. To detect a medium difference between the embedded cases ($d = .50$) at a significance level of $\alpha = 0.05$, and power of at least $1 - \beta = 0.80$, 64 participants per LEARN CoP were required (Cohen, 1992). Given that only 35 members completed the survey, this needs to be taken into consideration when interpreting the statistical findings.

5.6 Phase II: Qualitative Study Overview

This section presents phase II of the mixed-methods embedded case study design. The Phase II qualitative study intended to explain in greater depth the Phase I findings by examining whether and how shared identity, psychological safety, member identification, and social capital

each influence knowledge use, how these factors inter-relate to influence knowledge use, and what contributes or detracts from these relationships. To explain the Phase I findings and develop richer insights into the factors of interest and processes through which they exert their influence on knowledge use, an examination of the LEARN CoP overall and its embedded cases (that is, CoP A and CoP B) were examined. The primary data source for Phase II was in-depth interviews with members from the two embedded units. Interviews were supplemented by CoP documents. Field notes that captured the investigator's insights about aspects of the study process were also documented.

Data analysis involved some deductive processes but was largely inductive in nature. Open, axial and selective coding procedures were employed (Strauss & Corbin, 1990). The constant comparisons method (Glaser & Strauss, 1967; Charmaz, 2006) was also applied throughout these coding stages and at three levels of analysis: within each embedded unit, across the embedded units to gain an understanding of the overall LEARN CoP case, and finally between the LEARN CoP case and the relationships originally specified in the conceptual framework that guided the study (Figure 1). To elaborate, each embedded unit was analysed separately to understand how the conceptual framework guiding the study worked in those settings. Findings per embedded unit were compared and contrasted with one another to draw out similarities and differences that informed the development of a model of what factors influenced knowledge use in the overall LEARN CoP case. This model was then compared and contrasted with the relationships proposed in the conceptual framework that guided the study. This led to revisions to the framework that better explained how factors that helped different people cohere into a collective influenced knowledge use in the LEARN CoP (i.e., the case).

5.6.1 Phase II: Data Collection

In-depth Interviews, Documentation and Field Notes

Semi-structured in-depth, interviews formed the primary data source for the Phase II study. In-depth interviews were selected because they enabled probing into some of the concepts of interest to this study, which may not be common or tangible things that people talk about in every day conversation (e.g., issues pertaining to social/organizational identity or member identification). It also was deemed an appropriate way to best understand the factors that led to knowledge use and the processes through which this occurred. Given the geographic distribution of potential participants (i.e., members of each embedded unit), the study investigator conducted one-on-one, audio-recorded telephone interviews that lasted an average of 1 hour and 24 minutes (1 hour and three minutes to 1 hour and 50 minutes).

Given the small Phase I sample, survey results loosely informed what areas the interview guide would focus its attention. Decisions about what to focus on relied more heavily on the theories and concepts that underpinned the conceptual framework that guided the study (Figure 1). The interview guide was reviewed by two dissertation committee members for face and content validity. Two LEARN Team members also provided feedback on whether the questions were understandable from a practice perspective. Revisions were made. Appendix 4a presents the interview guide. The interview guide began with a warm up phase that aimed to build rapport with the participant to help them feel comfortable and create an environment conducive to open discussions. This process involved small chat about the participant's day, a description of the study purpose, what participants could expect during the interview (i.e., layout and general topics of inquiry), issues pertaining to confidentiality and an opportunity for participants to ask questions or concerns they may have before easing into the actual interview.

Semi-structured questions were posed along with probes to elicit greater understanding of some of the Phase I quantitative survey findings but more so to better understand the conceptual framework that guided the study (Figure 1). It also allowed the participant opportunity to direct the discussion to areas that, from their perspective, were important to the phenomenon of interest that may or may not be covered by the interview guide. Probes were used to elicit greater depth of information and clarify what had been said. The interview ended in a conversational format. All participants were informed that there were no right, wrong or desirable answers and that the investigator was only interested in their candid responses based on their experiences with their respective CoP.

CoP Documents

CoP documents that were deemed important to help identify the key informants and answer the research questions were collected to supplement interviews. Monthly participation logs of members within each unit were obtained from the LEARN Team to assist with the purposive selection of interview participants (see Section 5.6.2: Sampling Scheme). CoP documents collected included Community Charters and Learning Agendas, recorded meetings, meeting minutes and WebEx discussion posts specific to the embedded units - CoP A as well as the CoP B. These documents were analysed to build rich descriptions of each case and gain greater understanding of how CoP-related knowledge was used by members, whether factors of interest to this study (e.g., shared identity, member identification, social capital, psychological safety) existed and how they influenced knowledge use processes, and to identify other factors that appeared to influence knowledge use.

Community Charters per CoP A and CoP B were also intended to flesh out the descriptions of 'who we are' as the CoP A or CoP B, 'what we want to become or achieve' and compare it to interview participants perceptions of their respective CoP identity. Originally,

observations of meetings were planned should an in-person meeting occur during data collection period. This did not happen. With each CoP's permission, CoP meetings were audio-recorded as a means for members to catch up if they had missed a meeting and wished to hear the details and served as an archive of the history of the CoP and its evolution over time. However, these recorded meetings only came into effect just before the start of the Phase II study (November 2010). This dissertation used recorded meetings captured during the qualitative data collection phase (December 2010 to March 2011, but encompassed the November recorded meetings as well). Meeting minutes from each CoP's inception to the end of Phase II study data collection were collected to understand how each CoP had evolved with a focus on the factors of interest to this study. Meeting minutes that spanned the Phase I and Phase II study periods (April, 2010 to March 2011) were more specifically analysed to gather data pertinent to the research questions. A similar approach was used for the WebEx discussion posts. Each embedded unit (CoP A and CoP B) had access to their own online space called WebEx. WebEx served as a place where members could log on to at any time to access information on CoP activities (e.g., meeting agendas and minutes), served as a repository of CoP knowledge (science and practice documents), and offered a forum where members could post questions and engage in discussion threads around their practice area. Documents from WebEx, with an emphasis on the discussion posts, were analysed to gain insight into the research question. Field notes were also taken during and immediately after interviews, recorded meetings and analysis to capture the investigator's impressions of how data collection was working and possible adjustment to make and insights or ideas relating to data collected and initial interpretations of how concepts connected (Patton, 2002; Charmaz, 2006).

5.6.2 Phase II: Sampling Scheme

Members that comprised the embedded units of the LEARN CoP formed the population of interest from which potential interviewees were selected. As stated earlier, and consistent with a sequential mixed-methods approach, interviewees were a subset of members who had completed the Phase I quantitative survey (Collins et al., 2007). Participants were selected using a two-staged sampling selection procedure. First, members must have completed the Phase I survey and more specifically the knowledge use measure that assessed how frequently members used CoP knowledge in conceptual and instrumental ways (5-point scale 1=never to 5=always). Each member's self-reported level of conceptual and instrumental knowledge use was averaged and their individual knowledge use ratings were used to group them into lower, intermediate and higher levels of knowledge use. To determine these groupings, a combination of two approaches was used. First, the 5-point response option that members used to identify their level of knowledge use on the Phase I survey was used as a guide. Responses that ranged from 1 to 2 (never/seldom) reflected lower levels of CoP-related knowledge use; 3 (sometimes) represented intermediate levels of knowledge use, and 4 to 5 (often/always) reflected higher levels. At the outset of the study, a total of six members per embedded unit (two members per knowledge use category) would be interviewed. Additional interviews were planned if needed to saturate themes and ensure theoretical sufficiency (Charmaz, 2006).

In the second stage of sampling, CoP members who fulfilled the first sampling criterion and also attended at least five CoP A meetings or six CoP B meetings were eligible for interviews. These cut-off values were determined by averaging the number of meetings attended by CoP A as well as CoP B members who completed the Phase I survey. This sampling criterion was based on the premise that members would need a certain level of experience with their CoP to develop and be able to speak knowledgeably about the factors of interest in the conceptual

framework. More specifically, their experience would best inform what had been most important to their use of CoP-related knowledge. Twenty members across both embedded units (n=11 from CoP A and n=9 from CoP B) met the two-staged sampling criteria.

Efforts were made to purposively select members that represented diverse perspectives. Originally, the Phase I study findings were to inform the Phase II sampling. Given the small sample size in Phase I, Phase I findings ultimately loosely directed the selection of interview participants. Similar to the development of the interview guide, sampling decisions also relied on theories and concepts that underpinned the conceptual framework that guided the study (Figure 1). For instance, sampling was in part informed by the Social Identity Approach (Tajfel, & Turner, 1979) to better understand how people representing different sectors or organizations cohere (if at all), what influence this has on knowledge use, how and why. Consequently, attempts were made to recruit members representing different sectors (local public health, research, non-governmental agency (NGO), roles (e.g., LEARN Co-Chair), job positions (TCAN Coordinator, Tobacco Control Coordinator/Manager, Health Promoter, etc), education and/or gender. Diverse perspectives were desired to provide insights into how different members cohere in ways that lead to increased knowledge use.

5.6.3 Phase II: Sample

Recall that all members from each CoP were asked to indicate to the investigator electronically if they did not wish to participate in the interviews and / or allow the investigator access to CoP documents (See Section 5.2.2 Study Procedures: Ethics Approval). No one denied the investigator access to the CoP documents. However, six members declined participation in the interviews (four from CoP A and two from CoP B). Two of the declining CoP A members had completed the Phase I Survey, represented lower levels of knowledge use, had attended at least five meetings and represented different sectors (local public health and a consulting

organization). The other two declining CoP A members were non-survey respondents. The two members that declined from the CoP B had not completed the Phase I Survey. Although not asked, members indicated that the reasons for declines included: personal reasons, time constraints and no longer active members of their CoP.

As described in the previous section that outlined the sampling scheme, 20 members met the eligibility criteria for participating in the interviews. Seventeen (n=17) of these members were initially approached to participate in the interviews, which began on January 3rd and ended February 22nd, 2011. Prospective interview participants were contacted by phone and followed up with an email in instances where potential interviewees were not reached. Three of the 17 members that were approached did not participate. One CoP A member did not return phone calls or emails. Two CoP B members indicated that their work positions and priorities had changed and consequently were no longer active members of the CoP. At the outset of the study, 12 members (six per embedded unit) were planned for interviews. This is consistent with recommended sample sizes for case studies (Collins et al., 2007). By the end of the data collection period, 14 members (seven per embedded unit) participated. The extra two members interviewed to ensure that no new insights or ideas were raised which had not already been covered in the previous interviews (Crabtree & Miller, 1992).

Once members agreed to participate in the interviews, they were sent an email confirming the agreed-upon interview date and time and supplied the dial-in and passcode numbers that they would need to call into at the time of the interview so that it could be audio-recorded. All members were asked if they would like a copy of the interview questions prior to the interview, only four members said they did and received the interview guide immediately via email. One member required his/her local public health agency approval to participate. The information letter, consent form and copy of the interview questions were provided and approval was readily provided within one week time.

Interviews were staggered to provide enough time for audio-recorded interviews to be transcribed and for the investigator to review the transcripts. Once received, the study investigator compared all the audio-recorded interviews to the verbatim transcriptions to ensure accuracy and found positive results. Transcripts were also reviewed to ensure interview questions were not leading the interviewee and that they elicited the answers that they intended to generate. The investigator's reflections were captured in field notes. Appendix 4b summarizes the reflections regarding the interview process that were recorded in memos and discusses the subsequent adjustments made to the interview questions in particular.

5.7 Phase II: Qualitative Analysis

Telephone interviews were audio-recorded and transcribed verbatim by an external organization. Interviews, CoP documents and field notes were entered into NVIVO 9 Qualitative Software for data storage, coding and some analysis. The conceptual framework guiding the study (Figure 1) presented concepts that were of interest to the study and as such, data were examined to discern how these concepts influenced knowledge use. However, the investigator did not limit coding and analysis to these concepts. Rather, the investigator relied on the data gathered to shape understanding of the salient factors that influenced knowledge use and the processes through which this occurred.

Data analysis involved open, axial and selective coding (Strauss & Corbin, 1990) and employed the constant comparison method (Glaser et al., 1967; Charmaz, 2006). Efforts were also made to establish the validity of the mixed-methods study. To elaborate, *stage one* involved open coding to develop categories or 'free nodes' that reflect concepts that emerge from the data. During this stage, these categories/free nodes were compared and contrasted to identify which ones reflected a higher order concept (i.e., an overarching category or as described in this study 'branch') and subsumed them accordingly. Categories / free nodes that comprised a given branch

were then organized into sub-branches and its twigs. Each branch was then compared and contrasted to confirm that they were mutually exclusive (but potentially related to one another). *Stage two* involved a coding reliability check to refine the branch, sub-branch and twig coding structure developed from stage one and which would be used for subsequent analyses. *Stage Three* involved axial coding to identify branches per embedded unit that were important influencers of knowledge use as well as important to the other branches that also emerged as exerting important influences on knowledge use. This stage also determined ‘how’ and ‘why’ these branches exerted their respective influence by examining their respective sub-branches and twigs. Importance was determined by the frequency with which a branch-specific issue was mentioned across diverse members and / or appeared in CoP documents, amount of text dedicated to or rich descriptions provided about an issue by a few or many interview participants, and / or the emotionality with which members conveyed a particular branch-specific issue. Data per embedded unit were then compared and contrasted, regularities in these findings were identified and consequently pooled to construct an understanding of the branches that were most important to knowledge use and how these branches inter-related at the level of the LEARN CoP case. Models that depict these relationships were developed. *Stage four* involved selective coding. Data were compared and contrasted to understand what different interview participants (e.g., those with higher, intermediate and lower levels of knowledge use, representing different sectors, other) had to say about the branches that emerged as important to knowledge use and their inter-relationships as per stage three findings. *Stage five* (which also applied to Phase I quantitative study) involved efforts to establish the validity of the mixed-methods approach as a means to assist the reader in determining the study quality and their level of confidence in the findings and its conclusions (Creswell et al., 2011). This encompassed efforts to ensure the validity and reliability of the Phase I quantitative findings (e.g., efforts to enhance response rate,

pilot testing survey, assessing internal consistency of scales) and trustworthiness of the Phase II qualitative findings (e.g., credibility, transferability, and dependability) (Patton, 2002).

Efforts to establish credibility included: inter-coder reliability after the open coding stage and before axial coding, cross-data consistency checks through triangulation of data from different sources (e.g., interviews, documents, and to a lesser extent between Phase I and Phase II findings) (Patton, 2002), and member checks of the study findings. Additionally, early analysis informed later data collection. This means that data collection and early data analysis evolved together to ensure saturation of themes and theoretical sufficiency (Charmaz, 2006). Questions were added or revised and others removed as themes were saturated (redundancy of information), information gaps were identified and theoretical concepts were developed (range of responses obtained pertaining to specific concepts that emerged as important to knowledge use). Thus, interviews continued until thematic saturation was achieved and theoretical saturation of important themes was satisfied. This procedure provides more convincing evidence of the credibility of the information derived and it also signals when to stop sampling (Crabtree et al., 1992).

Transferability refers to whether the study findings can be transferred to other situations. Thick descriptions were developed and presented per embedded unit and the LEARN CoP case based on the data gathered to assist readers to make decisions about the transferability of findings to their contexts (Patton, 2002).

Dependability relates to the consistency between the data and findings and is achieved through clear explanation of the methods used to collect, analyse and interpret the data. Consistent with recommendations for ensuring the validity of a mixed-methods approach, an effects matrix (Miles & Huberman, 1994) was developed (see Appendix 8). The effects matrix documented all the major decision points made throughout the research process (i.e., an audit trail and serves as a tool that the reader can use to determine the extent to which interpretations

and conclusions are consistent with the procedures used in the mixed-methods study (i.e., ensuring interpretive consistency) (Collins et al., 2007). The effects matrix tracked: (a) all the major steps taken in the Phase I Study data collection, analysis and interpretation phases and major decisions made including how Phase I findings were used to inform Phase II Study Findings, (b) all the major steps taken in the Phase II Study data collection, analysis and interpretation, including efforts made to establish its trustworthiness (Patton, 2002), and (c) how findings from Phase II built on Phase I findings. Additional details regarding the Phase II qualitative analysis are provided in Section 6.7 Qualitative Analysis Process.

Common to a sequential mixed-methods approach, findings from each study phase were integrated in the discussion. To answer the research questions in the discussion comparisons were made between the Phase I and Phase II study findings per embedded units (i.e., CoP A and CoP B), as well as by comparing the overall findings of the LEARN CoP case in relation to the relationships originally proposed in the conceptual framework. Implications for science, practice, and methods are also discussed.

6.0 Results

This section presents the results of the Phase I quantitative study followed by the Phase II qualitative study.

6.1 Phase I: Quantitative Results

The Phase I quantitative study was developed to answer two of the three research questions that guided this study:

Q1: How do shared identity, psychological safety, member identification, and social capital each influence knowledge use in the context of the LEARN communities of practice?

Q2: How do shared identity, psychological safety, member identification, and social capital inter-relate to influence knowledge use in the context of the LEARN communities of practice?

6.2 Analytic Measures and Descriptive Statistics

Participants responded to the questions about shared identity, psychological safety, member identification / sense of belonging, social capital, and knowledge use. The means, standard deviations, range (minimum and maximum values), internal reliability coefficients, and correlations among the study variables are shown in Table 2.

Although not originally part of the study, factor analysis using principal components was conducted per measure to explore whether the items that comprised a given measure loaded together in a one-factor solution. The items that measured all five variables were then factor analysed to compare to the first factor analysis to determine what items to drop or retain from each measure and construct a factor score that would be used in subsequent regression analyses. The following describes this process. Note that analyses were also conducted by constructing composite scores using items per measure without conducting the factor analysis. Similar trends

in the findings emerged as those found when using scores from the first round of factor analysis as well as the second factor analysis.

Factor analysis was conducted to explore how the items of a specific measure loaded together. Items that did not load well were also items that, if dropped, would improve the internal consistency of that scale. Overall, one factor solutions emerged for each measure and the majority of items per measure had factor loadings of .50 and higher, which meets the .40 cut-off suggested by Nunnally and Berstein, (1994). Appendix 5a presents the factor loadings of the individual items per measure and Appendix 5b describes these results.

A factor analysis was then conducted on all 37 items of the survey that comprised the five measures that were used in the quantitative study (knowledge use, shared identity, member identification/sense of belonging, social capital, and psychological safety). The purpose of this factor analysis was to explore whether items loaded according to their intended measures (as observed in the factor loadings per measure described above). The un-rotated factor solution extracted eight factors with eigen values greater than 1 (1.2 to 16.73), with the largest factor accounting for ~45% of the variance. However, items for the most part still loaded on their intended measures. Specifically, knowledge use, member identification / sense of belonging, and social capital were predominately lined up according to their measures (see Appendix 6). While items for the shared identity measure also lined up, there was more of a range in the factor loadings with some items loading more strongly than others (.13 to .87). Similar results were found for psychological safety (-.004 to .83). Decisions about what items to retain or drop per measure to create factor scores that would be used in subsequent regression analyses were based on a comparison of findings between the two sets of factor analyses. These decisions are presented below.

Knowledge Use

One item from the knowledge use measure (“*I have received evidence concerning the area for which I am responsible*”) had a factor loading less than .40 and loaded onto separate factors when all survey items were entered into the factor analysis. Given that the original factor analysis for this measure revealed high loadings for all seven items and that knowledge use is the outcome of interest to this study, the item was retained and used in subsequent analyses. For interest sake, analyses conducted for the Phase I Quantitative Study (e.g., multiple linear regression, t-tests and ANOVA) were run with the above stated item included and then again with it excluded from the knowledge use measure, yielding similar results.

Shared Identity

One item from the strength of organizational identity measure (i.e., Shared Identity) “*This CoP has a well-defined set of goals and objectives,*” loaded onto separate factors and was weakly correlated with the other items (.13). This item also loaded weakly when conducting the first factor analysis with just the items that comprised the shared identity measure. Therefore, this item was dropped from the scale and analysis.

Member Identification / Sense of Belonging

One item from the organizational identification measure “*I am glad to be a member of this CoP,*” loaded onto separate factors and was weakly correlated with the other member identification items. Therefore this item was dropped from the scales and analysis.

Social Capital

One item, “*I engage in regular interactions with CoP members outside of CoP meetings,*” loaded weakly with the remaining social capital items when all survey items were entered into the factor analysis. However, the item was retained because its removal would reduce the reliability of the scale and the original factor analysis specific to this measure revealed that it was strongly correlated with the other social capital items. Conceptually social capital is comprised of both structural and cognitive social capital. Removal of this item would also result in the loss of important information pertaining to structural social capital and would over-emphasize cognitive social capital (i.e., trust, willingness to help others, etc). The item was retained leaving the 6-item social capital measure intact.

Psychological Safety

Three psychological safety items were weakly correlated with the other items that comprised the psychological safety measure when all survey items were entered into the factor analysis. One of these items, “*If you make a mistake in this CoP, it is not held against you,*” did not load at all with the other items that comprised the psychological safety measure and the other two items “*It is safe to take a risk in this CoP,*” and “*My skills and talents are valued and utilized when working with members of this CoP*” loaded at .33 and .37, respectively. Removal of the item “*If you make a mistake in this CoP, it is not held against you,*” improved the reliability of the scale while removal of the any of the other items compromised the scale reliability (i.e., less than .70). Thus, this item was deleted from the scale and subsequent analyses.

Cronbach alpha coefficients were calculated for shared identity, psychological safety, member identification, social capital, and knowledge use measures after the items were deleted. The new standardized Cronbach's alpha coefficients were .93 for knowledge use, .90 for strength

of organizational identity (shared identity), .94 for organizational identification, .90 for social capital, and .79 for psychological safety (Table 2).

Table 2 Means, Standard Deviations, Pearson Correlation Coefficients, Cronbach Alpha of Study Variables

Variables	Number of Items	M	SD	1KU	2SI	3SC	4SB	5PS
1.Knowledge Use	7	3.31	.95	(.93) ^a				
2.Shared Identity	5	3.49	.75	.42*	(.90) ^a			
3. Social Capital	6	3.05	.86	.40*	.59**	(.92) ^a		
4.Sense of Belonging	10	3.21	.86	.49*	.58**	.63**	(.94) ^a	
5.Psychological Safety	6	4.01	.48	.58**	.47*	.60**	.67**	(.79) ^a

* $p < .05$, ** $p < .01$

^aCronbach alpha corresponding to each variable

Control Variables

Before presenting the results specific to research questions one and two, relationships between potential control variables and the outcome of interest (knowledge use) were examined. Participants indicated the type of organization/sector represented on the LEARN CoP (TCAN/local public health agency or other: university/research institution, government agency, non-governmental agency, community-based organization, private business), length of CoP membership, experience in tobacco control, time in current tobacco control position, education, age, gender. No significant differences were found and were dropped as control variables for subsequent analyses.

6.3 Phase I Quantitative Results for Research Question 1

Research question one was answered by performing simple regression analyses to determine the relationship between knowledge use (outcome variable) and shared identity, member identification, social capital, and psychological safety, respectively. Tables 3 and 4 present the results of the regression analyses conducted. These analyses formed step one of the mediation analyses which help to answer research question two.

Table 3 Simple Regressions of Knowledge Use on Predictors

Variable	Knowledge Use		
	<i>b</i>	<i>SE b</i>	β
<u>Shared Identity</u>			
Intercept	1.21	.99	
Shared Identity	.59	.27	.42*
R^2		.17	
<i>F</i>		4.62*	
<u>Sense of Belonging</u>			
Intercept	1.82	.64	
Sense of Belonging	.48	.19	.49*
R^2		.24	
<i>F</i>		6.34*	
<u>Social Capital</u>			
Intercept	2.17	.62	
Social Capital	.40	.20	.40*
R^2		.16	
<i>F</i>		4.14*	
<u>Psychological Safety</u>			
Intercept	-.87	1.30	
Psychological Safety	1.05	.32	.58**
R^2		.34	
<i>F</i>		10.87**	

* $p < .05$, ** $p < .01$

Table 4 Multiple Regression of Knowledge Use on Predictors

Variable	Knowledge Use		
	<i>b</i>	<i>SE b</i>	β
<u>Shared Identity</u>			
Intercept	-1.18	1.67	
Shared Identity	.27	.34	.22
Sense of Belonging	.10	.28	.10
Social Capital	-.07	.29	-.08
Psychological Safety	.86	.49	.48
R^2		.39	
ΔR^2		.251	
<i>F</i>		2.76	

Strength of organizational identity (shared identity) ($b = .59$, $SE = .27$, $\beta = .42$, $t[21] = 2.15$, $p < .05$, Table 3), member identification / sense of belonging ($b = .48$, $SE = .19$, $\beta = .49$, $t[20] = 2.52$, $p < .05$, Table 3), social capital ($b = .40$, $SE = .20$, $\beta = .40$, $t[22] = 2.03$, $p < .05$, Table 3), and psychological safety ($b = 1.05$, $SE = .32$, $\beta = .58$, $t[21] = 3.30$, $p < .01$, Table 3) were all independently and significantly related to knowledge use. These findings suggest that higher levels of knowledge use occurred among:

- (1) Members who perceived that a widely held and deeply shared CoP identity exists;
- (2) Members who more strongly identified with / experienced a stronger sense of belonging to their CoP;
- (3) Members who had interacted with and developed trusting, supportive and helpful relationships with a greater number of CoP members ; and,
- (4) Members who felt it was safe to take interpersonal risks within the CoP without excessive fear of experiencing criticism from co-members.

These findings suggest that a relationship exists between each of the predictor variables and the outcome of interest (knowledge use), and are variables worth exploring.

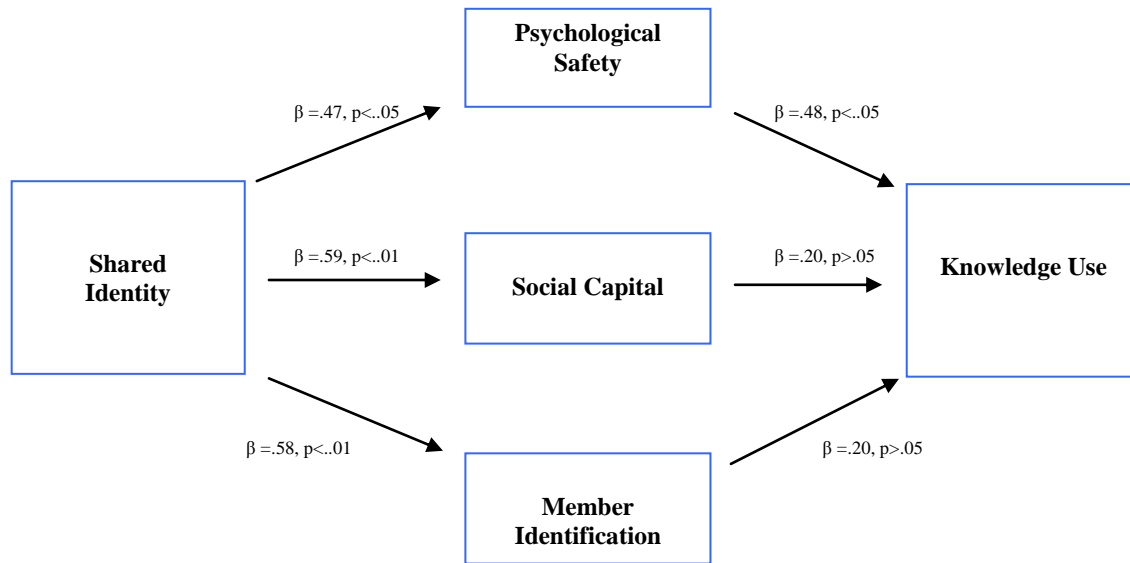
Out of interest, a multiple regression test was computed (Table 4). The test regressed knowledge use on all of the variables (shared identity, member identification/sense of belonging, social capital and psychological safety) to determine the variance explained and identify whether one or more of these variables predict knowledge use. Correlations between the predictors were high (Table 2). However, variance inflation factors (VIFs) were computed to determine whether the data suffer from multicollinearity. Multicollinearity is said to exist when VIFs exceed the value of 10 (Belsley, Kuh, & Welsch, 1980). The VIFs for shared identity, member identification / sense of belonging, social capital and psychological safety were each less than the most rigorous cut-off value of 2.50.

When knowledge use was regressed on the five predictors, the model emerged as borderline significant and explained 39% (~25% when adjusted to account for the multiple variables) of the variance on knowledge use ($R^2 = .39$, Adjusted $R^2 = .251$ $F(4,17) = 2.76$, $p = .06$). However, none of the variables entered in the model emerged as significant predictors of knowledge use when controlled for the other [Shared identity ($b = .27$, $SE = .34$, $\beta = .22$, $t[17] = .78$, $p = .44$), , member identification / sense of belonging ($b = .10$, $SE = .28$, $\beta = .10$, $t[17] = .36$, $p = .73$), social capital ($b = -.07$, $SE = .29$, $\beta = .08$, $t[17] = .25$, $p = .80$), and psychological safety ($b = .86$, $SE = .49$, $\beta = .48$, $t[17] = 1.74$, $p = .10$)] (Table 4). These findings may be a function of insufficient power to detect significance given the small sample size. Alternatively, the findings may suggest a spurious or an intervening relationship between the independent variables. Recall that VIF did not find multicollinearity to be a significant issue. Additionally, the literature reviewed for this dissertation suggested that the independent variables are distinct but inter-related. Thus, if the results are a function of a spurious or intervening relationship, the latter explanation is a more plausible reason for the multiple regression findings. This means that the predictors mirror one another, or stated differently, exert their respective impact on the outcome variable (knowledge use) through one another.

6.3 Phase I Quantitative Results for Research Question 2 (Mediation Analyses)

Recall in the Methods section (see Section 5.4: Phase I Quantitative Analysis) that an analytic framework was advanced to examine proposed relationships between shared identity and knowledge use and the processes through which this relationship emerges. The analytic framework is presented again below and specifies the standardized β and significance for each set of mediation analyses that were conducted (Figure 3).

Figure 3 Results of Mediation Analysis



To answer research question two of this study, the analytic framework was tested by running a series of regression analyses that met Baron & Kenny's (1986) criteria for mediation. The criteria to meet included establishing that the: (a) independent variable (shared identity) has a significant relationship with the outcome variable (knowledge use), (b) the independent variable (shared identity) has a significant relationship with the mediator (e.g., psychological safety, sense of belonging, or social capital), (c) the mediator (e.g., psychological safety, member identification / sense of belonging, or social capital) has a significant relationship with the outcome variable (knowledge use), when controlling for the independent variable (shared identity). As a final check of mediation, the Goodman test was performed, which is appropriate for small sample sizes (Goodman, 1960).

Psychological Safety as Mediator

The first set of regression analyses to be described pertains to psychological safety mediating the relationship between shared identity and knowledge use. Research Question 1 already established that the strength of organizational identity (i.e., members perceive that the

CoP identity is widely shared and deeply held) was significantly related to knowledge use ($\beta = .42, p < .05$, Table 3). Thus, the first criterion of Baron & Kenny's (1986) mediation analysis was supported.

The second criterion assessed the relationship between shared identity and psychological safety. Shared identity was significantly related to psychological safety ($\beta = .47, p < .05$), suggesting that CoP members who felt a shared identity existed reported a higher sense of psychological safety. The second criterion was supported.

The third criterion assessed the relationship between psychological safety and knowledge use. Psychological safety was significantly related to knowledge use, after controlling for shared identity ($\beta = .48, p < .05$) and shared identity became insignificant ($\beta = .22, p > .05$). Thus, psychological safety fully mediated the relationship between shared identity and knowledge use and the third criterion was supported.

As a final test of the mediation results, Goodman test (1960) was computed. The test found that psychological safety did not mediate the relationship between shared identity and knowledge use ($z = 1.63, p = .10$). Thus, the final check of mediation was not supported.

Overall, these findings suggest that when members perceive that a widely held and deeply shared sense of identity exists among CoP members, knowledge use increases. Similarly, when members feel it is safe to take interpersonal risks in their CoP (psychological safety), knowledge use increases. However, psychological safety was not found to mediate the relationship between shared identity and knowledge use as originally proposed.

Member Identification / Sense of Belonging as Mediator

The second set of regression analyses conducted pertained to member identification / sense of belonging with the CoP mediating the relationship between shared identity and knowledge use. As stated earlier, the strength of organizational identity (shared identity) was

significantly related to knowledge use ($\beta = .42, p < .05$, Table 3). The first criterion was supported.

The second criterion assessed the relationship between shared identity and member identification. Shared identity was significantly associated with member identification / sense of belonging ($\beta = .58, p < .01$). The second criterion was supported. These findings suggest that CoP members who felt that a widely held and deeply shared sense of identity existed were more strongly identified with / experienced a greater sense of belonging to their CoP.

The third criterion assessed the relationship between member identification / sense of belonging and knowledge use when controlling for shared identity. Shared identity became insignificant ($\beta = .22, p > .05$), but so did member identification ($\beta = .41, p > .05$). Thus, member identification / sense of belonging did not mediate the relationship between shared identity and knowledge use. The third criterion was not supported and Goodman Test was therefore not performed.

Social Capital as Mediator

The third and final set of regression analysis tested whether social capital mediates the relationships between shared identity and knowledge use. Recall that the strength of organizational identity (shared identity) was significantly related to knowledge use ($\beta = .42, p < .05$, Table 3). The first criterion was supported. The second criterion assessed the relationship between shared identity and social capital. Shared identity had a significant relationship with social capital ($\beta = .59, p < .01$), suggesting that CoP members who perceived that a widely held and deeply shared sense of CoP identity existed were ones that interacted with and experienced trusting, supportive and mutually helpful relationships with a greater proportion of CoP members. The second criterion was supported. The third criterion assessed the relationship between social capital and knowledge use when controlling for shared identity. Shared identity

became insignificant ($\beta = .31, p > .05$), but so did social capital ($\beta = .20, p > .05$). Thus, social capital did not mediate the relationship between shared identity and knowledge use. The third criterion was not supported and Goodman Test was therefore not performed.

6.4 Constructing an Understanding of the Embedded Units

As a prelude to the Phase II Qualitative Study, additional analyses were conducted to construct a snapshot of the embedded units of interest to this study that comprised the LEARN CoP. The purpose of these analyses was to understand how CoP-related knowledge was being used in each embedded unit and how each was developing with the variables that were found to influence knowledge use (i.e., shared identity, member identification / sense of belonging, social capital and psychological safety). Additionally, differences in knowledge use or the factors of interest that were found to be associated with knowledge use based on demographics were also examined. These results are presented next.

6.4.1 Differences between the Embedded Units

Student t-tests were examined to determine differences between the two cases of interest to this study (herein termed CoP A and CoP B, respectively). Table 5 presents the sample size, means, standard deviations, t statistic, and significance value for knowledge use (including its component parts, conceptual and instrumental), shared identity, member identification, psychological safety and social capital per CoP A and CoP B.

Table 5 Means, Standard Deviations per Variable within Embedded Units, and Significant Differences between Embedded Units

Variables	CoP	N	Mean	SD	<i>t</i>	<i>p</i>
Knowledge Use	CoP A	11	3.30	.88	-.79,	.43
	CoP B	8	3.65	1.0		
<i>Conceptual</i>	CoP A	13	3.58	.81	-1.42	.17
	CoP B	9	4.06	.73		
<i>Instrumental</i>	CoP A	11	3.11	.94	1.59	.56
	CoP B	8	3.41	.12		
Shared Identity	CoP A	13	3.18	.77	-2.12	.05
	CoP B	8	3.90	.72		
Member Identification	CoP A	13	3.02	.82	-1.67	.11
	CoP B	8	3.68	.94		
Social Capital	CoP A	14	2.85	.75	1.12	.13
	CoP B	9	3.28	1.11		
Psychological Safety	CoP A	13	3.82	.42	-3.47	.002
	CoP B	9	4.39	.30		

Knowledge Use

In the survey, knowledge use was assessed using a 5-point scale (1= never to 5 = always). On average survey respondents across both CoPs reported using knowledge gained from the CoP some of the time with a minimum value of never to always using CoP knowledge ($M = 3.31$, $SD = .95$, $min = 1.5$, $max = 5$, Table 2). Student t-tests were computed to identify significant differences between the two embedded units with respect to knowledge use, but none were found. Specifically, respondents from the CoP A as well as the CoP B reported that on average, they sometimes used CoP knowledge in conceptual and instrumental ways ($M = 3.30$, $SD = .88$ for CoP A; $M = 3.65$, $SD = 1.02$ for CoP B, $t(17) = -.79$, $p > .05$, Table 5).

For interest sake, the knowledge use measure was re-categorized into items that reflected conceptual types of knowledge use and instrumental types of use, respectively. Student t-tests were then conducted to ascertain whether differences existed between the two types of

knowledge use per CoP. On average, CoP A respondents reported lower levels of conceptual knowledge use as well as instrumental knowledge use than CoP B respondents, but these differences were not significant (conceptual knowledge use: $M = 3.58$, $SD = .81$ for CoP A; $M = 4.06$, $SD = .73$ for CoP B, $t(20) = -.142$, $p = .17$; instrumental knowledge use: $M = 3.11$, $SD = .94$ for CoP A; $M = 4.06$, $SD = .73$ for CoP B, $t(17) = -.59$, $p = .56$, Table 5).

Shared Identity

Strength of shared CoP identity (perception that shared CoP identity is widely shared and deeply held) was assessed using a 5-point scale (1 = strongly disagree to 5 = strongly agree). On average, respondents from both CoPs reported that they neither agree nor disagree that a widely held and deeply shared sense of CoP identity exists among members, with responses ranging from strongly disagree to strongly agree ($M = 3.49$, $SD = .75$, $min = 1.6$, $max = 5$, Table 2).

Student t-tests were conducted to determine if significant differences existed between the two CoPs with respect to the strength of organizational identity measure. Significant differences were found. Respondents from the CoP A reported that they neither agree nor disagree that a widely held and deeply shared CoP identity exists while respondents from the CoP B approached agreement with respect to this measure ($M = 3.18$, $SD = .77$ for CoP A; $M = 3.90$, $SD = .72$ for CoP B, $t(19) = -2.12$, $p = .05$, Table 5).

Member Identification / Sense of Belonging

Member identification with / sense of belonging to the CoP was assessed using a 5-point scale (1 = strongly disagree to 5 = strongly agree). On average respondents neither agreed nor disagreed that they identified with / experienced a sense of belonging to their CoP, with responses ranging from agree to strongly agree ($M = 3.21$, $SD = .86$, $min = 2$, $max = 5$, Table 2). An examination of ratings for this measure per CoP revealed that on average CoP A respondents neither agreed nor disagreed that they identified with / felt a sense of belonging to their CoP

while respondents from the CoP B approached agreement that they did. However, there were no statistically significant differences between the two CoPs based on this measure ($M = 3.02$, $SD = .92$ for CoP A; $M = 3.68$, $SD = .94$ for CoP B, $t(19) = -1.67$, $p > .05$, Table 5).

Social Capital

Social capital was assessed on a 5-point scale (1 = none to 5 = all). On average respondents across both CoPs indicated interacting with and having developed relationships characterized by mutual acceptance, trust and reciprocity with quite a few members in their CoP with responses ranging from none to all ($M = 3.05$, $SD = .86$, $min = 1.5$, $max = 5$, Table 2).

Respondents from the CoP A reported interacting and developing positive relationships with a few members within their CoP while respondents from CoP B reported quite a few. However, no significant differences emerged between these two CoPs with respect to social capital ($M = 2.85$, $SD = .75$ for CoP A; $M = 3.28$, $SD = 1.11$ for CoP B, $t(21) = -1.12$, $p > .05$, Table 5).

Psychological Safety

Psychological safety (belief that it is safe to take interpersonal risks without excessive fear of criticism) was assessed on a 5-point scale (1 = very inaccurate to 5 = very accurate). On average respondents across both CoPs indicated that it is accurate that psychological safety exists in their CoP with responses ranging from neutral to very accurate ($M = 4.01$, $SD = .48$, $min = 3$, $max = 5$, Table 2). However, t-tests revealed significant differences between the two CoPs with respect to this measure. Specifically, CoP A respondents on average reported feeling neutral about the presence of psychological safety in their CoP while CoP B respondents felt that it was accurate to say that psychological safety exists in their CoP ($M = 3.82$, $SD = .42$ for CoP A; $M = 4.39$, $SD = .30$ for CoP B, $t(20) = -3.47$, $p < .01$, Table 5).

6.4.2 Demographic Profile of Embedded Units

This section presents the demographic profile of respondents per CoP as well as results of t-tests or one-way ANOVA that were conducted to examine whether differences existed in knowledge use, shared identity, member identification, social capital and psychological safety respectively based on demographics reported by survey respondents across both CoPs.

Demographics examined included: gender, education, sector represented on the CoP, duration of membership on the LEARN CoP, duration of time spent in currently held position within organization, and years of experience in tobacco control. Only significant findings are reported. Significant differences that emerged in terms of knowledge use, shared identity, member identification, social capital, or psychological safety based on the demographics specified above were examined further using ANOVA to ascertain how these differences unfolded per CoP.

Demographic Profile per Embedded Unit

When examining each of the two CoPs separately, they revealed some unique aspects. While respondents on the CoP A were predominantly women (93.8%) of all ages between 20 and 50+, the CoP B respondents were equally divided between men and women (50%), but mostly younger between the ages of 31 to 40 years (60%) and no one in the 50+ age category. Respondents from both CoPs had either an undergraduate or graduate level of education. However, the majority of CoP A respondents possessed graduate education (62.5%) compared to 50% of those on the CoP B.

In terms of CoP membership, the majority of members in the CoP A had been members for 11 months to 1.5 years (54%), 27% had been members for up to 10 months and another 20% up to two years. In the CoP B, members had either been members for up to 10 months (50%) or between 11 months and up to 1.5 years (50%). Members primarily represented the local public health sector on both CoPs (~75% in CoP A and ~80% CoP B). The remaining members

represented a different sector (research, government, non-governmental organization, private business in the CoP A or research and government in CoP B).

Respondents across both CoPs held a range of job titles, such as Youth Development Specialists, Tobacco Control Coordinators, Health Promotion Specialists, Public Health Nurses and Project Managers. Fifty-seven percent (57%) of CoP A members had been in their position for up to two years, 15% between two and six years, 15% between six and ten years and another 13% between ten and thirty years. The majority of members in the CoP B had been in their current job position for up to two years (50%), while 30% held their position between two and six years and 20% in their position for six and ten years.

In terms of years of experience in tobacco control, CoP A respondents had a greater range of years of experience (spanning up to 20 years). In comparison CoP B members had up to 10 years of tobacco control experience. In the CoP A, 40% of members had up to two years of experience in tobacco control. Thirty percent (30%) had between two and six years of experience while another 30% had between 6 to 20 years of experience. Length of experience in tobacco control in the CoP B was primarily up to two years (50%). Another 30% had between two and six years of experience while 20% had between six and 10 years of experience.

Embedded Unit Differences in Variables by Demographics

As stated earlier, analyses were conducted to determine whether survey respondent demographics accounted for differences between the embedded units (i.e., CoP A and CoP B) in terms of knowledge use or the factors that the Phase I results revealed to influence knowledge use (i.e., shared identity, member identification, social capital, psychological safety). Significant differences between the CoP A and CoP B in knowledge use and / or one or more of the factors just listed were found based on education and gender were found. Table 6 and Table 7 present the findings.

Table 6 Differences in Variables by Education using Pooled Data

Variables	Education						<i>t(df) = t-statistic, p</i>
	Undergraduate			Graduate			
	n	Mean	SD	n	Mean	SD	
Knowledge Use	10	3.92	.77	12	3.04	.72	<i>t(20)=2.75, p=.01</i>
Shared Identity	11	3.55	.91	13	3.48	.69	<i>t(22)=.21, p=.84</i>
Sense of Belonging	10	3.49	1.03	14	3.09	.69	<i>t(22)=1.14, p=.26</i>
Psychological Safety	11	4.27	.42	14	3.88	.38	<i>t(23)=2.44, p=.02</i>
Social Capital	11	3.29	.95	15	2.96	.79	<i>t(24)=.98, p=.26</i>

Table 7 Differences in Variables by Gender using Pooled Data

Variables	Gender						<i>t(df) = t-statistic, p</i>
	Males			Females			
	n	Mean	SD	n	Mean	SD	
Knowledge Use	5	3.80	.98	17	3.33	.81	<i>t(20) = 1.08, p = .29</i>
Shared Identity	5	4.08	.73	19	3.36	.74	<i>t(22) = 1.95, p = .06</i>
Sense of Belonging	5	4.10	.73	19	3.03	.79	<i>t(22) = 2.85, p = .001</i>
Psychological Safety	6	4.39	.42	19	3.95	.40	<i>t(23) = 2.35, p = .03</i>
Social Capital	6	3.56	1.10	20	2.96	.75	<i>t(24) = 1.54, p = .14</i>

Differences in Variables by Education

Using the pooled CoP A and CoP B data, t-tests revealed that knowledge use differed by members education levels. Undergraduate educated respondents reported often using CoP knowledge compared to respondents with graduate degrees who reported sometimes using knowledge gained from the CoP ($M = 3.92, SD = .77$ for undergraduate education; $M = 3.04, SD = .72$ for graduate education, $t(20) = 2.75, p < .01$, Table 6). Undergraduate educated respondents also reported that it is safe to take interpersonal risks in their CoP without excessive fear of criticism from co-members compared to respondents with a graduate level of education ($M = 4.27, SD = .42$ for undergraduate educated; $M = 3.88, SD = .38$ for graduate educated, $t(23) = 2.44, p = .02$, Table 6).

Embedded Unit Differences in Variables by Education. One-way ANOVAs were also conducted to determine how these differences played out within each CoP. Psychological safety

was the only variable that differed significantly between CoP A and CoP B respondents with different education levels, ($F(3,17) = 6.36, p < .01$). Tukey post-hoc comparisons of the two groups (i.e., CoP A by education versus CoP B by education) revealed that CoP B respondents with an undergraduate level of education ($M = 4.50 \pm .35, 95\% CI [4.06, 4.94]$) were significantly more likely to report that it is safe to take interpersonal risks in their CoP than CoP A members with undergraduate degrees ($M = 3.74 \pm .21, 95\% CI [3.54, 3.93], p < .01$). No significant differences emerged based on CoP A and CoP B for knowledge use, $F(3,14) = 1.48, p > .05$; shared identity $F(3,16) = 1.28, p = .32$; member identification, $F(3,16) = 1.26, p > .05$; or social capital $F(3,18) = 1.00, p > .05$ in terms of education by CoP.

Differences in Variables by Gender

Using the pooled data from both CoP A and CoP B, t-tests revealed statistically significant differences with respect to member identification as well as psychological safety by gender. Men were significantly more likely to agree that they identified with / felt a sense of belonging to their CoP compared to women ($M = 4.10, SD = .73$ for men; $M = 3.03, SD = .79$ for women, $t(22) = 2.85, p < .001$, Table 7). Men were also significantly more likely to feel that it was safe to take interpersonal risks in their CoP compared to women ($M = 4.39, SD = .42$ for men; $M = 3.95, SD = .40$ for women, $t(23) = 2.35, p < .03$, Table 7). No significant differences were found in terms of knowledge use, shared identity or social capital by gender.

Embedded Unit Differences in Variables by Gender. Since significant differences were found using pooled data, one-way ANOVA were conducted to determine whether and how these differences played out in each CoP. Psychological safety was the only variable that emerged as significantly different between CoP A and CoP B in terms of gender, $F(3,18) = 3.73, p < .05$).

Tukey post-hoc comparisons of the different groups (i.e., CoP A men, CoP A women, CoP B men, CoP B women) were not possible because the CoP A had insufficient male respondents.

Other Demographics

No significant differences emerged for length of membership, sector, that members represented on the CoP, length of time a respondent had filled their current job position, number of years of experience respondents had in tobacco control in terms of knowledge use, member identification / sense of belonging, psychological safety or social capital.

6.5 Phase I Quantitative Results

Overall, the Phase I Quantitative findings revealed that a relationship exists between the outcome variable (knowledge use) and shared identity, member identification / sense of belonging, psychological safety and social capital, respectively. A multiple regression analysis revealed that taken together, shared identity, member identification, psychological safety and social capital explained approximately 25% of the variance on knowledge use, but all of these variables lost their statistical significance. Multicollinearity was not found to be an issue, thus the findings suggest that shared identity, member identification, psychological safety and social capital exert their impact on knowledge use through one another and thus, are highly inter-related. Unfortunately, the analytic framework that was tested using mediation analysis to examine proposed relationships about how these variables inter-relate to influence knowledge use was not supported. Consequently, the Phase II Qualitative Study aimed to unfold how shared identity, member identification / sense of belonging, psychological safety and social capital each influence knowledge use, how these variables inter-relate to influence knowledge use, and what contributes to or detracts from these relationships in the embedded units that comprise the LEARN CoP case.

To prepare for the Phase II study, descriptive analyses were conducted to construct an understanding of how each embedded unit that comprised the LEARN CoP case were developing with respect to knowledge use, shared identity, member identification / sense of belonging, psychological safety and social capital. Differences between the embedded units (i.e., CoP A and CoP B) with respect to these factors were also computed using t-tests. An examination of differences in shared identity, member identification, psychological safety and social capital based on specific demographics was also conducted using one-way ANOVA.

The analyses revealed that CoP B had, on average, higher ratings with respect to all the variables examined in the survey compared to CoP A, suggesting they were doing “better” than the CoP A with respect to the variables examined. However, only shared identity and psychological safety emerged as significantly different, with members from CoP B reporting that a stronger sense of shared CoP identity and belief that it is safe to take interpersonal risks existed in their CoP than did members from the CoP A.

Demographic differences were also found to influence knowledge use and psychological safety. Specifically, undergraduate educated respondents reported often using CoP knowledge compared to respondents with graduate degrees who reported sometimes using knowledge gained from their CoP. An examination of this relationship at the level of the embedded units revealed that psychological safety was the only variable that differed significantly between CoP A and CoP B respondents based on education. CoP B respondents with undergraduate degrees were significantly more likely to believe that it was safe to take interpersonal risks in their CoP compared to their CoP A counterparts. Gender differences were also found. Men were significantly more likely than women to identify with / experience a sense of belonging to their CoP and believe that it was safe to take interpersonal risks in their CoP. An examination of this relationship at the level of the embedded units revealed that differences in psychological safety between the CoP A and CoP B based on gender persisted. However, it was not quantitatively

possible to determine whether this finding was a function of CoP A women versus CoP B men or CoP A women and CoP B women. Taking into consideration the small sample size and a pre-determined emphasis on the Phase II Qualitative portion of this sequential mixed-methods study, the Phase I Quantitative findings were loosely used to inform what areas to explore more fully and what demographics to consider when sampling for the Phase II Qualitative Study. Table 8 in Section 6.6.1 below describes what decisions were made for the qualitative study based on the quantitative results.

6.6 Phase II: Qualitative Results

The Phase II dominant qualitative study sought to answer all three of the study's research questions:

Q1: How do shared identity, psychological safety, member identification, and social capital each influence knowledge use in the context of the LEARN communities of practice?

Q2: How do shared identity, psychological safety, member identification, and social capital inter-relate to influence knowledge use in the context of the LEARN communities of practice?

Q3: What contributes to and detracts from the development of shared identity, psychological safety, member identification, social capital and knowledge use?

The Phase II qualitative results section will unfold as follows. First, how Phase I quantitative results were (loosely) used to inform the Phase II qualitative study in terms of sampling decisions and areas to examine in the interviews is presented. Second, a brief description of the embedded units that comprise the LEARN CoP case is outlined again. Third, characteristics of the CoP members who were interviewed and details on the interview process itself (including the duration of interviews, reflections on the interview process and adjustments made) are described. Fourth, procedures used in each stage of the qualitative data analysis are described in greater detail than presented earlier in the methods section (Section 5.0). Finally, a

model that depicts the branches that were important to knowledge use and how these branches inter-related to influence this outcome in the LEARN CoP case is presented and described. This model was constructed based on the consistent patterns that emerged from the data between the embedded units (i.e., CoP A and CoP B). Thick descriptions were developed to illustrate how the resulting model of knowledge use in the LEARN CoP case played out in each of its embedded units (CoP A followed by the CoP B). Embedded unit descriptions, however, are presented in the appendices given that key findings are identified and described in the discussion section. Differences in member perspectives are weaved where appropriate in descriptions of the LEARN CoP case and its embedded units.

6.6.1 Linking Phase I Quantitative Results to Phase II Qualitative Study

Phase I quantitative results were used to provide some guidance on who to sample for the Phase II qualitative interviews and what areas to examine in-depth in the interviews. Table 8 summarizes the research questions that guided the Phase I quantitative study, the analyses conducted, the key results and how these findings were used to inform the Phase II study.

Table 8: Summary of Phase I Quantitative Study Results and Phase II Qualitative Study Decisions

Aims of Quantitative Study	Key Findings	Explored in Phase II Qualitative Study
<p>To inform Research Question One: Correlations and Simple Regressions to determine relationships between each independent variable and outcome variable: Shared Identity and Knowledge Use (KU) Member identification and KU Social Capital and KU Psychological Safety and KU</p>	<p>Confirmed Confirmed Confirmed Confirmed</p>	<p>Areas to explore in Phase II interviews to understand research question one:</p> <p>Relationships between each independent variable and outcome variable examined to: a). understand why and how these relationships exist (e.g., why shared identity is important to KU and how shared identity and KU relate to one another)</p>
<p>To inform Research Question One (and Two): Multiple Regression Knowledge use regressed simultaneously on shared identity, member identification, psychological safety and social capital</p>	<p>Model borderline significant, explained ~21% of variance (adjust R²); no predictor variables significant</p>	<p>Areas to explore in Phase II interviews to understand research question two and three: Understand why the analytic framework (mediation analysis) was not supported by examining whether shared identity, member identification, social capital, psychological safety are distinct from one another and if so, how they inter-relate to influence knowledge use.</p>
<p>To inform Research Question Two: Mediation Analysis:</p> <p>Relationship exists between Shared Identity and Sense of Member Identification Member identification mediates relationships between Shared Identity and KU</p> <p>Relationship exists between Shared Identity and Psychological Safety Psychological Safety Mediates relationships between Shared Identity and KU</p> <p>Relationships exists between Shared Identity and Social Capital Social Capital mediates relationships between Shared Identity and Knowledge Use</p>	<p>Confirmed Not Supported Confirmed Not Supported Confirmed Not Supported</p>	<p>Phase II qualitative study will extend Phase I study focus to also understand what contributes to or detracts from the development of these relationships.</p>
<p>To construct an understanding of the embedded units as a lead in to Phase II qualitative study: Explore differences between the CoP A (Case A) and CoP B (Case B)</p> <p><u>M. SD between CoP A and CoP B based on Knowledge Use, Shared Identity, Member Identification, Social Capital and Psychological Safety</u></p> <p><u>Examine significant differences in study variables between CoP A and CoP B:</u> Differences between CoP A and CoP B based on Knowledge Use Differences between CoP A and CoP B based on Member Identification Differences between CoP A and CoP B based on Social Capital</p> <p>Differences between CoP A and CoP B based on Shared Identity Differences between CoP A and CoP B based on Psychological Safety</p>	<p>CoP B consistently higher average ratings than CoP A</p> <p>No Difference No Difference No Difference Yes Yes</p>	<p>Construct deeper understanding of embedded units (i.e., CoP A and CoP B) to:</p> <p>Discern how the conceptual framework that guides the study (Figure 1) plays out in each embedded unit.</p> <p>Examine qualitatively whether CoP B is doing “better” than CoP A in terms of the study variables and discern why and how.</p> <p>Sample diverse perspectives to reveal ‘rival’ explanations to the originally proposed relationships presented in conceptual framework that guides the study (Figure 1).</p>

Table 8 continued: Summary of Phase I Quantitative Study Results and Phase II Qualitative Study Decisions

Aims of Quantitative Study	Key Findings	Explored in Phase II Qualitative Study
<p>Explore Differences based on Demographics</p> <p><u>Examine significant differences in study variables based on gender:</u> <i>Using pooled data:</i> Differences in knowledge use or shared identity, social capital based on gender Differences in psychological safety and sense of belonging based on gender</p> <p>Examine significant differences in study variables between CoPs based on gender: Differences in knowledge use, shared identity, social capital, member identification in terms of gender by CoP Differences in psychological safety in terms of gender by CoP</p> <p><u>Examine significant differences in study variables based on education:</u> <i>Using pooled data:</i> Differences in shared identity, member identification, social capital, by education Differences in knowledge use and psychological safety in terms of education</p> <p>Examine significant differences in study variables between CoPs based on <i>Education</i>: Differences in knowledge use, shared identity, member identification, social capital based on education by CoP Differences in psychological safety based on education by CoP</p>	<p>No Difference Yes</p> <p>No Difference Yes</p> <p>No Difference Yes</p> <p>No Difference Yes</p>	<p>Phase I findings on demographic influences on study variables guided sampling decisions, but other issues also considered.</p> <p>Sampling Decision: <i>Criterion One:</i> Phase II qualitative interview sample to be a subset of Phase I survey respondents.</p> <p><i>Criterion Two:</i> Since study is interested to understand how factors posited to help different people cohere enhances the use of CoP knowledge, priority is to sample and qualitatively examine data based on interviewee’s level of knowledge use (lower, intermediate, higher). <i>(Note: No statistical analyses conducted based on lower, intermediate or higher levels of KU due to insufficient sample size)</i></p> <p><i>Criterion Three:</i> Most study variables assumed to take time to evolve, therefore members that have attended ~ 5 meetings or more are eligible.</p> <p>Efforts were made to sample diverse perspectives amongst members who fit the above criteria. Members representing different sectors (local public health, research, NGO) essential to understand how different people cohere to enhance knowledge use. Efforts also made to sample members with different roles (e.g., CoP Co-Chair, job positions), education levels (undergraduate, graduate), and gender (male, female), Only salient differences will be reported.</p>

6.6.2 Phase II Qualitative Sample

The Case and its Embedded Units

Phase II employed an embedded case study design. See Section 5.0: Methods and Appendices 10a and 10b for thick descriptions of CoP A and CoP B, which served as the embedded units that comprised the LEARN CoP case at the time of the study and met inclusion criteria for the case.

Interview Participants

Recall that interviewees represented a subset of members who had completed the Phase I Quantitative Survey (Creswell et al., 2011), including the knowledge use section of the survey along with other eligibility criteria (see Section 5.0: Methods). From this pool of potential interview participants, efforts were made to obtain as much as possible representation from members who assumed specific job positions within the local public health sector (e.g., TCAN Coordinator, Tobacco Control Coordinator/Manager, and ‘front-line’ public health practitioners such as Health Promoters), roles assumed by members on the CoP (i.e., CoP Co-Chairs at some point during the CoP’s existence), different levels of education (undergraduate, graduate), as well as male and female member perspectives. Table 9 presents a profile of the final interview sample that reflects the criteria used to select the interview participants and that emerged as most important to the explaining the study findings of the sample selected. Other information such as the specific organization an interview participant represented (e.g., which TCAN or local public health agency), the education level or gender of the interview participant was not presented to maintain confidentiality. Note that the latter two did not emerge as particularly important in the Phase II qualitative analyses with respect to the phenomenon of interest.

Table 9 Profile of Interviewed Members

Interviewee	Average Level of Knowledge Use (KU) (based on Phase I survey)	Number of Meetings Attended	Sector	Role in CoP¹
CoP A	<i>Lower KU</i>			
A	2.08	5	NGO ²	Member
B	2.28	7	LPHA ²	Member
	<i>Intermediate KU</i>			
C	3.50	8	TCAN ²	Member
D	3.63	5	LPHA	Member
	<i>Higher KU</i>			
E	4.00	9	Research	Member
F	4.08	11	LPHA	Co-Chair
G	4.2	5	LPHA	Co-Chair
CoP B	<i>Lower KU</i>			
H	2.70	9	LPHA	Member
I	2.78	10	LPHA	Co-Chair
	<i>Intermediate KU</i>			
J	3.38	8	TCAN	Member
K	3.40	6	Research	Member
L	3.50	8	TCAN	Member
	<i>Higher KU</i>			
M	4.38	9	LPHA	Co-Chair
N	5.00	6	LPHA	Member

¹ Co-chairs include members who were in that role at the time of the study or at some time prior to the study.

² NGO= Non-governmental Organization; LPHA= Local Public Health Agency; TCAN=Tobacco Control Area Network

Overall, 14 members across the CoP A and CoP B were interviewed. Seven members were interviewed in the CoP A that had attended at least five CoP meetings (minimum five to maximum 11 meetings). Two of these members reported on the Phase I survey that they rarely used knowledge gained from the CoP, two other members reported sometimes using knowledge gained from the CoP (intermediate level of knowledge use), and three members reported using CoP knowledge often (higher levels of knowledge use). Four members represented local public health agencies from different TCAN regions. One of these members was a Tobacco Control

Manager while the rest were ‘front-line’ practitioners like Health Promoters or Public Health Nurses. Another member represented a TCAN-level position, one member represented the research sector, and one member represented the NGO sector. Two of the seven members had assumed the leadership role of CoP Co-Chair at some point during their CoP’s existence.

Another seven members were interviewed in the CoP that had attended at least six meetings (minimum six meetings, maximum 10 meetings). Two of these members reported rarely using CoP knowledge on the Phase I survey (and thus represented lower level of knowledge use). Three members reported sometimes using CoP knowledge (intermediate level of knowledge use), and two members reported often using CoP knowledge (higher level of knowledge use). Four members represented the local public health agency and each were ‘front-line’ practitioners such as Health Promoters or Public Health Nurses. Two other members held TCAN positions and one interviewee was a research representative. Two of the seven members had assumed the Co-Chair leadership position at some point during their CoP’s existence.

6.6.3 Interview Process

All 14 interviews were conducted over the telephone and audio-recorded using Audibility Services. On average interviews lasted one hour and twenty-four minutes long and resulting transcripts were on average 13,992 words and 42 pages long. Interviews were scheduled in blocks. Initially, four telephone interviews were completed (two members from each CoP) between January 17th and January 19th, 2011. Another set of four interviews were conducted one week later between January 24th and January 26th, 2011. Another five members were interviewed between February 1st and February 11th, 2011 and a final interview took place on February 22nd, 2011. Staggering the interviews facilitated analysis, which will be described later. Appendix 7 provides details on each interview that was conducted including the CoP they represented, the date of the interview, the duration of the interview, the length of transcript in terms of word count

and page length. Appendix 4b describes the investigators reflections and impressions of the interviews and adjustments that were made to the interview questions.

6.6.4 Supplementary Data Sources

Additional data sources were used to supplement the interviews. Fifty-eight (n=58) CoP related documents reflecting recorded CoP meetings (n=3 in CoP A; n=2 in CoP B), meeting minutes (n=18 in CoP A and n=13 in CoP B), Community Charters and Learning Agendas (n = 1 per CoP A and CoP B) and discussion posts (n=8 in CoP A and n=12 in CoP B) were collected. Interviews and supplementary data sources were entered into NVIVO 9 Qualitative Software for coding and analysis.

6.7 Phase II Qualitative Analysis Process

This section describes the different stages of the Phase II Qualitative Analysis. The investigator was the primary analyst for this project. An independent person aided inter-coder reliability. Analysis followed Strauss & Corbin's (1990) open, axial and selective coding procedures, which unfolded in different stages. Each stage of coding and analysis involved multiple passes through the data.

Appendix 8 presents the effects matrix that also served as an audit trail that tracked major decisions associated with data collection and analysis.

Stage 1 – Open Coding

Open coding was performed during the first pass through collected data with the purpose of coding or classifying the qualitative data into categories. As already mentioned, this stage of data analysis began as soon as each staggered set of interviews were completed and transcribed. A pencil and paper approach was used. The investigator coded the first four interviews by segmenting and labelling the text. Initial codes reflected the conceptual framework guiding the

study (Figure 1), but new codes were also generated based on the transcript data. This approach ensured that the phenomenon of interest was captured from the interview participant's perspective and not limited by the investigator's a priori conceptualizations. The same process was used for each subsequent set of interviews. Thus, constant comparison method was used during the open coding stage to reveal categories that were common across the data while also ensuring that categories that were unique to one or a few of the transcripts were accounted for in the list of categories generated (Strauss & Corbin, 1990; Glaser & Strauss, 1967). The list of categories generated was entered into NVIVO 9 Qualitative Software as free nodes. Supplementary data sources were then coded using the same coding scheme. No new categories/free nodes emerged from the data contained in the CoP documents.

The investigator then went through each category (i.e., free node) to ensure that the coded text that comprised it belonged, making appropriate reassignments. Instances where the coded text did not fit with the assigned category were re-coded into an appropriate category / free node. The investigator also examined whether any categories were redundant or not important at which point decisions were made to merge or drop a given category / free node. Decisions to drop a category occurred when the coded text did not contain content that was pertinent to answering the research questions (i.e., were more relevant to the broader CoP evaluation in which this dissertation was embedded) or overlapped with coded text in other categories / free nodes and those other categories better represented what was being conveyed in the coded text. Instances did exist, however, where text was coded in more than one free node and were kept that way. This occurred when the text conveyed information about how a factor such as shared identity influenced knowledge use or for instance conveyed how social capital influenced member identification).

Another phase in the analysis involved determining which categories (i.e., free nodes) should be subsumed under an overarching category (i.e., branch) because together they reflected

a higher order concept. Restructuring the categories / free nodes was informed by a combination of the data collected, the investigator's familiarity with it, as well as the conceptual framework guiding the study and the literature that supported it (Figure 1 and Section 2.0: Literature Review). This information guided the investigator to identify specific categories / free nodes that might potentially contribute understanding about a particular concept or issue. For instance, free nodes that the literature-informed conceptual framework suggested to contribute to a shared identity were used to inform what potentially existing free nodes might best explain this concept. Text contained within these categories / free nodes were then compared and contrasted to determine if their content reflected a shared higher order concept.

Nine overarching categories / branches were created by including the factors represented in the conceptual framework (Figure 1): "Shared Identity," "Member Identification/Sense of Belonging," "Psychological Safety and Speaking Up," "Social Capital," "Knowledge Use," "The Information/Knowledge," with the addition of "Mechanisms of Interaction," "Leadership," and "External Factors." Texts contained in the free nodes that comprised the overarching category were then compared and contrasted with one another and reorganized/relabelled into sub-categories (or sub-branches) or twigs. This tree structure is comprised of a branch (the overarching category), sub-branches (sub-categories that comprise the overarching category) and twigs (categories that comprise the sub-branches). Salient issues addressed within the twigs and sub-branches of a given branch were examined to see if they covered a range of responses (e.g., positive to negative comments). This eye-balling of the data was done to ensure that ideas contained within the branch were sufficiently saturated. There were categories/free nodes that were retained up to this point in the analysis to see if they would find a home within an overarching category, but were subsequently dropped because they were deemed not relevant to the research questions.

Stage 2: Inter-Coder Reliability

An individual with previous experience conducting inter-coder reliability, but who was not involved in the study assisted with inter-coder reliability. The investigator developed a document that listed each overarching branch and sub-branches and provided descriptions for each. Randomly selected text from each of the sub-branches that comprised the nine overarching branches were selected and exported into a Word Document. The person conducting the reliability check compared the randomly selected text per sub-branch that comprised each of the overarching branches to the definition of the sub-branch and overarching branch. The purpose was to determine if the coded text fit with and was an accurate representation of the sub-branch and resulting overarching branch as originally determined by the investigator. Overall, the reliability check had positive results. Only a few issues were raised by the person conducting the reliability check that were discussed with the investigator and resolved by consensus. Minor modifications were made based on the reliability check. Appendix 9 presents the branches, sub-branches, twigs and their properties that resulted from the analyses described to this point and used for subsequent analysis procedures. Appendix 9 also presents the key areas of disagreement that surfaced from the reliability procedure.

Stage 3 – Axial Coding

Axial coding built upon the previous analysis stages. Axial coding's primary task was to identify the inter-relationships between the twigs, and sub-branches that comprised a branch. Relationships between sub-branches and twigs that made up a given branch (e.g., how sub-branches that comprised the branch "Shared Identity" were inter-related) were unfolded by comparing and contrasting the data contained within them and how they linked together. Criteria used to assess the strength of the relationships between twigs and / or sub-branches that comprised a branch included: 1. many or all members commonly described the relationship. 2. a

few or many members provided rich descriptions pertaining to the relationships and / or 3. the emotion conveyed about the relationship by a or many members. Relationships were considered less strong when the relationship wasn't direct (i.e., a sub-branch related to another sub-branch through some other factor or mechanism).

The other primary task of axial coding was to identify which branches were related to "Knowledge Use" and the 'strength' of that relationship, whether branches that had a relationship with "Knowledge Use" inter-related with one another, and what branches contributed to or detract from these identified relationships whether or not they had a relationship with "Knowledge Use". The following will describe how these relationships were identified. Identifying these relationships involved a combination of using NVIVO 9 software and manually reviewing the data using constant comparisons. With respect to identifying the relationship between a given branch and "Knowledge Use," the investigator aggregated data contained within each branch (i.e., aggregating sub-branches and twigs to the level of the overarching branch) specific to the CoP A and also for CoP B and constructed matrices using NVivo 9 that positioned each aggregated branch (e.g., "Shared Identity," "Identification/Sense of Belonging," "Psychological Safety and Speaking Up," "Social Capital," "Mechanisms of Interaction," "Leadership," "Information/Knowledge," and "External Factors") against the "Knowledge Use" branch. The investigator then manually compared and contrasted the text shared between the twigs and sub-branches that comprised each of these branches (i.e., "Shared Identity," "Identification/Sense of Belonging," "Psychological Safety and Speaking Up," etc) and "Knowledge Use" to determine each branch's 'strength' of relationship with "Knowledge Use." A branch was deemed to have a direct and strong relationship with knowledge use when: 1. many or all members described instances where that branch was directly related to both conceptual and instrumental types of knowledge use, and / or 2. the amount of rich descriptions that was dedicated to a branch's particular relationship to both conceptual and instrumental knowledge use

either among at least a few interviewees interviewees, and / or 3. at least a few interviewees conveyed strong emotion about this relationship.

Branches that were deemed to have a direct, but less strong relationship with “Knowledge Use” were ones where: 1. many or all members described instances of it being linked only to conceptual types of knowledge use and this was determined, and / or 2. the amount of rich description dedicated to describing the relationship between a given branch and conceptual knowledge use either among a few interviewees or across several interviewees, and / or 3. the emotion conveyed by a few or many interviewees about this relationship.

Branches that were deemed to have an indirect influence on “Knowledge Use” were branches that did not directly influence this outcome, but were related to other branches that were directly and strongly or directly and less strongly related to “Knowledge Use” as evidenced by: 1. many or all members describing the indirect relationship, and / or 2. the amount of rich description dedicated to describing the indirect relationship, and / or 3. the emotion conveyed by a few or many interviewees about the indirect relationship.

To understand how branches that were related to “Knowledge Use” also inter-related with one another, the investigator aggregated data contained within each branch (i.e., aggregating sub-branches and twigs to the level of the overarching branch) separately for CoP A and CoP B and constructed matrices using NVivo 9 that positioned each aggregated branch (e.g., “Shared Identity,” “Member Identification / Sense of Belonging,” “Psychological Safety and Speaking Up,” “Social Capital”) against one another. The investigator then manually compared and contrasted the text shared between these branches. Two branches were deemed to have a strong relationship when: 1. many or all interviewees described a reciprocal relationship between the branches, and / or 2. at least a few interviewees offered rich descriptions about the reciprocal relationship by a few or several interviewees, and / or 3. the emotion conveyed by a few or many interviewees about the reciprocal relationship. Relationships between these branches were

deemed to be less strong when one branch influenced the other (i.e., a one-way relationship) as evidenced using the criteria specified above (e.g., how commonly members described this relationship, etc).

A branch that facilitated or constrained “Knowledge Use” was ones where either: 1. the branch was directly related to “Knowledge Use,” but also was described to provide certain conditions that contributed to or detracted from other branches that themselves had been identified as influencing “Knowledge Use” (strongly or less strongly), or 2. the branch was not directly related to “Knowledge Use” as evidenced by interviewees not describing such a relationship, but were they did describe the branch as providing certain conditions that contributed to or detracted from other branches that had been identified as influencing “Knowledge Use” (strongly or less strongly). The criteria for determining whether a branch contributed to or detracted from “Knowledge Use” were ones where: 1. many or all members described the relationship, and / or 2. rich descriptions were used to describe the relationship among a few or many interviewees, and / or 3. the emotion conveyed among a few or many interviewees.

Supplementary data sources (e.g., recorded meetings, meeting minutes, etc) were compared and contrasted with interview findings. When supplementary data sources revealed consistency with what members described in interviews, this strengthened the investigator’s confidence in the strength of the relationship found. When the supplementary data source revealed inconsistencies with what members described in interviews, the data were examined to discern whether there was an explanation for this difference that enriched understanding of the relationship.⁷

⁷ While discrepancies across primary and supplementary sources would have reduced the investigator’s confidence in the relationship, no instances were identified.

Stage 4 – Selective Coding

Selective coding involved comparing and contrasting what members with different characteristics had to say about branches that emerged in the previous analysis stage as strongly or less strongly related to “Knowledge Use” and / or branches that facilitated or constrained these branches. Differences of particular interest that were examined were based on interviewees’ level of knowledge use (lower, intermediate and higher) and their sector (e.g., TCAN/local public health, research, NGO, other). Differences based on the role an interviewee assumed in the CoP (i.e., CoP Co-Chair or ‘regular’ member) or on the job (e.g., TCAN Coordinator, Tobacco Control Manager, Health Promoter/Public Health Nurse, etc), gender, and education were also examined both within and across the embedded units. For instance, as the results will unfold, “Shared Identity” was found to be related to “Knowledge Use” in a particular way. The data were examined to discern what members with higher levels of knowledge use as reported in the Phase I survey findings had to say about “Shared Identity” as well as its relationship with “Knowledge Use.” These findings were then compared and contrasted with the perspective of members with intermediate or lower levels of knowledge use. Members with different characteristics served as ‘rival’ cases (Yin, 2009). When these ‘rival’ cases described similar experiences or perspectives, this increased the investigator’s confidence that the relationship described was wide-spread across interviewees. When the experiences or perspectives of these ‘rival’ cases differed, this deepened insights into how the relationship being described varied across different members. When variation existed (e.g., if members with higher levels of knowledge use were ones who more strongly identified with the CoP (i.e., the branch “Member Identification / Sense of Belonging”) compared to those with lower levels of knowledge use, this was considered a marker of theoretical sufficiency (Charmaz, 2006).

Selective coding also involved comparing and contrasting the findings that emerged between the CoP A and CoP B from the axial coding stage to understand whether the relationships found were consistent across the embedded units. This constant comparison strengthened the investigator's confidence in the relationships found and enabled patterns to be drawn out that constructed an understanding of what branches influenced the use of CoP knowledge in the LEARN CoP 'case', how these branches inter-related and what contributed or detracted from these relationships. Thick descriptions were developed for the CoP A as well as the CoP B (see Appendices 10a and 10b). Thick descriptions were also developed for the overall LEARN CoP case that helped to answer the research questions. A model was developed to depict the relationships that emerged for the overall case. Before presenting the findings for the LEARN CoP case, an overview of member checks will be described.

Stage Five – Member Check

This study set out to better understand how factors that the literature suggests are important to different people working together independently influence knowledge use, how they inter-relate to influence knowledge use and what factors contribute to or detract from these processes. The study also aimed for this research to provide practical value with the central intent of providing evidence that will inform the development efforts of current and future LEARN CoP. Given this aim, efforts were made to establish the trustworthiness of the study findings. One way to achieve trustworthiness was to ascertain whether the research findings reflected the data collected and was of value to the people who comprised the study context. Member checks contributed to this understanding and the thick descriptions developed in the analysis helped members to assess whether the findings fit with what they had experienced in their CoP. This study dovetailed with the broader study that evaluated the LEARN CoP and the findings from both were tightly entwined. Discussions with the LEARN Team led to a decision to present the

CoP-specific findings from both phases of this study to all members with time afterward to engage members in discussions about the validity of the findings and the value it brings for planning improvements in their CoP processes. Two presentations were constructed that presented case-specific findings, including:

1. how each CoP was progressing with respect to the factors that were of interest to the study and outlined in the conceptual framework (Figure 1);
2. how these factors of interest (e.g., shared identity, member identification, psychological safety, social capital) individually influenced knowledge use;
3. how each factor of interest inter-related with the other factors in the conceptual framework to influence knowledge use; and
4. other factors (i.e., remaining branches) that emerged as important to cultivating (or detracting from) knowledge use and / or shared identity, member identification, psychological safety and social capital.

CoP-specific presentations and script were reviewed by LEARN Team Staff and CoP co-chairs prior to the presentation. Feedback was obtained. Minor challenges were encountered with respect to standing firm against reshaping the findings as per feedback provided, but were easily resolved with brief discussion. These issues are described in Section 7.0: Discussion. Revisions were made as appropriate and the CoP-specific presentation and script (i.e., summary of thick descriptions) was then forwarded to all CoP members prior to the actual date of presentation for their review. Structured time was allocated to discuss the findings immediately after the presentation. During this time, members were asked what their impressions were of the study findings and more specifically:

1. whether the findings reflected their experiences in terms of what has been important to getting different CoP members to work together to share, discuss, make decisions, co-create and take action on CoP related knowledge;
2. whether the findings revealed unexpected findings or that diverged from their experiences; and,
3. any other impressions that members had about the findings.

A review of attendees at the meeting revealed that almost all members interviewed per CoP were present and these members often contributed to the discussion. Overall, members' responses in both CoP were positive. Comments indicated that the findings reflected what they saw happening in their respective CoP and the need to continue to engage core and peripheral CoP members as they work towards achieving their collective efforts. In the CoP A, questions were raised about how similar or dissimilar the two embedded units with respect to the factors of interest. As will become apparent when explaining the study findings in the thick descriptions of the embedded units and in the discussion, only the CoP A interview participants engaged in such inter-CoP comparisons confirming that a common finding that emerged from the analysis was an accurate reflection of issues that were pertinent to not only the interview participants but also of CoP A members who were not interviewed. These responses strengthened the investigator's confidence in the study findings.

6.8 Phase II Results from Analysis

The analyses revealed a number of branches that influenced the use of CoP knowledge in the LEARN CoP case directly and / or through their relationship with other branches. Not only did these branches inter-relate to influence knowledge use, but they also contributed to or detracted from the development of one another. Additionally, these branches and their relationships were similar across the two cases of interest to this study (named CoP A and CoP B) although how they played out within each CoP differed to some extent. Given these patterns, the results section for Phase II of the study begins with a model that illustrates the branches and their relationships. The figure is presented up front to orient the reader to how all the components fit together into a 'bigger picture' of what influenced knowledge use, how, and why in the LEARN CoP case. Subsequent sections 'zoom in' to describe each component of this model (i.e., by focusing on a particular branch, its respective sub-branches and twigs, their relationship

to knowledge use, and how they inter-related with other branches to influence knowledge use). Appendices 10a and 10b then present the thick descriptions of each embedded unit to illustrate how the above relationships described actually worked within the CoP A and CoP B settings. Embedded unit descriptions are placed in the appendix because the discussion compares and explains key findings from each CoP. Figure 4 below presents the model of the LEARN CoP case. An overview of the model and key findings are presented. How the findings per branch and their relationships to other branches are presented will also be described before delving into the in-depth findings.

Figure 4 Model of How Factors Important to Diverse People Cohering Influence Knowledge Use in the LEARN CoP Case

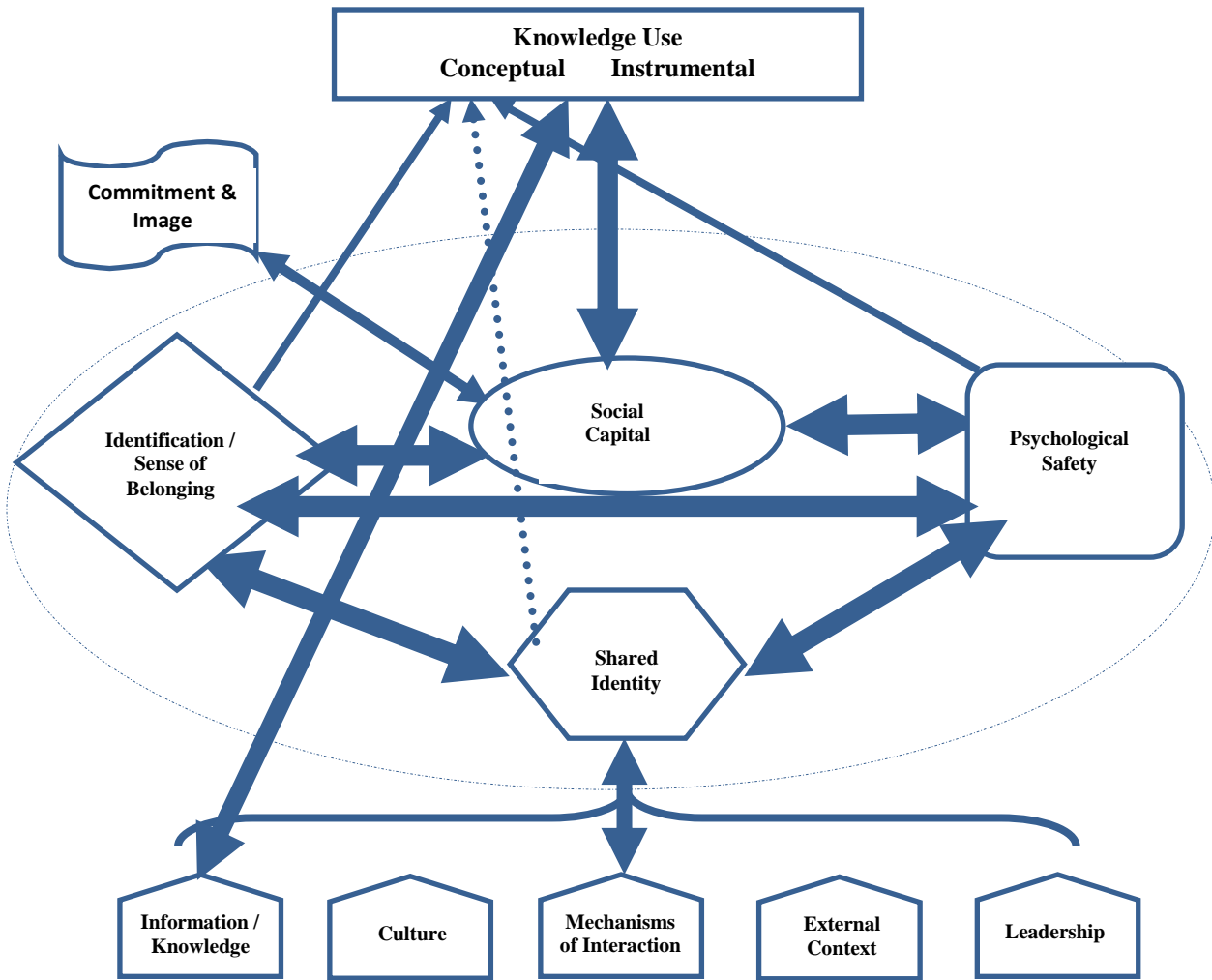


Figure 4 presents a model that depicts different people cohered in ways that influenced knowledge use, what other factors emerged that also influenced knowledge use, and what factors contributed to or detracted from that factors that helped members to cohere into a collective as well as knowledge use in the LEARN CoP case. This model encompasses many of the factors presented in the original framework that guided the study (i.e., Figure 1) and expands it. The figure presents the four branches that were proposed to contribute to cohesion amongst different CoP members and were found to influence knowledge use: “Shared Identity,” “Identification / Sense of Belonging” (short for “Member Identification / Sense of Belonging branch) “Social Capital” and “Psychological Safety” (short for the Psychology Safety and Speaking Up branch). Various shapes have been used to distinguish between the different branches stated above but hold now intrinsic meaning. Shapes depict branches consistently in subsequent models. To elaborate, “Knowledge Use” is depicted in Figure 4 as a rectangle. “Shared Identity” is depicted by the hexagon. “Social Capital” is depicted as an oval. “Psychological Safety” is consistently represented by the square with rounded edges. “Identification / Sense of Belonging” (or “Member Identification / Sense of Belonging used interchangeably) is consistently depicted by the triangle. “Commitment and Image” is depicted by the shape of the flag. “Other Factors” that either directly influenced knowledge use (e.g., “Information / Knowledge”) or contributed to or detracted from the branches that emerged as having important relationships with knowledge use were depicted by the pentagon at the bottom as seen at the bottom of Figure 4. The arrows in Figure 4 depict the relationships between each of these branches as well as their respective influence on “Knowledge Use.” (i.e., direction of influence, with bi-directional arrows indicating reciprocal influence). The thickness of these arrows denotes the strength of these relationships. How the strength of the relationship was determined was described earlier in Section 6.7 Qualitative Analysis Process. An overview of these relationships is provided next.

In Figure 4, thick, solid, bi-directional arrows are depicted between “Social Capital,” “Shared Identity,” “Member Identification / Sense of Belonging” and “Psychological Safety.” These arrows illustrate that many or all interviewees described instances where each of these branches influenced and were influenced by one another. As will unfold in the results section, these branches were found to inter-relate in ways that enabled diverse members to cohere into a collective in the LEARN CoP case and this relationship is depicted by the dashed circle that surrounds these four branches. The circle is dashed because other factors in the model contributed to or detracted from the development of these four branches which facilitated cohesion.

Each of these branches also independently influenced “Knowledge Use.” In Figure 4, a thin, dashed, bi-directional arrow is used to depict the relationship between “Shared Identity” and “Knowledge Use”. The thin arrow illustrates that “Shared Identity” directly, but less strongly influenced “Knowledge Use” because this branch influenced knowledge use primarily in conceptual ways. The dashed arrow was used to depict how, for the most part, “Shared Identity” formed a conceptual framework that largely *guided* how members made sense of or used CoP knowledge. The bi-directional arrow illustrates a reciprocal relationship between “Shared Identity” and “Knowledge Use.” These relationships will be explained in greater detail later in the results section.

In Figure 4, “Member identification / Sense of Belonging” also had a thin, solid arrow that goes directly to “Knowledge Use”. Again the thin arrow means that “Member Identification / Sense of Belonging” had a direct influence on “Knowledge Use” but it was less strong because it only influenced knowledge use in conceptual ways. The same relationship was found for “Psychological Safety”

Figure 4 reveals a thick and solid, bi-directional arrow between “Social Capital” and “Knowledge Use”. The thick and solid arrow means that “Social Capital” led to both conceptual

and instrumental types of knowledge use and as such had a direct and strong relationship with this outcome. The bi-directional arrow reveals that “Social Capital” influenced “Knowledge Use” and that engaging in “Knowledge Use” also influenced the development or strengthening of “Social Capital” as will be described later in the results section.

“Social Capital” also emerged as centrally related to the different factors that emerged as important to “Knowledge Use” and as such is located at the centre of Figure 4. Using a metaphor, “Social Capital” essentially emerged as the centre of the wheel to which all the spokes (i.e., other branches) connect. Specifically, “Social Capital” not only directly and strongly influenced “Knowledge Use” in conceptual and instrumental ways, it also was found to be a key branch that enabled “Shared Identity,” “Identification / Sense of Belonging,” as well as “Psychological Safety” to exert their influence on “Knowledge Use” in ways that went beyond conceptual types of use.

Through the development of a “Shared Identity,” “Member Identification/Sense of Belonging” and “Social Capital,” an additional branch emerged, “Commitment and Image.” In Figure 4, a thick bi-directional arrow is “Commitment and Image” is shown which indirectly contributed to knowledge use largely through “Member Identification / Sense of Belonging” and “Social Capital.”

While “Social Capital” played a central role, “Shared Identity” also revealed important insights into why members cohered into a collective in ways that influenced “Knowledge Use.” “Member Identification / Sense of Belonging” explained how members cohered in ways that influenced “Knowledge Use.” “Psychological Safety and Speaking Up” was also important to “Knowledge Use,” but feeling safe to take interpersonal risks was not identified as an issue per se in the LEARN CoP. Getting some members to speak up to contribute to CoP discussions, however, was an issue and was attributed to “Other Factors.”

“Other Factors,” which include “Information/Knowledge,” “Mechanisms of Interaction,” “Leadership” “Culture” and “External Context” are depicted at the bottom of Figure 4. The thick bracket and the thick solid arrow above these “Other Factors” denote that these “Other Factors” provided the conditions that contributed to or detracted from the development of “Knowledge Use” and / or contributed to or detracted from the branches that were found to directly and strongly or less strongly influence “Knowledge Use.” The bi-directional arrow between “Other Factors” and the rest of the model in Figure 4 illustrates that “Knowledge Use” and /or the branches that directly and strongly or less strongly influenced it had reciprocal effects on these “Other Factors.”

Some of these “Other Factors” also influenced “Knowledge Use.” The most prominent “Other Factor” to directly and strongly influence “Knowledge Use” was “Information / Knowledge Use.” In Figure 4, a bi-directional arrow exists between “Information / Knowledge” and “Knowledge Use.” This is because existence of “Information/Knowledge,” particularly relevant knowledge, was ultimately the main determinant of whether or not knowledge gained from the CoP was used. “Knowledge Use” also contributed to the development of the branches of interest to this study (e.g., “Social Capital, etc) through “Information / Knowledge.” “Leadership” was another factor that influenced “Knowledge Use” but was not as strong a theme as that found for “Information / Knowledge.”

Differences were also found across both CoP A and CoP B based on level of CoP knowledge use (lower, intermediate and higher), sector (local public health, research, non-governmental organization (NGO), role assumed in the CoP (Co-Chair), or specific job position (TCAN Representative). Although not always consistent across all branches of interest to this study, common patterns that did emerge included members with lower levels of knowledge use having weaker identification/ sense of belonging to the CoP, peripheral participation and less relationship building in the CoP. Members with intermediate levels of knowledge use tended to

experience neutral identification with / a neutral sense of belonging to the CoP. These members also tended to be TCAN representatives or Tobacco Control Coordinators / Managers in local public health agencies. These members also served as key knowledge transfer agents between the CoP and the tables they sit at beyond the CoP boundaries and consequently tended to use knowledge gained from the CoP in largely conceptual ways. Members with higher levels of knowledge use either experienced neutral or stronger identification / sense of belonging to the CoP and reported greater networking and involvement in the CoP. Co-chairs, who often fell in the higher level knowledge use category, expressed the most positive experiences with the CoP. Members that represented non-local public health agency sectors (e.g., NGO, researchers) were most likely to have noticed distinctions among CoP members based on sector and these distinctions influenced “Knowledge Use” as well as the other factors of interest to this study (e.g., social capital, identification/sense of belonging, etc). Differences based on level of knowledge use, sector, role in the CoP or at work are highlighted where appropriate as the relationships between factors of interest in this study are described below.

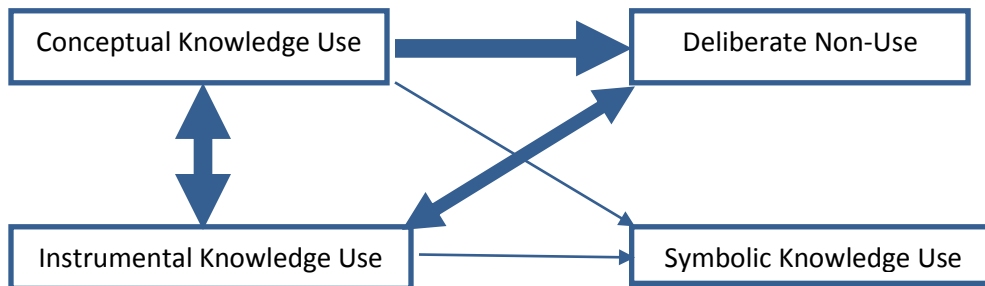
Since “Knowledge Use” reflects the explanatory factor of interest to this study, a description of the “Knowledge Use” branch is presented first. Given that “Other Factors” directly influenced “Knowledge Use” as well as “Shared Identity,” “Member Identification / Sense of Belonging,” “Social Capital” and /or “Psychological Safety and Speaking Up,” this branch and its respective sub-branches will be described second. The relationship between “Other Factors” and “Knowledge Use” will be included. What follows is a description of the four branches of interest to this study and these will be presented in order of their relative importance as indicated by the patterns that emerged from the findings. Thus, “Social Capital” will be described first, followed by “Shared Identity,” “Identification/Sense of Belonging” and “Psychological Safety and Speaking Up.”

Given the inter-relatedness of the branches, each branch will build on the other. For instance, “Social Capital” will begin with an explanation of the sub-branches that comprise it and how they inter-relate followed by its influence on “Knowledge Use,” and its relation to “Other Factors”. The same pattern will follow for each subsequent factor, adding in description of the relationship with preceding factors. The above descriptions will also highlight unique differences by level of CoP knowledge use, sector or other demographic(s) where appropriate.

6.8.1 Knowledge Use

“Knowledge Use” was comprised of the sub-branches “conceptual,” “instrumental,” “symbolic,” and “deliberate non-use.” An interest of this study was how CoP members made use of knowledge gained from the CoP in their work. CoP knowledge included LEARN backgrounders, literature reviews and documentation of practices (DoP), guest speaker presentations, presentations and information informally shared by members about the initiatives they were working on or had implemented including resources, tools and lessons learned. Figure 5 below summarizes the relationships between the sub-branches that comprise the branch “Knowledge Use.”

Figure 5 Relationships between Types of Knowledge Use



Interviews and CoP documents revealed that all members used CoP knowledge in some way. There were several instances where members made general comments about how they used CoP knowledge, such as, “I’ve used a quarter of it.” (A: Lower KU, NGO, p.7) Members reported using CoP knowledge in primarily conceptual and instrumental ways. Deliberate non-

use and symbolic knowledge use emerged, but not as prominently. Instances of “Conceptual Knowledge Use” encompassed accessing CoP knowledge from other members or through the CoPs respective online space called WebEx, increased awareness and learning about issues pertinent to the CoP practice area including improvements in knowledge and skills as illustrated in the following quote:

“I didn’t have...a lot of the knowledge base in (a specific CoP related issue) area, so (the CoP) certainly has fast-tracked me around some of those pieces” (D: Inter KU, LPHA, p. 30).

CoP knowledge was also shared within and beyond CoP boundaries. TCAN representatives, Tobacco Control Coordinators/Managers in local public health agencies and CoP co-chairs were more likely to discuss having shared knowledge gained from the CoP with their TCAN or organization. Meeting minutes and to a lesser extent discussion posts supported this finding.

“Conceptual Knowledge Use” was also found to directly and strongly feed into “Instrumental Knowledge Use” as depicted by the thick solid arrow between them in Figure 5. This relationship became evident when members described sharing CoP knowledge with their work organizations and how that led to in-depth discussions amongst their work colleagues, the use of CoP knowledge to inform decision-making (e.g., using scientific evidence to identify what population a campaign should target and how to best access this population) and / or adapting CoP knowledge (e.g., other members’ initiatives or resources) to one’s local context. Members also described an increase in their awareness and learning as a result of their engaging in discussions around information or practices that members shared during CoP meetings. Thus, the relationship of “Instrumental Knowledge Use” to “Conceptual Knowledge Use” was reciprocal and this is depicted in Figure 5 by the thick, solid and bi-directional arrow.

Although much less frequently discussed, instances of “Symbolic Knowledge Use” surfaced in interviews or CoP documents. These few instances suggested that “Conceptual

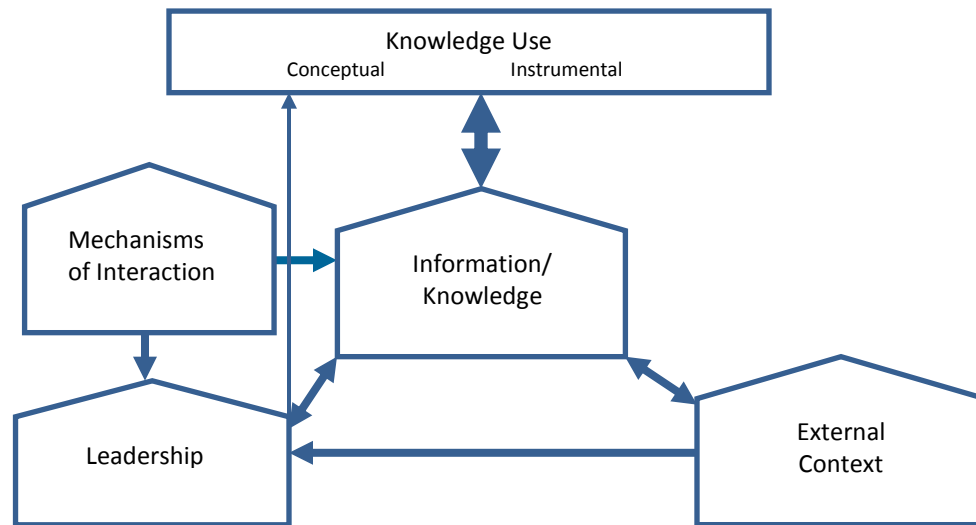
Knowledge Use” and “Instrumental Knowledge Use” influenced “Symbolic Knowledge Use.” For instance, a few members described that information shared within the CoP or knowledge gained as a result of discussing information during CoP meetings helped to confirm or ‘justify’ decisions that their local public health agencies had made such as decisions to prioritize a specific target population. Given the few instances, a thin arrow is used to denote this relationship.

“Conceptual Knowledge Use” also directly and strongly influenced “Deliberate Non-Use” as depicted by the thick and solid arrow in Figure 5. Learning about other member’s activities around the CoP topic area often provided members with enough information to discern whether they could use that knowledge in instrumental or symbolic ways or not at all at that given time. Additionally, sharing CoP information with one’s work organization and engaging in discussions with work colleagues about its potential use (i.e., “Instrumental Knowledge Use”) also was linked with instances of deliberate non-use. However, “Other Factors” (e.g., Information/Knowledge” and “External Context”) helped to explain the conditions under which such decisions were made and will be discussed next.

6.8.2 “Other Factors” and Knowledge Use

A number of factors were found to provide the conditions that contributed to or detracted from members’ use of CoP knowledge as well as the development of “Shared Identity,” “Member Identification/Sense of Belonging,” “Social Capital” and / or “Psychological Safety.” The “Other Factors” branch and more specifically the sub-branches that comprise it and how they inter-relate to influence “Knowledge Use” are described below. How they influence “Shared Identity,” “Member Identification/Sense of Belonging,” “Social Capital” and / or “Psychological Safety will be described in the sections that describe each of these particular branches.

Figure 6 "Other Factors" Relationship with Knowledge Use¹



¹ Different shapes are used to illustrate to represent a particular branch and its respective sub-branches. The rectangle represents the branch "Knowledge Use." The pentagon represents the sub-branches that comprises "Other Factors"

Information/Knowledge

"Information/Knowledge" reflects the information or knowledge that enters, circulates or is co-created within the CoP. The branch is comprised of the sub-branches "Relevant Knowledge" and "Observability." "Relevant Knowledge" reflects information shared or developed in the CoP's that were deemed relevant to member's needs. This sub-branch is comprised of the twigs: "Types of Relevant Knowledge" (including scientific research and evaluation, practice-based experiences and resources, and novel ideas and initiatives) and "Credibility of the Source" (including researchers and other CoP members). The sub-branch "Observability" encompasses CoP members or people external to the CoP observations of CoP knowledge in action. (e.g., they become aware of or see initiatives that are implemented in one's local community including how it was implemented and the relative ease of implementation).

The branch "Information/Knowledge" was identified by members as a critical factor that ultimately and directly determined whether they would use CoP knowledge as indicated by the thick and solid arrow in Figure 6. More specifically, "Relevant Knowledge" was essential for

“Knowledge Use” to occur. “Types of Information/Knowledge” that were deemed relevant included: scientific evidence (including members’ having access to researchers, their research and evaluation findings and peer-reviewed publications); practice-based experiences (e.g., progress made with initiatives, problems encountered and lessons learned) and resources (e.g., materials created for programs or initiatives such as information resources, pamphlets, signs, logos); as well as cutting edge or innovative initiatives/interventions (particularly ones that had been evaluated). “Relevant Knowledge” was often deemed “Credible,” namely because members became familiar with the sources of that knowledge (i.e., other members) and their perceived credibility. This was made possible by virtue of hearing about members work and the methods they applied to carry out initiatives through “Mechanism of Interaction” such as “Practice Sharing,” (see “Mechanisms of Interaction” and Section 6.8.3: Social Capital below for more information).

“Leadership” was directly linked to “Relevant Knowledge.” LEARN Team, LEARN Co-Chairs and individual members often took initiative to share information deemed relevant (and by virtue of this also credible) by CoP standards within the CoP and beyond often to members’ work organizations as illustrated in the following illustrative quote:

“Well, probably the most important piece is the research and the evidence. So, for example, you know, some of the backgrounders that have been created or even the lit reviews that have been done and shared on the Community of Practice WebEx for example, that’s where we actually spend most of our time, is sharing that information with our counterparts. So there’s obviously some value in each of these for not only the work that we do locally and regionally, but also they support initiatives that are being planned, you know, within certain local public health units” (L: Inter KU, TCAN, p. 3).

“Information/Knowledge” was used to inform decision-making such as using scientific evidence to decide which target population to address or discussing how a member could approach a specific initiative given other members’ lessons learned. Higher levels of instrumental knowledge use such as practice-based resources or programs being adopted or adapted were also found to some extent.

A reciprocal relationship between the “Observability” of CoP “Information/Knowledge” and “Knowledge Use” was also found as illustrated in Figure 6 by the bi-directional arrow between “Information / Knowledge” and “Knowledge Use”. The following illustrative quote describes this relationship:

“As I continue with my work in terms of educating and as more communities come forward with (wanting to address the CoP B topic area), then I start to get those calls about people saying ‘what do you know about this’ and that continues to drive change and then I tell them, ‘well you know, I have access to all this information (from the LEARN CoP) and I can tell you exactly (what other municipalities are doing about this specific issue) at this point in time.” (M: Higher KU, LPHA, p. 12).

CoP knowledge such as scientific evidence were also found to influence conceptual and instrumental types of knowledge use. For instance, members engaged in discussions during CoP meetings to make sense of what a source of evidence means and how that evidence might be used. Thus, relevant “Types of Information/Knowledge” indirectly influenced “Instrumental Knowledge Use” (through Social Capital see Section 6.8.3: Social Capital below for more).

A few instances were found whereby knowledge gained was also used to justify decisions or actions (i.e., “Symbolic Knowledge Use”) that a member or his/her organization had already taken as illustrated here:

“The scientific information shared and discussed in the Community of Practice supported a decision our agency had already made ...to move to a model that (would address a particular target population). The CoP (information) helped to reinforce that decision” (D: Inter KU, LPHA, p. 7).

Relevant “Types of Information/Knowledge” also directly influenced “Deliberate Non Use.” These findings will be discussed later in this section when describing the influence of “External Context.” While “Information/Knowledge” did influence “Knowledge Use”, other factors as just suggested above shaped members’ decisions about what constitutes relevant knowledge and its use.

Leadership and Knowledge Use

The branches “Leadership” and “Mechanisms of Interaction” were essential to facilitating the sharing and exchange of “Information/Knowledge” within the CoP. “Leadership” branch reflects the different leadership roles that are assumed within the CoP and is comprised of the sub-branches: (1) “LEARN Team,” which reflects the LEARN Team staff that are responsible for the development of the LEARN CoPs, managing funding, organizing meetings and its logistics and addressing CoP members scientific knowledge needs such as developing documentation of practices, evidence-based backgrounders, etc, (2) “LEARN co-chair,” which reflects members’ impressions of these members role in the CoP and their impact on CoP processes as well as co-chairs experiences assuming the role of liaison between CoP members and the LEARN Team, and (3) “Individual Initiative,” which reflects the personal characteristics and passion of members for the work that they do and their desire to take initiative within the CoP or around the CoP topic area. Twigs that comprise this sub-branch include: “Commitment to Organizational Learning” (reflects CoP members with a history in tobacco control or in the topic area and the initiative they display to share this tacit knowledge with co-members so that it is not lost), “Personality and Confidence” (reflects whether a member is extroverted or introverted and / or the confidence they have in their knowledge), “Personal Outcomes” (reflects the initiative taken by members to make the CoP what they want it to be and get out of it tangible outcomes or benefits), and Linking Agents (reflects members who connect the CoP with other resources (people, funds, etc) or serve as a conduit for information sharing between the CoP and external bodies.

The data revealed that “Leadership” particularly the “LEARN Team” and “LEARN Co-chair” roles (common to both embedded units) played important roles in identifying what members’ knowledge needs were and in some cases providing them with relevant information/knowledge as reflected in Figure 6 by the thick arrow between “Leadership” and

“Information / Knowledge.” “LEARN Team” and “LEARN Co-chairs” also had a strong but indirect influence on mainly conceptual and instrumental types of knowledge use. The LEARN Team and LEARN Co-chairs achieved this by organizing meetings (see “Mechanisms of Interaction”), facilitating CoP meeting discussions including soliciting members input on what information needs they had and delivering it, encouraging members to speak up and share what they know, and creating agenda topics to stimulate discussion of interest to members.

Additionally, the “LEARN Co-chairs” were found to have the most positive experiences with their CoP and higher levels of knowledge use in comparison to their co-members. Assuming a Co-Chair role motivated these members to take initiative (i.e., “Individual Initiative”) that would progress their CoP’s work (e.g., largely by finding ways to use CoP knowledge in their own practice be it sharing and discussing knowledge gained with their colleagues and at other tables they were members at beyond the CoP).

“Individual Initiative” of members who were not Co-Chairs also contributed to knowledge use in largely conceptual ways. Members with a history of experience in tobacco control or in the CoP topic area displayed initiative to share with co-members their expertise and tacit knowledge that may otherwise be lost if and when they choose to leave the field.

“Personality Characteristics and Confidence” also demonstrated some links to knowledge use. Extroverted members were described as more likely to share what they know or contribute to CoP discussions while those who shared less were at times considered introverted or potentially lacking confidence in their knowledge to speak up and share what they know (these are issues that will be discussed more so under “Psychological Safety and Speaking Up”). “Linking Agents” also influenced knowledge use. Members who were researchers served as linking agents who connected external researchers to the CoP. Other members served as conduits for knowledge transfer and exchange between the CoP and external groups to which they belonged. Linking agents are discussed in other sections (e.g., “Social Capital”). Thus “Leadership” also had a

direct but less strong influence on “Knowledge Use” (i.e., influenced knowledge use in conceptual ways) as depicted by the thin arrow between these branches in Figure 6.

Others felt that the CoP structure was one that necessitated individual initiative. A common theme was that it was up to members to get out of the CoP what they wanted and that this would drive how they used the knowledge gained from the CoP:

“the CoP is such an optional type of organization. It’s not like you’re a committee member where you have responsibility and all that stuff. It’s a different format. It’s voluntary and therefore people are there for their own reasons. Therefore, they’re going to use (CoP knowledge) more and pay attention to it and transfer the information they get there back into their work practice” (E, Higher KU, Research, p. 32).

Mechanisms of Interaction and Knowledge Use

The branch “Mechanisms of Interaction” reflects the ‘spaces’ that brought members together to interact, share information, engage in discussions and enabled “Leadership” to carry out many of their roles. As such, Figure 6 depicts a thick and bi-directional arrow between “Mechanisms of Interaction” and “Information / Knowledge” as well as “Leadership.” “Mechanisms of Interaction” is comprised of the sub-branches: (1) “The LEARN CoP,” which encompasses comments members made about having the LEARN CoP as a space for interaction and its importance, (2) “Medium of Interaction,” which includes the twigs: “In-person meeting,” “Teleconference,” and “Frequency of Meeting,” (media common to both embedded units) and reflects members’ experiences with and the perceived impact of in-person versus teleconference CoP meetings and the frequency with which members meet through these mediums, (3) “WebEx,” (common to both embedded units) includes the twigs “ Knowledge Repository” and “Communication Tool” and contains members’ impressions of the online knowledge repository specific to their CoP, the role of WebEx as an anonymous space for members to post discussions and stay connected to the CoP (4) “Practice Sharing,” (common to both embedded units) which is the structured time allocated during CoP meetings for members to formally or informally provide

updates, present findings or lessons learned from work conducted, and / or discuss problems encountered in their work and seek input from members on how to troubleshoot, (5) “Working Groups” (present in both embedded units but more so in CoP B), which reflect the formation of subgroups within the CoP that work on a specific project or issue pertinent to the CoP topic area.

These sub-branches (and their twigs) inter-relate in the following ways: the “LEARN CoP” provided a ‘space’ that brought members across the province together to engage around a specific topic area. Structures or “Mechanisms of Interaction” were instituted within the CoP ‘space’ that enabled “Knowledge Use” to occur. For instance, the CoP ‘space’ brought members together virtually through teleconference and WebEx as well as bi-annually through in-person meetings. During these meetings, structured time was allocated for “Practice Sharing” so that members could share their updates, initiatives, experiences/lessons learned and seek feedback from members on their work. During meetings (particularly “In-Person Meetings” and through “Practice Sharing,” members identified others within the CoP with similar interests and this periodically led to the formation of “Working Groups” where a subgroup of CoP members (and in some cases others external to the CoP) worked on a specific issue or initiative together.

WebEx was another important “Mechanism of Interaction.” WebEx was not only used as a tool so that members could follow ‘virtual’ presentations during teleconferences, but it also served as a “*fantastic*” knowledge repository that made using CoP knowledge easier. Members often reported downloading relevant CoP knowledge from WebEx to share with their colleagues at work (e.g., LEARN Backgrounders, information on software that other health units have used for specific initiatives) or to directly use or adapt resources such as “creatives” (e.g., pamphlets, logos, signage, etc) that other health units had developed and used for specific initiatives. Thus, all of these mechanisms of interaction provided a ‘space’ where members could engage in knowledge use and in this way these mechanisms played an important role in facilitating

“Knowledge Use.” However, it was the branch “External Context” that had the strongest influence on all of the “Other Factors” and contributed to or detracted from “Knowledge Use.”

External Context and Knowledge Use

“External Context” reflects the nested configurations that comprise the broader landscape in which the LEARN CoP is embedded and is comprised of the following sub-branches:

1. “Alignment with Ministry Context,” which describes the influence the Ministry has on work in Ontario local public health tobacco control and the LEARN CoP via their mandates and priorities
2. “Alignment with Organizational Context,” which reflects the organizations that CoP members represent on the CoP and their particular context, including their “Organizational Priorities and Policies,” members “Work Roles and Responsibilities, the needs of the communities/populations that they serve (“Local Community Context”) and the “Level of Experience” members have around the CoP topic area;
3. “Resources,” encompasses comments pertaining to “Funding” and availability of “Human Resources,” including during times of public health crises;
4. “Time,” speaks to “Time Constraints” that members face in terms of their work, the “Duration of the CoP existence,” the “History of Experience in Tobacco Control” both in terms of the history of Ontario public health tobacco control and member’s history of experience in tobacco control;
5. “Infrastructure,” reflects the “Multiple Levels of the System and Infrastructure” pertaining to the Ontario public health tobacco control system, the “Geography” (or geographic dispersion) of this system, and the “Ontario Public Health Tobacco Control Size;” and
6. “Culture,” encompasses the values and norms of behaviour that are embedded within the Ontario public health tobacco control system, including a culture of professionalism that supports learning, respect and knowledge sharing.

These sub-branches and their respective twigs also inter-relate. “Alignment with Ministry Context” exerted a powerful influence on many of the organizations that members represent on the CoP, particularly local public health agencies (“Alignment with Organizational Context”) as well as “Resources”. For instance, Ministry mandates and priorities set the direction of what issues will receive attention by local public health agencies. It also tended to determine what

issues would receive government funding. Members also noted that Ministry and organizational priorities shaped their work responsibilities and demands, which often constrained the “Time” they had to engage in or make use of all of the opportunities (e.g., workshops, trainings) available to them within the Ontario local public health tobacco control system. These opportunities had been made available over time as the history of tobacco control unfolded, its learning-oriented “Culture” developed and the “Infrastructure” instituted to ensure that people working within Ontario public health tobacco control across all levels (i.e., Ministry, Organization, other) are connected, have access to the best available information and opportunities for professional development. However, for TCAN representatives, the CoP was said to be “*duplicative of information*” that they hear at the other tables they sit at as part of their job role. Members representing ‘front-line’ practitioners (e.g., Health Promoters, Public Health Nurses) did not report this to be the case.

“External Context” also exerted a powerful effect on what was deemed relevant and credible “Information/Knowledge” and in turn whether members used that knowledge. This relationship is depicted by a thick and solid arrow in Figure 6 between “External Context” and “Information / Knowledge.” Ministry mandates and priorities not only shaped where funds would be directed and where attention should be focused within the Ontario public health tobacco control system especially with the local public health agencies, but also enhanced “Knowledge Use.” Specifically, when CoP knowledge aligned with ministry mandates and priorities and had resources (i.e., funding) to back it (External Context: “Alignment with Ministry Context”), that increased the likelihood that members would use the knowledge. Ministry mandates and priorities also tended to shape organizational tobacco control priorities and member “Work Roles and Responsibilities” (External Context: “Alignment with Organizational Context”). CoP knowledge that fit with organizational / work roles and responsibilities were deemed relevant, which facilitated conceptual and instrumental types of knowledge use:

“(When CoP knowledge pertains to our work)...we’re going to take that information back or more likely to (use it) than things that aren’t directly connected with what we’re doing” (E, Higher KU, Research, p. 32).

When CoP “Information/Knowledge” did not align with organizational priorities or specific work roles and responsibilities, this was a factor that often directly led to “Deliberate Non- Use” as illustrated here:

(re: why CoP knowledge has not been used) “I think it's mostly just because, like, our priority right now is (on a different kind of project) and so ...we're just not at the level of readiness yet” (B: Lower KU, LPHA, p. 26).

“The last (teleconference meeting) I attended was about (name of software) and I would never use that....I mean it’s kind of nifty but not totally relevant to something I am required to do in my work” (A: Lower KU, NGO, p. 9).

Additionally, the “Level of Experience” with the CoP practice area that member’s organizations possessed also influenced “Knowledge Use” by providing a context through which knowledge gained in the CoP became relevant and of use as depicted in this illustrative quote:

“I was required to do this (CoP topic area related) work for my position, but we have done very little work in our area. So I really hoped to be able to get all the information I needed from the community to start moving on, actually moving the activities in our area. And because we had no place to start, that was—I was hoping to get that out of the Community of Practice.”

Interviewer: How has that panned out?

“...On the WebEx space, all of the documents that are up there, we use them very, very frequently. Anything down to when someone pulls the picture of a campaign that they did, that’s all information that I share very regularly within my team. And because it was a new project for us, it helped us tremendously just to give us a starting point of where other communities were going. As time went on and more material started coming up on the WebEx space...like, in terms of evaluations and step-by-step processes and all that kind of material have just been incredible, incredible for us to be able to use” (H: Lower KU, LPHA, p.3)

In contrast, members that represented organizations with greater “Level of Experience” around the CoP practice area were more likely to report *not* having used some of the CoP Information/Knowledge because “*we either passed that point and have done that...or used that idea already*” (I: Lower KU, LPHA, Co-Chair, p.22). However, these members were often the

ones who most vocal during CoP meetings by frequently sharing their knowledge (Section 6.8.5: Member Identification/Sense of Belonging provides insight into why members like “I” were willing to be engaged in the CoP even though they were not necessarily gaining new information that facilitated their CoP-related work. Section 6.8.6: “Psychological Safety and Speaking Up” will expand on findings pertinent to “Level of Experience” and how this influenced members’ propensity to speak up to share what they know).

Interviews and meeting minutes revealed that certain organizational policies (“Organizational Priorities and Policies”) also influenced “Knowledge Use” again by making CoP knowledge relevant or not relevant to one’s organizational or work priorities. Policies that supported a focus on the CoP practice area facilitated “Knowledge Use” in conceptual and instrumental ways, but led to “Deliberate Knowledge Use” when such policies did not exist:

“There are some instances where we really didn’t have the policies in place to effectively implement such an initiative (that was shared in the CoP). So, we have stayed away and it’s because of the lack of internal policies in reaching out to certain groups” (L: Inter KU, TCAN, p. 16).

Organizational policies were also found to constrain members’ ability to use CoP knowledge. Immediate use of CoP knowledge was at times constrained when permission to use resources developed by local public health agencies were required (e.g., signs, tools), but was deemed worthwhile in the long run:

“...We got permission to use a number of different resources by contacting (the people who posted the resources on WebEx or shared it in the meetings). We made sure we had the rights to use it and so it actually became our activity so rather than reinvent the wheel, doing this...saved us a ton of steps and work.” (H: Lower KU, LPHA, p. 3)

Additionally, a “Culture” that valued learning and was evidence-based within the Ontario public health tobacco control system contributed to or constrained the use of CoP knowledge. Members reported an openness to share what they know and to learn from others because the broader culture in which they operated was learning-oriented. Section 6.8.6: Psychological Safety

will expand on this relationship). Additionally, the Ontario public health tobacco control culture was described as “evidence-based.” Some members also reported their organizations had evidence-based policies. Thus, CoP “Information/Knowledge” with an evidence-base (scientific/evaluation) to support it was deemed relevant and actionable, but led to “Deliberate Non-Use” when such an evidence-base was lacking:

“Well, I guess you could say the (name of an initiative that was presented and discussed within the CoP), we looked into that and deliberately did not use it because it wasn’t evaluated...We have to prove that an evidence base exists (in our agency) before we’re able to move forward with it. Because this initiative had not been evaluated and would require funding to do so, we were unable to proceed with that. But, it was interesting for sure and I would love to know if it ever does get evaluated” (F: Higher KU, LPHA, Co-Chair, p. 8).

The Ministry and organizational priorities also influenced LEARN Team, Co-chairs and/or member’s “Leadership” ability to use CoP knowledge. Initiatives that members were interested in pursuing as a collective, but did not align with Ministry interests or came up at the wrong time during the funding cycle were found to constrain LEARN Team and Co-chairs’ ability to help members coordinate themselves to take action on the initiative. In order for External Context to actually exert its influence, member participation and interaction within the CoP was necessary, which will be described next.

6.8.3 Social Capital

The following section describes the key findings for the branch “Social Capital,” which reflects what members said about networking, quality of relationships with other CoP members and the resources or assets that members had access to as a result of these relationships. The branch “Social Capital” is comprised of two sub-branches: “Structural Social Capital” and “Cognitive Social Capital.” “Structural Social Capital” reflects the ‘harder’ aspects of social relationships such as people interacting. “Structural Social Capital” is comprised of the twigs:

1. “Participation,” which reflects member participation in the CoP in terms of attendance and level of involvement (i.e., peripheral and more active/core members);

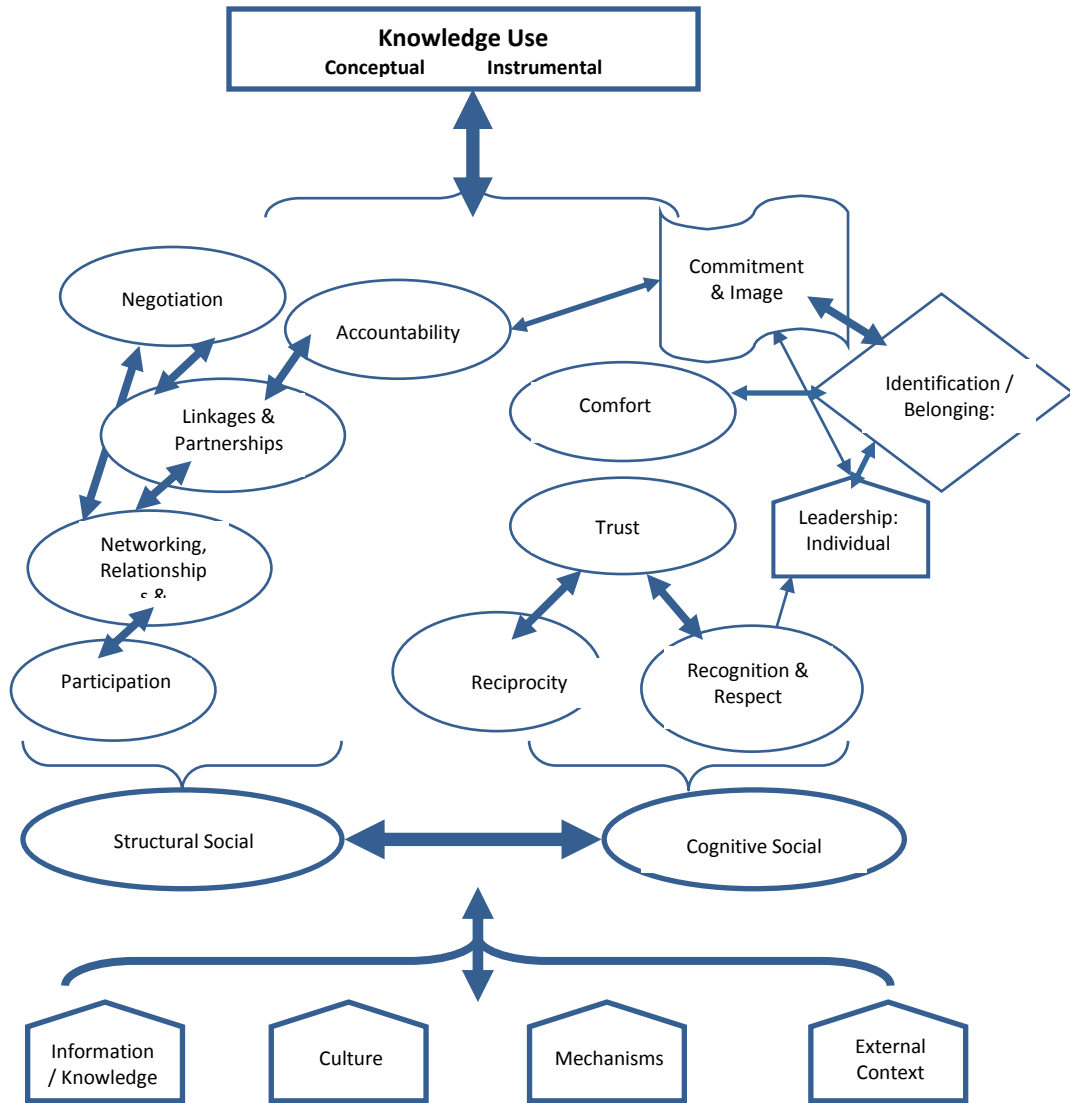
2. “Networking, Relationships and Familiarity” describes the networking that was enabled as a result of the CoP, the familiarity that developed among members in terms of who is who and what expertise and resources they possess, and the relationships that developed through such familiarity;
3. “Linkages and Partnerships,” describes the linkages and partnerships that were enabled as a result of the CoP;
4. “Negotiation,” reflects instances of member’s collectively negotiating key issues pertaining to their CoP and its functioning (e.g., purpose of CoP, membership, values and norms of behaviour, information needs);
5. “Accountability,” which reflects members’ sense of responsibility to the CoP.

“Cognitive Social Capital” reflects the softer aspects of relationships that bind members together and is comprised of the twigs:

6. “Recognition and Respect,” encompasses descriptions of member’s being acknowledged, recognized and respected by co-members,
7. “Trust,” reflects members perceiving co-members as trustworthy in their interactions with one another and trustworthy sources of information;
8. “Reciprocity” pertains to member’s willingness to help one another out; and
9. “Comfort;” reflects member’s sense of comfort to approach other members for help, to access information, share what they know in the CoP.

The relationship between “Structural Social Capital” and “Cognitive Social Capital” are depicted in Figure 7. The figure also depicts how “Social Capital” influences “Knowledge Use” as well as other outcomes such as member’s sense of productivity, which reflects twig “Personal Outcomes” (which belonged to branch and sub-branch “Leadership: Individual Initiative”), and “Commitment” (“Image and Commitment”). Productivity reflects member’s sense that they are useful contributors to the CoP and the personal feeling of accomplishment or productivity that feeling engenders. Commitment reflects member’s desire to continue to invest their time and efforts in the CoP. All of these relationships will be described below and developed further in subsequent sections as well.

Figure 7 Social Capital's Relationship with Knowledge Use



To summarize Figure 7, each branch and its respective sub-branches are represented by a different shape. For instance, the oval represents the branch “Social Capital” and the sub-branches that comprise that branch, the scroll represents “Commitment and Image,” and the rectangle represents the branch “Knowledge Use.” A strong and reciprocal relationship also exists between “Structural Social Capital” and “Cognitive Social Capital” whereby structural social capital fosters the development of cognitive social capital, which in turn strengthens structural social capital. As such the twigs that comprise these respective sub-branches strongly inter-relate with one another. This reciprocal relationship between structural and cognitive social capital is depicted in Figure 7 by a thick and solid bi-directional arrow.

To elaborate on this relationship, (ongoing) “Participation” in the CoP enabled members: to network with one another, develop new connections or strengthen pre-existing relationships and thereby increasing familiarity amongst members.

“Networking, Relationships and Familiarity” often led to the development of linkages and even partnering (“Linkages and Partnerships”) around initiatives between organizations that members represented on the CoP (e.g., research and a local public health agency linking together to help a researcher gain access to a hard to access population or several local public health agencies partnering to work on a shared area of interest).

“Other Factors,” most notably, the “Information/Knowledge,” “Mechanisms of Interaction,” “Practice Sharing,” “Working Groups,” “Leadership” and “External Context” including “Alignment with Organizational Context” and “Culture” enabled “Structural Social Capital” to emerge. The combination of “Structural Social Capital” and “Other Factors” also provided the foundation from which the softer aspects of relationships (i.e., “Cognitive Social Capital”) could be fostered and contributed to “Knowledge Use.” These relationships are depicted in Figure 7 by the thick and solid bi-directional arrow between them and are described below.

The “Information/Knowledge” powerfully and directly influenced members’ ongoing participation in the CoP. Specifically, the provision of relevant information/knowledge influenced whether members would attend a given CoP meeting, “*contextualize(d) member interactions*” (E: Higher KU, Research, p. 47) and shaped member “Negotiations” about the CoP, what it was they were there to achieve together and whether information shared fit with this shared understanding (see Section 6.8.4: Shared Identity).

Additionally, when the CoP offered “Information/Knowledge” that informed member’s work priorities and responsibilities (“External Context: Alignment with Organizational Context), this increased members’ participation levels in the CoP in terms of attendance and in some cases moved a peripheral member to (at least temporarily) become more involved (i.e., engage in more active participation).

“Mechanisms of Interaction” also influenced participation levels. Almost full attendance occurred during the bi-annual “In-person Meetings” where members reported being more engaged and collectively more productive. Monthly “Teleconferences” had variable participation rates and were less lively:

“Oh they're (in-person meetings are) great! There's tons of networking going on because we all have something in common and the programs have always been very interesting. So, it's always been very insightful into what's going on and ideas that we can take back to our project and so on. So I think they're much better (than teleconferences)...there's more opportunity for distraction with those” (E: Higher KU, Research, p. 7).

But others felt (largely Co-Chairs) that members were missing out on “*the great knowledge sharing and pertinent information moving us forward on those (monthly teleconference) calls*” (M: Higher KU, LPHA, Co-Chair, 14).

According to members across both CoPs and who represented different levels of knowledge use and sectors, “In-person Meetings” also made it easier for members to put a face to a name, network, become familiar with others they did not know and / or strengthen relationships with people they knew prior to joining the CoP. Familiarity with other members and the informal

conversations that face-to-face contact enabled during “In-person Meetings” led to “Knowledge Use.” For instance, members reported feeling more comfortable (“Comfort”) to share what they were doing with others during these meetings or contribute their ideas (see Section 6.8.6: Psychological Safety), contacting members outside of meetings to ask questions or access information with the sense that they would help (“Reciprocity”) and led to instances where some member linked together (“Linkages and Partnerships”) to work on a shared initiative of interest or discuss the feasibility of adapting an initiative to another’s local context (i.e., instrumental knowledge use).

Another “Mechanism of Interaction,” which involved structured time for “Practice Sharing” during meetings and especially during in-person meetings (“Medium of Interactions”) provided a space that facilitated “Networking, Relationships and Familiarity,” a sense of “Comfort” and “Knowledge Use.” “Practice Sharing” enabled members to identify others who possessed information/knowledge they needed, worked on similar initiatives or had shared interests. As members interacted and became familiar with one another, a sense of comfort developed and this made members feel more apt to connect particularly with those who possessed knowledge they needed. These connections were often reported to occur most frequently during in-person meetings or outside of CoP meetings where they either accessed resources related to the initiative that was shared within the CoP, learned more about a member’s initiative or engaged in discussions of lessons learned or how that initiative might work in their local context (and as such engaged in conceptual and instrumental types of knowledge use).

“Practice Sharing” (particularly during “In-person Meetings”), did more than create a sense of familiarity and make members aware of others with similar interests. “Practice Sharing” particularly during “In-person Meetings,” allowed members to observe (“Information/Knowledge: Observability”) the progress of others which made members more “Accountable.” Hearing others share what they had accomplished set a standard that motivated

members, at least for members with intermediate and higher levels of knowledge use, to want to achieve the same or better results as illustrated in this quote:

“when you’re actually talking to somebody in person and hearing (what they’ve done), you build that relationship (and it’s) almost like you feel...like it’s a necessity for you to do the same work that they’re doing because you don’t want to kind of fall behind. If they’re doing great work, you’re almost like, ‘hey, you know what? I need to....do something similar or if not better’” (N: Higher KU, LPHA, p. 8).

“Practice Sharing” also increased awareness of what others were doing, the methods or approaches they applied in their work (see Section 6.8.6: Psychological Safety), which helped members to discern the “Credibility” (i.e., “Information/Knowledge”) of one another’s information/work and engender a sense of mutual respect (“Recognition and Respect”) and “Trust.” Feeling respected and a trust of others reinforced members sense of “Comfort” to speak up and share what they know (see Section 6.8.6: Psychological Safety for more information) and to use other members’ information/knowledge.

At times, a subset of CoP members with shared interests (e.g., practitioners that serve local communities with similar contexts – i.e., rural areas), brought to light often through “Practice Sharing,” convened into “Working Groups” where they would collectively work on an initiative that aligned with the CoP topic area and their work priorities (“External Context: Work Roles and Responsibilities”). Members of such “Working Groups” reported developing stronger personal and working relationships with others who sat at that table, took greater initiative (i.e., “Leadership”) by investing more of their “Time” (outside of CoP meetings) and were more productive in terms of knowledge use. Other Factors such as “Time” invested in these “Working Groups” and “Mechanisms of Interaction” and more specifically the “Frequency of Interaction” contributed to the stronger relationships that these members described experiencing:

“There’s definitely a jelling in that (name of Working Group) because we work so closely together. So, the relationship, we know one another on a more personal level, as well as a professional level, feel more comfortable, just because of the amount of time that we’re spending together.”

Interviewer: How much time do you spend?

“Well, we have a teleconference pretty much twice a month now, and we’ve had a few in-person meetings for that group, as well. Plus, we’re working on pieces of that project individually, so there’s time spent as individuals in our different workplaces, as well. We’re collaborating on developing resources and materials for the project. There’s just a lot more time contributed to that on many levels, so that you do develop more of a relationship with those people” (F: Higher KU, LPHA, Co-Chair, p. 15).

Engaging in “Practice Sharing” or being a part of a “Working Group” also created a sense of “Recognition and Respect” for those who shared especially when what was shared generated interest among the other members. Feeling recognized and respected by their peers instilled a sense of productivity (“Leadership: Individual Initiative: Personal Outcomes”) and as though they had contributed meaningfully to their CoP. A sense of productivity contributed to members’ confidence in their knowledge, their ‘place’ within the CoP, “Commitment” to the CoP and “Motivation” to use CoP knowledge (e.g., to continue to share their practices, engage in CoP discussions).” Hearing what others were doing across the province (i.e., through “Practice Sharing”) also bolstered members’ confidence in their own work (“Leadership: Individual Initiative: Personality and Confidence”). This experience helped to create a sense of “Comfort” about their work and bolstered their “Commitment” and sense of “Accountability” to the collective work that CoP members were engaged around. As one member described it:

“I think the knowledge that the work that we are doing here (in our health unit) is very similar to work that’s been done around the province. We’re not headed in the wrong direction. We’re actually on the right track and, you know, you can tell yourself that yes, this is what our community needs, but until you see that other people are doing the same work it’s kind of that comfort factor that okay, yes, I’m on the right track. We know what we’re doing. Let’s ... keep going down this road” (I: Lower KU, LPHA, Co-Chair, p. 37).

“Practice Sharing” also influenced “Commitment” (“Image and Commitment: Commitment),” which in turn contributed to the development of “Social Capital. Specifically, hearing what others were doing across the province bolstered member’s “Commitment” to the

CoP and its work and inspired a sense of “Accountability” that manifested in different ways. For instance, “Commitment” was described by some to create “*a chain reaction*” whereby committed members would attend more meetings, which would create a standard that other members would feel accountable to match:

If everybody who was very committed came all the time, you'd feel more pressure to do so yourself, right? So, I think when you're seeing less commitment in the CoP...especially amongst people who you would think should be leaders in the CoP like Ministry and researchers then it's like 'well, maybe this information we're getting here isn't important' (C: Inter KU, TCAN, p. 29).

“Commitment” also influenced member “Accountability” by motivating (“Motivation”) members to take initiative (i.e., “Leadership: Individual Initiative”) to share what they know and engage in discussions around CoP information/knowledge (i.e., “Knowledge Use”). It also strengthened their willingness to help other members when asked or opportunities arose (i.e., “Reciprocity”), which in turn strengthened their “Commitment” and reinforced a sense of “Accountability” to follow through with what they said they would do for the CoP and co-members. Some members also demonstrated their “Commitment” and consequent “Accountability” to the work of the CoP by serving as important “Linking Agents” either by becoming a “*conduit*” for knowledge transfer and exchange between the CoP and different tables that they sat at outside of the CoP or by linking new researchers or players to the CoP who could carry out studies or work that was mutually beneficial. Thus, reciprocal relationships existed between the twigs that comprised the sub-branches of “Structural Social Capital,” “Cognitive Social Capital” and “Commitment” (“Image and Commitment: Commitment”). These relationships also exerted their influence on “Knowledge Use” in conceptual and instrumental ways particularly by cultivating quality relationships that enabled members to interact, share, socially construct new awareness or understandings or co-create resources, initiatives, or

practice-based research around issues pertinent to their CoP topic area and that fit with organizational/work priorities and responsibilities.

Thus, “External Context” and in particular “Alignment with Ministry Context” and “Alignment with Organizational Context” also influenced “Commitment” and “Accountability” when the work of the CoP aligned with ministry mandates, organizational priorities/member work responsibilities. These relationships will be further developed under Section 6.8.5: Member Identification / Sense of Belonging).

Engaging in “Knowledge Use” in and of itself also spurred the development of “Social Capital” through “Information/Knowledge” as depicted in Figure 7 by the thick, solid and bi-directional arrow between these two branches. As already described hearing/observing how co-members were taking action on the CoP topic area (e.g., via sharing of practices or knowledge developed through working groups), motivated some members to want to do the same. Observing (Information/Knowledge: Observability) how others engaged in knowledge use then spurred member interactions to learn more about the actions taken and / or contributed to the quality of relationships members shared given the acknowledgement and respect members received for work well done and their willingness to help interested co-members out. However, members also noted that the broader “Culture” of professionalism that permeates the Ontario public health tobacco control system provided a strong foundation that shaped how members interacted with one another in the CoP. This “Culture” of professionalism was described to value learning and as such was oriented towards knowledge sharing (The “Infrastructure” of the Ontario public health tobacco control system is an expression of this “Culture”) and promoted respect for diverse perspectives. Additionally, the profession itself is dedicated to improve the health of others and, thus, reciprocity was a natural and well embedded cultural attribute that members also described as shaping the quality of their interactions. Overall, “Social Capital” emerged as directly and strongly influencing conceptual and instrumental types of “Knowledge Use.” “Social Capital”

was also influenced by “Knowledge Use” and had reciprocal influences on “Other Factors” as well as commitment (“Image and Commitment: Commitment”).

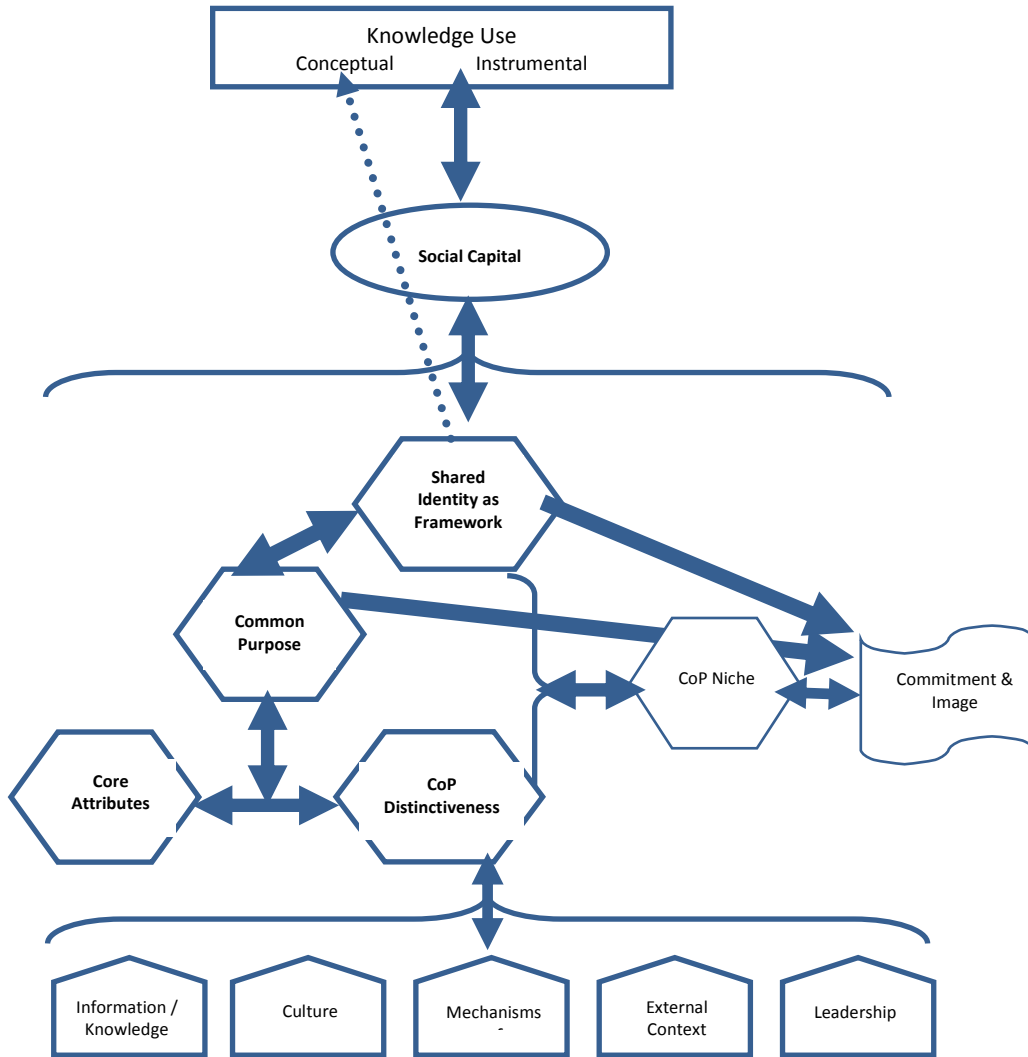
6.8.4 Shared Identity

The branch “Shared Identity” reflects members shared understandings of “who we are” as a social group, which in this study are the CoPs. It is comprised of the sub-branches:

1. “Core Attributes that Define the CoP,” which reflects the characteristics or attributes that members commonly used to describe what their CoP represents or stands for;
2. “CoP Distinctiveness”, which reflects the characteristics or attributes that members said sets their CoP apart from other comparable social entities;
3. “CoP Niche” reflects the unique role that their CoP contributes to the broader Ontario public health tobacco control community and/or to the local community;
4. “Common Purpose or Goal,” which pertains to CoP members sharing a common purpose or goal and its importance,” and
5. “Shared Identity as Guiding Framework,” which describes the role that a shared understandings of ‘who we are’ as a CoP influences sensemaking and actions.

Figure 8 summarizes the relationships that emerged between the sub-branches that comprise the branch “Shared Identity,” the relationship between “Shared Identity” and “Knowledge Use” and the influence that “Social Capital” and “Other Factors” have on these relationships. “Shared Identity” also influenced “Image and Commitment” which encompassed the sub-branches “Construed External Image” (member’s perceptions of how external others perceived the CoP and its influence on one’s sense of pride) as well as “Commitment.” An explanation of the figure is described below.

Figure 8: Shared Identity's Relationship with Knowledge Use



Despite differences between the two CoPs with respect to member perceptions about whether a shared identity existed in their respective communities (these findings are elaborated in Appendices 10a and 10b and discussed in Section 7.0: Discussion), similar patterns emerged across both CoPs with respect to this branch and its relationships to other branches of interest to this study. Strong and direct reciprocal relationships existed among sub-branches that comprised the “Shared Identity” branch. The sub-branch “Core Attributes that Define the CoP” at times was also identified as attributes that defined the “CoP Distinctiveness” (i.e., what set the CoP apart from other comparable groups). Reciprocal relationships were found between “Core Attributes that Define the CoP,” “CoP Distinctiveness” and “Common Purpose/Goal” as described by this illustrative quote:

“Understanding who we are as a CoP helps determine the purpose for the group. Without this understanding, it’s hard to have a purpose; without a purpose it’s hard to have a shared identity.” (F: High KU, LPHA, Co-Chair; p. 20)

‘Core’ and ‘distinctive’ attributes (e.g., ‘we are about the specific CoP topic area’, ‘we are evidence-based’) (see Appendices 10a and 10b for more information on these attributes) and the presence of a “Common Purpose/Goal” strongly and directly influenced members’ perceptions of the niche their CoP (i.e., “CoP Niche”) had carved within the broader Ontario public health tobacco control community. These sub-branches, including “CoP Niche” also provided a strong foundation for group comparisons whereby members reflected on how their CoP compared to other comparable social groups that existed or that they are involved with (see Section 6.8.5: Member Identification / Sense of Belonging) and influenced the branch “Image and Commitment” and more specifically the sub-branch “Construed External Image” as depicted in Figure 8 because they shaped member perceptions of how external others perceived their CoP and in turn themselves for being a member of such an entity. “Construed External Image” (“Image and Commitment”) in turn either made members view their involvement in the CoP as a

source of pride (largely because the CoP provided a space where members could showcase their organization's work and be recognized for their progress by colleagues across the province, or motivated them to want to aspire to emulate other social groups perceived to be better in some way(s) than their own (see Section 6.8.5: Member Identification / Sense of Belonging for more information). These comparisons were made predominately in the CoP A whereby CoP A members compared their progress to that of the CoP B, the reasons for which are elaborated in Appendix 10a and Section 7.0: Discussion.

Additionally, these sub-branches (i.e., the core and distinctive identity attributes, the presence of a common purpose/goal and the CoP niche) also reflected members' shared understandings of 'who we are' as a CoP and formed a conceptual framework that was frequently reflected upon to guide what the CoP valued, issues and information attended to and acted upon, and how to behave in identity-consistent ways (i.e., the sub-branch "Shared Identity as Guiding Framework"). This finding is developed in Section 6.8.5: Member Identification / Sense of Belonging.

The sub-branch "Shared Identity as a Guiding Framework" revealed that cultivating shared understandings of 'who we are' as a CoP was "*essential*" to CoP functioning, "*I mean it would be dysfunctional if we didn't have a common understanding of what we're doing with the group*" (E: High KU, Research; p. 31). For one, it "*puts us all on the same page so we all know what our purpose is of being here. There isn't inferring. Everybody comes with their own perceptions, so I think that it helps clear that up.*" It also "*helps define the value, this is what we are here for, this is what it's delivering and you can use that to measure the value (that the CoP brings)*" (D: Inter KU, LPHA; p. 21).

A "Shared Identity" and one that members identified with (See Section 6.8.5: Member Identification / Sense of Belonging) was also identified as important to creating a "*sense of community*" (H: Low KU, LPHA, p. 36) amongst diverse people and "*to help the group feel*

cohesive” (K: Inter KU, Research; p. 35). A “Common Purpose/Goal” emerged as critical to this unification process and to building “*power in numbers*” (B: Low KU, LPHA; p. 19) and “*synergy*” (F: High KU, LPHA, Co-Chair; p. 26) as it provided “*teeth...sustainability...and the potential to evolve into projects...*” (L: Inter KU, TCAN; p. 26) that would contribute to the accomplishment of the collective goals. A lack of “Shared Identity” was noted to create challenges to CoP viability and a few members reflected on past experiences with other groups that struggled with their identity: “*It was certainly an issue that dissolved that CoP*” (D: Inter KU, LPHA, p. 19). How “Shared Identity” contributed to a sense of community will be elaborated below when describing its relationship with “Social Capital.”

“Shared Identity” also directly but less strongly influenced “Knowledge Use” as depicted in the model by the less thick and dashed arrow. Figure 8 presents the specific sub-branches of “Shared Identity” (in bolded text) that influenced “Knowledge Use.” The dashed arrow was used to illustrate “Shared Identity’s” implicit influence on primarily conceptual, but also instrumental types of “Knowledge Use.” The dashed arrows are described below. As already stated, “Core Attributes that Define the CoP,” “CoP Distinctiveness” and the presence of a “Common Purpose/Goal,” which was also a salient ‘core’ and ‘distinctive’ attribute that members used to define their CoP, served as a framework that guided the CoP (i.e., the sub-branch “Shared Identity as Guiding Framework”). This framework kept the CoP and the knowledge gained from it more top of mind and guided members on what types of CoP information/knowledge was useful to attend to, access, share and otherwise use:

“...it would be definitely forefront; it’s more, you know, accessible in your mind. So, if you have that shared (understanding) and you feel a part of this group and the shared goals and outcomes then you’re definitely going to bring that forward more in all the other areas that you’re working in” (G: Higher KU, LPHA, Co-Chair; p. 18)

However, “Shared Identity” did not necessarily directly influence to “Knowledge Use.” “Social Capital” was one way through which “Shared Identity” influenced “Knowledge Use” and

“Other Factors” enabled these processes. To illustrate, attributes or characteristics that members commonly used to define ‘who we are’ as the CoP A or CoP B and in particular attributes that described the CoPs as being about “*knowledge sharing and learning*” and “*evidence-based*” were linked to different types of “Knowledge Use.” For instance, being a CoP that was about “*knowledge sharing and learning*” was commonly described by many members to prime them to engage in conceptual types of use (e.g., by orienting members to access, listening to and/ or share information/ideas that contributed to increased awareness of and learning about CoP topic area issues). Being a CoP that was “*evidence-based*” was often linked to descriptions of “Instrumental Knowledge Use” and “Deliberate Non-Use.” Several instances were found where members noted that the CoP was evidence-based and gave examples of how this defining characteristic of the CoP shaped the types of information that members valued, attended to and used in some fashion. For instance, CoP meetings often involved discussions around scientific evidence or evaluated initiatives to discern how that evidence could apply to their work context. In other instances, knowledge gained from the CoP that lacked a scientific/evaluation base may have been shared back with one’s work organization but were often described as deliberately not being used (i.e., implemented).

The presence of a “Common Purpose/Goal” also tacitly influenced “Knowledge Use.” It did this by giving members a better sense or tangible outcomes to work towards that could “*collectively impact provincial trends*” (D: Inter KU, LPHA; p. 33). Others felt that a “Common Purpose/Goal” helped influence instrumental uses because it specifies “tasks” and this makes it “*easier to get people involved because it’s tangible. It’s easier to lurk when (‘who we are’ as a CoP) is about knowledge sharing*” (F: Higher KU, LPHA, Co-Chair; p. 4). These findings support the statement offered above that “Shared Identity” influenced “Knowledge Use” through other factors. The remainder of this section will unfold how “Shared Identity” influenced “Knowledge Use” by contributing to the development of “Social Capital.” It will also describe

“Shared Identity’s” influence on “Commitment” (“Image and Commitment: Commitment”) and how this further contributed to “Social Capital.” A description of how “Social Capital” in turn influenced the development of “Shared Identity” and its relationship with “Knowledge Use” follows. The reciprocal relationship between “Shared Identity” and “Social Capital” was direct and strong as depicted in in Figure 8 by the thick, solid and bi-directional arrow between them. The role of “Other Factors” will also be described.

Shared Identity, Social Capital and Knowledge Use

“Shared Identity” influenced “Knowledge Use” through “Social Capital.” The salient identity attributes that members used to define their CoP (“*we are about the (CoP topic area),*” “*we’re a community of people that are here to share knowledge and learn*” or “*we’re evidence based*” as some key examples) served to guide how CoP members should interact to influence CoP related knowledge use. As evidenced by the following quote, these attributes were also used as reference points that helped to remind members what it means to be a part of the CoPs, what it values and how to act in identity-consistent ways that would enhance knowledge use and create coordination to realize collective goals:

*“I think it's important to manage the membership of our CoP in the ways suggested in this memo. One of our underlying aims in this CoP is to promote evidence-based practice and practice-informed research. When a membership becomes "too" large, we run the risk of moving toward a pure knowledge dissemination model (i.e., show-and-tell presentations to a diverse audience that is largely passive). To achieve genuine knowledge exchange, we need members who are ACTIVE in practice/research and ENGAGED in the process of **sharing information** and building the networks and infrastructures that will ultimately lead to **evidence-based** practice and practice-informed research. In other words, we need to have a COMMUNITY and we need to be prepared to put into PRACTICE the ideas, strategies and visions that come from the community”* (CoP A Discussion Post #4 – bolded text and block letters as per original).

“Shared Identity” also influenced “Knowledge Use” through the development of “Cognitive Social Capital.” Members commonly noted that a “Shared Identity” created a sense of community and cohesion among members because it “*gives more confidence when people sit on*

the teleconference meetings that they might be the only person in their health unit or their TCAN working on these things, but they're not the only one in the province" (K: Inter KU, Research; p. 24)

Sharing an understanding of 'who we are' as a CoP not only meant that members shared a common interest, but that they shared common ideas, values and experiences with addressing the CoP topic area. This in turn created a sense of "*comfort*" and "*support*" among members, which made it more likely for members to take the initiative (i.e., "Leadership) and use CoP knowledge. This idea is depicted in this illustrative quote:

"I mean, if I have my Community of Practice supporting me in some information that I've presented in the Community of Practice, or even an idea that I've taken away from that Community of Practice that I know that other members have used...and then I bring it forth to my coworkers in my organization here, or within a community partnership...I feel more supported and more empowered...in delivering that information."

Specific examples of how this played out were also given by this member:

"Within the past year, we've (describes work conducted that relates to CoP topic area) here in our community and a couple of other communities in our district and there's been a bit of a backlash. But, we came back and said 'you know, not only did we do it, but it's being done in a quite a few other municipalities around the province. I belong to a Community of Practice and these are the things we talk about...'" (I: Lower KU, LPHA, Co-Chair; p. 29)

Shared understandings of 'who we are' as a CoP, particularly ones that hinge on a "Common Purpose/Goal," influenced "Social Capital" and "Knowledge Use" by bolstering member "Accountability" to shared goals as well as contributing to the development of "Cognitive Social Capital." As one member put it, "*Across Ontario, it takes a lot of people to actually get this job done and when you have a common goal and meet in this space, we can all look to each other for help and support."* (H: Lower KU, LPHA; p. 35)

Shared Identity, Commitment and Social Capital

Shared understandings of 'who we are' as a CoP and 'what we want to become or achieve' contributed to member's "Commitment" to the CoP and ongoing participation.

“Commitment” to the CoP manifested in two ways. Either members were invested in the CoP because they wanted to be there (affective commitment) or they felt they should or ‘ought’ to be a part of the CoP (normative commitment). The following quotes are illustrative of what members with intermediate and higher levels of knowledge use said about “Shared Identity” and “Commitment.” (Section 6.8: Member Identification / Sense of Belonging will build on these relationships). Members indicated that a shared CoP identity strengthened commitment to the CoP because it helped to clarify for members why it was important for them to be a part of the CoP.

Having a “Common Purpose/Goal” was identified as critical to strengthening “Commitment,” particularly affective types of commitment (i.e., wanting to participate rather than feeling one should participate):

“Again, I think...if there’s a common purpose... (there’s) more commitment. I really think you need something to commit to or it’s sort of like ‘you should participate’” (F: Higher KU, LPHA, Co-Chair; p. 17).

“Well if you’re in it for the same reasons, then I think you’re more committed and you’re going to share more and listen more attentively and so and so on. If you’re not, I don’t know why people would be involved otherwise” (E: Higher KU, Research; p. 31)

Shared Identity and Factors that Influenced its Development and /or Relationship to Knowledge Use

“Social Capital” strongly influenced the development of “Shared Identity” and its relationship to “Knowledge Use” as depicted by its position in Figure 8 between “Shared Identity” and “Knowledge Use” and the thick, solid and bi-directional arrows flowing from “Social Capital” to “Shared Identity” as well as “Knowledge Use.” “Other Factors” also strongly influenced (contributed to or detracted from) these inter-relationships as depicted in Figure 8 by the thick, solid and bi-directional arrow between “Other Factors” and the rest of the figure. These relationships are described here.

“Leadership” and more specifically, “LEARN Team” and “LEARN Co-chairs” were instrumental in facilitating CoP member discussions around ‘who we are’ as a CoP by engaging members to collectively negotiate (Social Capital: “Negotiation”) (and as such socially construct) shared understandings of ‘who we are’ as a CoP. Such shared understandings were documented in the form of a Community Charter and Learning Agenda for their CoP and was used by “Leadership” to re-engage members annually during “In-person Meetings” (i.e., Other Factors: Mechanisms of Interaction) to reflect and revise these documents. The Community Charter and Learning Agenda clarified the CoP topic/practice area, documented topics within that practice area of collective importance for members, identified information/knowledge that members valued and needed and highlighted the norms of behaviours (e.g., expectations around participation and appropriate behaviours) that members deemed necessary to achieve the aims of their CoP. Thus, these living documents captured members shared understandings of ‘who we are’ as a CoP and were identified as documents that “*guide our conversations and the resources shared and developed*” (CoP B: Meeting Minutes, Feb 2011).

CoP leaders and members frequently referred to shared understandings of ‘who we are’ as outlined in these documents to guide interactions and influence “Knowledge Use.” For instance, when “LEARN Team” and “LEARN Co-Chairs” structured meeting agendas around information or initiatives that addressed topic areas of interest to members as articulated in the living documents, it generated a lot of member interest and discussion (i.e., “Instrumental Knowledge Use”). These leaders also referred to the documents to guide what “Information/Knowledge” were important to members and either accessed or developed knowledge products to meet those needs (e.g., in the form of LEARN Backgrounders, Documentation of Practices) in efforts to enhance “Knowledge Use.” Members reported using these relevant knowledge products largely in “Conceptual,” but also “Instrumental” and in a few instances “Symbolic” ways. Thus, “Leadership” played a key role in stimulating the social

construction of a shared CoP identity and using that identity as a guide to develop relevant knowledge that could engage members and facilitate their use of that knowledge in practice.

“Mechanisms of Interaction,” such as “In-person Meetings,” “Practice Sharing” and the formation of “Working Groups” emerged as potent facilitators that enabled members to interact around the CoP practice area and in the process negotiate and refine shared understandings of CoP identity. “In-person meetings” were identified as important to creating shared understandings of ‘who we are’ as a CoP. In-person meetings were where “Leadership” largely engaged members to construct the Community Charter and Learning Agendas. It was also where “Shared Identity” was made a point of discussion, where members are “*all reminded of why we’re (here)*” and see if this is “*still going where we want to go...*” (H: Lower KU, LPHA; p. 36).

As members engaged in “Practice Sharing” around their CoP topic area and the discussions that emerged from such sharing, this contributed to the continuous social (re)construction or reinforcement of shared understandings of ‘who we are as CoPs.’ “Practice Sharing” also enabled members to identify other members that shared similar interests and this often led members to link up, partner up or form “Working Groups.” Members who partnered up or formed working groups reported stronger relationships, cultivated clearer understandings of what their specific focus was within the broader CoP topic area is and in turn ‘who they were as a working group and what they were working together as a sub-group in the CoP to achieve. Recall from Section 6.8.3: Social Capital, members who partnered up and more specifically engaged in “Working Groups” also had cultivated personal and professional relationships with one another, greater investment of time and energy to achieve what they came together to achieve and in turn higher levels of “Knowledge Use.” These groups also exhibited stronger “Member Identification/Sense of Belonging” to the CoP, which will be discussed in Section 6.8.5.

In addition to “Social Capital,” “Leadership,” and “Mechanisms of Interaction,” “External Context” was also found to strongly shape the construction of a “Shared Identity” and its relationship with “Knowledge Use.” One aspect of the “External Context” were the values and norms that reflected the “Culture” of the Ontario public health tobacco control community and which directly and strongly shaped members shared understandings of ‘who we are’ as a CoP. For instance, the norms and values that reflected acceptable professional behaviours in the broader Ontario public health tobacco control community became embedded within members’ collectively negotiated definitions of their CoP (“Shared Identity”). To illustrate, a common identity attribute used to define ‘who we are’ as a CoP was the term ‘Community of Practice’:

I think the name of the group itself, ‘Community of Practice.’ I mean if you’re part of a Community, you’re being very antisocial if you don’t participate and get involved in its activities. It’s kind of a code of ethics, you know, of professional behaviour...it creates a sense of obligation to work with the people in the group and help them out.” (E: Higher KU, Research; p. 46).

As described in Section 6.8.2: Other Factors, the “Culture” of the Ontario public health tobacco control community also had a strong orientation towards “*learning*” and an emphasis on “*evidence-based practice*.” Recall that these were also common CoP identity attributes that guided what “Information/Knowledge” was important to attend to and how members interacted and coordinated their efforts (i.e., “Social Capital) to enhance “Knowledge Use.”

“Alignment with Ministry Context” or the presence of a broader public health movement (largely legitimized by Ministry backing) also powerfully shaped the construction of a CoP identity. An understanding of Ministry “*philosophy*” with respect to the CoP topic area as well as Ministry mandates and priorities strongly shaped what the CoP’s “Common Purpose/Goal” should be and if that philosophy was known, made clear to members ‘who we are’ as a CoP. Additionally, when the “Common Purpose/Goal” of a CoP “*aligned with*” philosophies, mandates and/or priorities of the Ministry or broader movements that they supported and was backed by “Resources” and in particular “Funding,” member “Participation,” “Networking”

“Linkages and Partnering” (i.e., “Social Capital”) and “Knowledge Use” around that “Common Purpose/Goal” increased. Such alignment also helped to build capacity and consistency around the CoP topic area and more broadly:

“You’re all of a sudden in a situation where you can borrow content and information from others. For example, (type of resource) that was developed by others from across the province, some of the wording has been adopted and that exchange really assists groups in getting their message clear and also ensuring that the message is fairly consistent across the province” (L: Inter KU, TCAN; p. 5).

In contrast, lack of Ministry mandates and priorities around the CoP topic area challenged members’ ability to discern what their “Common Purpose/Goal” was and in turn ‘who we are’ as a CoP. This in turn constrained the ability for members to engage in “Knowledge Use,” particularly instrumental types.

“Alignment with Organizational Context” and more specifically, organizational or work philosophies, priorities or the particular needs of the communities or populations that member’s organization serve (i.e., “Local Community Needs”) also strongly and directly shaped members’ understandings of ‘who we are’ as a CoP. This is evident in this illustrative quote:

“what comes to mind when I think about the CoP is that it’s sort of split into domains. I think we’re about (CoP topic area) and within that some community members have been really focused on (implementing a specific type of activity) in (specific contexts)...Then there’s the other members who are pushing to have (another type of activity implemented) in (specific contexts)...the whole public health unit model...people within their own community have to identify their own priorities and opportunities and this has shaped the different areas that our CoP focuses on” (K: Inter KU, Research; p. 21-22).

Shared understanding of ‘who we are’ was also found to directly shape the focus and types of “Information/Knowledge” that circulated within the CoPs and dominated CoP discussions. When CoP “Information/Knowledge” aligned with the “*philosophies*” or “*information needs*” of the organizations or specific divisions within the organization that members represented on their CoP (“External Context: Alignment with Organizational Context), this increased the relevance of CoP “Information/Knowledge,” which increased member interest

and participation in the CoP and the likelihood of members using that knowledge in either conceptual or instrumental ways (Recall Section 6.8.2: Other Factors). When “Shared Identity” did not align with the philosophies, culture or priorities of other nested configurations in the external landscape that the CoP was embedded, “Deliberate Non-Use” of CoP knowledge was more likely to occur. The issue of alignment (alignment being a term used by members) was illustrated by the following quote in which an initiative was presented for potential use by other local public health agencies:

“Using bars and nightclubs could be problematic. It is a good venue to reach (a specific audience), but those venues promote partying and the use of alcohol which goes against the philosophies and goals of other departments within public health....this initiative would not ‘sit well’ with a lot of health promoters” (CoP A Recorded Meeting, December 2010; p. 10).

Additional factors played into the relationships between “Shared Identity” and “Knowledge Use.” One of these factors is the branch “Member Identification / Sense of Belonging, which will be described next.

6.8.5 Member Identification / Sense of Belonging

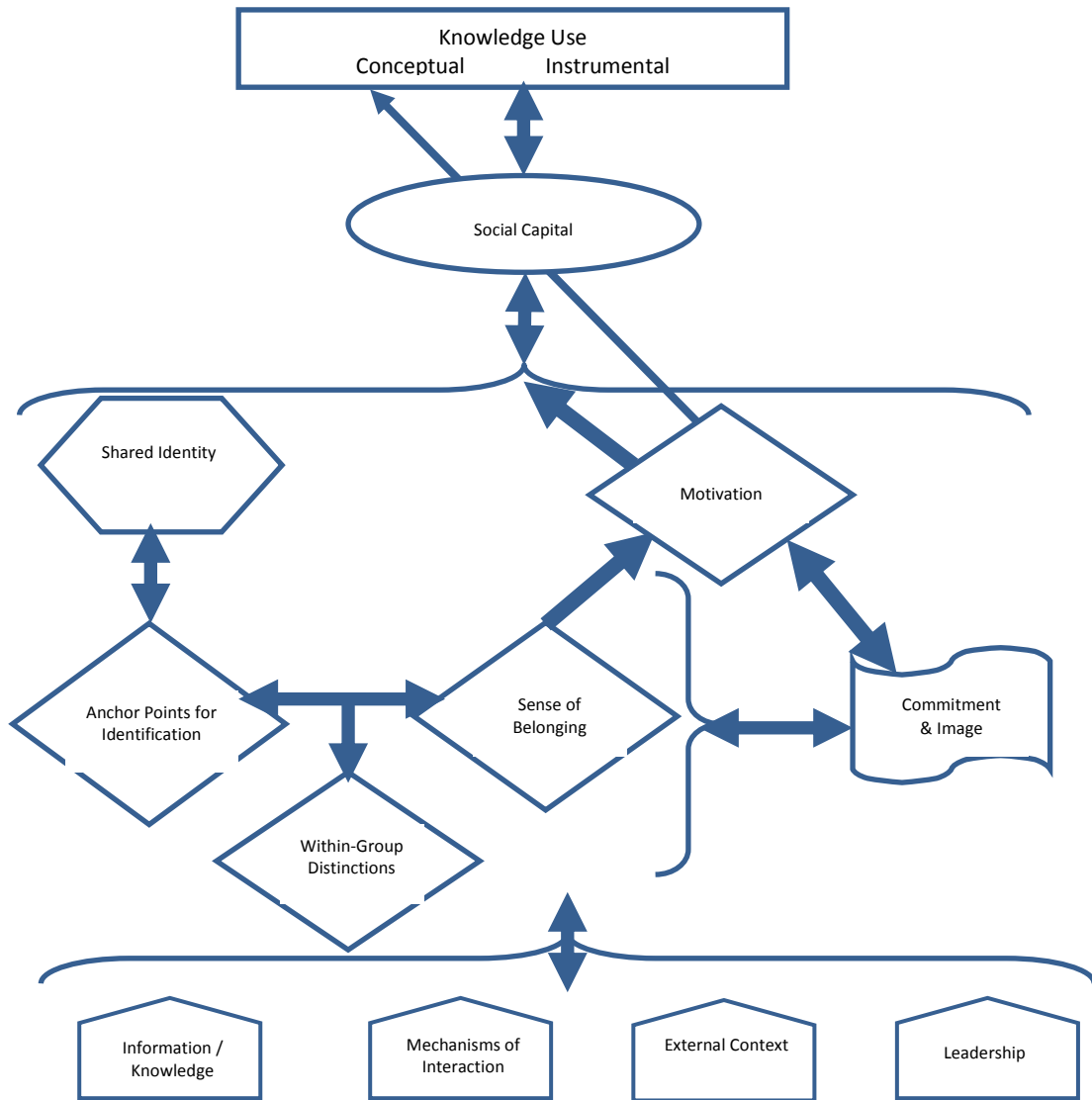
The branch “Member Identification/Sense of Belonging” reflects whether members identify with / feel a sense of belonging to the CoP and what it is about the CoP that they identify with. The branch “Member Identification/Sense of Belonging” is made up of four sub-branches.

1. “Sense of Belonging,” which encompasses what members said about their sense of belonging to the CoP and includes the twigs “Degree of Belonging” and “Importance” (Note, this twig will be discussed when describing its relationships to the branch “Social Capital” and other factors of interest)
2. Within-Group Distinctions,” which reflects perceived differences between members of a CoP and includes the twigs “Core and Peripheral” (i.e., the spectrum of participation from core members, active members and those who participate less) and “Sectors;”
3. Anchor Points for Identification,” which reflects the characteristics or attributes about the CoP that resonates with member priorities, values or sense of self and attracts them to the CoP; and

4. “Motivation,” which reflects what members experienced when an aspect of the CoP overlapped with priorities or values that were important to them (“Anchor Points for Identification”) and the “Sense of Belonging” that resulted.

Figure 9 summarizes the relationships that emerged between the sub-branches that comprise the branch “Member Identification / Sense of Belonging,” the relationship between “Member Identification / Sense of Belonging,” “Shared Identity” and “Knowledge Use” and the role of “Social Capital,” “Other Factors” and “Image and Commitment” (including Construed External Image and Commitment) with respect to these relationships.

Figure 9 Member Identification / Sense of Belonging Relationship with Knowledge Use



Recall from Section 2: Literature Review, that in the organizational identification literature, members identify with a social group because something about it resonates with what they value or is important to them, who they are as a person and / or what they aspire to become. The literature also suggests that what attract members to a social group often become the anchor points with which members identify (Kreiner et al., 2004). When members identify with a social group, it creates a “psychological entwinement” or a “Sense of Belonging” to that group because a part of their personal identity is defined by the identity of the social group. Consequently, individuals who identify with a social group will take actions that ensure the success of their group and in turn enhance their self-esteem (Ashforth et al., 1989). The findings in this study share consistencies with this literature. To properly explain these consistencies requires beginning with a discussion of the relationships that emerged between the branches “Shared Identity” and “Member Identification / Sense of Belonging,” and the influence this had on members’ “Commitment” to the CoP and their “Motivation” to engage in prosocial behaviours that contribute to “Social Capital” as depicted in Figure 9. How “Other Factors” play into these relationships will be weaved into these discussions where appropriate.

Recall that a “Shared Identity” reflects shared understandings of ‘who we are’ as a CoP. A strong and reinforcing relationship was found between “Shared Identity” and “Member Identification / Sense of Belonging” as depicted in Figure 9 by the thick, solid and bi-directional arrows between the sub-branches that comprise “Member Identification / Sense of Belonging” (i.e., “Anchor Points for Member Identification,” “Within-Group Distinctions,” and “Sense of Belonging”). Members were asked to provide characteristics that they felt best described their CoP’s identity (i.e., “Core Attributes that Define the CoP” and “CoP Distinctiveness). Similarities were found among members with respect to the identity attributes they used to define ‘who we are’ as a CoP. These identity attributes influenced the branch “Member Identification /

Sense of Belonging” by serving as “Anchor Points for member identification. More specifically, the ‘core’ and/or ‘distinctive’ attributes that members used to define their CoP were often what members said was important to them, such as their priorities and values. These identity attributes were often what attracted members to the CoP and why they felt some degree of belonging to the CoP. For instance, a common attribute that members used to define their CoPs was a “Common Purpose/Goal.” The presence (or lack of) a “Shared Identity” that is oriented around a “Common Purpose/Goal” became an “Anchor Point for Identification” and was often identified as the reason for the varying degrees of member identification / “Sense of Belonging” that members reported experiencing in relation to the CoPs. A common pattern was that the presence of a “Common Purpose/Goal” contributed to member identification / “Sense of Belonging” while its absence detracted a bit from member’s identification with/sense of belonging to the CoP. Having a “Common Purpose/Goal” that members identify with was said to help attract prospective members to the CoP and bolstered “Motivation” for current members to “Participate:”

“A common purpose definitely helps with building a sense of belonging to the group as well as a reason to attend meetings.” (C: Inter KU, TCAN; p. 33)

... If you can catch people with what they’re interested in or passionate about, they’re likely to be much more involved” (A: Lower KU, NGO; p. 19).

Recall in Section 6.8.4: Shared Identity that a “Common Purpose/Goal” gave members something to commit to (i.e., “Commitment”), which made members accountable to the CoP and its work (i.e., “Accountability”). These experiences in turn contributed to members’ “Motivation” to help other members out (“Reciprocity”) in relation to their work and practice area and this in turn contributed to “Knowledge Use.” Further analyses also revealed that “Shared Identity” influenced “Commitment” (“Commitment and Image”) through “Member Identification / Sense of Belonging.” In fact, “Member Identification / Sense of Belonging” had a strong and direct influence on “Commitment” and vice-versa as depicted in Figure 9 by the thick, solid and bi-directional arrow between them. For instance, a “Common Purpose/Goal” influenced the

development of member “Commitment” to the CoP and its work by providing an anchor point for identification and belonging. Stated differently, when a common purpose/goal existed and it resonated with what members deemed to be important or valued, then they were more likely to identify with that common purpose/goal, feel a sense of belonging to the CoP because members “...are *in it for the same reasons*” (E: Higher KU, Research; p. 31) and this gave rise to their “Commitment” and the subsequent chain of relationships described above. Recall also that these relationships strengthened when the “Common Purpose/Goal” aligned with the mandates and priorities of the nested configurations in the “External Context” (i.e., the sub-branches “Alignment with Ministry Context” and “Alignment with Organizational Context”).

Additionally, some of the ‘core’ and ‘distinctive’ identity attributes that members used to define ‘who we are’ as a CoP also influenced member perceptions regarding the presence of “Within-Group Distinctions” in the CoP. A common finding across both CoPs was that members who largely represented the local public health agency sector defined their CoP as “*inclusive*” of diverse members and for the most part did not recognize distinctions among members within the CoP based on “Sector.” However, the members that represented a sector other than local public health (e.g., research, NGO) defined their CoP as “*very local public health focused*.” Although not always a consistent pattern across the CoP’s (see Appendix 10a and 10b and Section 7.0: Discussion), for some of these non-local public health sector members such perceptions detracted from their identification with / sense of belonging to the CoP. One key reason that emerged to explain this finding pertained to the “Other Factors” and more specifically, the “Information/Knowledge” of focus within the CoP.

The “Information/Knowledge” that the CoPs paid most attention to was another common “Core Attribute that Defines the CoP” and served as an “Anchor Point for Identification” (or not). Recall from Section 6.8.4: Shared Identity, shared understandings of ‘who we are’ as a CoP (which was reflected in the ‘core’ and ‘distinctive’ attributes that members said defined their

CoP) strongly and directly shaped the focus and types of “Information/Knowledge” that were emphasized within the CoP. Since the CoPs truly were local public health agency focused, the “Information/Knowledge” that was discussed within the CoPs was also strongly oriented towards the needs of this sector, but did not always address the needs of other sectors at the table. Consequently, for some of these members that represented another sector, this detracted from their “Sense of Belonging” and for a few their “Motivation” to participate in the CoP and make use of CoP knowledge. The impact of “Within-Group Distinctions” based on Sector on “Knowledge Use” was not consistent and will be explicated further in thick descriptions of CoP A and CoP B (Appendix 10a and 10b, respectively) and in Section 7.0: Discussion.

Members that came from the *same* “Sector” also identified more (“Anchor Points for Identification”) / experienced a greater “Sense of Belonging” as depicted here:

“...All of us who work in public health...I mean, we mainly come from that sector so we do have that connection. Some are public health nurses, some are health promoters or managers, but we all understand the public health unit mandate, we understand the changes that have occurred around chronic disease prevention and how public health works and that’s a key component (to feeling a sense of belonging) because it’s a lot easier to understand one another and the ‘how-to’ when you have that background” (L: Inter KU, TCAN; p. 24)

Such similarities contributed to “Knowledge Use” by members feeling a sense of “Comfort” (“Social Capital”) to share what they know. Additionally, members who represented other sectors (e.g., NGO, research) also discussed how commonalities with people from their own sector created a greater “Sense of Belonging.” Similarities in experiences (e.g., knowing that others had encountered the same challenges or barriers) or members who dealt with the same type of setting/context (e.g., members providing programs and services to rural communities) contributed to member identification/sense of belonging, and led to increased knowledge use as illustrated here:

“There’s been some different members that I’ve made contact with and have worked with on projects that come from rural areas. There’s not many of us that kind of live in the rural

areas. So that has been a little bit more of a bond...I've shared a lot of information with them and certainly gotten a lot of information from them...and (while) all of the knowledge that I hear or gain (from the CoP) is great, (the rural information) is much more beneficial to me than others" (H: Lower KU; LPHA; p. 48).

Despite these findings (i.e., that distinctions based on sector or other and similarities shared among members of these different groups within the CoP impacted sense of belonging and knowledge use), there was a also general trend where all members in the CoP learned from others in the CoP although the extent to which instrumental uses occurred varied. Note that learning from others was enabled through "Other Factors" such as through structured time for "Practice Sharing" ("Mechanism of Interaction: Practice Sharing") and helped members from different sectors gain a better appreciation for the challenges they encountered.

Recall that knowledge sharing was another common identity attribute members used to define their CoPs. However, members commented that not all members were sharing that there were differences in terms of "Core and Peripheral" members. "Other Factors" such as "Alignment with Organizational Context" and more specifically the percentage of time members spent working on the CoP topic area (i.e., Work, Roles and Responsibilities") and "Level of Experience" that members themselves or the organizations they represented possessed was said to be a major factor that contributed to which members became "Core and Peripheral" members.

Core members regularly attended meetings, were important knowledge sources for the CoP and as such engaged in "Practice Sharing" ("Other Factors: Mechanism of Interaction"), contributed to CoP discussions and facilitated the functioning of the CoP (e.g., Co-Chairs fell within the sphere of core members). They were also said to identify with / experience a stronger "Sense of Belonging" to the CoP and to have developed greater "Social Capital" because of the connections and relationships they shared with one another as well as other members. Active members were another set of members that weren't necessarily the most visible members, but did regularly attend meetings and contributed to discussions when needed or desired. Peripheral

members were less visible during meetings and were often described as “*lurkers*” that came to “*listen*” rather than contribute through “Practice Sharing.” *Lurkers* were also perceived to weakly identify with / experience less of a “Sense of Belonging” to the CoP and had cultivated less “Social Capital” in terms of the connections and relationships they had developed with other members.

Although not a consistent pattern, these perceptions were confirmed by some of the self-identified peripheral members who were interviewed. These members noted that they sat at the periphery either because the CoP information/knowledge did not always meet their needs (as described earlier) or because of their own or their work organization’s level of experience in or level of readiness to address the CoP topic area (these issues will be discussed later in this section). Peripheral members who reported weaker identification / belonging to the CoP, however, commonly stated that they appreciated the flexibility the CoP offered in terms of participation because it allowed them to stay connected to the CoP and attend when there was something on the agenda (i.e., Information / Knowledge”) that interested them. “Mechanisms of Interactions” and more specifically each CoP’s online knowledge repository called “WebEx” was identified by peripheral members who felt less “Sense of Belonging” to the CoP as an important way to stay connected to the CoP and access information if it proved relevant to their needs.

Member Identification/Sense of Belonging, Shared Identity, Commitment and Knowledge Use

Some insights into how “Member Identification / Sense of Belonging” influenced “Knowledge Use” were given above. This section elaborates on this relationship. Overall, “Member Identification / Sense of Belonging” had a direct but less strong relationship with “Knowledge Use” because it primarily influenced conceptual types of knowledge use. Figure 9 depicts this relationship with a thin, solid arrow. A relationship between this branch and “Instrumental Knowledge Use” did not surface. This may have been a function of one having to

link or quantify a perception of belonging to actual instances of tangible knowledge use.

“Member identification / Sense of Belonging” was instead said to make the use of CoP knowledge into one’s work automatic and something that they didn’t much think about.

However, relationships were found whereby “Member Identification / Sense of Belonging” influenced “Knowledge Use” through its relationships with a “Shared Identity” and “Commitment.” A common finding was that shared understandings of ‘who we are’ as a CoP meant that members identified with the same cause and being in it for the same reasons created a “Sense of Belonging.” Stated differently, “Shared Identity” formed an anchor point for member identification (“Anchor Point for Identification”) and consequently “Sense of Belonging.” This in turn bolstered member’s personal confidence (i.e., “Leadership: Individual Initiative”) to use CoP knowledge: “*because I trust that...the whole group is working towards the same goal*” (H: Lower KU, LPHA; p. 40) (i.e., “Cognitive Social Capital”). Others elaborated on why this is:

“Conceptually, (a sense of belonging) makes you feel stronger in what you’re doing because you’re not doing it alone. You know there’s that...strength and collectivity in the work that you’re doing. So I think in the background of how you think and approach your work, (a sense of belonging) strengthens it” (E: Higher KU, Research; p. 46).

A sense of belonging was described to inspire “Commitment” and motivate (“Motivation”) members to use CoP knowledge in conceptual ways. The following quotes describe these relationships:

“If I was sitting as an outsider, you know, I wouldn’t be sharing as much. So, if I’m part of the group then I’m more invested and more helpful and more involved. It’s Yours. You’re a part of it” (G: Higher KU, LPHA, Co-Chair; p. 46).

“Well, I think if people feel like they belong, it helps them get more value out of the experience, and if they’re getting more value out of the experience, then they’re probably more likely to take the information and use it or share it. I think that certainly, we’ve all been in (groups) that we didn’t feel connected to...and they shared information and you might have wrote it down but in your busy day it kind of got forgotten. But, if you’re involved in something that you felt connected with and motivated by, then you’re more apt to take that information and put it at the top of your list as something you’re going to share...(and I have used CoP knowledge because of this)” (D: Inter KU, LPHA; p. 25).

Member Identification/Sense of Belonging, Social Capital and Knowledge Use

“Member Identification/Sense of Belonging” also helped to explain what motivated members to interact with co-members and help them out in ways that facilitated “Knowledge Use.” A “Sense of Belonging” generated two types of “Commitment,” either it made members *want to* participate or they felt they *ought to* participate. Both types generated a sense of “Accountability” (i.e., Structural Social Capital) that enhanced member’s receptivity to help one another out (“Cognitive Social Capital: Reciprocity”) in ways that influenced “Knowledge Use” as depicted in this illustrative quote:

(Regarding feeling a sense of belonging to the CoP) *“I think that if I found information that would benefit either one of my programs in terms of (the CoP topic area) that I hadn’t found through the Community of Practice, I would still use it. But my next instinct would be to share it with members”* (H: Lower KU, LPHA; p.47).

A “Sense of Belonging” also influenced “Social Capital” in other ways that in turn impacted “Knowledge Use.” For instance, a “Sense of Belonging” cultivated (mainly for those with intermediate and higher levels of knowledge use) the sense of having the collective backing of members. These perceptions helped members to feel connected, which made them value and “Trust” (“Cognitive Social Capital”) one another and as such turned to them for information and help. While most people said they would use CoP knowledge regardless if they experienced a sense of belonging, members (typically those with intermediate and higher levels of knowledge use and more strongly identified with the CoP) said something similar to this quote:

“Feeling like you belong I think is extremely important, from a trust perspective and knowing that the information that you’re using is coming from a reliable source. If you don’t have a sense of belonging and understand who the membership of the group is and what their experience is and where they come from, then why would you use what they’re saying?” (F: Higher KU, LPHA, Co-Chair; p. 22).

Both a “Sense of Belonging” as well as the experience of “Trust” gave rise to a sense of “Comfort,” which influenced “Networking, Relationships and Familiarity” and members contacting one another to access information from other members. “Sense of Belonging” also

made members feel like they were recognized by co-members as valuable contributors to the CoP (“Respect and Recognition”), which made them feel productive (“Individual Initiative: Personal Outcome”) and motivated their continued participation and sharing of knowledge. However, a few members who were TCAN Representatives or had lower levels of knowledge use cautioned that strong member identification / sense of belonging can create a situation where the CoP becomes:

“exclusive in a way, and then I think that limits the kind of knowledge exchangeability of the group...I think...the more people on the community the better to be able to gather as much information as possible (C: Inter KU, TCAN; p. 25).

Factors that Influenced Member Identification/Sense of Belonging and its Relationship with Knowledge Use

“Other Factors” had a strong relationship with “Member Identification / Sense of Belonging”) because it provided certain conditions that contributed to the development or strengthening members’ sense of belonging and its relationship with “Knowledge Use.” Being a part of “The CoP” (“Mechanisms of Interaction: Medium of Interaction”) in and of itself contributed to member identification/a sense of belonging. However, “Social Capital,” and more specifically, the relationships members developed (“Structural Social Capital: Networking, Relationships and Familiarity”) and member’s willingness to help one another out (“Cognitive Social Capital: Reciprocity”) were critical ingredients that cultivated or strengthened a “Sense of Belonging.”

“(When) you have a relationship with people around the table, you’ve called them and got information from them, you’ve shared stuff with them, they’ve helped you out with different things and you come together....once you get to know people a little bit better, it helps build that sense of belonging...and the excitement of getting together with people” (D: Inter KU, LPHA; 24).

Members with intermediate and higher levels of knowledge use described why a sense of belonging was important particularly in a distributed CoP that was made up of diverse members and that developing relationships were critical to cultivating that experience as illustrated here:

“...it's an important thing to me to feel a part of this (CoP). Because it's based on teleconferences and WebEx spaces it's difficult to be engaged with that if you don't have some kind of...relationship with the people that are involved. Because we all are busy in our day-to-day with other things, the CoP is something that, you know, is sort of on top of all that. So, because it's such a difficult medium to work with, I think that there has to be more interest and relationships help build that comfort of feeling a part of the group. (These are things that) I think definitely lend to a better experience...(The CoP is also made up of members from) “completely different areas and regions and completely different backgrounds so establishing relationships and feeling that comfort of belonging is important if (this CoP is) going to work” (G: Higher KU, Co-Chair; p. 25).

Although not a consistent pattern, some members with lower levels of knowledge use indicated that the limited relationships they developed detracted from their sense of belonging and propensity to use CoP knowledge (“Knowledge Use”):

“I don't really feel a strong sense of belonging (because) ...I haven't really developed a lot of relationships. I also don't interact as much with them. Like, I don't contribute (to discussions) in the way that I might in another group...and I've used very little of the information shared here...” (A: Lower KU, NGO; p. 20).

Some of the “Other Factors” also served as member’s anchor points for member identification / sense of belonging and its influence on “Knowledge Use.” Assuming a “Leadership” position and more specifically the “LEARN Co-Chair” role led to a strong “Sense of Belonging” because these members interacted more with a greater range of members (“Structural Social Capital: Networking, Relationships and Familiarity”), experienced a strong sense of productivity (“Leadership: Personal Outcome”) by contributing in a leadership way to the CoP and had higher levels of knowledge use. LEARN Co-chairs also reported the most positive experiences with the CoP. Stepping down from the Co-Chair position detracted from these members “Sense of Belonging” as noted in this illustrative quote:

“I would say that I did (feel a sense of belonging) when I was co-chair. Now that I'm not and there are things that I cannot participate in, I don't feel quite as much like I belong.” (F: Higher KU; LPHA, Co-Chair; p. 21).

Members “that are incredibly passionate about (the CoP topic area)” (L: Lower KU, LPHA, p. 56) were described as members who experienced a strong “Sense of Belonging” and more actively participated, shared their work and contributed to CoP discussions.

External Context” such as ministry mandates and high workloads led to “Time constraints” (“Alignment with Organizational Context”) that limited some member’s ability to actively participate in the CoP and consequently detracted from a “Sense of Belonging.”

“Mechanisms of Interaction,” including “Practice Sharing,” “In-Person Meetings,” “Working Groups” and the “Frequency of Interactions” were also important facilitators of a “Sense of Belonging.” Engaging with others around their common topic area and sharing experiences through “Practice Sharing” or through interactions during meetings or in working groups also shaped a “Sense of Belonging” because it made members more aware of their commonalities. The role of shared experiences was described earlier when discussing “Within-Group Distinctions.”

Similar to the impact that “In-person Meetings” and “Working Groups” had on Social Capital (see Section 6.8.3: Social Capital), seeing members face-to-face familiarized members, helped to break down barriers that might exacerbate “Within-Group Distinctions” and made members “*feel accepted*” and “*feel a part of the group*.” The “Frequency of Interaction” also contributed to the above experiences. Regular meetings via teleconference (once per month at the time of the study) and in particular attending the bi-annual “In-person Meetings” kept members connected and reinforced the sense of “commonality” that maintained or strengthened a “Sense of Belonging.” Infrequent interaction detracted from a “Sense of Belonging.” Findings that relate to this will be elaborated in conjunction with an external contextual influencing factor, “Alignment with Organizational Context.”

A common ‘core’ attribute that members used to define ‘who we are’ as a CoP was that

the CoP aligned with their organizational or work priorities (“Alignment with Organizational Context”). This identity attribute had actually detracted from member identification/the strength of belonging that members felt for their CoP because they felt a stronger sense of belonging to their work organization (i.e., “External Context: Organizational Context”). While varying levels of belonging to the CoP were found (low as was sometimes the case of members with lower levels of knowledge use and high as in the case of LEARN co-chairs), a majority of members said they felt a neutral sense of belonging to the CoP. TCAN representatives were most vocal about this as illustrated in the following quote:

“(I am) neutral (regarding a sense of belonging). Like, technically I’m a member of it, but I’m not sure if we meet regularly enough to have that sense of identity and we’re made up of such different individuals that it’s kind of harder. Like, I identify more with the group that I meet with weekly ...we all do the same job and there’s only seven of us in Ontario so I feel that’s easier to identify with, to have a sense of belonging versus the Community of Practice” (C: Inter KU, TCAN; p. 24-25).

A stronger “Sense of Belonging” to one’s work organization and more specifically one’s work role however, was beneficial in terms of members using CoP knowledge. The same relationships outlined in Figure 9 hold regardless of whether members felt a “Sense of Belonging” to their CoP, their work organization or their job role. Identifying with /experiencing a sense of belonging to one’s work gave rise to members “Commitment” to their work organization, made them more “Accountable” (i.e., “Social Capital”) to their work roles and responsibilities, which led to members using CoP knowledge in their work:

“My role at work is to help support health units in their initiatives. So my main role is to liaise with the local agencies and provide some of the LEARN backgrounders, providing some of the evidence and the reports and reporting at their meetingsIt’s essential that groups and partners locally here in this region capture the CoP info, and during our monthly or even our weekly get-togethers, whether it’s local or regional meetings, we obviously have this (the CoP) as a standing agenda item” (L: Inter KU, TCAN; p. 12).

A strong “Sense of Belonging” to one’s organization also had implications for “Construed External Image” (“Image and Commitment”) as well as “Knowledge Use” through “Practice Sharing.” To feel a “Sense of Belonging” to one’s work organization and serve as a

representative of one's organization or TCAN region led to a "...*feeling (of) pride*" and this increased member "Motivation" to speak up and share with the CoP their organization or TCAN region's progress around the CoP topic area. Recall that being recognized and even celebrated ("Social Capital: Recognition and Respect") for the work they have done and shared in the CoP bolstered member's sense of productivity and "Commitment" to the CoP ("Leadership: Individual Initiative: Personal Outcome"). Being recognized by CoP members for the work done or progress made by one's work organization with respect to the topic area also strengthened member's sense of pride and their perceptions of the positive distinctiveness of their organization ("Shared Identity: Distinctiveness"). The next section examines "Psychological Safety," its influence on "Knowledge Use" and the role that "Shared Identity," "Member Identification/Sense of Belonging" and "Other Factors" play.

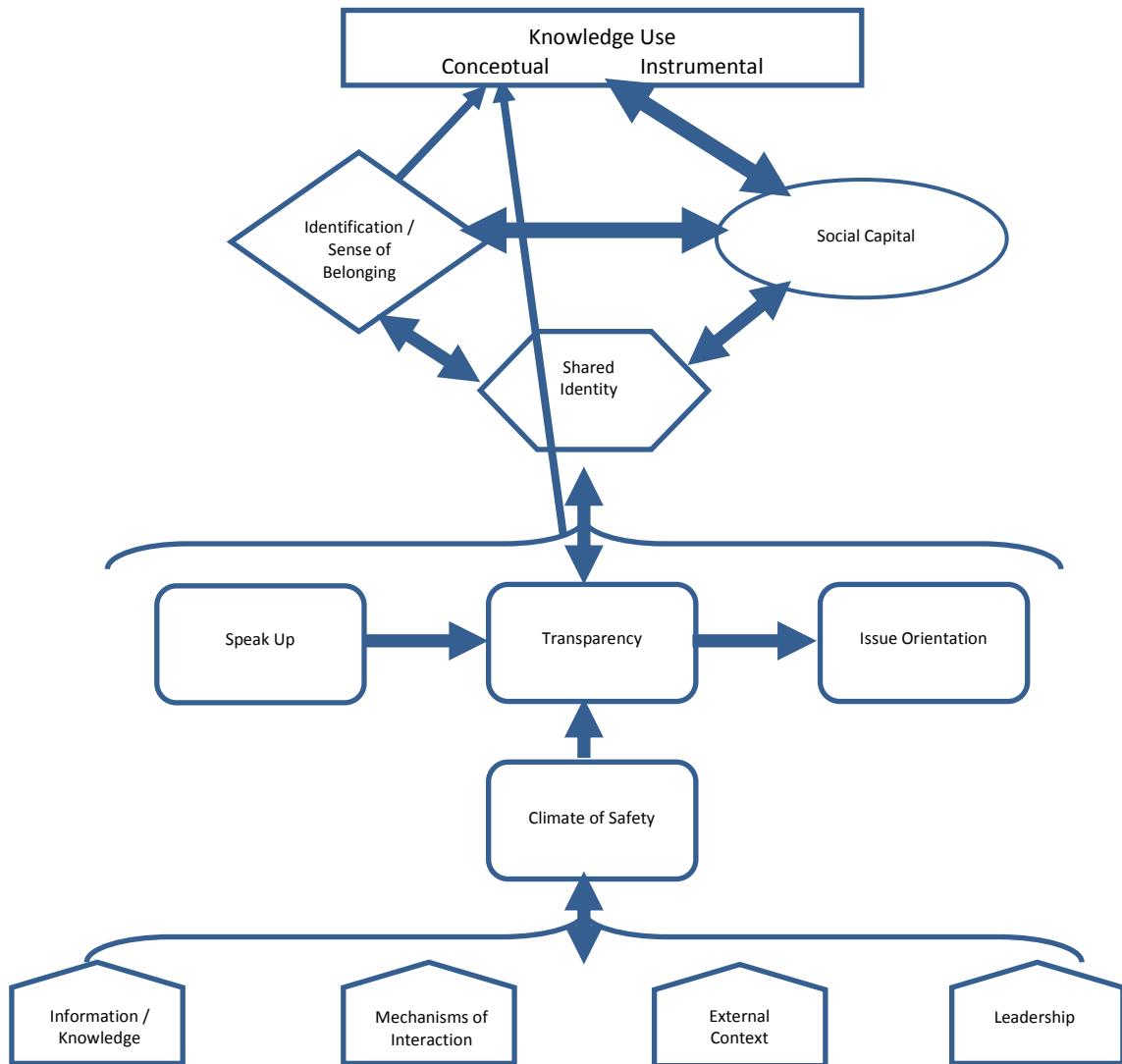
6.8.6 Psychological Safety and Speaking Up

Psychological safety exists when members of a social group / organization feel safe to take interpersonal risks (e.g., they feel safe to make errors and speak up to honestly discuss what they think and how they feel) without excessive fear of co-member reactions (Edmondson, 1999). The branch "Psychological Safety and Speaking Up" is comprised of the following sub-branches:

1. "Climate of Safety," which describes member's belief that their CoP is conducive to psychological safety and includes the twigs 'Feeling Safe,' the presence or absence of 'Power Dynamics' and, an 'Openness' to share sensitive information, unorthodox ideas and / or different perspectives;
2. "Speak Up" which reflects member's propensity to speak up and contribute thoughts, ideas and information in the CoP. "Speak Up" may or may not be related to "Climate of Safety."
3. "Transparency" which reflects member's propensity to expose the methods or approach used to carry out an initiative, openness to obtain member feedback and openness to be questioned or challenged; and
4. "Issue Orientation" which reflects focusing on the information or issues that are being discussed and questioning or challenging others regardless of their social status/position.

These sub-branches inter-related with one another, influenced “Knowledge Use” and were influenced by a range of factors discussed already in the study. These relationships are depicted in Figure 10 and described below. Different shapes are used to represent a branch and its respective sub-branches. For instance, the rounded rectangular shape represents the sub-branches that comprise “Psychological Safety and Speaking Up.”

Figure 10 Psychological Safety's Relationship with Knowledge Use



To summarize Figure 10, strong relationships, depicted by direct, thick arrows, were found between sub-branches that comprised “Psychological Safety and Speaking Up.” A “Climate of Safety” rendered members “*more open to new ideas*” and influenced each of the other sub-branches of “Psychological Safety and Speaking Up.” Specifically, a “Climate of Safety” created an environment where members felt safe (or not) to “Speak Up” to share what they know in the CoP or to ask questions of others; to make transparent the approaches they used in the initiatives that they shared, be open to co-member constructive feedback and questions (“Transparency”); as well as to question or challenge the information that other members share regardless of the status of the source of that information (“Issue Orientation”). A relationship between “Transparency” and “Speak Up” also emerged. An openness to expose one’s methods for purposes of obtaining feedback from others facilitated member’s propensity to “Speak Up” to share their experiences and ideas. Having structured time for “Practice Sharing” (“Other Factors: Mechanism of Interaction”) provided a space for such transactions to occur.

“I notice that with presentations (that members make), people are always asking them about, you know, their evaluation or their methods or things like—people seem to be really open about being asked about that” (J: Inter KU, LPHA p.24).

However, members reported a greater tendency to “Speak Up” when a fellow member requested their input:

“Oh, they were presenting (their work) in order to get feedback. They seek the feedback from the group so we felt very free to say ‘how do you expect to do that?’ and ‘well, if you’re going to go out and do this survey, you need to do this, you need to do that. They were calling on our experiences. It was very appropriate” (E: Higher KU, Research; p. 51).

“Issue Orientation” was influenced by a “Climate of Safety” (as already stated above) as well as the presence of “Transparency.” When members felt that it was safe for them to express their perspectives in their CoP and when other members asked for feedback as the above quote illustrated, members were more likely to ask questions. Such experiences taken together also

influenced “Knowledge Use.” Often members who presented their work for feedback made transparent what they had planned or had completed-to-date with respect to a project or initiative, described how they approached the work, problems encountered, and/or asked questions on how to move forward with some aspect of their initiative. Through this process, other members reported becoming aware of certain issues and / or learning something new. It also generated iterative discussions that encompassed how knowledge might be applied in practice (i.e., “Instrumental Knowledge Use”). In providing feedback, some members questioned the presenter on the methods employed, which led to further discussions about why that approach was used in their particular context. Members also shared their own experiences and lessons learned that might inform the presenter’s work, which led to discussions as evidenced in the following quotes from meeting minutes:

“(Name of health unit) is launching a (name of a campaign) and was wondering how to engage and involve (target population) in this campaign. Members were asked if they had ever involved (target population) in (specific type of campaign, how they were involved and ideas to engage and involve them.” (CoP A: Meeting Minutes, August 2010). Four different health units spoke up to share their experiences during these discussions.

There were also instances of presentations on knowledge products that were being developed or were developed between members. For instance, a local public health practitioner

“gave a presentation on an awareness resource being developed by (name of health unit) in conjunction with (a researcher on the CoP) to address the risks of (a particular type of tobacco use) that was relevant to the (CoP A topic area)” The presenter asked “CoP members for their input on the resource,” which generated much discussion.” (Minutes, August 2010).

Thus, when members did “Speak Up” to share their practices (often captured in data sources as occurring during structured time for “Practice Sharing” (“Other Factors: Mechanism of Interaction”) or “Working Groups” (“Other Factors: Mechanism of Interaction”) and were transparent about the approaches they used in their work, this stimulated a process of iterative exchange where members shared what they know, engaged in story telling (i.e., stories about

their own experiences as relevant to other's practices), combined and synthesized different types of information and at times worked together as a CoP or with a subset of members to generate practice-based research or develop practice-relevant toolkits and resources. Recorded meetings captured these processes. Incremental learning (or learning how to do things better) emerged as a result of these processes. Some instances were found where members who did speak up to share their work reported using the feedback co-members provided to inform adjustments in their approaches ("Instrumental Knowledge Use"). More 'radical' types of learning (e.g., discussing or experimenting with unorthodox ideas) was said to occur less frequently in the CoPs. Most members indicated that when members "Speak Up" they tend to share initiatives or campaigns – *"things that (members have) done, best practices, what worked for us, but not really 'hey here's a crazy idea' and kind of flesh it out or brainstorm around it"* (B: Lower KU, LPHA; p. 27). There isn't really much *"thinking outside the box..."* (L: Inter KU, TCAN; p. 36).

"Transparency" also primarily occurred when the initiative that a member was working on had reached a certain level of development. As one example, Co-Chairs asked a member to speak about her work, but the request was declined, limiting knowledge use with the following explanation: *"the project isn't quite ready to present to the group at this point"* (CoP A: Meeting Minutes Nov, 2010). "External Context" and more specifically the "Culture" of the Ontario Local Public Health Tobacco Control Community emerged as an important contributor to this tendency within the CoPs as illustrated in these quotes:

"I mean we tend to want to provide problem-solving strategies, and I think we—not all of us have experience enough yet to be able to share that. And I think that's maybe what's lacking because we are so caught up sometimes in ensuring that we have all of our i's dotted and t's crossed and...because of that we tend to not be as maybe open to share information and to provide insight until we have everything completed and kind of approved by upper management..." (L: Inter KU, TCAN; p. 28).

"Transparency" was also linked to "Deliberate Non-Use" by providing members with information on whether or not CoP knowledge was useable from an "Alignment with

Organizational Context” standpoint. Members probed presenters about the methods used in promising program interventions with an emphasis on whether it had been evaluated. Non-evaluated initiatives were often not used. Recall from Section A: Other Factors, an evidence-based “Culture” (“External Context: Culture”) as well as organizational policies (External Context: “Organizational Context”) strongly influenced what CoP related knowledge was used or deliberately not used.

“Psychological Safety and Speaking Up” and its respective sub-branches influenced “Knowledge Use” by contributing to the development of different factors. Additionally, a number of factors also contributed to or detracted from the development of “Psychological Safety and Speaking Up” and its relationship with “Knowledge Use.” Some of these factors have been described above (e.g., “Practice Sharing,” and “Culture”). These and other factors will be elaborated below.

Members across different levels of knowledge use and sectors (even those who did not feel a particular strong sense of belonging to their CoP), indicated that “Member Identification / Sense of Belonging” and “Social Capital” worked hand-in-hand to cultivate “Psychological Safety and Speaking Up” and vice-versa and in ways that influenced “Knowledge Use.” Figure 10 depicts these relationships with thick, solid and bi-directional arrows between these branches.

An illustrative quote of this relationship follows:

“If you have strong connections and relationships and you really feel a strong sense of belonging... you’re much more willing to be open, to share information, to challenge, to have those frank discussions. Whereas if you don’t know somebody well, you don’t really want to do that” (A: Lower KU, NGO; p. 25).

Members who did not experience a sense of belonging to the CoP (often members with lower levels of knowledge use) confirmed what was said by the above quote and elaborated. According to these members, not feeling a particular sense of belonging and the lack of relationships they had developed detracted from their propensity to “Speak Up” (although “Other Factors” also

emerged as important reasons why this is for these and other members as will be described below). However, these members identified “WebEx” as critical to creating a “Climate of Safety” for people like them as described in the following illustrative quote:

“I think it’s important that people do feel like the CoP is a trusted and safe environment. Our online environment (WebEx) is somewhere we can post information ...give an update on a project and not feel like they’re going to be judged or criticized...” (B: Lower KU, LPHA; p. 29).

Members explained how “Networking, Relationships and Familiarity” (“Social Capital: Structural Social Capital” contributed to “Sense of Belonging:”

“...if you feel like you’re part of the group then you feel more familiar with the rest of the people in that group and this (makes it) more comfortable to speak up and provide your opinion, or any idea that you might have, and probably feel less maybe insecure about being objectified, or somebody, you know, not thinking that your idea is that great, or what you had to say is that important” (I: Low KU, LPHA; Co-Chair; p. 13).

Members across different levels of knowledge use (lower, intermediate and higher) further described that familiarity and in particular a sense of belonging created a sense of comfort because belonging made them feel like they had a voice in the CoP and thus a right to be speaking up. “Recognition and Respect” (“Social Capital: Cognitive Social Capital”) also made members feel that they are “*a significant part of the team*” and that their “*opinion is valued*” (N: Higher KU, LPHA; p. 24). “Comfort” in turn made it easier for members to “Speak Up,” to engage in “Transparency” or “Issue Orientation.” Members across levels of knowledge use and sector described members of their CoP as “*...very respectful of other people’s ideas and suggestions*” (i.e., “Social Capital: Cognitive Social Capital: Recognition and Respect” (D: Inter KU, LPHA; p. 11). “Recognition and Respect” in turn contributed to member’s sense of “Trust” that co-members would remain open to their contributions without backlash. Such experiences also made members feel safe to share sensitive or private information and trust that their requests to not have the information shared beyond the CoP. Meeting minutes and recorded meetings supported these comments. Members with intermediate to higher levels of knowledge use, had

assumed the LEARN Co-chair role and who were primarily from the local public health sector stressed that “Recognition and Respect” was “*one of the biggest things*” that enabled the development of “Comfort,” “Trust” and in turn “Psychological Safety.” Recall in Section B: Social Capital, being recognized and respected for one’s work not only made members feel a sense of belonging and a valued member of the CoP, but a “Productive” one at that, which had other benefits such as enhancing member “Commitment” to the CoP and “Motivation.” “Recognition and Respect” for other people and its consequent influence on “Psychological Safety” was said to be a part of the “Culture” of the Ontario public health community:

“...People are really respectful of how they ask their questions...and not be disrespectful to people...I think that’s (part of) working in public health, you always have the questions and people understand that’s always going to happen” (J: Inter KU, TCAN; p. 24).

“Psychological Safety and Speaking Up” also influenced “Social Capital.” A “Climate of Safety” was evident as members of different levels of knowledge use (but not necessarily sector – recall Section 6.8.5: Member Identification / Sense of Belonging) described their CoP as being inclusive of diverse opinions and perspectives. This climate in turn reinforced a sense of “Comfort” and “Trust” amongst members, feeding into the chain of relationships outlined above.

More specific to “Member Identification/Sense of Belonging,” the sub-branch “Within-Group Distinctions” also directly influenced “Psychological Safety and Speaking Up” by contributing to or detracting from “Issue Orientation” which had implications for conceptual types of “Knowledge Use.” Recall Section 6.8.5: “Member Identification/Sense of Belonging,” distinctions among members were attributed largely to “Sector” as well as members representing different levels of participation (“Core and Peripheral”). With respect to “Within-Group Distinctions based on “Sector” members commonly noted that they felt comfortable questioning the information others presented regardless who they were. However, there were a few comments that noted a general “*reticence*” among members to speak up when a Ministry representative

attended a meeting. However, a few instances also emerged that illustrated a sense of safety among a few members who felt safe to speak up and challenge a Ministry representative on the processes they were relating to an initiative they were implementing (“Issue Orientation”) as illustrated here:

“I have said things with the Ministry there that I think to myself afterwards, ‘well, maybe I shouldn’t have been quite so forthcoming.’ But, c’est la vie, that’s how I felt” (F: Higher KU, LPHA; p. 28).

Recall in Section D: “Member Identification/Sense of Belonging” that distinctions amongst members also emerged based on those who were more active within the CoP (i.e., Core members) versus those who were less active (i.e., Peripheral members or “*lurkers*”). A common theme was that getting members, and particularly peripheral members, to “Speak Up” during discussions was like “*pulling teeth*” (G: Higher KU, LPHA, Co-Chair, p. 24). While a “Climate of Safety” was acknowledged as important to have in order to enable a sense of safety to speak up, engage in “Transparency” and “Issue Orientation,” members commonly felt that “Other Factors” were more at play. Specifically, “Other Factors” emerged as providing conditions that strongly enabled or constrained “Psychological Safety and Speaking Up” and its relationship with “Knowledge Use.” Figure 10 illustrates “Other Factor’s relationship with a thick, solid arrow. For instance, “Work Roles and Responsibilities” (“External Context: Alignment with Organizational Context”) was a common explanation for peripheral members speaking up less frequently than more active members. Members who spent a greater percentage of their work time on issues relevant to the CoP topic area were identified as more active members in the CoP who more frequently spoke up (“Speak Up”), engaged in “Transparency” and / or “Issue Orientation.” Additionally, the “Level of Experience” that a member or the organization that member represented on the CoP had in the topic area was also an influencing factor.

“Leadership” also contributed to “Psychological Safety and Speaking Up.” “LEARN Team” and the “LEARN Co-Chairs” strongly shaped a climate of safety in the CoP. Co-chairs

and members described the “LEARN Team” as a critical resource to the CoP, supporting the CoP to meet member’s needs rather than directing what occurs in the CoP. CoP members also described the LEARN Team and the Co-Chairs as very welcoming of members and their diverse perspectives. Co-Chairs encouraged and made efforts to ensure that everyone had a chance to speak up and made sure that member’s knew their contributions were valued. These findings reflected comments made by the Co-Chairs themselves. Co-Chairs described their efforts to model behaviours that conveyed that all members were welcome, that they had a voice in the CoP and their contributions were valued. A welcoming, inclusive and safe environment also contributed to the development of “Social Capital, as it cued members to the sense that co-members were people they could turn to for help:

“It makes me want to sit and listen to what people have to share. It makes me know that if I ever get stuck in my own personal plans at the health unit, I know that I have place where I can call or email or check out the web space and I know that I have someone somewhere and one of the members is going to help me out” (H: Lower KU, LPHA, p. 18).

“Individual Initiative” (a sub-branch of “Leadership”) such as members’ “Personality and Confidence,” “Commitment to Organizational Learning,” and “Personal Outcomes” were noted as important contributors. Members with a history of experience in tobacco control often reported taking initiative to mentor others within the tobacco control community and to share what they have learned over time within the CoPs and beyond so as to preserve the lessons learned that are not documented. This “Commitment to Organizational Learning” influenced these members propensity to “Speak Up” and engage in “Transparency.” Whether one is an extrovert or introvert (“Personality and Confidence”) was another factor that potentially explained the challenges with getting peripheral members to “Speak Up.” Confidence in one’s knowledge (“Personality and Confidence”) was another contributing factor and members commonly noted that when they felt recognized and respected for their work by their fellow members (“Social Capital: Recognition and Respect”), this bolstered their sense of contribution to the CoP (Personal Outcome),

confidence in their knowledge, and sense of belonging. These experiences motivated members to “Speak Up” and engage in “Transparency” and/or “Issue Orientation.”

“Mechanisms of Interaction” also contributed to or detracted from “Psychological Safety and Speaking Up” by facilitating “Social Capital.” Specifically, “In-Person Meetings” contributed to familiarity (“Social Capital: Structural Social Capital: Networking, Relationships and Familiarity), “Comfort,” “Recognition and Respect” and “Trust” (Social Capital: Cognitive Social Capital” - see Section 6.8.3: Social Capital), which contributed to Psychological Safety and Speaking Up.” In contrast, “Teleconferences” detracted from “Psychological Safety and Speaking Up.” Members commonly noted increased distractions and technical issues that disrupt the natural flow of meeting discussions (e.g., mute, unmute) as detracting from members speaking up “Speak Up.” A few members stated that teleconferences detract from a feeling of safety (“Climate of Safety”) because:

“I think you feel more vulnerable. So if you’re having a problem with your project and you’re funded then you don’t want to be telling the Ministry in a forum of that nature (if they are on the call). You don’t know who is listening. The telephone – everybody’s unseen.” (E: High KU, Research, p. 6).

The frequency with which meetings occurred (monthly teleconferences and the highly valued bi-annual in-person meetings) (“Frequency of Interaction”), and duration of time with which members had been interacting (“External Factors: Time”) also strongly facilitated “Familiarity” and “Comfort” among members in the CoP and the development of a psychologically safety environment. The size of the Ontario public health tobacco control community (“External Context: Infrastructure: Tobacco Control Community Size”) also helped to build “Familiarity” amongst members and the propensity to “Speak Up” as described in this illustrative quote:

“We call it the tobacco community. I think it’s a rather small community across Ontario. So whether or not I’ve met someone personally, chances are I’ve heard of them. So it makes it, to me, a lot easier to kind of drop my barriers and kind if ask if I need to ask or question what

I need to question” (H: Lower KU, LPHA, p. 23).

The “Information/Knowledge” itself was a powerful tool that got members to “Speak Up,” and engage in “Transparency” and / or “Issue Orientation.” Agenda topics or information that was presented or shared in the CoP that reflected the CoP Community Charter and Learning Agenda (living documents that describe ‘who we are’ as a CoP) or was deemed novel and relevant inspired members to “Speak Up,” and engage in “Transparency” and / or “Issue Orientation.”

A relationship was also found between “Shared Identity” and “Psychological Safety and Speaking Up.” Feeling safe to “Speak Up,” being transparent (“Transparency”) and / or having an “Issue Orientation” influenced the development of shared understandings of ‘who we are’ as a CoP and its priorities. When members did speak up and / or shared what they were working on and made transparent the methods they used (e.g., through “Practice Sharing”), this helped members construct a better understanding of the practice area around which they were interacting, which in turn shaped a “Shared Identity.” Engaging in “Issue Orientation” also influenced “Shared Identity” as described in the following quote:

“I remember an in-person meeting, somebody—I can’t remember the name even, just stepped up and said, I don’t know why we’re prioritizing this issue over this. And then, she gave a legit rationale and the rest of the team didn’t agree. But, her voice was actually heard. That’s good conflict to have though I think. You need to be able to voice your opinion, because before we actually go on the same stream and facilitate the same kind of initiatives or similar ones, you got to sort out all the different voices to make sure everyone feels it’s a priority. You don’t want a bunch of people just agreeing exactly with whatever you’re saying” (N: Higher KU, LPHA; p. 37).

Although not identified nor found in the data sources to be an issue, engaging in “Issue Orientation” in such ways also minimized “Group Think” behaviours:

“I think challenging people is fine and I think that in a safe environment that this Community of Practice is, I think it also helps people feel safe to say things that differ from what everyone else might be saying. If something worked well for somebody, well half a dozen times we’ll hear someone else say, you know what? That didn’t really work for me because

we have a different community view...They're offering different viewpoints" (H, Lower KU, LPHA, p. 20).

A “Shared Identity” in turn influenced “Psychological Safety and Speaking Up” and in turn “Knowledge Use” but did so through “Culture.” Recall in Section 6.8.4: Shared Identity that the traits that reflect the “Culture” of the Ontario public health tobacco control community became embedded in the attributes that members used to define ‘who we are’ as a CoP. These attributes in turn guided what members paid attention to and what was considered acceptable behaviour within the CoP as they engaged around their practice area. A “Culture” of learning was prominent in the Ontario public health tobacco control community, and members commonly used attributes such as “knowledge sharing and learning” and “evidence-based practice” to define their CoPs. As stated earlier in this section, “Transparency” and “Issue Orientation” were also norms of behaviours in the Ontario public health culture.

This section outlined the relationships that emerged across both LEARN CoPs. Appendix 10a and 10b presents the thick descriptions of how these relationships played out within each LEARN CoP. The case descriptions provide information on the differences between the embedded units that explained variations in the model of how diverse members cohere to enhance knowledge use and offer the reader these thick descriptions to determine whether findings are transferable to their particular contexts. These case descriptions have been placed in the appendix because Section 7.0: Discussion explains and discusses these key findings in detail.

7.0 Discussion

This section answers research questions 1, 2 and 3 by comparing the findings from the Phase I and Phase II studies, the embedded units that comprised the LEARN CoP, and the LEARN CoP case and the conceptual framework that guided the study in order to develop a richer understanding of how it is that different CoP members cohered into a collective and how this enhanced knowledge use. Strengths and limitations of the study, epistemology and ontology, and implications to methods (including a discussion of the merits of a mixed-methods approach), science and practice follow. Some final remarks conclude the dissertation.

7.1 Answers to Research Question 1

How do shared identity, psychological safety, member identification, and social capital each influence knowledge use in the context of LEARN communities of practice?

Before fully answering how shared identity, member identification / sense of belonging, social capital and psychological safety each influenced knowledge use, a comparison of how knowledge gained from the CoP was used will first be presented.

7.1.1 Knowledge Use

This study conceived knowledge as evidence coming from research and / or practice. Types of knowledge use that were of specific interest in this study included conceptual and instrumental types of use. For the most part, comparable findings emerged between the Phase I and Phase II studies with respect to knowledge use.

The Phase I quantitative study revealed that the LEARN CoP (CoP A and CoP B) used knowledge gained from their CoP some of the time. Although not statistically significant, CoP B members reported a higher frequency of conceptual and instrumental types of knowledge use than CoP A members. Insufficient power to detect differences may have been a function. In comparison, the Phase II qualitative study found that knowledge gained in the LEARN CoP was

used in conceptual and / or instrumental ways. However, conceptual use was the most common type of use occurring in both CoP A and CoP B. Similar findings have been found in the research utilization literature, which has found research evidence to be used primarily in conceptual ways - that is, it broadens perspectives by providing new ideas, theories and interpretations about a particular issue with no immediate change in behaviour/practice (McWilliam, Kothari, Kloseck, Ward-Griffin & Forbes, 2008; Landry et al., 2001).

Instrumental types of use were also apparent in both CoPs, but qualitative distinctions were found with respect to the kinds of instrumental uses that occurred by CoP. CoP A was more likely to engage in discussions with co-members or colleagues from work about how knowledge gained in the CoP might make sense of how it might best be applied in practice. In comparison, CoP B also used CoP knowledge as a basis for decision-making and/or adapting that knowledge (e.g., practice developed resources) to initiatives they were working on in their organization.

Although not specifically examined in this study but worth noting, process use (Patton, 1998; 2002) was observed during CoP meetings that occurred shortly after the Phase II qualitative study interviews had completed (see Appendix 4b Interview Process, Reflections and Adjustments). Process use is a type of use found in the evaluation literature and reflects changes in individual thinking and behaviours that can lead to the clarification of goals and values, and / or changes in procedures of a program or organization (or in this case, CoP) as a result of learning that occurs during the evaluation process and even prior to presentation of evaluation results (Patton, 2002). Co-Chairs in CoP A and CoP B commonly made comments about how the topics discussed during the interview process was raising their awareness about what they need to do to cultivate a sense of belonging among CoP members or in other groups in which they are involved. Whether this new understanding led to changes in behaviour is not known. However, a prominent theme that emerged in the CoP A in the Phase II study was a lack of clarity about 'who we are' as the CoP A and the need to pursue a common purpose or goal. A few interviewed

members voiced this issue during a CoP meeting shortly after their respective interviews and led to efforts to form a working group that would focus on identifying a common purpose or goal. What came of these efforts is not known, but these observations provide insights into how the research process itself can stimulate learning and the potential for subsequent action among intended users prior to their receiving the final study results.

The discussion will now focus on the influence of shared identity, member identification/sense of belonging, social capital as well as psychological safety on knowledge use. The study originally posited that these factors (used interchangeably with variables) each influence knowledge use. The Phase I and Phase II studies found support for these proposed relationships.

The Phase I quantitative study revealed that each factor was positively and significantly associated with knowledge use. However, when knowledge use was regressed on all of the factors, the model indicated borderline significance and none of the factors emerged as a significant predictor when controlling for the other factors. Multicollinearity did not explain this result. Thus, the results of the regression analysis suggests that shared identity, member identification/sense of belonging, social capital and psychological safety exert their influence on knowledge use through one another, perhaps because they reflect aspects of the same construct – that being cohesion. The Phase I quantitative study also examined how each embedded unit of the LEARN CoP was progressing with respect to the above variables discussed above and found a general trend where the CoP B consistently did “better” in terms of their self-reported levels of knowledge use, development of a widely shared and deeply held sense of who we are as the CoP (i.e., shared identity), sense of belonging, social capital as well as psychological safety than the CoP A. However, significant differences between the two CoPs were only found with respect to shared identity and psychological safety.

Overall, the Phase II qualitative study findings provided support that each factor of interest to the study influenced knowledge use. Shared identity, member identification/sense of belonging, psychological safety were linked to conceptual types of knowledge use, but social capital emerged as the vehicle through which instrumental types of use largely occurred. Other factors (e.g., external context, mechanisms of interaction, leadership) emerged in the qualitative study as also facilitating the use of CoP knowledge in practice. These other factors also contributed to or detracted from the relationships observed between a shared identity, member identification/sense of belonging, social capital, psychological safety and knowledge use. The latter will be addressed under question 3 (Section 7.3). This section examines how each of the above factors each influenced knowledge use.

7.1.2 Shared Identity

Qualitative results helped confirm the relationship of shared identity and KU identified in Phase 1, and explored what this relationship entails and the reason behind the reported differences between the presence of a shared CoP identity in the two embedded cases. Both CoPs consistently described a shared understanding of ‘who we are’ as the CoP as important to getting its diverse members on the same page about what they are about, what they valued and what they intended to achieve together. Consistent with the organizational identity literature and seminal work on CoPs, shared understandings of ‘who we are’ as the CoP also served as an orienting framework that tacitly cued members as to what issues and types of information the CoP valued and consequently should pay attention to, access, share with other members and if appropriate take action on and what was considered appropriate behaviours for CoP members (Albert et al., 1985; Dukerich et al., 1991, Wenger, 1998; Wenger, 2000; Wenger et al., 2002). Specifically, the characteristics that members commonly used to define ‘who we are’ as a CoP was linked to members’ assessment of whether they would use CoP knowledge. For instance, ‘we’re evidence-

based' was commonly identified as a characteristic of each CoP's identity. Initiatives and resources that had research or evaluation to back it up and was related to their CoP topic area (another common identity attribute) was deemed fit for use by members. Deliberate non-use was more likely when information shared in the CoP was not evidence-based. However, broader issues such as the culture of public health tobacco control also impacted how shared identity influenced knowledge use as will be discussed later (see answers to question 3). Members across both CoPs also commonly stated that when a shared understanding of the CoP identity existed, the CoP and its knowledge became more top-of-mind outside of CoP meetings. This increased their recall of the CoP knowledge and in turn their propensity to bring that knowledge to the attention of others in their work organization.

CoP B revealed a more widely shared and deeply held CoP identity than CoP A in quantitative and qualitative results. Despite CoP A members providing similar attributes to define their CoP (indicating that members shared an understanding of what is central and distinctive about their CoP), they felt that their CoP identity needed more clarity about what their purpose was about, often raising the question 'are we a sharing community?' or are we a 'doing community?' Members commonly stated that if they had a common and tangible goal-oriented purpose, it would improve their use of CoP knowledge in more instrumental ways (i.e., moving beyond discussions to adapting and implementing). In comparison, CoP B had a common purpose (made possible via a broader movement around the CoP B topic area, Ministry mandates and external funding – see section 7.3), which CoP B members identified as something that made it easier for them to act on knowledge gained from their CoP. The actionable common purpose had clear understandings of what they were about, what they needed to achieve, what information would help to achieve their collective aims and, with the help of funding, were able to implement initiatives rather than only share and discuss them. According to the literature, when members share an understanding of 'who we are' and 'what we want to become' as a CoP, it clarifies for

them the gap between where they currently are at and what they need to still do to achieve their collective aims. Such understanding creates opportunities for learning and action (i.e., instrumental uses such as decision-making and implementation of programs) as members strive to bridge the gap (Senge 1990; 1992; Goh & Richards, 1997).

7.1.3 Member Identification / Sense of Belonging

The Phase I Quantitative Study revealed on average a neutral identification / sense of belonging in the LEARN CoP and that identification / sense of belonging was positively and significantly associated with knowledge use. The Phase II qualitative study found some support for these Phase I findings. Specifically, there was indication that the more a member identified / felt a sense of belonging to the CoP, the more likely they were to use CoP knowledge. In the CoP B, all interviewed members either reported a neutral or stronger identification with/sense of belonging to their CoP and all reported making efforts to use knowledge gained from the CoP in some fashion where ever possible. In the CoP A, members experienced weaker, neutral and stronger levels of belonging to their community and this corresponded for the most part to their level of knowledge use (both as self-reported in the Phase I Survey as well as described in the interviews). Thus, CoP A members who weakly identified with/experienced a weak sense of belonging to their CoP rarely made use of knowledge gained from that community. Those who neutrally or more strongly identified /experienced a sense of belonging described greater use of CoP knowledge. Questions two and three will elaborate on why these differences emerged. How member identification/belonging to their CoP influenced knowledge use is briefly (and more simplistically) described here and elaborated upon in sections 7.2 and 7.3. The qualitative data revealed that when a member identified with the CoP (and/or their work organization – see section 7.3), it motivated them to act in ways that benefited their community. However, the data only uncovered a direct link between member identification/sense of belonging and conceptual

types of knowledge use. Members easily described how their identification with the CoP (and / or their work organization) made them want to share what they know, but when it came to instrumental use the most that they could state was that it was an automatic thing and couldn't comment further on that.

7.1.4 Social Capital

The Phase I Survey findings revealed, on average, greater interaction and positive relationships characterized by mutual acceptance, trust, and a willingness to help co-members in the CoP B compared to CoP A members, but this finding was not statistically significant. Social capital (which assessed both structural and cognitive social capital) was also positively and significantly associated with knowledge use.

In the Phase II qualitative study, both CoPs exhibited structural and cognitive capital. With the exception of a few (i.e., CoP A members with lower levels of knowledge use) members across both CoPs indicated making new connections or strengthening pre-existing relationships as a result of participating in the CoP (i.e., structural social capital). Members, regardless of level of knowledge use, also described positive relationships (e.g., trusting, helpful, etc) among CoP members (i.e., cognitive social capital). Similar to the Phase I study, qualitative relationships emerged between social capital and knowledge use. While shared identity, member identification/sense of belonging and psychological safety influenced conceptual uses, it was largely through social capital that instrumental types of use occurred.

In terms of structural social capital and its influence on knowledge use, even a basic familiarity between members (i.e., weak ties developed via putting a name to a face in meetings, having an informal conversation not related to or related to CoP related issues, and / or hearing about what other members were working on), was identified as particularly important to them becoming aware of other members' knowledge and skills and to feeling comfortable to contact

these members to access information, obtain feedback on project ideas or other help. Knowing ‘who knows what’ was important to knowledge use because members did not possess all the information they required to solve problems or perform tasks at hand. Others have noted that the more connected/familiar one is with other CoP members, the more likely it is they will have access to and actually access the resources (e.g., knowledge) that they desire (Lesser et al., 2001). Weak ties between research and practitioners also led to both conceptual and instrumental uses, including researchers sharing their research findings and evidence-based resources prior to widespread dissemination/publication (both CoPs), soliciting input from practitioners about the perceived relevance of potential research study ideas (more so evident in CoP B), discussing how to (or actually partnering with practitioners to) access research sites (both CoPs), and / or what to consider when recruiting, collecting data and / or disseminating results to specific target audiences (more so in CoP B).

Cognitive social capital also enhanced conceptual and instrumental types of uses. Trust in other members emerged as particularly important to knowledge use behaviours. Although specific types of trust were not explicitly examined in this study, interviewed members descriptions reflected both benevolent and competence-based trust. Benevolent trust focuses on a sense that members care about one another and take an interest in each other’s well-being and goals. This kind of trust enables members to approach their colleagues for help, ask them questions (that may reveal their lack of knowledge) without fear that they will lose face (e.g., suffer damage to their self esteem or reputation). Competence-based trust also emerged as important to knowledge use. Competence-based trust allows one to feel confident that the person being approach for information is someone credible and is worth learning from (Abrams, Cross, Lesser & Levin, 2003).

Benevolent trust in this study contributed to members cohering as a collective and allowed them to feel safe to take interpersonal risks (i.e., psychological safety). Feeling safe to take

interpersonal risks in turn emerged as important to information sharing and member engagement in discussions around CoP related issues / knowledge. A willingness to help one another (reciprocity) and be respectful in their interactions helped members to trust that their queries would be handled in trustworthy ways (i.e., no exploitation of one's exposed vulnerability or acting in opportunistic ways). A norm of reciprocity means that favours are returned and social obligations are repaid and is asserted to be an essential type of relationship to cultivate to promote joint learning (Lipshitz et al., 2002).

Competence-based trust in this study was described as knowing the quality of other's work (Abrams et al., 2003). In the qualitative study, discussions reflecting competence-based trust pertained to interviewed members being viewed by co-members as competent and trustworthy information sources and they described how this influenced how they used knowledge. Specifically, being recognized and respected for their work and contributions in the CoP enhanced the perception that co-members viewed them as a competent member of the community. This perception in turn contributed to their sense of belonging in the CoP, which motivated them to continue to speak up, share what they know and engage in discussions during CoP meetings. Although benevolent trust appeared to contribute to a sense of safety to speak up or take interpersonal risks in the CoP, the literature suggests that a reliance on this type at the expense of competence-based trust can lead to members accessing information and knowledge that does not optimally contribute to the achievement of collective aims (Whittaker and Van Beveren, 2005).

Structural social capital provided the foundation for cognitive social capital to emerge and together influenced knowledge use. The more frequently members interacted, the more they were able to gauge the predictability of co-members actions – that is, the anticipation that members helped one another out, were respectful of one another and their work and were trustworthy in their actions and competence. Interactions and familiarity also enabled members to

figure out who had similar interests, which led to some partnering or the formation of working groups around their specific interests. The latter occurred in both CoPs but more frequently in the CoP B. These partnerships or working groups emerged as hotbeds for the cultivation of strong ties (Granovetter, 1973). Strong ties were characterized by stronger identification/sense of belonging among members, a deeper level of mutual reciprocity and trust that strongly enhanced conceptual and more specifically instrumental types of use. Stronger ties have been identified as a powerful builder of trust (and other types of cognitive social capital) that can enhance learning and knowledge use processes. However, it has also been noted that strong ties can decrease learning over time because members end up knowing and having access to the same kind of knowledge. In contrast, weak ties have been linked to the influx of novel information (Granovetter, 1973). Trusted weak ties (individuals that a person does not know well, but trusts to be benevolent and / or competent) have also been found to provide the most useful knowledge (Levin et al., 2004). The impact of weak versus strong ties on knowledge use was not specifically examined in this study. However, all members perceived cognitive social capital to exist in the CoP regardless of the breadth of contacts made or participation in CoP working groups where stronger ties flourished. This indicates that mutual reciprocity, respect and trust was common across members who had cultivated weaker or stronger relationships with others. Also, all members regardless of the connections made reported using CoP knowledge in some way to a lesser or greater extent. These findings support the above findings by (Cross et al., cited in Abrams et al., 2003) that trusted weak ties can exist and can lead to knowledge use. Whether more useful knowledge was gained from these ties in the current study is not known. Further work is needed to better explicate these relationships. Regardless, both types of social capital (structural and cognitive social capital) were important influencers of conceptual and instrumental types of knowledge use in the current study. Despite different conceptualizations of social capital, other quantitative and qualitative studies have also found a link between social

capital and knowledge use (most with a specific focus on the use of research evidence) in different social science or health-related or CoP contexts (Landry et al., 2001; Belkhdja et al., 2007; Chagnon, Pouliot, Malo, Gervais & Pigeon, 2010; Wathen, Sibbald, Jack & MacMillan, 2011; Lesser et al., 2001).

7.1.5. Psychological Safety

In the Phase I Study, psychological safety was positively and significantly associated with knowledge use. Psychological safety also came close to be a significant predictor of knowledge when all variables were entered in the multiple regression analysis. These findings suggested that knowledge use increased the more that members' felt safe to take interpersonal risks. Feeling safe to speak up and share thoughts, ideas, know-what, know-how, question or challenge others' perspectives or approaches was also significantly more developed in the CoP B than in the CoP A at the time of the quantitative study.

The qualitative study revealed that members from both CoPs felt that their respective community had a climate of psychological safety, that they as members of the community did feel safe to take interpersonal risks and that this was important to knowledge use. In both CoPs, members said that psychological safety made them more open to hearing different perspectives and ideas, and made it easier for them to speak up and share their know-what and know-how, contribute to discussions around CoP related knowledge by asking questions or, more rarely, challenging others' perspectives to better understand the thinking behind the methods or approaches used. Such actions contributed to conceptual and (through interaction and relationships) instrumental types of uses. It also at times led to deliberate non-use (e.g., when transparency revealed an initiative did not have the criteria needed to make it useable in their work organization). However, members in both CoPs noted that the people who spoke up more and shared knowledge were the one's who spent more of their work time focused on CoP related

issues. Peripheral members were perceived to be the one's who rarely shared knowledge in the CoP and this was attributed to be more a function of their level of experience or organizational level of readiness to take action on CoP related issues than it was a function of psychological safety. This was the case for a few interviewed participants who self-identified themselves as peripheral members, but other reasons such as not knowing how they fit in and belonged to the CoP was another key reason. The latter issue will be elaborated in Sections 7.2 and 7.3 below. As already stated though, members indicated that feeling safe to speak up is an important contributor to members actually speaking up and engaging in behaviours that can lead to knowledge use.

Evidence of a different kind of learning was also found. Speaking up was linked to exploitation types of learning in the CoP A (mainly), and both exploitation and exploration in the CoP B (March, 1991). Exploitation types of learning occur when members learn from others' actions *and* incorporate those lessons learned to improve how they think or approach their work (i.e., to improve upon current practices). CoP A members frequently reported mainly using what they learned from others to refine their thinking about how to approach specific populations or adapt an initiative to their local context. Although CoP B members frequently noted that they adopted / adapted other members' resources or program materials (i.e., instrumental use), there were also some instances of them adapting the materials in ways that incorporated the lessons learned by those who used it before. Some exploration types of learning were found in the CoP A, but comparatively more instances emerged in the CoP B. Exploration types of learning in the CoP B was made possible largely via their access to a network of researchers who enabled new ideas that were generated within the CoP to be investigated. Researchers and practitioners engaged in discussions about the best available evidence around a specific issue, including practitioners' knowledge and the lessons they learned through their previous actions on the same or related issues. Knowledge generated through these discussions about a research topic and how it might best be applied (including lessons learned) was incorporated into the conceptualization,

execution and dissemination of the studies conducted by the researchers who solicited members' input. Exploitative and exploration types of learning, both of which involved the incorporation of lessons learned from previous actions in the LEARN CoP are important, from an organizational learning standpoint because it can improve the quality of CoP knowledge generated. Also, this knowledge can spread to CoP members' work organizations (with members serving as the primary channel) and potentially advance the thinking and approaches of at least some segment of the local public health agencies or other organizations that members represent on the CoP as it relates to the CoP related issues.

7.2 Answers to Research Question 2

How do shared identity, psychological safety, member identification, and social capital inter-relate to affect knowledge use in the context of LEARN communities of practice?

Prior to conducting the current study, the researcher proposed that shared identity, member identification/sense of belonging, social capital and psychological safety inter-relate with one another to help diverse members of the LEARN CoP cohere as a collective in ways that influence knowledge use. In the Phase I Quantitative Study, the model regressing knowledge use on these four factors approached statistical significance ($p = .06$). However, none of the above variables emerged as significant predictors of knowledge use when controlling for each of the others. While this can suggest spurious relationships, it is more plausible (as the Phase II qualitative findings revealed) that these factors are distinct in some ways yet overlap to reflect a broader concept - this being cohesion – and as such exert their influence on knowledge use through one another. To ascertain how these variables interact to influence knowledge use, a series of mediation analyses (Baron & Kenny, 1986) were conducted using pooled data from both CoPs to test an analytic framework that posited shared identity to influence knowledge use through the development of member identification/sense of belonging, social capital as well as psychological

safety, respectively. This framework was informed by relationships specified in the literature. It was also informed by the investigator's interest to see whether shared identity was a major driving force that enabled different people to cohere as a collective by giving rise to specific mediators that enhance knowledge use. Mediation analyses did not support the proposed analytic framework.

The Phase II qualitative study was invaluable in explaining how the factors of interest to this study inter-related to knowledge use and also revealed how they work together to help different people cohere. The factors examined strongly contributed to the development of or strengthening of the other to enable diverse members to cohere into a collective in ways that enhanced knowledge use. However, social capital was the key mechanism through which knowledge use (conceptual and instrumental) occurred in the LEARN CoP. Shared identity and the external context that shaped this identity (see section 7.3) helped to enrich understanding of why knowledge use differed between CoP A and CoP B. Member identification/sense of belonging, in turn, provided deep rich insights into how social capital was developed and strengthened in ways that increased the likelihood of knowledge use occurring. It also unfolded the processes of how shared identity influenced knowledge use, and how social capital and shared identity inter-related in ways that enabled diverse members to work together to influence knowledge use. Psychological safety did not emerge as a particularly strong theme in the Phase II qualitative findings. Members revealed that psychological safety existed and was a given in the CoPs because members brought to the CoP the professional culture (i.e., values and norms of behaviour of respect, reciprocity, etc) of the broader Ontario tobacco control community. However, they noted other factors that influenced member's propensity to speak up in ways that influenced knowledge use. For this reason, psychological safety will not be described in much depth. The following will highlight some of the key inter-relationships that emerged in the LEARN CoP case that ultimately influenced knowledge use. Where appropriate, differences

between the two CoPs will be discussed. The relationship between social capital and shared identity will be discussed first, followed by the role of identification/sense of belonging and how these relationships influenced knowledge use.

Social capital emerged as the central theme in both CoPs that directly enabled members to access, learn from co-members, engage in discussions to plan how CoP knowledge might be used, make decisions and / or apply CoP knowledge (see section 7.1 above). Social capital also gave rise to the development of a shared identity, contributed to and strengthened member identification/sense of belonging and psychological safety among members in both CoPs and as such facilitated those factors influence on knowledge use. A shared identity and member identification/sense of belonging also contributed to and / or detracted from social capital and thus had implications for knowledge use.

Although the CoP A reported a lack of shared understanding of their CoP's identity (largely because they lacked an actionable common purpose), members per CoP (CoP A and CoP B) used common characteristics to define their respective communities. As such, both CoPs exhibited shared understandings of 'who we are' as a CoP. Regardless if members perceived they shared a common understanding of their community's identity, they commonly felt that a shared CoP identity did or would help to unify different members, bridge their perspectives, create a collective voice, enable members to feel a part of the "bigger picture," and inspire ongoing participation particularly when an actionable goal was present. Moreover, anecdotal evidence surfaced in the data about a previous CoP that belonged to LEARN that dissolved due to the absence of shared understandings of who they were as a community. Recall that trust was an important aspect of social capital that influenced knowledge use. Shared understandings of 'who we are' as a CoP contributed to members' confidence and trust in other members and their knowledge. Co-members were deemed trustworthy because they were "in it" for the same reasons and working towards the same collective ends.

Community Charters and Learning Agendas reflected living documents of ‘who we are’ as the CoP, what we want to become, and specified the values and behaviours deemed necessary to achieve their collective aims. However, these documents were collectively negotiated through member interactions. It was also through ongoing interactions around the collectively negotiated knowledge domain (i.e., CoP topic area) that members gave meaning and practical expression to what was described in the Community Charter and Learning Agenda and this led to knowledge use. Through interaction around their CoP topic area, members developed an understanding of what types of information / knowledge (e.g., topics relevant to CoP topic area, initiatives or resources that had research/evaluation to back it up) were appropriate to share and discuss in the CoP or were more likely to be further acted on and how to engage with members in ways that enhanced knowledge use (i.e., to act with professionalism which encompassed respect of other members, their opinions and work, and being helpful and supportive). As members interacted in identity-consistent ways, the more deeply members shared understandings of ‘who we are’ as the CoP became embedded into their work practices. Moreover, qualitative data sources (e.g., interviews, meeting minutes, and discussion posts) found that members actually reflected on whether CoP information, activities or member behaviours aligned with their collectively negotiated understandings of the CoP and impacted whether they would or would not use (i.e., share or implement) that knowledge in practice. Thus, shared understandings of ‘who we are’ as a CoP guided sensemaking and actions around CoP knowledge.

Overall, the study findings support the literature which suggests the following: (a) through ongoing interactions members construct and maintain a shared sense of identity that is entrenched in their collectively negotiated knowledge domain (i.e., CoP topic/practice area) (Wenger et al., 2002; Kärreman, et al., 2008), (b) that members ascribe meanings to their collectively negotiated understandings of ‘who we are’ as a social group and develop identity-consistent practices (including how they work together and use knowledge) as they interact

around their practice area and as such shared CoP identity “*inheres in work practices*” (Nag et al., 2007: 842), and (c). shared understandings of ‘who we are’ as the CoP and what we want to become guide sensemaking and actions (Albert et al., 1985). Stated differently, a shared identity provides a framework that gives rise to cognitive coherence and clarifies for members what issues and knowledge to attend to and how to act in identity-consistent ways (Dutton et al., 1991).

Member identification with / sense of belonging helped to further explicate the inter-relationships between social capital and shared identity and their influence on CoP knowledge use. Member identification/sense of belonging also provided a lens to explain how social capital developed and members cohered into a collective and became motivated to keep participating to address their CoP topic area – issues that are important in voluntary-CoP contexts. Discussion of the remainder of question 2 will focus on member identification/sense of belonging because of its insights to how diverse members of a CoP cohere and inspires members to act.

According to the Social Identity Approach (encompasses Social Identity Theory and Self-Categorization Theory), people classify themselves and others into different social categories (e.g., gender, age cohort, organizational membership). Categorizing oneself and others into social categories allows people to cognitively segment the social environment by defining who belongs to what social category. It also enables a person to define where (s)he fits into the social landscape in which the person is embedded. According to the Social Identity Theory, a person’s self-concept encompasses not only their personal identity (e.g., based on psychological traits, interests, abilities), but also a social identity that encompass the salient social categories they belong to. When a person classifies / identifies as belonging to a social organization (e.g., a group, organization or CoP), (s)he perceives him/herself to be an actual or symbolic member of that social entity and perceives the fate of that group as his/her own. Thus, social identification is the cognitive perception of oneness or sense of belonging to some social entity (Ashforth et al.,

1989). Since members' definition of self is in part defined by the social organization they belong to, members will positively differentiate their social organization (the ingroup) from (and at the expense of) a comparable outgroup in order to achieve a positive social identity and in turn positive self-esteem (Hogg et al., 2000). Members of an ingroup also perceive one another as independent individuals and external others as homogeneous. The latter can lead to stereotypes and conflict (Haslam, 2001) and block the ingroup's uptake of outgroup knowledge because the messages are understood to reflect an outgroup-based bias (Wilder, 1990).

Self-Categorization Theory (Turner, 1982; Turner et al., 1987) extends the Social Identity Theory to explain how different members of a social organization are cognitively able to move beyond their personal identity to a social identity in ways that make them become, feel, think and act as a psychological group. When members self-categorize themselves into (i.e., identify with) a social group, they cognitively assimilate the 'self' to the ingroup prototype and as such undergo a process of depersonalization of their self-concept (Hogg et al., 2000). This means that when a person self-categorizes into a social group, that person aligns his / her self-perception and behaviour with the prototypical characteristics of the social group to which the person belongs. This gives rise to positive ingroup attitudes, prosocial normative behaviours (e.g., motivation to help co-members out, cooperate), coordinate activities and cohesion (but can also give rise to ethnocentrism and negative stereotyping of outgroups). Prosocial behaviours are enacted to ensure desired outcomes of the social group are realized, which in turn enhance a member's self concept. Prototypes are stored in memory, but are created, maintained and modified by their social interactive context and what outgroup the social group chooses as a legitimate comparison group (Hogg et al., 2000; Haslam, 2001).

As originally proposed in this study, members' shared understandings of 'who we are' as the CoP, and more specifically, the attributes that members commonly used to define their respective CoPs, formed anchor point(s) for member identification. "We're a CoP" was one

salient attribute that members across both CoPs commonly used to define their respective community and had specific meanings about what that meant to them. Being a part of the CoP appeared to be the minimal criterion necessary for members to even weakly identify with / experience a sense of belonging to the CoP. The impact of different levels of identification will be discussed later in this question and in section 7.3. The “CoP topic area,” the presence or lack of “a common purpose or goal,” being “inclusive” communities where members were “working together” to “share information and learn” from colleagues across the province were other common attributes members used to define their CoP and that overlapped with members’ values and what they felt was important. As will be developed later in answering this question, these identity attributes used to define the CoP influenced member identification/sense of belonging and motivation to participate in the CoP and use CoP knowledge.

Recall from Question 1 (Section 7.1), that benevolent trust facilitated knowledge use and such trust emerged when members acted in predictable ways (e.g., consistently being willing to help, respectful of others, etc). Consistent with the Social Identity Approach, there was also evidence that feeling a part of the CoP contributed to benevolent trust. A majority of members described themselves and co-members as being motivated to help one another with information needs or other requests because they wanted to support their fellow CoP members who were working towards the same common goal. Similar findings were also found among members who shared the same profession (e.g., local public health, NGO), came from similar geographic region (i.e., TCAN), or shared similar characteristics that defined the local communities that some local public health practitioners served (e.g., rural/urban, unique issues of local communities that some local public health agencies addressed). Feeling a part of the CoP gave members the sense that they had the collective backing of their co-members (even if they did not know them very well) and could rely on them for information and support. This also made members feel comfortable to

approach co-members for assistance and made it easier for them to link up and coordinate activities to address their CoP goals.

In terms of knowledge use, member identification/sense of belonging was qualitatively linked to conceptual types of use. A sense of belonging and its contribution to the development of benevolent trust helped members feel that the CoP is a safe place for them to take interpersonal risks. Sharing their practices, exposing their work methods, providing feedback or questioning other's logic or approaches were examples of risks taken in both CoPs that also helped to deepen members understanding and learning about the CoP topic area. The link between trust and psychological safety has been made (Edmondson 2002). To the investigator's awareness, a link between member identification/sense of belonging, trust (benevolent versus competence-based trust) and psychological safety have not been made and may merit further exploration. Members also noted that belonging to the CoP made them want to share their information / knowledge with other co-members and that member identification / belonging to one's organization made them also want to take CoP knowledge and share it with work colleagues (this will be discussed further below). In fact, these members commonly noted that it went without saying that belonging to the CoP meant they would share what they know with their co-members. Others have suggested that when people belong to a group, they are more likely to consider their knowledge the property of that group and as such more likely to share it with group members (Jarvenpaa et al., 2001). However, member identification / sense of belonging was strengthened the more that members had opportunities to interact with one another (especially in face-to-face meetings – see Section 7.3). For the CoP B members in particular, the relationships that were developed became anchor points for member identification that kept them coming back to the community. Increased interactions made members recognize their commonalities - that is, they shared similar experiences or similar local community contexts/priorities/challenges, similarities in profession, professional culture and history, and were in the midst of co-creating a story and shared

knowledge base as they worked together to achieve a common aim. These relationship ties also became important resources that members drew on (e.g., in terms of support and information) that led to both conceptual and instrumental uses in efforts to achieve their collective goals.

A social ecological approach was used to specify the proposed relationships that guided this study (Figure 1). The framework posited that increased knowledge use would occur when members perceived a widely shared understanding of ‘who we are’ as the CoP, and the more they identified with/experienced a sense of belonging, developed social ties, trusting and supportive relationships and experienced psychological safety. The findings discussed thus far reflect the original relationships that were specified, but some notable differences emerged that challenged some of the proposed relationships based on sector in the CoP A.

CoP A members who were not from the local public health sector (i.e., represented NGO and research sectors) described: a lack of shared understanding about ‘who we are’ as the CoP A (something that all CoP A members noted), weaker or neutral identification / ambivalent schizo-identification to the CoP (Kreiner et al., 2004), and despite this, also reported developing new connections with a either few or more members of the CoP, the presence of mutual trust and supportive relationships among members, a climate of psychological safety and lower or higher levels of knowledge use. However, these non local public health sector representatives indicated that their interest to continue to participate was fading. Different but related reasons helped to explain these findings (some of which will be discussed in Question 7.3). However, one of the most prominent reasons for research and NGO sectors’ less strong levels of identification and fading interest in the CoP, (and for the NGO sector’s lack of social ties, peripheral participation and lower levels of knowledge use) was a function of not knowing how they fit into the CoP. A common attribute that the majority of members used to define ‘who we are’ as the CoP A was “inclusive.” However, this attribute was commonly offered by the local public health practitioners who represented the majority in the CoP A and did not notice any distinctions in the

CoP based on sector. In contrast, research and NGO sectors defined the CoP as “local public health focused,” which shaped the kind of information shared within the CoP and ultimately was not relevant to the research or NGO sector’s needs (see section 7.3 for more). Research sector called for more discussion around methodological issues pertinent to the CoP A topic areas. NGO work focuses on provincial level issues while the information shared within the CoP was largely focused on the local-level.

Similar issues were raised among a few CoP B members in relation to the organizations that were members of their community but also were the entities the CoP B work targeted for change. These CoP B members noted that despite being members of the CoP, these community organization representatives rarely attended meetings. This may be why none of these members completed the Phase I Survey and thus were not eligible for Phase II. However, CoP B members who discussed this issue said that their lack of participation was partly because the community organizations are not mandated to work specifically on the CoP B topic area, but also because the CoP B had not found a way to make these members see how they fit into the largely local public health agency focused CoP. These findings imply that to effectively bring together different sectors in ways that can enhance member identification / sense of belonging, more active levels of participation and knowledge use, it is important to pay attention to what defines them and what they value. Relevant information as a critical and defining feature of the CoPs that member’s identified with, that attracted them to the CoP and kept them coming back and was the number one factor that ultimately determined the use of CoP knowledge across both CoPs.

Member identification / sense of belonging with a CoP is a central theme in a seminal author’s work on CoP (Wenger, 1998; Wenger et al., 2002). According to Wenger (1998), information transforms into meaningful and actionable knowledge when it serves an identity of participation. CoPs offer a context in which members can define what this identity of

participation means. However, when one cannot see how they fit within this CoP identity, the information they gain becomes:

“alien, literal, fragmented, unnegotiable. It is not just that it is disconnected from other pieces of relevant information, but that it fails to translate into a way of being in the world coherent enough to be enacted in practice. Therefore, to know in practice is to have a certain identity so that information gains the coherence of a form of participation” (Wenger, 1998: 220).

Moreover, when members identify with their social group, they are more likely to understand and care about the gap between ‘who we are’ as the CoP and what we want to become versus where we are at right now. Such understanding creates opportunities for learning and other types of knowledge use as members strive to bridge the gap (Senge 1990; 1992; Goh & Richards, 1997). Additionally, when diverse members of a CoP identify, it enables “*alignment across discontinuities,*” and the co-creation of new knowledge and understandings of how to apply it as members enact the processes necessary (i.e., expose assumptions, perceive our own perspectives in new ways, ask new questions, experiment with new ideas) to converge diverse perspectives (Wenger 1998: 218). To enhance identification, Wenger (1998) asserts that it is essential to incorporate the identities of its different members – that is, to integrate its members’ pasts in terms of what they have been, what they have done, and what they know into the community’s negotiated constructions of ‘who we are’ as a CoP. Authors in the organizational identity literature make similar assertions, suggesting that member identification/sense of belonging can emerge when a ‘superordinate’ identity that embeds the salient characteristics that define the sub-groups that comprise it exists. Superordinate identity has been suggested to enhance not only identification and identity-reinforcing norms of behaviours, but also the adoption of high quality information in laboratory, (Kane et al., 2005) and inter-organizational networks (Riketta et al., 2007). A lack of superordinate identity has been found to create ingroup versus outgroup stereotypes, power imbalances, communication breakdowns and /or knowledge hoarding in two

interdependent CoPs (Hong et al., 2009) and in integrated health care settings (Haddow et al., 2007).

Despite not quite knowing how they fit within the CoP A, which detracted from research and NGO sector's experiencing a strong sense of belonging, (and for the NGO, lower levels of structural social capital and knowledge use), these members did not display ingroup versus outgroup stereotypes, did not describe interpersonal conflict with other members in the CoP, and they did experience cognitive social capital. As stated earlier, CoP A local public health practitioners did not perceive any distinctions in the CoP or conflicts that hampered knowledge use (i.e., sharing, exchange) based on sector. These findings provide some support that people who are unlike others develop bridging social capital (i.e., weak ties) (DeRose et al., 2009). However, the findings contrast the common assumptions that ingroup versus outgroup comparisons (i.e., based on sector in this study) invariably lead to us-them distinctions that lead to conflict due to ingroup favouritism and outgroup bias (Fiol et al., 2009) and that ingroup trust and outgroup trust are negatively correlated (Putnam, 2007). This may be because this study examined sub-groups that belonged to one CoP and as such all members, regardless of strength of identification, considered themselves and were considered by others to be ingroup members. However, research and NGO sectors also had minority representation in the CoP A. It is not known if ingroup favouritism and outgroup bias and its potential negative consequences within the CoP A would emerge with greater representation from these sectors. Regardless the strength of identification / sense of belonging, at the very least these minority sectors reported conceptual use, including becoming more aware about the CoP topic area and local public health agencies' realities and challenges with addressing the issue as well as transferring CoP knowledge to their respective work organizations. Section 7.3 will pick up on this theme when discussing the role of relevant information, CoP-work organization alignment, member identification with their work and the influence these had on knowledge use.

Inter-group comparisons between the CoP A and CoP B, however, were made. In the Phase I quantitative findings, CoP B reported experiencing comparatively stronger identification with/sense of belonging to the CoP than CoP A although this finding was not statistically significant. However, notable qualitative differences did emerge in the Phase II findings. In contrast to CoP A members, all CoP B members experienced a neutral or stronger identification with / sense of belonging to the CoP and their discussions conveyed an energized enthusiasm for the work they were doing together. Also, consistent with the Social Identity Approach, CoP B members displayed a psychological entwinement with the CoP whereby successes of others were celebrated and experienced as their own (Ashforth et al., 1989). The presence or lack of a common purpose or goal was responsible for the differences observed between the two CoPs with respect to member's level of identification/belonging, enthusiasm and high motivation to engage and take action around the CoP topic area.

A common attribute that members used to define their respective CoP was the presence of a common goal-oriented purpose that members could sink their teeth into (CoP B) or the absence of one (CoP A). The lack of a common purpose commonly led CoP A members to compare their community to that which they aspired to become more like – that is, the CoP B which had a common purpose that was perceived to make them more of a 'doing' CoP rather than a 'sharing' CoP, the latter being an attribute that CoP A members commonly used to define their own community. Instead of displaying ingroup favouritism by making comparisons that showcased the positive distinctiveness of the CoP A at the expense of the CoP B (i.e., the "outgroup"), CoP A members did the opposite. Tajfel & Turner (1979) specify that individuals are more likely to display ingroup favouritism when that group is central to their self-definition (i.e., the stronger they identify with the group and experience its successes and failures as their own), when the external context provides grounds for comparisons between the groups, and based on the perceived relevance of the comparison outgroup. However, outgroup favouritism

(seen in the CoP A) can also occur when the outgroup's main task is irrelevant to the ingroup or, more pertinent to this study based on the relative 'superiority' of the CoP B (defined by CoP A members as CoP B being a 'doing' community and taking concrete actions to achieve their clearly specified and well-funded, collectively-negotiated goals) (Haslam, 2001). While CoP A members across all strengths of identification engaged in these comparisons (i.e., weaker, neutral or strong identification), it was Co-Chairs (who displayed the greatest strength of identification/belonging to the CoP A) that were particularly vocal and sorrowful that their community was not more like the CoP B. These findings suggest that there was something about the CoP having a tangible common purpose that was important to these members self-concept, above and beyond how weakly or strongly they identified with their CoP. Taking action is an imperative in the public health world. Without action, public health outcomes will not improve. Public health practitioners are notoriously action-oriented and it may be that knowledge sharing is important but not sufficient to make them feel good about their work as a CoP and in turn themselves. The finding also suggests that in the presence of a comparable and superior outgroup, strongly identified ingroup members (such as Co-Chairs) may internalize more strongly the perceived lack of progress or success of their social organization than their less identified co-members.

Shared identity and member identification were also linked to external image and, in turn, knowledge use. In the literature, external image is an important component to organizational identity construction and identification processes (Gioia, Schultz, & Corley, 2000; Scott et al., 2000; Hatch et al., 2002; Dhalla, 2007). Image and its influence on identity stems from the 'looking-glass self' theory (Cooley, 1902, cited in Hatch & Schultz, 2004). This theory, extrapolated to the organization-level, posits that members' shared understandings of organizational identity are, in part, based on how external others view them (Alvesson et al., 2008). Discrepancies between members' perceived organizational identity and the image they

perceive external others have of them prompts member to take action to balance the scales and reclaim a positive sense of the organizational self (Gioia et al. 2000; Hatch et al., 2004). Positive construed external image has been found to significantly influence members' identification with their CoP, enhance self-esteem and motivate members to take favourable action on behalf of their organization (Smidts, Pruyn, & van Riel, 2001; Dutton et al., 1991). Disidentification (Kreiner et al., 2004), low self-esteem, anxiety and powerlessness were found when negative construed external image existed (Humphreys et al., 2002).

In this study, the presence or lack of a common purpose in the CoP A affected members' perceptions of how external others viewed their CoP. CoP B members exhibited positive construed external image because they had a clear common purpose and were seeing the impacts of their efforts. CoP A members felt that external others saw them as a "little group out there floating" because they lacked a common purpose and as such were unable to achieve appreciable impact around their CoP A topic area in the broader community beyond increasing awareness. This sentiment was expressed more strongly by members with intermediate and higher levels of knowledge use, including the strongly identified CoP A members (e.g., Co-Chairs). Negative construed external image coupled with positive outgroup comparisons theoretically should have prompted members to take actions that ensured the positive distinctiveness of their CoP (Hogg et al., 2000) as a means to improve their construed external image and in turn self-esteem. However, there was no evidence of increased efforts to engage in the kind of knowledge use that would lead to CoP A members' desired impacts (e.g., implementing programs and services in local communities that target the CoP A topic area). This was not a function of lack of interest or effort on member's behalf, but rather of external contextual issues that members perceived to constrain their ability to formulate and act on a common purpose. These findings will be addressed in section 7.3. Future research might benefit from examining the specific impact that

construed external image has on member identification/sense of belonging and how this influences knowledge use in voluntary structures like CoPs.

7.3 Answers to Research Question 3

What contributes to and detracts from the development of shared identity, psychological safety, member identification, social capital and knowledge use?

This question describes “Other Factors” that also contributed to (or detracted from) knowledge use as well as shared identity, member identification/sense of belonging, social capital and / or psychological safety. “Other” factors that emerged from the Phase II qualitative data had, for the most part, cross-cutting effects in terms of their influence on the above stated study factors. Overall, access to relevant information was the number one factor that ultimately determined whether or not members, regardless of their level of knowledge use, would use knowledge gained from their respective CoP. However, social capital, shared identity, member identification / sense of belonging and psychological safety made the use of CoP knowledge easier. As already stated, social capital enabled instrumental uses. Mechanisms of interaction (e.g., WebEx, meetings, structured time for practice sharing, working groups), roles assumed by members in the and external context issues such as Ministry mandates and priorities, organizational priorities and work responsibilities, level of experience in CoP topic area and the culture of public health tobacco control) facilitated (or detracted from) the development of shared identity, member identification/sense of belonging, social capital and / or psychological safety and their relationship to knowledge use. These findings will be discussed below.

Relevance of the Information

In the Phase I quantitative study, members with undergraduate levels of education had higher use of CoP knowledge compared to members with graduate degrees in the LEARN CoP case. In the Phase II qualitative study, no qualitative differences in knowledge use were found

based on education. What did emerge were differences between the CoP A and CoP B in knowledge use due to the availability of CoP relevant information. In the CoP A, members regardless of education level indicated that instrumental types of knowledge use were challenging to achieve because of limited understanding of the CoP A topic area. CoP A members also described a lack of access to researchers who could answer questions they had that went beyond the valued contributions of the research sector represented on their community which focused on a specific setting. CoP B achieved higher types of instrumental knowledge use. This was in part because they had access to relevant information and access to a network of researchers that addressed a range of practitioner-informed CoP relevant questions and engaged members throughout the research cycle. Since the culture of organizations represented on the CoP strongly valued evidence-based practice, use of CoP knowledge was also more likely across both communities if it had research/evaluation backing. These findings are consistent with studies from the research utilization literature which suggest that use of scientific evidence increases when linkages exist between researchers and practitioners (Belkhdja et al., 2007; Armstrong, 2006), when scientific evidence integrates the specific needs of users in the research process (Landry et al. 2003; Orlandi 1996; Belkhdja et al., 2007), and that knowledge translation is less likely when practitioners lack relevant scientific evidence (Barwick, Boydell, Stasiulis, Ferguson, Blase, & Fixsen, 2008). Thus, availability of relevant information and not members' education per se was important to knowledge use. Access to information relevant to each CoP topic area was also a common feature that members used to define 'who we are' and emerged as an important anchor point that attracted members to the CoP, kept them coming back, contextualized member interactions and ultimately shaped the development of shared understandings of 'who we are' as the CoP in ways that facilitated knowledge use.

In the CoP B, implementing CoP knowledge (e.g., incorporating it into CoP relevant initiatives undertaken) created a domino effect of more knowledge use. When initiatives were

implemented in a local community and neighbouring communities became aware and observed its impacts, they approached their local public health agencies to implement the initiative in their areas. Observability has been found to be an important characteristic of the information and source that influenced knowledge use by others, which reflects findings of other researchers (Rogers 1995; Cousins & Leithwood, 1993). CoP B members also described how hearing and seeing their co-members successes felt like a success of their own and motivated them to do better in their own efforts, which included using CoP knowledge to implement initiatives in their local communities. Engaging in knowledge use (e.g., sharing, discussing how information might apply in practice, etc) also contributed to social capital and shared understandings of ‘who we are’ as the CoP.

Mechanisms of Interactions

Mechanisms of interaction also emerged as important contributors to shared identity, member identification/sense of belonging, social capital, and psychological and their inter-relationships with knowledge use.

WebEx. WebEx was an online space where members frequently accessed up-to-date information about the CoP, events external to the CoP (i.e., workshops, conferences) that were related to the CoP topic areas, access to CoP information (i.e., meeting agenda topics, meeting minutes, scientific evidence, documentation of practices where applicable, and practitioner-led initiatives and resources). WebEx was also commonly identified as a feature of the both CoPs that made it distinctive from other social groups to which members belonged. Discussion posts, a feature of WebEx, was used more frequently during the early stages of each CoP’s development and had declined in use over time (i.e., at the time of the study). Overall, the discussion post feature didn’t emerge as particularly important to relationship building or knowledge use. However, it was the knowledge repository feature of WebEx that was attractive to members. Availability of a one-stop shop for CoP-related information needs made it easy for members to

access information for personal use and to share and discuss with work colleagues. WebEx was also identified as an important resource that kept weakly identified and consequently less involved members connected to the CoP. These members kept abreast of CoP activities by checking upcoming meeting agenda topics to ascertain whether they would participate and to review whether continually posted CoP information was relevant to their specific needs. Despite feeling safe to speak up, WebEx was also identified by these and other members as effective at enhancing psychological safety for those who may not feel safe.

According to Wenger and colleagues, offering multiple modes of participation for members to suit their preferred levels of involvement (core, active or peripheral) is essential (Wenger, 1998; Wenger et al., 2002). Inviting different levels of engagement offers peripheral members a potential anchor point for identification (i.e., flexibility to participate), the opportunity to acculturate to the ways of the CoP and get more involved if and when they choose (Wenger, 1998; Wenger et al., 2002). Although these authors acknowledge knowledge repositories (like WebEx) to be useful, feeling related and accountable to other members in the community is more potent a force for increasing participation and what is referred to as a sense of ‘aliveness’. By connecting people, not only does an information network develop but so does a web of trust (Wenger et al., 2002).

Teleconferences and In-Person Meetings. In the current study, monthly teleconferences synchronized with WebEx were noted as useful to keep the CoP top-of-mind, members connected and to follow, remotely, meeting materials and presentation slides live. However, this was not an ideal medium for inspiring excitement or enthusiasm, more active levels of participation, relationship building or dynamic knowledge exchange. Although lack of skills to use different types of technologies in CoP can hamper learning and impede members movement from peripheral to more active or core levels of participation (Guldberg et al., 2009), this was not identified as an issue in the current study likely because members were given training on use of

the technologies. Not being able to see others and opportunities for distractions (e.g., multi-tasking, technical difficulties (muting and unmuting phones) were identified as the culprits.

In contrast, bi-annual in-person meetings emerged as a highly favoured and powerful medium that generated a sense of ‘aliveness’ (e.g., enthusiasm, wholeness, belonging, relevance and value to attract and engage members), which is essential to one’s experience particularly in voluntary structures such as a CoP (Wenger et al., 2002; Block, 2008). Connecting face-to-face reinvigorated members’ commitment to their shared cause, made tangible to members that they belonged to the community, facilitated familiarity with other members and the development of trusting, supportive relationships and a sense of safety. It also was described as the space for deeper levels of exchange and greater productivity. Although the ideal frequency of interaction to facilitate the factors of interest to this study was not examined, participation in these in-person meetings over time strengthened the above experiences. Virtual communities that are developed around physically based communities (i.e., enable face-to-face interactions), much like the LEARN CoP, are asserted to be potent in their ability to cultivate a sense of community identity, member identification / sense of belonging and social capital (Timms, 2007), factors which the current study revealed to be important to knowledge use.

Practice Sharing and Working Groups. Structured time for practice sharing enabled members to share what they were working on and lessons learned, discuss problems they were encountering, solicit feedback from members to troubleshoot problems or discuss what to consider when moving forward with initiatives. Structured time for practice sharing also enabled a space where members could become familiar with each other’s knowledge base and the credibility of their work particularly when presenters made transparent the methods / approaches they used in their initiatives. It also provided a space for members to identify others who shared similar social characteristics, which subsequently led to more sustained interaction between those members and, more so in the case of the CoP B, the formation of working groups. Members who

formally or informally presented during practice sharing time said that it made them feel productive, particularly when co-members positively acknowledged them for their contributions. Being acknowledged made members feel respected, valued for their opinions and knowledge and a competent source of information. These experiences bolstered member's identification/sense of belonging to the CoP, which motivated them to present again or do more for their CoP (e.g., assume Co-Chair positions contribute to meeting discussions, and make efforts to apply CoP knowledge in practice. These findings were particularly prominent in CoP B.

Working groups. Working groups emerged as mechanisms where members developed shared understandings of 'who we are' as a group and strongly identified with that cause, worked together outside of CoP meetings, developed deeper relationships, psychological safety and engaged in higher levels of instrumental knowledge use, often developing resources, toolkits or other knowledge products that got disseminated and used in broader activities. Although not specifically examined for this purpose, structured time for practice sharing, working groups and the CoP itself can be viewed as organizational learning mechanisms (OLM). OLM are structures that enable organizational members to interact so that they can "jointly collect, analyze, disseminate, and apply information and knowledge" in ways that lead to changes in organizational paradigms, normative behaviours, organizational routines and/or operating procedures (Lipshitz, Friedman, & Popper, 2007: 16). In the current study, the CoP itself, practice sharing and working groups emerged as important structures that enabled members to learn from their own and others actions and provided opportunities for them to figure out how to apply those lessons learned in ways that improved their practice. Changes in practice could be specific to the CoP (i.e., learning from actions informed how the community conducted its work), but it can also (and ideally) spread to the organizations that members represent on the CoP, an issue that was beyond the scope of this study. Garcia's (2008) realist account of evidence-informed practice in Ontario local public health agencies also found that OLM were important

structural features that existed informally to roll out comprehensive tobacco control.

Understanding how different types of OLM influence use of knowledge and also organizational learning may be worthwhile future pursuits.

Roles. Roles assumed in the CoP or as part of one's actual job outside the CoP influenced knowledge use, member identification/sense of belonging, and social capital. Roles, which emerged in the Phase II qualitative study, also provided an alternative explanation to the Phase I survey findings that found gender-based differences in the LEARN CoP case. In Phase I, men experienced a stronger identification / sense of belonging and psychological safety to their CoP than did women. Phase II found that these men largely came from the CoP B, represented all levels of knowledge use, but had also either assumed a Co-Chair position at some point during their CoP existence or were more experienced in tobacco control or the CoP topic area and as such became important sources of knowledge for the CoP. The majority of members who assumed these positions in the CoP, irrespective of their gender, were consistently more enthusiastic about their experiences with the CoP, more strongly identified with the CoP, participated more, reported strengthening pre-existing ties and forging new connections in the CoP, perceived all CoP members as trusting and supportive, felt very safe to take interpersonal risks and reported making greater efforts where possible to use CoP knowledge. These individuals were also very committed to the CoP. Co-Chairs often described wanting to be a part of the CoP (even after they stepped down) because they wanted to see their CoP continue to thrive and successfully impact the CoP topic area.

Members who served as important knowledge sources based on their history of experience in tobacco control or the CoP topic area described feeling a sense of responsibility and desire to share what they know with their co-members (even before they knew their co-members to any extent) to help them achieve the collective aims of the CoP. Classical minimal group studies on social identity revealed that even random self-categorization of people into

groups (without familiarity with co-members) was enough for members to help each other out and take actions that benefited everyone in their group in efforts to ensure their collective success (Tajfel, 1978a; 1978b; Tajfel, Flament, Billing, & Bundy, 1971; Brown, 1978; Billig, & Tajfel, 1973). It has already noted that being a part of the CoP was enough for members to identify (even weakly) with the CoP. Data suggested that members with greater history or progress made in tobacco control or around the CoP topic area identified strongly with the broader Ontario tobacco control movement in which they had invested much effort. Identification with this broader movement may have stimulated the processes described by the Social Identity Approach and commitment to share what they know.

Professional or job roles also had an impact on member's identification / sense of belonging with the CoP as well as their work organization, which had implications for knowledge use. Researchers and TCAN representatives across both CoPs used knowledge gained from the CoP some of the time or often despite their neutral identification with their respective CoPs. According to organizational identification literature, neutral identification occurs when a member neither identifies nor disidentifies with an organization. This type of identification could lead to a lack of engagement with the organization (Kreiner et al., 2004), which can hinder use of organizational knowledge. However, neutral identification can also be a legitimate and important form of identification arising from the role that one plays in that organization (Elsbach, 1999), particularly roles that necessitate objectivity. This appeared to be the case with the research sector across both CoPs who noted that they identified more strongly with their role as (an objective) researcher than to the CoP per se. This may explain why the neutrally-identified research sector in the CoP A exhibited higher levels of knowledge use compared to the weakly identified NGO sector with lower levels of knowledge use even though both sectors did not feel they 'fit' within the local public health-focused CoP A identity (see 7.2). Indeed the research sectors represented on both CoPs perceived their role to be (and were perceived to be important)

knowledge generators for their respective communities. They imparted their scientific expertise to members and in the case of CoP B more so than CoP A, engaged CoP practitioners throughout the research cycle, identified research questions of interest to CoP members and carried out a broad range of practitioner-informed research that members did not have the capacity to conduct otherwise. Thus, neutral identification with the CoP proved to be a legitimate form of identification for the research sector that may have offset (for the research sector in the CoP A) the issues that detracted from a sense of belonging, and in both CoPs ensured the influx of scientific evidence that could inform practitioners work around the CoP topic area.

Similarly, TCAN representatives described neutral identification with the CoP, but described this to be a function of their strong identification with their TCAN, their role in that TCAN and the Ontario public health practitioners they support. One of their primary responsibilities was to impart information to local public health agencies in their TCAN jurisdiction that would inform their tobacco control initiatives. As such, TCAN representatives largely reported conceptual types of knowledge use and emerged as effective knowledge transfer agents, moving knowledge gained from the CoP beyond the community boundaries. As will become evident later the roles that members assumed (e.g., as researchers or TCAN, etc) were important because they enabled members to the conduct the work of the social organizations that they more strongly identified with.

Leadership. LEARN CoPs formal leadership, which included the LEARN Team and the LEARN Co-Chairs, emerged as important facilitators of the factors of interest to this study. LEARN Team were critical to the CoPs viability. Members consistently indicated that without the secretariat support of the LEARN Team in particular, members would be ill-fit to sustain their respective communities given the overload of responsibilities in their primary jobs. Both LEARN Team's and Co-Chair's continuous efforts to model behaviours of openness to diverse perspectives, encouraging everyone to speak up in discussions, respecting and positively

acknowledging all contributions all played a critical role in encouraging member interaction, practice sharing and discussions around CoP knowledge, shaping CoP identity, developing a climate of psychological safety and facilitating member identification / a sense of belonging. Wenger (1998) asserts that members must be able to have a say, (or as he terms it, negotiability), in order for identification and knowledge use behaviours to occur. A climate where members speak and are heard enables members to see the scope of their influence, bolsters their commitment to the community and affects their involvement, what actions they will take, including what they will do with the information and resources that are available to them via the community. Formal leadership in CoP's appeared to enable opportunities for negotiability.

Formal leadership seems counter-intuitive in CoPs which are emergent and informal entities that do not react well to bureaucratic directives/control (Wenger et al., 2002). In this study, a formal leadership structure designed to be attuned to and support CoP members' needs proved extremely valuable and useful to CoP functioning. This leadership structure was also extremely useful at facilitating knowledge use via their work to find or develop evidence-based knowledge products of use to members. Moreover, the LEARN CoPs were well-situated given that they were a project that was implemented through the PTCC and funded by the Ministry. As a resource centre for Ontario local public health agencies, PTCC's LEARN Team was able to keep abreast of and connect members to upcoming external CoP-relevant events or activities. Attempts to link the CoP with the activities occurring in the broader environment in which they were embedded kept the CoPs current, avoiding the potential for them to become isolated and irrelevant in the broader context (Thompson, 2005). Issues about CoP-external environment fit are discussed next.

CoP Alignment with External Environment. Another critical finding that emerged as particularly important to knowledge use and the other factors of interest to this study was each CoP's "alignment" (as members termed it) with the broader landscape in which the respective

communities were embedded (i.e., the external environment). Ministry mandates directed where funding would go and strongly shaped Ontario local public health agencies priorities or what issues they focused their attention upon. Recall, that members stated the CoP B topic directly addressed a broader movement in Ontario public health that the Ministry had declared a priority, which had clear directives and funding. In contrast, the CoP A topic was an emerging Ministry priority with no clear directives or funding. Presence or absence of Ministry mandates and funding had a profound effect on both CoPs understanding of ‘who we are’ as the CoP, what we want to become, and how we fit into the broader landscape in which we are embedded. Lack of Ministry directives meant lack of a common actionable purpose/goal for the CoP A, which challenged their clarity about ‘who we are’ and what we want to achieve as the CoP. Lack of a common purpose and funding in turn constrained members’ ability to sink their teeth into something tangible that they could orient their actions around and apply CoP knowledge. Despite a clear desire for a common purpose, at the time of the study there was limited energy devoted by the CoP A to take initiative to define their own course of action and promote it as a viable direction to address the CoP A topic area to the Ministry. Limited time on practitioners’ behalf to take such action in addition to their work responsibilities as well as comments made that Ministry presence at CoP A meetings tended to make members more cautious about what they shared. Although beyond the scope of this study, the latter finding raises the question of power relations between the Ministry and Ontario local public health agencies and how this facilitates or constrains knowledge exchange and innovation to tackle complex public health issues.

In contrast, regardless of level of knowledge use, CoP B members explained that the broader movement that the CoP B efforts directly fed into defined their common purpose, which in turn made clear ‘who we are’ as the CoP, gave them something tangible to identify with and commit to, provided a focal point that put members on the same page, directed their interactions and enabled them to take action. As already stated, the CoP B exhibited greater enthusiasm for

what was transpiring in the CoP as well as higher types of instrumental use and this was largely attributed to the availability of relevant and actionable knowledge made possible by external mandates, the movement, and funding. These findings are consistent with previous research on Ontario local public health agencies that found external mandates to strongly shape what issues are attended to and these agencies propensity to engage in evidence-informed practice (Bonin, 2007; Garcia, 2008).

CoP and Organizational Alignment. Alignment between the CoPs and the organizations that CoP members represented on the community also influenced the uptake and use of CoP knowledge in the organizations that members represented as well as the development or strengthening of other factors of interest to this study. Studies suggest that knowledge generated from CoP ‘leak’ or spread more easily across similar communities, but has a tendency to ‘stick’ or not spread to dissimilar communities (Brown et al., 2001; Hong et al., 2009; Ren et al., 2007). Social identity has been suggested to provide a lens to explain why this occurs (Bartunek et al., 2003; Nieminen, 2005; Willem et al., 2008). From a Social Identity Approach, people can identify with more than one social organization (George & Chattopadhyay, 2005). To the extent to people define themselves and act in ways that align with a particular social identity, members of that group will become motivated to ensure the full transfer of information and its meaning to similar others, made easier by the shared language or communication codes that become specific to that social group (Haslam, 2001).

This study provides some support for the above. One of the most common characteristics members used to define their respective CoPs was that the work of the CoP aligned with their organizational or work priorities. As already stated earlier, shared understandings of ‘who we are’ as the CoP directly shaped the focus and types of information that circulated within each community and dominated CoP discussions. When knowledge gained from the CoP aligned with the philosophies and information needs (e.g., priorities, evidence-based initiatives) of the

organizations (or divisions within the organization) that CoP members represented, knowledge use was more likely to occur. Deliberate non-use also occurred when CoP knowledge did not meet these criteria.

Alignment between ‘who we are’ as the CoP and one’s work organization also became an anchor point for member identification. Indeed the majority of members across both communities reported more strongly identifying with their work organization, the role they played to facilitate the work of their organization (as researchers, TCAN, NGO’s and practitioners), and to varying degrees (largely neutral) with their CoP. This appeared to benefit the work of the CoP as well as member’s organizations. CoP-work alignment (as members described it) attracted members to the CoP, kept them participating in the CoP because it facilitated (and in the case of CoP B made easier) their work by learning from and accessing the CoP relevant knowledge of others across the province and motivated them to take this knowledge back to their work colleagues to advance the CoP topic area in their local communities. For some members organizational-CoP alignment also enhanced their sense of pride in their work organization because the CoP offered them a platform to showcase the progress of their work organization to colleagues across the province, which bolstered their construed external image of their organization and in turn self-esteem. Although not explored in this study, CoPs that are aligned with one’s work organization may not need a strong degree of identification to the community to achieve the benefits that a social identity can provide to a group. While members felt that identification with the CoP was important to cultivate in the community, some also felt that too strong an identification and the CoP risks becoming exclusive and potentially resistant to the influx of new information that can advance their collective practice. These sentiments echo what others have said (Onyx et al., 2000). Research on groupthink behaviours suggests that moderately cohesive groups are enough to give rise to groupthink behaviours. However, full-blown groupthink is rare unless other conditions are present (e.g., the group is isolated from outsiders, lacks a history of impartial

leadership, has no standardized protocols for critical reflection and analysis to arrive at decisions (Janis 1982, cited in Haslam 2001: 151). Groupthink was not evident in either CoP as members offered and were open to diverse perspectives from members within the CoP and beyond its boundaries (i.e., guest speakers or other external sources). However, future studies might benefit to explore what strength of identification is optimal for diverse members of a CoP to work well together and engage in evidence-informed practices.

Alignment between SubGroups and the CoP. A dominant theory of how groups form is the Social Cohesion Model, which posits that individuals become a social group and engage in behaviours to achieve collective aims to the extent that members like one another and develop positive emotional bonds (Lott & Lott (1965) cited in Halsam, 2001). In this study, consistent with the Social Identity Approach, members that shared specific characteristics (e.g., represented the same sector such as NGO, TCAN, local public health) tended to connect more. In some cases subgroups within the CoP formed based on members who also shared similar characteristics such as being local public health agencies that served rural communities). Whether members in the CoP liked one another prior to forming these subgroups (i.e., work groups) was not clear because members did not discuss this. Rather, members consistently described gravitating to others to forge working groups based on specific shared characteristics. Mutual liking and deeper relationships were described to develop more fully as members who shared similar characteristics engaged in ongoing interactions with one another. Ongoing interactions in turn helped to strengthen their identification with their respective workgroup. What these findings suggest is that structural social capital (i.e., interactions as a broader CoP entity) helped members identify similar others and that social capital was cultivated more fully within the structure of a social identity. Reciprocally, social identity was strengthened by the stronger social ties and trusting and supportive relationships (i.e., social capital) that developed among work group members. These workgroups also ended up addressing specific issues that were pertinent to the broader CoP topic

area, were fertile sites through which shared understandings of ‘who we are’ as a social group within the CoP emerged as did psychological safety and knowledge use (including higher types of instrumental use). Thus, social identity helped to unfold how social capital developed within the CoP and its subgroups and social capital strengthened social identity. According to proponents of the Social Identity Approach, social ties formed within the context of a social identity serve as a more stable and reliable means through which different members can cohere and knowledge can flow compared to interpersonal ties, which are formed based on interpersonal liking and attraction that are subject to the idiosyncrasies of one’s personal preferences (Hogg et al., 2000). The findings also suggest that similar to formal organizations, multiple social identities existed in each CoP. To keep these subgroups connected with the broader CoP, members of these subgroups shared updates and presented their work and the impact it was having (if applicable) in their respective local communities.

Culture. Another key finding was that specific characteristics that members described as defining the culture of the broader Ontario public health tobacco control also emerged as salient characteristics that members used to define their respective CoPs, influenced what information members paid attention to and used and how they interacted with others. Mutual trust and reciprocity in the CoP were said to be a by-product of the Ontario public health tobacco control culture’s emphasis on professionalism. Members came into the CoP enacting behaviours that were culturally engrained. This may be another explanation for the high levels of cognitive social capital even amongst members who had not developed a lot of structural social capital. Being evidence-based was a strong value of the broader culture and consequently member’s work organizations, which in turn emerged as a defining feature of both CoPs. While being evidence-based appeared to motivate the desire to have access to and interact with researchers that addressed a wide range of CoP related issues across both CoPs,

it also may have served to constrain knowledge use in the CoP A. To elaborate, addressing a topic that was underresearched and underfunded coupled with member's work organization practice to implement initiatives that were evidence-based constrained member's ability to move on CoP A related initiatives in their local public health agencies. While relying on evidence that shows the effectiveness of an initiative is deemed the ideal approach to inform decision-making in public health, experimentation with new ideas that could lead to important evidence is also important to pursue.

7.4 Validity of Mixed-Method Study

Establishing the validity of a study is critical to increase the reader's confidence in its findings and conclusions. Criteria to establish validity differ between quantitative and qualitative studies, which are guided by different paradigmatic views. These paradigms offer different assumptions about the nature of knowledge (ontology) and the means of generating that knowledge (epistemology). As such, a researcher's paradigmatic view of the world is related to the way one goes about researching the world (Creswell et al., 2011). Positivist paradigms emphasize objective quantitative methods. Relativist paradigms emphasize qualitative methods. For some, mixing the two methods is not a legitimate approach because they are rooted in distinct paradigms that are deemed incompatible (Bazeley, 2004). However, other paradigms that fall at the mid-point of the positivist-relativist continuum exist such as pragmatism which was adopted in this study (see Section 7.3: Ontological and Epistemological Perspective). Pragmatism offers a more unified perspective that supports the use of quantitative, qualitative or both methods in a research study (Onwuegbuzie & Leech, 2005). The research question determines what methodological approaches are selected. Thus, the pragmatic researcher chooses whatever methodologies work best to answer the questions at hand (Creswell et al., 2011). What constitutes validity in mixed-methods research, however, has not been well developed (Leech,

Dellinger, Brannagan & Tanaka, 2010). Although the term validity has positivistic connotations, it is a term recommended and used in discussions about establishing the credibility of mixed-method studies (Creswell, 2011; Leech et al., 2010). Validity in mixed-methods research is defined as “employing strategies that address potential issues in data collection, data analysis, and the interpretations that might compromise the merging or connecting of the quantitative and qualitative strands of the study and the conclusions drawn from the combination” (Creswell et al., 2011: 239).

In this sequential mixed-methods study, one of its implicit aims was to connect the two phases to show how the qualitative data helped to explain the quantitative results. It is the investigator’s hope that this was adequately illustrated when the quantitative and qualitative data were connected and interpreted in the discussion of the findings to come to a deeper understanding of the phenomena explored. What remains to be determined is the extent to which the strategies employed at each step of this study were judicious and that the interpretations and conclusions were consistent with the procedures used (Creswell et al., 2011; Collins et al., 2007). Appendix 8 presents an effects matrix (which also serves as an audit trail) that tracked: (a) all the major steps taken in the Phase I Study data collection, analysis and interpretation phases and major decisions made including how Phase I findings were used to inform Phase II Study Findings, (b) all the major steps taken in the Phase II Study data collection, analysis and interpretation, including efforts made to establish its trustworthiness (Patton, 2002), and (c) how findings from Phase II built on Phase I findings. Tracking this data enables the reader to determine the validity of this study and the extent to which interpretive consistency occurred (Collins et al., 2007).

Specific strategies documented in the audit trail/effects matrix that aimed to enhance the validity of each study phase and their being linked together to enhance interpretive consistency (Collins et al., 2007) will be addressed here. Phase I Quantitative Study attempted a census of

members across two embedded cases within the LEARN CoP case (CoP A and CoP B) that were eligible to participate (based on attendance of at least one CoP meeting). The survey instrument was developed (with the exception of social capital) using established measures in the literature that had tested its psychometric properties with favourable results. The analyses conducted to test the psychometrics of the survey in this study also revealed positive results. The first set of factor analyses found items used to measure a particular variable loaded together as expected. Cronbach alpha coefficients of the scales revealed strong internal consistency.

Efforts were made increase response rates. Follow-up reminders via email and telephone were made to members to complete the web-based survey. Despite the small sample size (35 of the 56 eligible members), the response rate exceeded that of many surveys (approximately 63% across both CoPs) and had good representation per CoP with 68% (n=23 of 34) in the CoP A and 55% (n=12 of 22) in the CoP B. Additionally, strong, statistically significant correlation coefficients emerged between knowledge use and each of the variables of interest to the study, introducing for the first time, to the author's awareness, that a shared identity, member identification / sense of belonging, social capital and psychological safety are positively associated with knowledge use. However, the smaller sample size may have limited power to detect statistically significant findings with the multiple regression results (knowledge use regressed on all of the predictor variables) and mediation analyses (Baron & Kenny, 1986). As such, the quantitative results, which had been identified as the phase that would be less dominant in this study, were loosely used to inform what members to purposively sample and areas to explore in the dominant Phase II Qualitative Study. These issues will be picked up again shortly below.

In the Phase II Qualitative Study, efforts were made throughout the data collection, data analysis and interpretation findings to ensure the trustworthiness of the qualitative research (the qualitative version of validity). Credibility, dependability and transferability are criteria used to

establish trustworthiness in qualitative data (Lincoln & Guba, 1985; Patton, 2002). Efforts to establish credibility of the findings involved an inter-coder reliability check after the open coding stage. Sampling also continued until no new ideas emerged in the interviews. Sampling to the point of redundancy strengthens the reader's confidence that the salient issues (across diverse perspectives) that pertain to the phenomena under investigation were adequately captured (Crabtree et al., 1992). Theoretical sufficiency was also attempted (Charmaz, 2006). Efforts were made to ensure that categories (particularly those that were emerging as salient to answering the study questions) were not revealing new insights or new properties. Additionally, a range in members responses as it related to a specific property within a category (e.g., negative to positive, weak to strong) was used as another signal that additional data gathering was not necessary.

Different data sources were also compared and contrasted to determine the consistency of findings and interpretations (e.g., across interviewees, across interviews and supporting documents such as Community Charters, discussion posts, meeting minutes, recorded meetings and to some extent the quantitative and qualitative findings). Pattern matching to identify consistency in what members within and across cases said and how these patterns matched with the conceptual framework that guided the study (and its subsequent revision) was also employed. Member checks confirmed the interpretations of the quantitative and qualitative findings and the conclusions drawn when connecting the two.

Dependability relates to the consistency between the data and the findings achieved through clear explanation of steps and major decisions made throughout the data collection, analysis and interpretation phases. The thorough accounts of these issues in the results section and the effects matrix / audit trail in Appendix 8 lend to one's assessment of this criterion. Finally, efforts were made to provide thick descriptions so that the reader can discern whether the

structure of the LEARN CoPs, the concepts examined and / or the processes that emerged might apply (i.e., be transferable) to other contexts or situations.

Strategies were also employed to link the Phase I quantitative study and Phase II qualitative study in ways that made sense and could justify the comparing and contrasting of the two phases in the discussions to develop a more unified and rich understanding of the issues examined. First, the conceptual framework guided what research questions were of interest to ask and consequent methodologies selected as well as each study phase in isolation. The framework also served as an anchor point that enabled the quantitative and qualitative data to be compared and contrasted (i.e., integrated) in the study discussion.

Consistent with recommendations for a sequential mixed-methods study, a nested approach to sampling was used whereby a subset of Phase I survey respondents were purposively sampled for the qualitative study. Nested sampling approaches ensure that the quantitative outcomes are explained and expanded upon by those who can best speak to the findings (Creswell et al., 2011) and supports the appropriateness of integrating the quantitative outcomes to the qualitative outcomes to generate meta-inferences and conclusions (Collins et al., 2007). Lessons learned from these decisions, and in particular to issues specific to integration of findings are developed in section 7.6.1: Methodological Implications.

Despite a nested sampling approach, mixed-methods research is known to be time-intensive and can involve significant time lags between the different phases in a sequential design (Bryman, 2007; Molina Azorin & Cameron, 2010), issues that were experienced in this study. Despite the time lapse, the qualitative findings found the same general trends that were identified in the quantitative study (e.g., CoP B emerged as doing ‘better’ with respect to developing shared CoP identity, member identification/sense of belonging, social capital, psychological safety and using knowledge use and more specifically in instrumental ways). This made comparisons between Phase I and Phase II Study results easier to follow and explain in the discussion.

Ultimately, strategies employed to increase the validity and interpretive consistency of the mixed-methods study also bolsters confidence in one's claims about the generalizability of findings to other contexts or situations. These issues will be revisited under section 7.6.2: Theoretical Implications.

7.5 Ontological and Epistemological Considerations

Given this study's focus on knowledge and how it is generated and used, and that "all knowledge is knowledge from some point of view," (Mounce, 1997: 14, cited in Feilzer, 2010) it is important to declare the investigator's assumptions about the nature of social reality (ontology) and how we come to know this reality (epistemology). As already mentioned, this study is guided by the pragmatist paradigm. A discussion about the philosophy of knowledge, the history of pragmatism, its multiple perspectives and consequent complexity that marks its evolution is beyond the scope of this dissertation. What will be discussed pertains to the common ideas that have emerged despite the various ways it has been conceived, the type(s) of methods it embraces and the potential applicability this paradigm has to generating useful knowledge for public health science and practice.

Paradigms have been defined as the shared beliefs within a community of researchers who share understandings of what type of research questions are meaningful and procedures are appropriate to develop answers to the questions (Morgan, 2007). Two dominant (and simplistically categorized) paradigms in social science research include positivism and its opposite relativism. Positivism views reality as singular (rejects or fails to reject hypotheses). This reality becomes 'known' via the use of deductive logic (theory/hypothesis testing) and quantitative methods to generate context-free generalizations. Relativism and its varying perspectives believe that multiple subjective realities exist. This subjective plurality becomes 'known' by understanding the views of people using qualitative methodologies and inductive

thinking (i.e., researcher starts with participants' views to identify patterns and theories). Paradigms implicitly shape what is deemed appropriate in terms of the types of research questions asked, methodologies and research methods employed in a research study. Many researchers assert that research studies need to be grounded in either a quantitative or qualitative approach, but that the different paradigms or research traditions that guide their use are incompatible and cannot be mixed (Leech et al., 2010).

In contrast, pragmatists sit mid-way between the poles of the positivist-relativist continuum. Pragmatists describe the world as “having different elements or layers, some objective, some subjective, and some a mixture of the two” (Dewey, 1925: 40, cited in Feilzer, 2010). Consequently, pragmatism accepts that there are singular and multiple subjective realities (i.e., researchers test hypotheses and provide multiple perspectives to understand a social phenomenon). It recognizes the existence and importance of the natural world as well as the emergent social and psychological world characterized by language, culture, human institutions and beliefs. In pragmatism, people are constantly adapting to new situations and environments. Knowledge generated through research then is relative, imperfect and not absolute. Even if structures, events and relationships follow stable patterns/exhibit causal relationships, these are deemed impermanent and hard to identify due to random and uncertain occurrences and events including the unpredictability of human nature (Teddlie & Tashakkori, 2009: 93; Feilzer, 2010). Thus, “truth” is instrumental (i.e., theories become true to different degrees based on how they work in the present), impermanent, and generated through “a dynamic homeostatic process of belief, inquiry, modified belief, new doubt, new inquiry...an infinite loop, where the researcher constantly tries to improve upon past understandings in a way that fits and works in the world in which he or she operates. The present is always a new starting point.” (Johnson & Onwuegbuzie, 2004: 18).

Pragmatism also values democracy, freedom, equality and progress and as such orient its efforts on asking research questions that solve real-world problems (Creswell & Plano Clark, 2007; Feilzer, 2010). Given that reality is not absolute and that real-world problems are complex, pragmatists use ‘whatever works’ to understand the research question (Van de Ven, 2007). Practicality, then, marks the epistemology of the pragmatist as the research question drives the selection of methodological and research method selections (not the paradigm per se). Stated differently, the pragmatist researcher employs whatever methodologies and research methods (quantitative, qualitative or both) work to generate understanding about the different layers of the phenomenon they are investigating. Mixing of paradigms and methodologies are accepted ways to generate understanding about social issues/problems. Pragmatism then offers an alternative view that bridges the paradigm divides.

While pragmatists acknowledge that paradigmatic differences exist between positivism and relativism, they argue that similarities exist as well. Regardless of paradigmatic orientation, social science researchers are both concerned about finding the “truth” whether it is an objective truth or relative truth of multiple realities in order to warrant assertions about people or groups of people and the environments in which they live (Dewey, 1925: 46, cited in Feilzer et al., 2010). Commonalities exist in their respective approaches to the nature of inquiry. Both quantitative and qualitative researchers take steps to strengthen the validity/trustworthiness of their data, describe their data, construct explanatory arguments from their data and reflect on why the outcomes derived emerged as they did (Johnson et al., 2004). The divisive distinctions drawn between positivism and relativism are deemed political ones generated by social scientists and the unique skills sets they develop for quantitative and qualitative research. The “anti-dualism” to which pragmatists subscribe (Rorty, 1999, cited in Feilzer, 2010), the resultant value placed on both quantitative and qualitative research methods and their combination, and the potential to produce knowledge from these research methods that further understanding (and improvements in)

society and social life “offers a chance to produce a properly integrated methodology for the social sciences” (Morgan 2007: 73).

Pragmatism may be useful to furthering the science of public health and more specifically knowledge exchange in the effort to generate evidence-based practice. Tobacco use is a complex (layered) issue causing a widespread social problem – chronic disease, illness and disability. The convergence of different perspectives, which can also include the use of multiple methods, is necessary to effectively measure/observe the layers of this social problem and generate practice-relevant knowledge to effectively address it. Moreover, the iterative approach to inquiry whereby past insights are continuously re-tested to generate new practical understandings and improvements suggests openness to evaluation as a critical force to generating knowledge. Generating new insights via use of multiple methods and learning through action are essential to solve (tobacco-related) chronic diseases. A shift in consciousness is also needed – one where views of the world as intractably demarcated are softened and efforts are made to find ways to bridge these socially constructed divides so that new and better solutions can emerge. Employing pragmatist orientation and the range of methods it embraces to solve real-world problems offers one possible way to achieve such needed ends.

7.6 Implications for Methods, Theory and Practice

Strong calls have been made for the development of multi-faceted partnerships in the fight against tobacco and other risk factors that cause chronic disease (CIHR, 2004; Currie et al., 2005; Canadian Partnership Against Cancer, <http://www.partnershipagainstcancer.ca/priorities/primary-prevention/>). CoPs are deemed powerful mechanisms that can draw together people from within and across different social groups (sectors, disciplines, etc) around a shared cause and generate practice-based evidence to address it (Best et al., 2006; Li et al., 2009). Little is known about the underlying

factors/processes that give rise to these desired ends, which are strongly desired in public health (Kerner, 2006). This study examined how people that come from different social groups are able to work well together and how this influences knowledge use in the context of tobacco-specific LEARN CoPs using a mixed-methods approach. This dissertation pulled different but related concepts (e.g., organizational identity, social/organizational identification, psychological safety, social capital) from different literatures (e.g., organizational and management sciences, social psychology) that have not been examined together before *and* tied them to the field of knowledge utilization. The study and its findings offer several implications in terms of methods, theory as well as and public health practice. Implications are discussed below.

7.6.1 Methodological Implications

Mixed-methods research began to garner serious attention in the late 1980s when writers from different disciplines and countries began to critically contemplate the feasibility of mixing quantitative and qualitative methodologies (Creswell et al., 2011). After a period of disrepute attributed to the paradigm wars, mixed-methods research has gained increased attention as an acceptable approach to conduct research (Bazeley, 2004; Leech et al., 2010). Different types of mixed-methods approaches exist and are selected based on the research problems that need to be addressed. As already stated, the sequential mixed-methods approach employed in this study, involved a quantitative study phase followed by the dominant qualitative phase. Data analysis and presentation of findings per phase were discussed separately with the intent that the qualitative study would build on the quantitative findings. Outcomes from both phases were integrated in the discussion. A common theme raised in more recent mixed-methods literature, however, pertains to the degree to which researchers integrate their quantitative and qualitative findings in ways that move beyond what was done in the current study (Creswell et al., 2011; Leech et al., 2010). Reviews of published mixed-methods research articles reveal a strong

practice of retaining the dichotomy between quantitative and qualitative methods and data by keeping the presentation of their findings as largely independent of one another only to connect them in the discussion if at all. Rarely are the quantitative and qualitative data integrated during the analysis phase (Bazeley, 2004). The latter is deemed desirable because it would transcend the quantitative/qualitative dichotomy, make better use of the data gathered and potentially generate new insights that might not surface when phases are kept distinct (Bryman, 2007; Bazeley, 2004).

The investigator agrees with these sentiments while also acknowledging, given experiences with the current study, that there is also a place for keeping the quantitative and qualitative phases largely distinct. In this study, the quantitative study revealed important statistically significant findings in terms of the relationship between each variable of interest and knowledge use as well as between the CoP A and CoP B in terms of the variables of interest and based on gender and education. However, as already stated, the small sample size may have limited the power needed to detect significant predictor(s) of knowledge use using multiple regression as well as how the variables of interest inter-related to influence knowledge use using mediation analyses (Baron & Kenny, 1986). Consequently, the investigator linked the findings from the two study phases in the discussion phase as originally planned. This process revealed the value of a mixed methods approach given that it demonstrated how the qualitative findings explained and built-on the quantitative results and served as a source of triangulation. More specifically, the qualitative results within and across cases affirmed statistically significant relationships found in Phase I (e.g., strong and positive correlation coefficients between each variable of interest and the outcome knowledge use), brought to life the factors that contributed to or detracted from these relationships, revealed deeper reasons for the statistically significant relationships found in terms of sense of belonging and psychological safety based on members with different levels of education and / or based on gender, and resolved discrepancies by unfolding how study factors of interest inter-related to influence knowledge use.

Data sources. To capture the presence of shared CoP identity, member identification, social capital, psychological safety and knowledge use and their relationships, the use of a variety of data sources proved extremely useful. The cross-sectional survey yielded an important snapshot of how knowledge was being used and how the CoP and its embedded units were developing with respect to the other factors stated above. Semi-structured interviews were critical to understanding whether the above factors were important in a CoP context, why, how these factors inter-related and what contributed or detracted to their development. Although the crux of the findings were developed based on the interviews, supporting CoP documents (i.e., recorded meetings, meeting minutes, Community Charters and Learning Agendas, WebEx discussion posts) were extremely useful at capturing real-time processes in teleconference meetings (recorded meetings), and illustrating with actual examples (via meeting minutes, Charters, WebEx) what members described in their interviews.

7.6.2 Theoretical Implications

Theoretical contributions of this dissertation to the field of knowledge utilization, the respective literatures from which the concepts examined were drawn and communities of practice are outlined in this section. Overall, this study found shared identity, member identification / sense of belonging, psychological safety, and social capital each contributed to knowledge use. These factors also emerged as distinct, but tightly related concepts that contributed to or detracted from the development and / or strengthening of the other. While shared identity, member identification / sense of belonging, and psychological safety were qualitatively linked to conceptual types of knowledge use, social capital was the only factor that revealed a relationship with instrumental types of knowledge use. Mechanisms of interaction, roles, and external contextual factors also strongly contributed to or detracted from the development of shared

identity, member identification / sense of belonging, social capital, psychological safety and knowledge use. These contributions will be discussed below.

This study found that social capital was a useful theoretical framework to understand knowledge use processes. This study found that social interaction, familiarity, trust and norms of behaviour such as reciprocity facilitated cooperation among CoP members and enabled them to contribute to and make use of resources in efforts to achieve collective goals (Putnam, 1995; Nahapiet et al., 1998; DeRose & Varda, 2009; Lesser et al., 2001). This study also discerned how social capital contributed to different types of knowledge use and was the only factor examined, as indicated above, that was directly linked to both conceptual and instrumental knowledge use.

The literature also calls for explication of how the different facets of social capital (in this study defined as structural and cognitive social capital) inter-relate and which is more important to knowledge use (Daniel et al., 2003; Nahapiet et al., 1998). While more research is needed to truly discern the respective contributions of structural versus cognitive social capital, this study contributes five insights into this issue that may benefit knowledge utilization and social capital literatures.

First, structural social capital (e.g., attending meetings, making new (even weak) connections and becoming familiar with other members by putting a name to a face) was in its own right a powerful influencer of conceptual and instrumental types of knowledge use. Second, cognitive social capital (e.g., mutual trust and norms of reciprocity) also contributed to conceptual and instrumental knowledge use because trusting and helpful relationships made it easier for members to access help and feel safe to engage in deeper levels of exchange between members. Although not specifically examined in the study, different types of trust (e.g., benevolent- and competence-based trust) were found to influence knowledge use providing another contribution to the knowledge utilization literature that warrants future examination. Third, structural social capital gave rise to cognitive social capital, which was enhanced through

specific mechanisms (e.g., in-person meetings, work groups) and frequency of interaction around shared interests/common goals that related to the CoP topic area. Cognitive social capital in turn reinforced structural social capital (i.e., motivated continued participation, linking or partnering with co-members, or organizations external to the CoP but relevant to the CoP topic area to work on shared interests). This finding provides support for Putnam's (2007) assertion that bonding social capital (strong ties characterized by trust and reciprocity) can lead to bridging social capital (development of weak ties).

Fourth, although social capital was the key mechanism through which members accessed and used CoP knowledge, the study also revealed that social capital alone was not always enough to enable members to act and achieve desired impacts in their communities. To elaborate members from both CoP A and B reported contributing to and drawing on resources (e.g., knowledge) gained from their community that benefited them personally (e.g., it made their work easier). Unlike the CoP B, members from the CoP A were less likely to implement CoP-related initiatives in their local communities because they lacked clear Ministry directives, funding, and research of what works to take action. Thus, this study points to a need to better explicate how external environment / contextual issues impact the ability of members to contribute to and make use of resources accrued from social capital that can enable collective benefits rather than only personal benefits.

Fifth, literature calls to better understand the psychological antecedents (and in particular the role of social identification) of social capital (Kramer, 2006; Schaefer-McDaniel, 2004). In this study, the Social Identity Approach (Tajfel & Turner, 1979) proved a useful theoretical framework to understand how member identification with the CoP / sense of belonging enabled social capital to emerge and be strengthened. Members reported joining (and experiencing some degree of identification with) their respective CoP. Identifying with / experiencing a sense of belonging to the CoP motivated members to want to interact and develop the prosocial

relationships with diverse co-members and to use where possible, CoP knowledge to advance their CoP's goals. Reciprocal effects were also found whereby social capital contributed to members' psychological identification with the CoP. For instance, interacting with co-members at teleconferences or in-person meetings enabled members to become aware of similar others and to link up to work on shared interests (i.e., in working groups or other). Moreover, members that interacted frequently and developed trusting and supportive relationships (such as in working groups), reported experiencing a stronger sense of belonging to that specific sub-group and / or the CoP. These findings are important because the relationship between social identity and social capital has not been well explored but asserted to be an important frontier for future research (Putnam, 2007).

Despite strong calls for multi-faceted partnerships (which necessitates the convergence of multiple social identities) to generate and use practice-based evidence in public as well as population health, there has been (to the investigator's knowledge) no examination of the role of social identity in such efforts. A few studies were located outside of this domain that examined knowledge integration across divisions within two businesses (Willem et al., 2008) and the adoption of knowledge in laboratory settings (Kane et al., 2005) from a social identity perspective. With the exception of Bartunek et al., (2003) that suggested social identity may illuminate important issues to bridge the research-practice divide, only one recent published conceptual paper pointed to the role of social identification as a potential obstacle to knowledge sharing when attempting to bridge different professions and organizations in health research and health care in a CoP context (Kislov et al., 2011). The current study attempted to bridge the gap described above by applying the Social Identity Approach (Tajfel & Turner, 1979) and Ashforth et al., (1989) extrapolation of this approach to understand organizational identification processes at the organizational level. This dissertation also extended the Social Identity Approach by applying it to the study of how different people cohere into a collective in ways that influence

different types of knowledge use in a real-life setting of public health tobacco-specific CoPs. Recall that Social Identity Approach encompasses Self-Categorization Theory, which specifies how an individual shifts from acting as an individual to one that becomes, thinks, feels and acts collectively as a group member. Social Identity Theory describes the continuum between personal and social identity. It stipulates that the more a person identifies with a social group, the more likely this person will favour the ingroup over comparable out-groups (potentially creating ‘us’ and ‘them’ distinctions that can thwart important collaborations). Identification with the social group also primes or motivates the person to engage in behaviours that reflect the group’s norms (i.e., they will act in group identity-consistent ways) and take actions that will enhance the positive distinctiveness of the group at the expense of an outgroup (Tajfel, 1982; Terry et al., 1999). Both are process theories that together provided valuable and new insights about how social identity influenced group dynamics and knowledge use.

In this study, the Social Identity Approach (Tajfel & Turner, 1979) served to deepen understanding of how different CoP members cohered in ways that facilitated the use CoP knowledge. Simply by being a part of the CoP was enough to make members (at the very least weakly) identify/feel like they ‘belonged’ to the CoP. Identification with/a sense of belonging motivated the desire to help other members out, share what they know and to learn from others. However, strength of identification also influenced knowledge use differentially. Weakly identified members rarely used CoP knowledge. Neutrally or more strongly identified members tended to report using CoP knowledge more often or where possible. Neutrally and strongly identified members alike also described a desire to share their information and knowledge with co-members (if they had it to share) and / or to share CoP knowledge beyond the CoP boundaries largely with their work organizations with the hope of spurring discussion for further action. To the author’s awareness, this is the first study to link strength of identification to levels of knowledge use. Not only does this finding contribute new information about what influences

knowledge use, it also unfolds the processes that play out when people differentially identify with a social entity – an issue that is relevant to organizational identification literature (Kreiner et al., 2004) and warrants deeper examination in multi-faceted partnership structures like the CoP studied in this study. A range of factors were also found to stimulate identification / sense of belonging (e.g., the CoP itself, alignment between one's work organization and the CoP, feeling valued by being heard and positively recognized by co-members for one's contributions, among others). Some of these factors will be further developed below. Given identification/sense of belonging's link with social capital and knowledge use, future research would benefit from examining what stimulates this psychological process.

Organizational identity, defined as shared understandings of what is central and distinctive about this CoP (i.e., shared CoP identity), was another concept this study introduced that provided valuable insights into CoP members use of knowledge. Specifically, this study contributes new insights into the processes that led to member use of CoP knowledge as a result of examining organizational identity in tandem with the Social Identity Approach and social capital.

First, shared understandings of 'who we are' as the CoP emerged as members interacted around their CoP topic area. Second, shared understandings of 'who we are' as a CoP (and more specifically salient characteristics used to define what is central and distinctive about the CoP) served as a framework that guided sense making and action – a finding that supports theoretical and conceptual papers (e.g., Albert et al., 1985; Kreiner et al., 2004) and previous research (e.g., Dutton et al., 1991) and is illustrated, to the author's awareness for the first time, in a CoP context. To elaborate shared identity provided cues about what the CoP valued or prioritized, what issues or information to pay attention to and act on and how to act in social identity consistent ways to achieve collectively negotiated aims. For instance, being 'evidence-based' was

something that members valued and were more likely to report using CoP knowledge or initiatives that were evidence-based (i.e., had research or evaluation to back it).

Third, characteristics members used to define their respective CoP's identity provided important insights into what members identified with, which in turn shaped the strength of their identification with / sense of belonging to the CoP, motivated their interest to keep coming back to the CoP, and facilitated the development of deeper social ties with co-members and use of CoP knowledge.

Fourth, 'who we are' as the CoP shaped the type of information/knowledge that circulated in the CoP and members engaged around. A defining feature of both CoPs was that they were 'very local public health focused.' Consequently, information shared was pertinent to local-level practice. When that information did not align with or address the needs of other social groups that members strongly identified with (e.g., the needs of non-local public health sectors that had minority representation in the CoPs), this challenged those member's ability to locate how they fit into the CoP and detracted from their identification with the CoP, development of social capital (structural in particular) and use of knowledge. On a related note, to the author's awareness, this is the first study to examine whether differences in social identities (and more specifically based on sector) *within* a CoP context creates conflicts that can hamper group dynamics (Fiol et al., 2009) and knowledge use. What this study found was that sectors that had minority representation in the CoP (i.e., NGO and research sectors) had weak or neutral levels of identification to the CoP respectively, were largely the ones to describe distinctions based on sector within their CoP, but this did not compromise group dynamics or their desire to use CoP knowledge. Rather, the relevance of CoP knowledge to the sector's needs (NGO in particular) detracted from their use of CoP knowledge in practice. As stated earlier this may have been a function of their minority status in the group. Increased representation of this sector in the CoPs may have provided them greater voice in the CoP and ability to shape the CoP shared identity in

a way that encompassed the values and needs of their particular sector (and in turn the information that circulated within the CoP). Future research might examine how minority versus majority representation influences multi-faceted partnerships and knowledge use.

Another key finding that reflects more recent and less understood points of discussion in the organizational identity literature is that people identify with more than one social entity and one of them will be more dominant (George et al., 2005). This study found that most members (with the exception of Co-Chairs) tended to identify more strongly with their sectors or organizations that they represented on the CoP than with the CoP per se. This had implications for knowledge use. One, members were motivated to take CoP knowledge back to the social entity that they strongly identified with so long as it was relevant. As already stated, shared understandings of ‘who we are’ as a CoP shaped the types of information that was deemed important to the CoP and as such shaped the availability of relevant information / knowledge. Two, the study also found that when the ‘who we are’ as a CoP reflected the philosophies/values and priorities of the sector or organization that was salient to members, this motivated members to take CoP knowledge back to their work organization for use and to share what they have been doing in their work organizations with CoP members. Additionally, members from the different sectors also reported identifying with a broader common vision or ideal that the CoP and the organizations that members belonged to attempted to achieve – that is, to target specific tobacco control issues and improve public health. This ultimate vision or goal may have been the ‘superordinate’ identity that buffered the potential for within-group identity-based conflicts due to sector in the CoP, contributed to weakly identified member’s decisions to come back and motivated members to want to use CoP knowledge in practice. What these findings suggest is that in a context where members voluntarily participate in a social structure such as CoPs, a superordinate identity that embeds the values and needs of the social entity’s that are most salient to them can serve as a mechanism that enhances bridging social capital (Putnam, 1995) (i.e., by

connecting potentially dissimilar social entities) and enable CoP knowledge to flow through these channels. The findings also suggest that a superordinate identity may be important when attempting to build a coordinated system whereby its nested configurations can bridge their philosophies, knowledge and activities to find solutions to complex problems. This issue warrants future examination.

This study also revealed that some members were motivated to share knowledge gained from their CoP with their work organizations and vice-versa because it contributed to the positive distinctiveness of their work organization, their CoP (or both) and, in turn, their sense of pride for being a member (and an important contributor to it as well). The more that members perceived that their CoP members recognized their organizations (and in turn themselves) in a positive light, the more likely they were to continue to participate in the CoP and engage in knowledge use again in the future. Moreover, feeling heard and being recognized by co-members for one's contributions contributed to members feeling of belonging, motivating them to want to continue to share what they know with co-members. These findings reinforce the relevance of examining how shared identity, member identification and social capital inter-relate to influence knowledge use. It also introduces the concept of construed external image (i.e., member's perception of how others view the social entity to which they belong) as another mechanism that influences knowledge use in the context of voluntary social structures such as CoPs.

Overall, these findings support the contention that organizational identity can be used in tandem with social identity approach to gain deeper understanding of what it is members are identifying with and the social processes that occur within a social entity – in this case tobacco-specific CoPs (Cornelissen et al., 2007; Kreiner et al., 2004; Ashforth et al., 1989; Hatch et al., 2004). It also extends this contention to show that when used in tandem, deeper understandings of what motivates diverse members to cohere into a collective and to use CoP knowledge can emerge. However, the study also points to a need to account for other factors such as external

context when examining shared identity, social identity approach and social capital and its influence on knowledge use.

External context emerged as a strong influence on the development of a superordinate identity, member identification with the CoP, social capital and member's ability to use knowledge. Specifically, the presence of a tangible common purpose backed by clear Ministry mandates and funding helped to make clear or not clear to members 'who we are' as the CoP and 'how we are distinctive' from the myriad nested configurations in which the CoP was embedded as well as knowledge use. Ministry mandates and funding achieved this by providing clear and actionable directives that enabled different members (as seen in CoP B) to get on the same page, to identify with and commit to the collective aim of the CoP, which in turn bolstered their motivation to participate and draw from the collective resources of the CoP, which led to more instances of higher types of instrumental knowledge use. Lack of a common purpose due to lack of Ministry directive and funding (as seen in the CoP A) confused members as to what their purpose as a CoP was (are we here to share knowledge or are we here to take action?), how the CoP 'aligned' with the Ministry's philosophy about the topic area, and constrained their use of CoP knowledge particularly higher types of instrumental ways. It was also the basis for CoP A members invoking ingroup versus outgroup comparisons by emphasizing the positive distinctiveness of the CoP B at the expense of their own CoP. The differential clarity in each CoP's understanding of their shared identity and ability to act on it based on Ministry backing raises the question of power relations. Examination of power dynamics that exist within a social organization and between nested configurations of a system (e.g., within and between Ontario local public health agencies and those that shape their priorities and fund their work) may be important to pursue in order to deepen understanding of knowledge use in public health tobacco control.

Another external contextual issue and contribution of this study was the underlying, but powerful influence that the broader Ontario public health tobacco control culture had on both CoP dynamics (i.e., how members interacted and related to one another) and to the use of knowledge. Several studies point to an organization's culture as important to increase use of evidence in public health / health service organizations (Garcia, 2008; McWilliam et al., 2008; Belkhdja et al., 2007). This study extends these findings by suggesting that the broader culture of a system strongly shapes the shared values, beliefs and normative behaviours of the social organizations (and their members) that comprise a particular system (i.e., the system of Ontario public health tobacco control). This study offers a possible explanation of how this process unfolds by using organizational identity, social identity approach and social capital as a framework to study it. Salient attributes that define the culture of Ontario public health tobacco control (e.g., a culture that, according to CoP members, strongly values evidence and professionalism (respect for others, openness to new ideas and transparency, action-oriented, etc) were reflected in the culture of the organizations that members represented and became embedded in their respective CoP identity. This culturally-embedded identity became an anchor point for member identification and appeared to guide how members inter-related with one another, what information they and their work organizations paid attention to, acted on, or deliberately did not use.

This study also contributes to the knowledge utilization literature by identifying roles and mechanisms that facilitate interaction that contributed to diverse members cohering into a collective in ways that enhanced knowledge use. Formal leadership roles (i.e., LEARN Team, Co-Chairs), roles assumed by individual members (i.e., knowledge generators for the CoP such as researchers and practitioners with more experience in the CoP topic area), and initiative taken by individual members to participate and share what they know with others were fruitful ways to make one feel like a productive member of the community, strengthened their identification and

commitment to the CoP, and prompted more active levels of participation and knowledge use. Specific mechanisms or ‘spaces’ that enabled members to interact were also important. Monthly virtual CoP meetings via WebEx coupled with teleconferences were useful to keep the CoP top of mind and members connected (particularly less identified members via WebEx), but was not as effective at capturing members full attention and stimulating deeper levels of knowledge exchange as in-person meetings. In-person meetings made the CoP and its members ‘real,’ were most lively and productive in terms of building shared understandings of what the CoP was about, developing sense of belonging, trusting relationships and giving rise to more sharing, exchange, social processing and co-creation of knowledge. Structured time for practice sharing and working groups also proved hot beds for the development of all factors of interest to this study. These structures of interaction may serve as organizational learning mechanisms that enable people to interact for the purposes of learning and action (Lipshitz et al., 2002). More focused examination on these roles and structures, what motivates members to assume or engage in them, the social-psychological impacts each type of role or structure has and its ability to influence knowledge use (and potentially organizational learning in member organizations) are potential areas for future inquiry. Taken together, the above findings pertaining to social identity processes and social capital within the CoP, and how the roles, structures and external environment shapes these processes affirms a key principle of the Social Identity Approach – that social identities do not form in a vacuum. Rather, how people define themselves, make sense of the world and act in relation to each other is shaped by the interaction between social structure, social context and broader environment in which the social structure is embedded (Haslam, 2001; Tajfel, 1982). To deeply understand knowledge use in diversely comprised social structures, therefore, necessitates examination of factors at multiple levels.

Finally, this study contributes to literature on communities of practice and their influence on knowledge use by focusing on the softer aspects of a social structure that are said to be critical

to a CoP's ability to thrive as a knowledge generating structure, but are often overlooked and under-examined (Wenger, 1998; Wenger et al., 2002; Moingeon et al., 2006). As already evident, these softer elements include having a shared identity that is rooted in CoP members practice area, member identification/sense of belonging, participation and relationships, and an environment where members engage in interpersonal risks that can enhance learning and the co-creation of new knowledge. Appendix 11 summarizes additional theoretical contributions relating to psychological safety and organizational commitment.

7.6.3 Practical Implications, Transferability of Findings, and Future Research

This dissertation identified factors that may warrant cultivating in social structures that aim to bridge the perspectives of people representing different social groups in efforts to address a complex problem like tobacco use. Too often attention is focused on the aspects of creating structures, coordinating systems, tasks and associated roles that achieve a social structure's goals. While these elements are very important, ultimately it is the people who make these social structures work, particularly in the formally instituted but voluntary structures like the CoPs examined. Thus, this study focused largely on less tangible, social-psychological aspects that the literature suggested to be (and emerged as) important to different people cohering and motivating them to achieve their shared purpose/goals. Understanding these factors and their relations has practical benefits by pointing to factors that could improve group dynamics that enhance knowledge generation and its use in practice.

Recognizing the small sample size and the emphasis on qualitative case studies, generalizing about the "how-to," to create partnerships that bridge people representing different social groups in ways that enhance knowledge use is problematic. On the other hand, it is through detailed analyses of specific cases from which such general principles are realized and better developed. Given this, Table 10 presents some general principles that emerged from the study.

These principles offer a range of anchor points that were found to enhance member identification / sense of belonging, motivated members to keep returning to the CoP regardless of level of involvement (peripheral or more active) and enacted norms of behaviours that reflected the identity of the social entity (or social entities) they identified that ultimately led to action (i.e., knowledge use behaviours or other actions).

These principles benefit those responsible for the development of formally instituted, but voluntary social structures and possibly other multi-faceted partnership structures that are called for in public health, population health circles (CIHR 2004; Graham et al., 2008), and in other fields. These principles provide insights into how to inspire diverse members desire to get involved, stay involved and engage in prosocial behaviours to achieve the collective aims of the partnership – issues that essential to understand when such partnerships are not mandatory (Ren et al., 2007; Moingeon, et al., 2006). These general principles are listed below and subject to verification via additional testing.

Table 10 General Principles to Inspire Members to Cohere and Use Knowledge

Principles	Brief Description
Secretariat and Resource Support	<ul style="list-style-type: none"> • Secretariat support is an important feature to enable the development, implementation and ongoing support and evolution of a social structure. The secretariat structure, however, supports but does not lead or direct the social structure’s priorities or activities. • While the secretariat support body does not formally lead the structure, it can play a critical role in enabling and modeling the behaviours necessary to inspire people to get involved and act on their ideas. The key is to authentically make these people realize that their ideas have a place in this world, connect them to people they can work with to mould their ideas or knowledge needs into action and through these actions, letting them know that they have a place where they belong. Basic fundamental principles of listening, respecting, valuing, honouring and celebrating people and their contributions as well as consistently following through on their requests are critical qualities to make people feel that they matter. The same principles and modelling of behaviours are needed by members who assume leadership roles (see below).
Funding	<ul style="list-style-type: none"> • Secure stable funding to foster the social structure’s development, implementation and ongoing maintenance and evolution. • Ensure funding exists for dedicated staff to provide ongoing secretariat support and oversee logistics. • Ensure funding to support a range of online, teleconference and in-person interactive mechanisms that enable members to get together between scheduled meetings (see spaces below).
Spaces	<ul style="list-style-type: none"> • In-person meetings are essential to diverse people cohering into a collective and knowledge use behaviours. At least one annual in-person meeting is useful. • Institute a variety of different types of spaces to facilitate member interaction and discussions during and between meetings. Spaces can be a range of virtual and in-person spaces to accommodate diverse preferences and keep all members connected regardless of strength of identification or level of participation (peripheral, active / core). • Provide structured time for practice sharing and institute and support working groups to cultivate stronger relationships, shared understandings, sense of belonging and increased knowledge exchange and integration and other uses.
Shared Identity	<ul style="list-style-type: none"> • Engage members around discussions about what is central and distinctive about their social structure and what they want to become or achieve in their work together and revisit and renegotiate annually. • Discern what is deeply valued and important to members and the main social group(s) they represent at the table and ensure these are incorporated into shared identity, including documents, types of information shared in the CoP, activities and other artefacts.

Table 10: General Principles to Inspire Members to Cohere and Use Knowledge con't

Principles	Brief Description
Permeable Boundaries and Coherence with Nested Configurations in the Broader Relevant External Landscape	<ul style="list-style-type: none"> • Keep social structure boundaries attractive and permeable by being internally and externally oriented, allowing flexible membership (peripheral to more core participation) and the injection of new knowledge and new blood. • Keep social structure and its work relevant and sustainable by keeping it connected and where possible integrated with information, activities and other opportunities occurring in the broader relevant system in which it is embedded or wishes to influence. • Ensure the philosophies, values and priorities that shape the identity of the social structure cohere with philosophies, values and priorities of the nested configurations in the relevant external landscape (i.e., member organizations, organizations/populations targeted for change) to enhance receptivity to social structure knowledge and its use. • If possible, position secretariat support in (or link to) a resource centre that welcomes and can support the members learning needs (including development of evidence needs and linking members with specific ideas/information needs to the right people, resources and supports that help them build capacity and <i>know-how</i> so they can achieve their goals)
Develop Additional Anchor Points for Member Identification	
Common Purpose	<ul style="list-style-type: none"> • Engage members to negotiate a common and actionable purpose that resonates with values, needs and priorities that have meaning to them. • Make efforts to have this actionable common purpose cohere with priorities or movements in broader relevant environment to clarify activities, increase opportunities for funding sources, and create unique niche. • A common purpose can serve to get members on the same page, feel like they are all working towards the same collective ends (rather than individual agendas) and can shape shared understandings of who we are, form a powerful anchor point for member identification, sustained commitment, relationship building, reason to take action, including use of relevant knowledge and can endure despite turnover of members.
Knowledge	<ul style="list-style-type: none"> • Ensure information / knowledge that circulates, is discussed / generated in the social structure reflects needs, values and priorities of members and the social group(s) they represent. Relevant knowledge brings people back to the table, contextualizes interactions, can become focal point for partnerships and relationships and enhances knowledge use • Institute easily accessible knowledge repository to capture information shared and generated in the social structure to facilitate knowledge use. Ensure members ongoing access to the information (and if relevant open it up to non members).
Roles	<ul style="list-style-type: none"> • Construct roles and allow members to develop own roles / niche in CoP to enable them to locate their niche in and sense of contribution to the social structure (productivity enhances deeper levels of involvement and continued motivation to exchange and use knowledge and take actions that benefit collective goals of the group). • Establish time limited leadership roles with succession planning assumed by different members. Leadership roles create a sense of ownership and deeper levels of fulfillment and belonging that inspire deeper levels of involvement. • Leadership roles model the principles of the social structure's negotiated identity
A climate of recognition, honouring and openness	<ul style="list-style-type: none"> • Although already embedded in points above, create an environment where each member is heard, respected, acknowledged and celebrated for their contributions. This can stimulate a sense of value and belonging to the social structure, which inspires members to commit to greater involvement and engage in actions (i.e., knowledge use behaviours) that benefit the collective goals of the social group. • Ensure a climate of respect and openness to new ideas, experimentation and challenging of status quo. This will ensure continued learning and innovation around the social structure's topic area. This climate can be facilitated via leadership modeling these behaviours, and keeping social structure boundaries permeable to new ideas.

The dissertation findings and some of these principles have already been put to use. The LEARN Team has used findings from this dissertation to inform quality improvements in the LEARN CoP's currently operating embedded units (CoP A, CoP B and others), and has provided insights into what to consider when moving forward with future communities. For instance, ongoing efforts are made to engage members in discussions about what the CoP is about and wants to become and ensure shared understandings exist. A variety of structures have also been instituted to keep members across all levels of participation (peripheral, active, core) engaged and provide a range of anchor points for member identification, networking and relationship building and knowledge exchange. For instance, the LEARN Team and Co-Chairs have started to encourage members to form of working groups within the CoP and provide support for this to happen (e.g., support meeting needs). Although unable to fully address the evidence needs of non-local public health sectors represented in the current CoPs (largely due to PTCC mandate to provide technical assistance and training to local public health agencies), the importance of this task to creating 'alignment' in terms of what the CoP is about and offers and what member organizations need and the impact this can have on engaging diverse players at the table was understood and may become an issue for discussion in future LEARN CoPs.

The study findings may also apply to different situations or contexts. Mixed-methods research makes decisions about study finding generalizations complex as inferences drawn from the quantitative and qualitative findings are combined while allowing the appropriate emphasis to be placed (which in this study was the qualitative findings). Despite a small quantitative sample size, the response rates per CoP were good and arguably representative of the population in each case. A subset of survey respondents were sampled for the qualitative study, a strategy that can enhance the consistency between the quantitative and qualitative inferences that are made (Collins et al., 2007). The qualitative findings captured the characteristics, processes and contextual issues specific to each CoP. Given the representativeness of the quantitative sample

and the qualitatively-derived, member verified descriptions of diverse perspectives in the qualitative study, it is reasonable to assume the study findings can be generalized internally to the specific LEARN CoPs that were examined. It may be reasonable to assume that the study findings can also be transferred to other currently operating CoPs that have been developed under the LEARN Project using the same model, involve similar types of membership, and are embedded in the same external environment (i.e., Ontario local public health system) as the study cases.

The study findings *may* also have applicability beyond the LEARN CoPs. According to Wenger and colleagues (2002), CoPs are everywhere. While this may be true, it is also true that not all CoPs have the same structure or characteristics that were present in the LEARN CoP. Embedded units (CoP A and CoP B) of the LEARN CoP case were at least one year old (and as such represented an examination of the study phenomenon at a particular junction in a CoP lifecycle). They were formally instituted and government-funded structures that operated through a Resource Centre (PTCC), which was also government funded. PTCC offered dedicated staff (the LEARN Team) to institute and oversee the development and maintenance of the LEARN CoP, including providing secretariat support to the LEARN CoPs. Within the CoPs, nominated or self volunteered members assumed leadership roles (i.e., Co-Chairs). Co-Chairs served as a liaison between the LEARN CoPs and the LEARN Team that supported them and shaped meeting agendas and facilitated CoP meetings. Despite these ‘formalities,’ these CoPs were largely informal in that members could direct where they wanted to take their collectively negotiated CoP topic area rather than such directives being imposed by PTCC or the government who funded the entities. Membership was also voluntary and predominately comprised of TCAN representatives and Ontario local public health practitioners who were TCAN Coordinators, Tobacco Control Managers, Public Health Nurses, or Health Promoters, and to a lesser extent other sectors (primarily researchers, NGO). All of these members joined the CoP either because

they or their organization had interest and some experience in the the CoP topic area. However, members may also have joined, at least partly, because it was required by their organization. This was not explored in the current study. Member retention and active participation is desired in order for formally instituted CoPs like LEARN CoP to achieve what they intend. Thus, future studies might benefit to explore how being required to join shapes member's initial interest, identification, active participation, and knowledge contributions in the CoP and how this may change over time as they continue to participate in the CoP (or not). Little is also known about who did not join these intentionally formed CoPs, whether key players are not being engaged, why they did not join, and how to best engage them. Moreover, the CoPs were predominately virtual. Although the study did find that features of the virtual CoP environment (e.g., the online knowledge repository) were more effective than others (e.g., discussion boards) at keeping members connected to the CoP and exchanging knowledge, these technologies were not as effective as the bi-annual in-person meetings at enabling members to cohere into a collective in ways that influenced knowledge use. Future studies would benefit to examine how virtual CoPs affect membership (e.g., attracting or deterring potentially valuable members from joining) and keeping CoP members engaged and actively contributing to the CoP. Future studies might also compare and contrast various CoP models such as ones that are 100% virtual, a mix of virtual and in-person, and / or 100% in-person to determine how they attract and retain members, inspire active participation and enable innovation.

Additionally, the Phase II qualitative study focused on members who had attended at least five CoP meetings during their CoP membership span in order to best inform the research questions. While this was important for purposes of this study, it neglected the perspectives of members who infrequently participated (one or two times despite a lengthy duration of membership) or new members who had, at the time of the study, joined the CoP. Future efforts may benefit from examining level of development of shared identity, member identification /

sense of belonging, social capital, psychological safety and their influence on knowledge use among members with limited versus regular CoP participation to understand how to motivate members to engage with others in ways that optimize knowledge exchange and co-creation of new knowledge and at what point during a CoP's existence do these factors become more salient or critical in terms of diverse members cohering in ways that enhance knowledge use.

This study also pointed to additional areas for exploration. The purpose of the LEARN CoPs was to provide a space that enabled those tasked in Ontario local public health agencies to roll-out the government instituted Smoke-Free Ontario Act to interact, learn from one another and generate innovations from the bottom-up that could push the tobacco control movement forward. These formally instituted LEARN CoPs were also funded by the government body that strongly directed the work of Ontario local public health agencies around tobacco control and there was some suggestion in the evidence of possible power issues (perceived and / or actual) that may have facilitated or constrained the CoP A's versus CoP B's ability to co-create new knowledge and innovate in their topic area. Future studies would benefit to examine how entities within the broader Ontario public health tobacco control system (e.g., provincial government bodies that direct the work of Ontario local public health agencies) constrain or facilitate formally instituted CoPs and their members' ability to feel or be empowered to innovate and take an active role in informing the direction that the government should take around their CoP topic area. Such a study may be conducted by comparing and contrasting formally instituted versus emergent CoPs (i.e., not government funded) to understand whether and how these respective CoP models are effective at carving a unique and viable identity within the Ontario tobacco control system and generating innovations from the bottom up in the context of the Ontario tobacco control public health system. Findings from such a study can inform how to optimize the investments being made in such formally instituted CoPs and what changes might be needed to ensure a cohesive and empowered Ontario public health tobacco control system.

People who research or are tasked with developing CoPs or other types of structures might also find the findings from this study useful. It may be that the notion of cohesion and the factors identified in this study as contributing to this may develop and be important in a range of social structures. Such structures may include (but are not limited to) families, teams, organizations (and structures or units within them), or a structure that integrates different players across a bounded system (e.g., a national or international strategic alliance with research, practice, policy representation). It may also be that the factors examined in this study may become increasingly salient in social structures that form for a specific purpose. For instance, the factors examined in this study that contribute to cohesion, particularly those relating to a shared identity and member identification / sense of belonging may be important to strategic alliances that form for purposes of cooperation (i.e., where one organization shares information with another to help advance one another's work), but may become even more important issues to examine in strategic alliances that require different social structures to understand or to integrate to some extent their respective social structures' identity such as strategic alliances formed for purposes of collaboration (e.g., different organizations work collectively through common strategies, relinquishing some degree of autonomy so as to achieve their jointly determined purpose), or coadunation (e.g., different social structures unite within an integrated structure to the extent that one or all relinquish their autonomy in favour of a surviving organization such as in mergers or acquisitions) (Bailey & McNally Koney, 2000: 6-7). These issues are in need of greater examination particularly in relation to their implications such identity-based differences have on knowledge use. Thick descriptions have been developed to enable the reader to determine the potential transferability of study findings or applicability of the factors examined in this study to other contexts (Patton, 2002). To truly ascertain whether the factors and insights garnered in this study are important to consider when developing multi-faceted partnerships in CoP or other social structures to generate more practice-based evidence, however, additional

studies are needed. If similar conclusions arise across different cases despite varied circumstances, it increases the validity of findings and expands the potential for external generalizability (Yin, 2003; 2009). Examining the degree of cohesion that is needed to optimize knowledge exchange, learning and the co-creation of new knowledge in CoPs and other multi-faceted structures that form to promote these purposes is also an important avenue to examine. Although not a focus of this study, a few members noted that CoPs that are too strongly cohesive may become too inclusive and shut out potentially valuable people and information that could innovate and progress work around tobacco control. To the investigator's awareness, these issues have not been addressed in the context of CoPs before in the literature.

Although areas for future research have been discussed throughout sections 7.6.2 Theoretical Implications and above in this section, the following outlines additional ideas about the role of identity in cultivating cohesion in capacity building efforts, the role of cohesion in promoting workplace health and wellness, and the role of cultivating cohesion in cultivating grassroots efforts through community-based participatory research that can have powerful upstream population health impacts. Solutions to complex problems like preventable chronic diseases caused by tobacco use or other risk factors may best emerge when diverse players across a system work together. System approaches, however, necessitate people representing different social groups to work well together, openly exchange and integrate their diverse perspectives and knowledge bases, and coordinate their actions to induce change. This may not be an easy feat given different social groups possess unique social identities that shape social and cognitive (i.e., knowledge) boundaries that define their approaches to work and can limit the spread of innovations between these communities (Ferlie, Fitzgerald, Wood & Hawkins, 2005). This study highlights the importance of creating a shared identity that attends to the values and needs of the diverse social groups that aim to be brought together and can form an important anchor point for member identification. Member identification / sense of belonging emerged as an important

psychological mechanism that contributed to social capital. Social capital in turn served as a powerful vehicle for knowledge use, including the type that encompass decision-making and implementation of initiatives (i.e., instrumental). Social capital has also been linked to beneficial outcomes such as coordination among different actors and collective action that benefits individuals and their communities (Portes, 1998; Putnam, 2007; Kramer, 2006; Schaefer-McDaniel, 2004). Given these links, those who are tasked with building capacity to strengthen local public health agencies' ability to execute the comprehensive tobacco control program, the public health system, or to build a chronic disease prevention system may benefit to invest efforts into cultivating cohesion. Ways to do this may be via building superordinate identities, attending to social identity issues, and cultivating an environment of psychological safety that can enhance relationship building by motivating members to want to engage with diverse others, coordinate efforts and co-create knowledge that can address complex health issues.

Researchers may also benefit to examine and develop the science around identity-based issues in relation to building capacity for comprehensive tobacco control or the public health system more broadly. To illustrate using one level of the Ontario public health tobacco control system, the SFO positions local public health agencies as key leads in the roll-out of the strategy. Human resources (i.e., local public health professionals) have been identified as a critical component of public health capacity (Turncock, 2004 cited in Meyer, Davis & Mays, 2012) and as such are essential to the SFO. To support local public health professionals to effectively execute the SFO, local public health agencies must provide organizational-level supports that can aid their work. Researchers might explore organizational identity and member identification and their potential contributions to retaining skilled employees, motivating actions that advance tobacco control work in their local communities. Organizational identity and the Social Identity Approach may serve as potentially useful theoretical frameworks to guide future research in this area. Moreover, since building capacity at system levels in public health tobacco control or other

may extend beyond provincial and even national boundaries, examination of social, organizational, institutional, and national or ethnic/cultural identities may be important avenues for investigation.

As already stated earlier, the concepts examined as part of the conceptual framework guiding this study may also be relevant for practice and research in other types of formal organizational settings. According to WHO, public and private organizations:

“directly influence the physical, mental, economic and social well-being of workers and in turn the health of their families, communities and society...These organizations are also increasingly recognizing that their future success and viability hinge on the existence of a healthy, qualified and motivated workforce” and have been identified as a priority for health promotion in the 21st century
(World Health Organization, http://www.who.int/occupational_health/topics/workplace/en/).

The conceptual framework guiding this study and general principles in Table 10 above may contribute to the social and psychological well-being of a workplace. Future research might examine how cultivating shared identity in the workplace, sense of belonging, psychological safety, and social capital influences employee health (e.g., absenteeism from health-related illnesses) or organizational outcomes (e.g., innovation, productivity). To the extent that future research supports a link between these factors and health or organizational outcomes, local public health professionals who specialize in workplace health may expand their health promotion efforts by educating workplaces to attend to the creation of the above stated factors as a means to contribute to a healthy and motivated workforce with potentially beneficial public health ripple effects.

The conceptual framework may also have implications for community-based participatory research and understanding of emergent informal and voluntary structures that are forming in the general population. If we want more practice-based evidence that achieves public health impact, perhaps we should expand our engagement efforts beyond research, policy and practice sectors to include the actual target populations (i.e., the public) we wish to ultimately

influence. The notion of engaging the very people whose behaviours we wish to change has other implications. According to Florida (2002), ‘our social landscape is changing and with it a shift in how we define ourselves.’ He contends that we are increasingly defining ourselves by seeking work environments, activities, products to consume, and locations to live that resonate with our values and creative interests. Consequently, people are organically organizing into multi-faceted social groups (e.g., in their local communities or more broadly) with their own social identities that reflect their collective values, aspirations and interests. The organic emergence of social groups around shared interests (some of which may be health-related) within local communities may signal opportunities for community-driven changes that can help solve social problems. The principles derived in this study (Table 10) may provide insights into how to support such changes. For instance, allowing citizens to identify community-based research problems and questions, engaging them throughout the research process and / or having resource centres in place that can connect them to people and supports they need to address these social problems may enhance identification with and ownership over their community. This in turn may cultivate or strengthen social capital and generate new innovations that may improve the well-being of the people and the community with potential upstream ripple effects. The conceptual framework that guided this study may also prove useful in future research to shed insights into how these emergent communities of interest form, cohere, and potentially generate innovations that progress their local communities.

In this study, the Social Identity Approach provided a useful framework for understanding social processes associated with knowledge use. This approach may also shed insights into the social processes associated with the uptake and use of smoking or other risk factors among different population groups. Youth, for instance, are motivated to engage in smoking or not depending on the norms of behaviour that characterize or ‘define’ the social group with which they identify (Stewart-Knox, Sittlington, Rugkasa, Harrisson, Treacy &

Abaunza, 2005). Program interventions may benefit to understand the social groups that populations like youth identify with and target the normative behaviours that motivates members to engage in (e.g., smoking) in order to portray an image consistent with their group's identity. Social identity processes may also inform more effective mass media campaigns or policies that target chronic disease causing risk factors, but this needs exploration.

Moreover, the Social Identity Approach may offer a lens through which researchers; practitioners and policy makers alike might rethink their assumptions and actions about specific populations (or sub populations) that their work seeks to impact. Ingroup versus outgroup distinctions increases the likelihood that outgroup members are seen as homogeneous. This has, for instance, been suggested to detract from optimal care for elder cancer patients (defined in one study as a social group) because of oncologists' assumptions about that age group and their needs (Harwood & Sparks, 2003). When we break down "us" and "them" distinctions (and potential stereotypes), then perhaps the true needs of the groups we wish to positively impact with our work will surface, be heard, and addressed.

8.0 Final Remarks

Calls are made for the formation of multi-faceted partnerships in public and population health to generate relevant evidence that can solve complex problems like tobacco use (Graham et al., 2008; CIHR 2004; Riley et al., 2009; Kerner et al., 2006). Despite these calls and much talk about the importance of diverse people working together, little attention is placed on the processes involved and there is an assumption that partnership dynamics will just work themselves out. To generate useable practice-based evidence, however, necessitates that we understand how to optimally converge the different players that sit at the table so that member's can and do engage in productive dialogue that generates the solutions and impacts intended. This dissertation made efforts to address this gap by examining the LEARN CoP and issues that Wenger and colleagues (Wenger, 1998; Wenger et al., 2002) assert are essential to ensure members cohere together to experience the 'aliveness' needed to make the CoP thrive.

Social capital emerged as a potent force that drove members with different perspectives to share, exchange, co-create and take action on CoP knowledge. Defining oneself as belonging to a common group, however, motivated members to engage with others and as such contributed to and strengthened social capital. Belonging also gave meaning to members' interactions and the knowledge they co-created to achieve collective goals. It has been noted that "*the social fabric of a community is formed from an expanding shared sense of belonging (and that) only when we are connected and care for the well-being of the whole*" can a collective consciousness emerge that can achieve transformative social change (Block, 2008: 9).

Cultivating the social fabric of a community through a shared sense of belonging, however, can be a challenge when members represent different social groups that are defined by their particular philosophies, priorities and ways of doing business. When conflicting identities collide, intractable conflicts may arise that can destabilize multi-faceted partnerships (Fiol,

2009). Although differences in social identities emerged in this study, they did not lend to such conflicts. The presence of a superordinate identity that resonated with the values and priorities of CoP members and their salient social groups appeared to play an integrative role. An overarching identity provided an anchor point for belonging, which motivated diverse members to engage in behaviours that facilitated knowledge use in effort to work towards their collective aims. These findings suggest that a superordinate identity and sense of belonging may help to cultivate rich reservoirs of social capital, marking them as important ingredients of cohesion and the experience of ‘aliveness’ needed to coordinate the activities of different social groups of an existing or desired system and ensure it thrives. Thus, these issues may have application in system approaches that aim to improve the public’s health (Wenger et al., 2002; Haslam, 2001; Block, 2008). In the words of Roy Cameron, “*We are the system. If we align our work we will start to build a ...prevention system. If we do not align our work, we will not have a system, no matter how much money gets spent*” (Chronic Disease Prevention Alliance of Canada, 2007; p. 12). The present study findings suggest that to ‘align our work’ may necessitate diverse people to cohere into a collective and offers organizational identity, the Social Identity Approach and social capital as frameworks to understand the underlying psychological and social processes that can help to create (or inhibit) such systems and their intent to generate public health solutions that can save lives.

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Appendix 1: Visual model of sequential explanatory mixed methods procedures

Phase	Procedure	Product
Case Selection	<ul style="list-style-type: none"> • LEARN CoP comprised of the embedded cases CoP A and CoP B 	
quantitative data collection ↓	<ul style="list-style-type: none"> • Cross-sectional web-based survey Sample: members from CoP A and CoP B who participated in at least one CoP meeting: <ul style="list-style-type: none"> - N=54 of 64 eligible members across both communities; - N=34 eligible members within one community and N=22 in the other) 	<ul style="list-style-type: none"> • Numeric data
quantitative data analysis ↓	<ul style="list-style-type: none"> • Data screening • Cronbach Alpha Coefficient • Descriptive statistics • Multiple regression • Mediation Analysis • ANOVA, t-tests • SPSS Quantitative Software v. 18 	<ul style="list-style-type: none"> • Frequency distributions, histograms, descriptive statistics • Statistically significant differences between the two communities of practice • Tested analytic framework to ascertain relationships between shared identity and knowledge use and how psychological safety, identification, social capital explain this relationship • Internal consistency of scales used to assess variables
QUALITATIVE Sampling and Interview Protocol Development ↓	<p>Use quantitative findings to inform:</p> <ul style="list-style-type: none"> • Sample within embedded cases: Purposive sampling of 6 members <i>per</i> CoP with high (n=2), intermediate (n=2) and low (n=2) levels of knowledge use. Within this, sample diverse members based on demographics important to factors of interest to study and / or knowledge use • Interview questions: based on factors most important to knowledge use 	<ul style="list-style-type: none"> • LEARN CoP Case and its embedded units (N=2 CoP) • Sample: at least n=12 members <i>across</i> two CoP • Interview Guide
QUALITATIVE Data Collection ↓	<ul style="list-style-type: none"> • Individual in-depth telephone interviews • Follow-up interviews if necessary • Documents • Observations and Field Notes 	<ul style="list-style-type: none"> • Textual data (interview transcripts, documents, field notes from observations and analytic memos)
QUALITATIVE Data Analysis ↓	<ul style="list-style-type: none"> • Coding and thematic analysis using constant comparison method • Within-case and across-case theme development and analysis • QSR NVIVO 8 Qualitative Software 	<ul style="list-style-type: none"> • Codes and themes within- and across-case • Thematic similarities and differences across cases • Differences based on sampling criteria (e.g., high, intermediate, low levels of knowledge use, sectors represented) • Visual models of LEARN CoP case
Integration of the Quantitative and QUALITATIVE Results	<ul style="list-style-type: none"> • Comparison and explanation of quantitative and qualitative results 	<ul style="list-style-type: none"> • Discussion • Implications • Future Research

Appendix 2: Information Letters and Consent Forms

DATE

Dear [Name of CoP] Member,

You are invited to participate in Phase II of the LEARN CoP Evaluation study being conducted by Irene Lambraki as part of her role as Developmental Evaluator for the LEARN Project. The study also forms the basis of her PhD thesis in Health Studies and Gerontology at the University of Waterloo, under the supervision of Dr. Steve Manske, Propel Centre for Population Health Impact, University of Waterloo.

The study is designed to evaluate the LEARN (Learning through Evidence, Action & Reflection Networks) Communities of Practice (CoP), and aims to better understand how your CoP is developing and operating and what has been important to enhancing relationship building, knowledge exchange and the use of CoP-related knowledge in practice. You are being contacted because of your membership in the (Name of CoP).

If you decide to volunteer, you will be asked to complete a 30-minute online questionnaire that is completed anonymously. The survey consists of three parts: 1) some questions on demographics, 2) questions on concepts relevant to participating in a CoP such as knowledge exchange, and 3) questions on barriers, facilitators, and added value from CoP participation. The research team may decide to use Survey Monkey™ whose computer servers are located in the USA. Consequently, USA authorities under provisions of the Patriot Act may access this survey data. If you prefer not to complete the survey on the web or using the Survey Monkey™, please contact us and we will make arrangements to provide you with a paper copy of the questionnaire. The alternate method may decrease anonymity but confidentiality will be maintained.”

At the next stage of this study, following the questionnaire, we will ask your permission to audio-tape your monthly CoP meetings, and later engage you in an interview which will be informed by insights gained from the first stage.

Participation in this study is voluntary. You may decline to answer any questions that you do not wish to answer and you can withdraw your participation at any time by not submitting your responses. There are no known or anticipated risks from participating in this study.

It is important for you to know that any information that you provide will be confidential. All of the data will be summarized and no individual could be identified from these summarized results. Furthermore, the web site is programmed to collect responses alone and will not collect any information that could potentially identify you (such as machine identifiers). The data, with no personal identifiers, collected from this study will be maintained on a password-protected computer database in a restricted access area of the university. As well, the data will be electronically archived after completion of the study and maintained for two years and then erased.

Should you have any questions about the study, please contact either Agnes Nowaczek at (519) 888-4567, ext. 38266 or by email anowacze@uwaterloo.ca or Steve Manske at (519) 888-4567 ext. 84518 or by email manske@uwaterloo.ca. Further, if you would like to receive a copy of the results of this study, please contact either investigator.

We would like to assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please feel free to contact Dr. Susan Sykes, Director, Office of Research Ethics, at 1-519-888-4567 ext. 36005 or by email at ssykes@uwaterloo.ca.

Thank you for considering participation in this study.

Consent: With full knowledge of all foregoing, I agree, of my own free will, to participate in this study.

- "I agree to participate"
- "I do not wish to participate"

Sincerely,

Irene Lambraki
Developmental Evaluator
Propel Centre for Population Health
Impact
University of Waterloo

Steve Manske, PhD
Principal Investigator
Propel Centre for Population Health
Impact
University of Waterloo

Agnes Nowaczek, PhD
Project Manager
Propel Centre for Population
Health Impact
University of Waterloo

Erika Steibelt
Team Lead, Knowledge
Development and Exchange
Program Training and Consultation
Centre
Cancer Care Ontario

Sume Ndumbe-Eyoh, MHSc
Health Promotion Specialist,
Knowledge Broker
Program Training and Consultation
Centre
Cancer Care Ontario

DATE

Dear [Name of CoP] Member,

You are invited to participate in Phase II of the LEARN CoP Evaluation study being conducted by Irene Lambraki as part of her role as Developmental Evaluator for the LEARN Project. The study also forms the basis of her PhD thesis in Health Studies and Gerontology at the University of Waterloo, under the supervision of Dr. Steve Manske, Propel Centre for Population Health Impact, University of Waterloo. The study is designed to evaluate the LEARN (Learning through Evidence, Action & Reflection Networks) Communities of Practice (CoP), and aims to better understand how your CoP is developing and operating and what has been important to enhancing relationship building, knowledge exchange and the use of CoP-related knowledge in practice. You are being contacted because of your membership in the (Name of CoP).

Phase I of the evaluation took place in April 2010 and involved a web-survey addressing concepts related to knowledge use among CoP members. Phase II of the evaluation involves collecting data from the following sources: in-depth interviews, audio-recorded monthly CoP meetings, and a web-survey.

Selected members of your CoP will be contacted to participate in a telephone interview. The purpose of the interviews is to understand what is working, what is not working and what could be improved with respect to networking and relationship building, knowledge exchange and the use of knowledge gained from the CoP in your work practice. Permission will be requested to audio record the interview and for the use of unattributed quotations in the thesis or any publications.

We are also seeking your permission to use the audio recordings of the CoP monthly meetings and permission to use unattributed quotations from the recordings in the thesis or any publications that result from this study. The purpose of using the audio-recorded meetings is to understand how knowledge is exchanged and used within your CoP and the factors that facilitate or impede these processes.

A consent form is attached outlining each part of the study. If you are **not** willing to participate in a specific part(s) of the study, please fill out the consent form and send it via email to Irene Lambraki at ilambrak@healthy.uwaterloo.ca.

It is important for you to know that any information that you provide will be confidential. All of the data will be summarized and no individual could be identified from these summarized results. Furthermore, the web site for the questionnaire is programmed to collect responses alone and will not collect any information that could potentially identify you (such as machine identifiers). The data collected from this study, with no personal identifiers, will be maintained indefinitely on a password-protected computer database in a restricted access area of the University.

Should you have any questions about the study, please contact either Irene Lambraki at ilambrak@healthy.uwaterloo.ca.

We would like to assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. However, the final decision about participation is yours. If you have any comments or concerns resulting from your participation in this study, please feel free to contact Dr. Susan Sykes, Director, Office of Research Ethics, at 519-888-4567 ext. 36005 or by email at ssykes@uwaterloo.ca.

We thank you for taking the time to consider this project.

Sincerely,

Irene Lambraki
Developmental Evaluator
Propel Centre for Population Health
Impact
University of Waterloo

Steve Manske, PhD
Principal Investigator
Propel Centre for Population Health
Impact
University of Waterloo

Agnes Nowaczek, PhD
Project Manager
Propel Centre for Population
Health Impact
University of Waterloo

Erika Steibelt
Team Lead, Knowledge
Development and Exchange
Program Training and Consultation
Centre
Cancer Care Ontario

Sume Ndumbe-Eyoh, MHSc
Health Promotion Specialist,
Knowledge Broker
Program Training and Consultation
Centre
Cancer Care Ontario

Consent Form

I have read the information presented in the information letter about the LEARN CoP Evaluation study, which also forms the basis of a thesis that is being conducted by Irene Lambraki, Developmental Evaluator for the LEARN Project, and PhD Candidate in Health Studies and Gerontology, under the supervision of Dr. Steve Manske, Propel Centre for Population Health Impact, University of Waterloo.

I was informed of the following:

I may be contacted by Irene Lambraki to participate in a telephone interview.

Audio recordings of the monthly CoP meetings will be used.

Excerpts from the monthly CoP meetings may be included in publications, reports or other documents that may result from the study. I understand that all quotations will be anonymous.

I have had the opportunity to ask questions related to this study.

I received satisfactory answers to my questions in sufficient detail.

I am aware that I may withdraw from participating in the study at any time by advising Irene Lambraki of this decision.

This project has been reviewed by, and received ethics clearance through the Office of Research Ethics at the University of Waterloo.

I was informed that if I have any comments or concerns resulting from my participation in this study, I may contact Dr. Susan Sykes, Director of Research Ethics at the University of Waterloo at 519-888-4567 ext. 36005 or ssykes@uwaterloo.ca.

PLEASE CHECK THE FOLLOWING IF YOU DO NOT WISH TO PARTICIPATE IN ONE OR MORE ASPECTS OF THIS STUDY:

I **do not** agree to the use of audio recordings of the monthly CoP meetings for the study (please check off box):

I **do not** agree to the use of unattributed quotations from the audio recordings of the CoP meetings in any publications, reports or other documents that come of this research (please check off box):

Please copy and paste the above three statements if you decide NOT to participate along with your name, and email it to Irene Lambraki at ilambrak@healthy.uwaterloo.ca

Appendix 3: Phase I Survey



LEARN Communities of Practice

Dear Community of Practice member:

Thank you for participating in the evaluation of your Community of Practice (CoP). Your participation in this evaluation is voluntary, is not part of your work requirements, and has no impact on your work.

Your responses to this questionnaire will be kept confidential and data gained from this survey will be stored on a secure server. Should you wish to not respond to a question please skip to the next question in the questionnaire.

If you have any questions about the study or wish to obtain information on the results of this survey, please contact Irene Lambraki at ilambrak@uwaterloo.ca or the Project Manager, Agnes Nowaczek via email (anowacze@uwaterloo.ca) or phone (Agnes, 519-888-4567, x 38266).

This study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. Any questions or concerns may be directed to Dr. Susan Sykes in the Office of Research Ethics at 519-888-4567, ext. 36005.

1. For each of the different groups listed (from “none” to “all”), please select the number of people, on average, that you feel you have the following types of relationships with, and who are important to you for different reasons. Please indicate your response to *each* of the following statements by marking *one* circle (⊗) that best describes how you feel.

<i>On average, how many people (none to all) from the following group/s</i>	None ↓	Few ↓	Quite a Bit ↓	Many ↓	All ↓
a. Do you experience positive relationships with:					
Members of this Community of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Do you experience feelings of support:					
Members of this Community of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Do you experience feelings of acceptance:					
Members of this Community of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. Do you engage in regular interaction with:					
Members of this Community of Practice during organized meetings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Members of this Community of Practice outside of organized meetings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Are you willing to work with/help:					
Members of this Community of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. Do you experience a high level of trust with:					
Members of this Community of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Concepts Related to your Community of Practice

2. These statements address different ways in which you might use knowledge related to your work within and outside of your Community of Practice, as a result of you being a member of the LEARN CoP. Please indicate how accurately *each* statement reflects your perception, by marking *one* circle (⊗) that best describes how you feel.

<i>Due to my participation in this CoP...</i>	Never ↓	Seldom ↓	Some times ↓	Often ↓	Always ↓
a. ...I have received evidence concerning the area for which I am responsible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. ...I have read and understood the evidence that I received as a member of this CoP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. ...I have cited evidence that I received as a member of this CoP to colleagues or as a reference in my work (research and/or practice)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. ...I have adapted the format of the evidence I received as member of this CoP to provide information useful to our decision makers (research and/or practice)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. ...I have made efforts to promote the adoption of evidence in my field that I received as member of this CoP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. ...I received evidence which has led me to make professional choices and decisions that I would not have made otherwise	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. ...I have access to information about how evidence has been used, which has led to concrete changes in the programs or services delivered by my workplace	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. Please indicate the extent to which you agree or disagree with *each* of the following statements with respect to your Community of Practice, by marking *one* circle (⊗) that best describes how you feel.

<i>In this Community of Practice...</i>	Strongly disagree ↓	Disagree ↓	Neutral ↓	Agree ↓	Strongly Agree ↓
a. Members seem to have a strong sense of its origin and purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Members have a strong sense of pride in the CoP goals and mission	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Members here think this CoP has created a unique place for itself in the Ontario tobacco control community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. This CoP does not have a well-defined set of goals and objectives for itself	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. Members are very knowledgeable about its origin and purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. When members talk about this Community of Practice to outsiders, it is usually with great enthusiasm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Please indicate the extent to which you agree or disagree with *each* of the following statements with respect to your Community of Practice, by marking *one* circle (⊗) that best describes how you feel.

<i>In this Community of Practice...</i>	Strongly disagree ↓	Disagree ↓	Neutral ↓	Agree ↓	Strongly agree ↓
a. When someone criticizes this CoP, it feels like a personal insult	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. I am very interested in what others think about this CoP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. When I talk about this Community of Practice, I usually say 'we' rather than 'they'	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. This Community of Practice's successes are my successes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. When someone praises this CoP, it feels like a personal compliment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. If others in the tobacco control community criticized this CoP, I would feel embarrassed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. I feel strong ties with this Community of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
h. I experience a strong sense of belonging to this CoP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
i. I feel proud to be a member of this Community of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<i>In this Community of Practice...</i>	Strongly disagree ↓	Disagree ↓	Neutral ↓	Agree ↓	Strongly agree ↓
j. I am sufficiently acknowledged in this Community of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
k. I am glad to be a member of this Community of Practice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. Please indicate how accurately the following statements reflect your Community of Practice, by marking *one* circle (⊗) that best describes how you feel.

<i>About this Community of Practice...</i>	Very in-accurate ↓	In-accurate ↓	Neutral ↓	Accurate ↓	Very accurate ↓
a. If you make a mistake in this CoP, it is often held against you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Members of this CoP are able to bring up problems and tough issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c. Members in this CoP sometimes reject others for being different	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d. It is safe to take a risk in this CoP	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
e. It is difficult to ask other members of this CoP for help	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
f. No one in this CoP would deliberately act in a way that undermines my efforts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
g. Working with members of this CoP, my skills and talents are valued and utilized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix 4a: Phase II Interview Guide

Preamble to be provided to participants prior to asking questions:

- Introduce self, describe purpose of the study, and why it is important.
- Emphasize the importance of their participation and describe how their information will be used. The study serves as the investigator's dissertation and aims to assist 1). LEARN Team and the CoP members about what it takes to get different people in the CoP to cohere and the influence this has on their use of knowledge gained from the CoP in practice to advance CoP goals.
- Explain that the interviewer (investigator) is interested only in the views and experiences of the participant and is not invested in a particular outcome for the study. The only thing that is of interest is candid, professional responses. Stress that there are no right or wrong answers and members are free to answer or not answer any questions and that participation is voluntary.
- Describe and confirm issues of confidentiality (participant will have already given consent prior to interview).
- Ask if the interviewee has any questions, answer them and begin.

Questions:

Theme: Knowledge Use

1. Tell me about some instances where you *or* your community of practice has collectively used knowledge gained from this community in practice? (probe for types of knowledge use if they do not surface)

Probes: (conceptual knowledge use)

Would you have examples of how you or the community as a whole have used community-related knowledge in this way? What led to this?

(instrumental knowledge use)

Would you have an example of how knowledge gained from this community of practice has been used by you or the community of practice as a collective to make decisions and program, policy or practice changes? What led to this?

(symbolic knowledge use)

Would you have an example where you or the community as a collective has used knowledge gained from the community of practice to justify actions or decisions that have already been made? What led to this?

Probe: Have there been times when you have deliberately not used what you learned through the CoP? What circumstances led to this? Please provide examples.

Probe: *What can be done to overcome these obstacles?*

Theme: Cohesion

2. So, let's talk about this. How do you feel that members of your community of practice are 'jelling together'?

Probe: *How important is it for members of the community of practice to gel together in order to exchange and use knowledge? Would you have some examples of this?*

What degree of members jelling together is important to achieve these ends?

Probe: *What has been most important to this occurring?*

Probe: *What has detracted from this? How can these challenges be overcome?*

Theme: Shared Identity

3. Refer to the community of practice survey findings on shared identity:
The survey findings indicated that members feel that (insert findings – there is / is not a shared understanding among members’ about ‘who we are’ as a community of practice – i.e., what this community of practice represents) Why do you think this is?

4. What is the purpose of your community of practice? Or, what does your community of practice represent anyway? What are the key characteristics that define what your community of practice is about?

Probe: What do these characteristics mean to you? (i.e. how do you interpret them)?

Probe: How is this community of practice similar to and what sets it apart from, communities of practice or other comparable groups that you are involved with?

5. What importance, if any, does shared understandings of ‘who we are’ as a community have in (name of CoP)?

Probe: In what ways has a shared understanding (or not) of ‘who we are’ as a community of practice influenced how knowledge is used in this community? Please provide examples.

6. What do you feel has contributed to or detracted from developing a shared understanding of ‘who we are’ as a community of practice and its influence on knowledge use?

*Probe: If not offered by participants, probe for:
Sense of belonging,
Interactions with other members, quality of relationships (i.e. trust, norms such as reciprocity),
feeling safe to speak up).*

Theme: Sense of Belonging

14. What was it about this community of practice that originally drew you to the CoP and motivated you to become a member? What is it that keeps you coming back? Why?

15. Describe survey findings for CoP re: sense of belonging. How does this reflect your feelings of belonging to this community?

Probe: *What does a sense of belonging mean to you anyway? Is it important in this CoP?*

16. In what ways has a sense of belonging influenced your use of knowledge gained from the CoP if at all? Please describe? Please provide examples.
17. What has contributed to or detracted from your identification with / a sense of belonging in this community of practice?

If not offered or described by participants above, probe for:

Shared sense of who we are as a community of practice?

Interactions with other members, quality of relationships (i.e. trust, norms such as reciprocity

feeling safe to speak up without excessive fear of being embarrassed, or rejected by community members

Theme: Social Capital

I would like for you to reflect now on the nature of interactions and relationships in this community of practice and how this influences knowledge use.

17. How would you characterize your interactions with other members in this community of practice?

Probe: How would you characterize the interactions you see in the CoP more broadly?

18. How would you characterize the quality of relationships that exist within this community of practice? What do you define as quality relationships? (e.g., cooperation, respect, trust, reciprocity) What do these terms mean to you?
19. In what ways have member interactions influenced how you use knowledge?
20. In what ways have the quality of relationships you described influenced how you use knowledge gained from the CoP?
21. What has contributed to or detracted from member interactions? Quality of relationships?

Probe: ***If not offered by participants, probe for:***

Shared sense of who we are as a community of practice

Sense of belonging,

Feeling safe to speak up

Theme: Psychological Safety

22. Describe survey findings relating to a climate of psychological safety. How does this compare to your experiences or impressions of a safe climate in the CoP?

Probe: Is this important in this CoP?

23. In what ways has the feeling that it is safe to speak up (or not) influenced how you and other community members exchange and use knowledge? Are there exceptions?

Probe: *How do differences based on sector (research, practice, NGO, other) or perceived expertise (novice to expert) influence members propensity to speak up, to constructively challenge others' assumptions?*

24. What factors have contributed to or detracted from members speaking up and its influence on knowledge use?

Probe: ***If not offered by participants, probe for:***

Shared understanding of who we are as a community of practice

Sense of belonging

Interactions with other members, quality of relationships (i.e. trust, norms such as reciprocity)

Wrap Up:

25. Any other key information that I should be aware of before we finish up today?

Closing

Thank-you for taking the time to participate in this interview. Your input is extremely valuable and on behalf of myself and the LEARN Project Team, we appreciate your time and candid responses. Would you mind if I call you if I have additional questions or need your advice?

Appendix 4b: Description of Interview Process, Reflections and Adjustments

The following will summarize the format of the interview and the investigator's reflections that were captured in field notes.

Impressions of Interview Structure and Interview Questions

Questions were grouped by factor of interest in the conceptual framework starting with questions around knowledge use, followed by shared CoP identity, member identification, social capital and psychological safety. For the knowledge use section, interviewees were asked to describe how they had used CoP knowledge. Probes were used to capture types of knowledge use that were not covered by the interviewee.

Members were also asked whether having CoP members 'jell together' is important to influencing their use of CoP knowledge. While this question yielded interesting results about the level of cohesion that was desirable in a CoP context, it became apparent that the question was not working in terms of deciphering the respective contributions that shared identity, member identification / sense of belonging, social capital or psychological safety had on members cohering together and its subsequent influence on knowledge use. This question was dropped after the first four interviews and a more direct approach to identifying how shared identity, member identification/sense of belonging, social capital and psychological safety influence knowledge use was taken. Examples of how this was done are described below.

The investigator also probed for the circumstances that contributed to or detracted from their use of CoP knowledge and used these answers to direct questioning particularly when interviewees mentioned factors of interest to this study. Specifically, when interviewees mentioned a factor of interest in the study as influencing knowledge use unprompted, the investigator posed a set of semi-structured questions that pertained to that factor. When a factor was not raised by interviewees, the investigator brought it up.

Tapping issues pertaining to member identification (i.e., what is it about the CoP that members identify with) in particular and for a few members' issues pertaining to a shared identity were challenging. Although indirect questions were attempted such as 'what was it about this CoP that resonates with you?' some interviewees asked for clarification on what this meant. During these initial interviews, the investigator provided an explanation of what exactly was being asked. The example often given was that organizations portray a certain message of what it is about. For instance, "Nike" portrays the message of 'we create products that inspire you to take action.' Staff and customers may find that message inspiring to them because it resonates with their own definition of who they are as an individual (e.g., I am action-oriented) or who they aspire to become. Members were then asked, what is it about the CoP that you identify with or resonates with you and motivates your desire to keep coming back?" Subsequent interviewees were asked more simply 'what is it about the CoP that keeps you coming back' and responses often reflected those offered by the first four interviewees who were re asked the more complicated question.

Following how others have assessed issues pertaining to shared identity (Nag et al., 2007; Alvesson & Empson, 2008), questions were asked in indirect ways. Members were asked "what

is the purpose of this CoP?” or “what does the CoP represent?” For the most part, members were able to answer these questions without a great need for clarity. However, a few members experienced difficulties when they were asked “what characteristics best describe (name of CoP A).” The investigator clarified that she wanted to know what best defines or makes the CoP what it is and what makes it different from other groups that they belong to. This clarification helped. The investigator also noted similarities in member responses as the number of interviews continued (i.e., by the 11th individual, few if any new information was emerging). By the 14th interviewee, the investigator stopped sampling with the caveat of conducting additional interviews should coding reveal areas in need of saturation.

Impressions of Response Bias

The investigator also searched transcripts for evidence of response bias, but did not find any. All interviewees were well spoken and forthcoming in sharing their perceptions, both positive and less positive, about how the CoP is doing with respect to the factors of interest to the study and their influence on knowledge use. In fact, there were examples where some interviewees made clear statements that other factors beyond those of interest to this study were more powerful in determining whether they would use CoP knowledge in their work. Additionally, a few instances were identified where interviewees corrected the investigator’s interpretation of something they had communicated suggesting that they were not responding in socially desirable ways.

Ending the Interview

The interview process also revealed other interesting insights. Members, often those who had served or currently served as co-chairs, said that the interview questions actually gave them ideas of how to improve CoP processes or expand their understandings of what they want to experience as a result of their participation. For instance, these members indicated:

“This has been interesting for me to reflect on the whole process because we don’t often take time to do that.”

“So actually it’s interesting, I’m taking some notes because I’m getting ideas talking to you as well,”

“So like I’ve just been making notes and I think that it’s important to maybe reach out a little bit more to members,” and

“(the interview) certainly makes you think about what you hope to get out of the COP much more.”

Interestingly, the investigator observed in post-interview recorded meetings and meeting minutes that CoP A members began raising key issues that they noted during the interviews would improve the CoP and their use of CoP knowledge. These issues largely centred on issues pertaining to a shared CoP identity. All interviews ended by asking members if there was anything that: (1) was not covered but should have been asked and (2) they wanted to expand on anything that they said but may not have had the opportunity to do during the interview. Members commonly stated something similar to these illustrative quotes:

“No, I think that was pretty comprehensive...You did a great job...Very well thought out,” and “It’s been a pleasure...”

All members were also willing to be contacted again for follow-up should clarification be required and to conduct member checks to validate study findings.

Impressions of Interviewees

The investigator’s field notes not only tracked her impressions of the interview process, but also of the interviewees. All interviewees were friendly, warm, forthright and professional in their answers and it was clear to see the commitment they have to do their best in their work. Certainly, members’ dedication was evident given the time and effort they invested in completing the interviews. The interviewer reflected in her memos:

“I feel a deep sense of gratitude for the time and energy that each of these members put into their interview and the kindness, patience and openness that they showed to me despite the lengthy interviews and their busy schedules. In all my interactions with public health professionals over the years, I have always noted the passion they have and initiative they take to serve a greater cause. It’s not lost on me that I have gravitated to learn from them and understand what it takes to motivate different people to work well together to achieve their collective aims.”

Appendix 5a: Factor Solutions per Survey Measure

Items	Knowledge Use	Shared Identity	Sense of Belonging	Social Capital	Psychological Safety
Knowledge Use					
Knowledge Use 1	.73				
Knowledge Use 2	.81				
Knowledge Use 3	.93				
Knowledge Use 4	.88				
Knowledge Use 5	.88				
Knowledge Use 6	.88				
Knowledge Use 7	.82				
Shared Identity					
Shared Identity 1		.86			
Shared Identity 2		.89			
Shared Identity 3		.75			
Shared Identity 4		.25			
Shared Identity 5		.85			
Shared Identity 6		.90			
Member Identification					
<i>Sense of Oneness</i>					
Member Identification 1			.67		
Member Identification 4			.63		
Member Identification 7			.78		
Member Identification 8			.68		
Member Identification 9			.95		
Member Identification 10			.70		
Member Identification 11			.85		
<i>External Orientation</i>					
Member Identification 2			.89		
Member Identification 3			.84		
Member Identification 5			.77		
Member Identification 6			.87		
Social Capital					
Social Capital 1				.94	
Social Capital 2				.89	
Social Capital 3				.89	
Social Capital 4				.64	
Social Capital 5				.64	
Social Capital 6				.93	
Psychological Safety					
<i>Climate of Safety</i>					
Psychological Safety 2					.84
Psychological Safety 4					.72
Psychological Safety 6					.70
Psychological Safety 7					.74
<i>Unsafe Climate</i>					
Psychological Safety 1					.87
Psychological Safety 3					.54
Psychological Safety 5					.65

Appendix 5b: Description of Factor Solutions per Survey Measure

Knowledge Use

The reliability of the 7-item knowledge use measure was $\alpha = .93$ and a one-factor solution emerged with factors loading at .73 to .93. All items were tentatively retained.

Shared Identity

The 6-item strength of organizational identity (shared identity) measure had a standardized Cronbach $\alpha = .86$, but revealed that dropping item “*goals and objectives*” would increase the alpha coefficient to .91. A one-factor solution emerged for the 6-item shared identity measure with five of the items loading at .75 to .90. One item (“*This CoP has a well-defined set of goals and objectives*”) was weakly correlated with the other items (loaded at .25) and was consequently flagged as an item to drop from the scale and subsequent analyses.

Member Identification

The 11-item organizational identification (also interchangeably called sense of belonging in this study sense of belonging) measure had a standardized Cronbach $\alpha = .94$. The factor analysis revealed a two-factor solution. All items loaded on both factors, but some loaded more strongly on factor one and others on factor two. Factor one explained ~64% of the variance with 7 of the 11 item displaying factor loadings of .63 to .95. Factor two explained ~14% of the variance with four items displaying factor loadings of .77 to .89. Factor one describes members sense of oneness with their CoP. Factor two was labeled ‘*external orientation*’ because the items that loaded here reflect how perceptions of external others influences one’s identification to their CoP. Based on the literature, both factors represent member identification and as such are considered one scale. Similar decisions have been employed by other researchers. Specifically, other have found a measure to have more than one factor solution even though they reflect a single construct, but constructed these into a single scale (e.g., Carmeli & Gittell, 2009 in their examination of the role of high-quality relationships on organizational learning).

Social Capital

The 6-item social capital measure had a standardized Cronbach $\alpha = .90$. A one-factor solution also emerged for this measure with four of the items displaying factor loadings from .89 to .94. The remaining items loaded at .64, respectively and included “*I engage in regular interactions with CoP members outside of CoP meetings,*” and “*I am willing to help members of this CoP.*” The tentative decision was made to retain all of the items of this measure for analysis.

Psychological Safety

The 7-item psychological safety measure had a standardized Cronbach $\alpha = .75$, and would increase to .79 should the item “*If you make a mistake in this CoP, it is not held against you*” be dropped. The factor analysis revealed a two-factor solution. All items loaded on both factors, but some more strongly on one versus the other. Factor one explained ~43% of the variance with four items loading at .70 to .84. Factor two explained ~19% of the variance with three items loading at .54 to .87. Factor one reflected aspects of the CoP environment that makes members feel safe to take interpersonal risks that lead to learning and was labeled, ‘*Climate of Safety*’ (e.g., valuing and utilizing one’s skills and talents, integrity in member’s actions towards one another). Factor two reflected the aspects of the CoP environment that might challenge member’s perception of safety and consequently their propensity to speak up to share what they know, good or bad. This factor was labeled ‘*Unsafe Climate*’ and encompassed issues such as how CoP members are received when: they admit errors, are different than others within the group, or when they ask others for help or information. Conceptually, both factors reflect psychological safety and were thus considered one scale.

Appendix 6: Factor Solution for Entire Survey

Items	Knowledge Use	Shared Identity	Sense of Belonging	Social Capital	Psychological Safety
Knowledge Use					
Knowledge Use 1	.34				
Knowledge Use 2	.45				
Knowledge Use 3	.80				
Knowledge Use 4	.78				
Knowledge Use 5	.83				
Knowledge Use 6	.90				
Knowledge Use 7	.84				
Shared Identity					
Shared Identity 1		.61			
Shared Identity 2		.56			
Shared Identity 3		.87			
Shared Identity 4		.13			
Shared Identity 5		.42			
Shared Identity 6		.41			
Member Identification					
Member Identification 1			.82		
Member Identification 2			.88		
Member Identification 3			.62		
Member Identification 4			.61		
Member Identification 5			.82		
Member Identification 6			.81		
Member Identification 7			.76		
Member Identification 8			.73		
Member Identification 9			.50		
Member Identification 10			.62		
Member Identification 11			.32		
Social Capital					
Social Capital 1				.84	
Social Capital 2				.92	
Social Capital 3				.84	
Social Capital 4				.37	
Social Capital 5				.47	
Social Capital 6				.84	
Psychological Safety					
Psychological Safety 2					.65
Psychological Safety 4					.33
Psychological Safety 6					.83
Psychological Safety 7					.37
Psychological Safety 1					-.004
Psychological Safety 3					.48
Psychological Safety 5					.64

Appendix 7: Interviewee, Dates, Interview Duration, Transcript Page Length and Transcript Word Count

Member	CoP Represented	Date	Length of Interview (hours)	Transcript Word Count	Transcript Page Length
B	CoP A	Jan 17th, 2011	1.25	12,544	39
F	CoP A	Jan 18 th , 2011	1.34	12,703	36
J	CoP B	Jan 18 th , 2011	1.22	12,596	40
N	CoP B	Jan 19 th , 2011	1.21	14,956	42
M	CoP B	Jan 24 th , 2011	1.38	19,584	55
K	CoP B	Jan 24 th , 2011	1.20	12,339	37
L	CoP B	Jan 25 th , 2011	1.06	10,781	32
A	CoP A	Jan 26 th , 2011	1.03	12,084	36
C	CoP A	Feb 1 st , 2011	1.27	14,528	38
E	CoP A	Feb 2 nd , 2011	1.38	16,884	57
G	CoP A	Feb 11 th , 2011	1.03	10,879	32
D	CoP A	Feb 11 th , 2011	1.50	17,805	40
I	CoP B	Feb 11 th , 2011	1.23	13,281	43
H	CoP B	Feb 22 nd , 2011	1.28	15,373	58
Total			17.38 hrs	195 893 words	pages
Average			1.24	13992.40	41.8

Appendix 8: Effects Matrix / Audit Trail

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Context of Interest to Study and Development of Conceptual Framework	<p>Investigator was working with LEARN CoPs and provided an interesting setting to understand calls for mult-faceted partnerships and to better understand informal structures like CoPs.</p> <p>Conceptual framework contains different layers (individual, social, CoP and external environment), but focuses on shared identity, member identification, social capital and psychological safety and how they inter-relate to influence knowledge use within a CoP setting.</p>	<ul style="list-style-type: none"> Investigator was interested in understanding how people representing different social groups (e.g., sector) cohered into a collective in the LEARN CoP setting and the influence this had on their use of CoP knowledge. Framework developed based on literature and forms the conceptual foundation that guided the study 	<ul style="list-style-type: none"> Framework applied to CoP context for testing
Development of Research Questions	<p>Three research questions posed to test the conceptual framework:</p> <ol style="list-style-type: none"> How do shared identity, member identification, social capital and psychological safety each influence knowledge use? How do the above factors inter-relate to influence knowledge use? What contributes to or detracts from these relationships? 	<ul style="list-style-type: none"> A mixed-methods approach deemed useful to answer the research questions. A quantitative study was deemed useful to statistically determine whether shared identity, member identification, social capital, and psychological safety each influenced knowledge use (research question 2) and allow testing of possible inter-relationships of interest to research question 2. A qualitative study was emphasized in this study because it was deemed essential to gaining deeper insights into the research questions, including examination of contributing or detracting factors (research question 	<p>Mixed methods approach to be used to answer research questions.</p> <p>quan-QUAL mixed-methods approach – meaning, the Phase II qualitative study is emphasized over the Phase I quantitative study.</p>

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Selecting Study design	A sequential explanatory mixed-methods embedded case study design was selected to answer research questions.	<ul style="list-style-type: none"> • Case study is the LEARN CoP Project. Embedded units are selected CoP that comprise the project. • Sequential mixed-methods selected such that a quantitative study would statistically test relationships in the conceptual framework, Qualitative study would build on the quantitative study by examining in greater depth statistical findings. 	
Case Identification	An embedded case study of the LEARN CoPs project with focus on two purposively selected LEARN CoPs.	<ul style="list-style-type: none"> • Embedded cases purposively sampled because had been operating for at least 1 year – a criterion deemed necessary in this study for factors of interest (shared CoP identity, social capital, etc) to emerge. • Two cases deemed similar because developed and implemented using the same model and comprised the LEARN CoP project. This will enable pooling of data for analyses. 	
Ethics Approval for Study		<ul style="list-style-type: none"> • Approved 2010 	<ul style="list-style-type: none"> • Proceed with Study

<i>Steps</i>	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
<p><i>PHASE I QUANTITATIVE</i></p> <p>Phase I Survey Development</p>	<ul style="list-style-type: none"> Identified established measures from literature with some psychometric testing to assess organizational identity, organizational identification, psychological safety and knowledge use Survey developed and tested for face and content validity Web-based survey developed at Propel, University of Waterloo and tested 	<ul style="list-style-type: none"> Measure to assess social capital was developed. Survey items adapted to CoP context Face and content validity of survey items assessed by LEARN Project Team members (a researcher and Team lead) and a local public health tobacco control practitioner not involved in the study. Revisions were made. Web-based survey tested for aesthetics and functionality. Modifications were made. 	<ul style="list-style-type: none"> Prepare to launch Web-based Survey
Quantitative Recruitment Procedures	<ul style="list-style-type: none"> Members of LEARN CoPs informed about dissertation study, plans for Phase I including consent and confidentiality. Criterion for sample selection: members must have attended at least one CoP meeting PTCC provided list of members per CoP, including current email addresses. Members that met criteria (above), were sent an email with information letter and consent form to indicate interest in participating 	<ul style="list-style-type: none"> Members per CoP informed about study during one of their respective regularly scheduled teleconference CoP meetings. General purpose of study was stated (i.e., to understand what factors influence use of CoP knowledge) along with study protocols. Criterion to be eligible to partake in the study based on decision that in order for members to belong to the CoP and be able to answer questions they need to have been exposed to at least one meeting. N=56 of 64 total members across both CoPs agreed and were eligible to participate. 	<ul style="list-style-type: none"> Send web-links to eligible participants to complete the survey

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Quantitative Data Collection	<ul style="list-style-type: none"> • Cross-sectional web-based survey implemented • Members who returned consent forms were sent a link to the UW survey where they re-confirmed their approval to participate. • Three-staged efforts made to increase response rates: Web-based survey designed so members could return multiple times to complete survey; 	<ul style="list-style-type: none"> • As planned, email reminder sent to eligible members to complete survey two-weeks after its launch • Decision to make follow-up calls made to eligible members to remind them of the survey and ask if they had any questions • Implemented May 2010 • N=35 of 56 eligible members completed the survey: N= 23 of 34 eligible CoP A members completed survey; N=12 of 22 eligible CoP B members completed survey 	<ul style="list-style-type: none"> • Discussions with statistician regarding plans to analyse data given small sample size.
Quantitative Data Analysis	<ul style="list-style-type: none"> • SPSS Version 20 used to screen data, determine how well items per measure loaded on intended measures (factor analysis), created factors score to use in subsequent statistical analyses. Determined standardized Cronbach alpha coefficients for each measure • Correlations, linear and multiple regression used to answer research question 1. • Mediation Analysis using Baron & Kenny (1986) approach and Goodman's Test for verification was used to answer Question 2. 	<p><i>Key Findings To Establish Reliability of Scales</i></p> <ul style="list-style-type: none"> • Items loaded per scale as anticipated as result of factor analysis (reflective of other studies that have tested the respective scales) • Cronbach Alpha Coefficients strong (above $\alpha = .70$ cut-off) for all scales assessed (comparable with previous studies). <p><i>Key Results Using Pooled CoP Data</i></p> <ul style="list-style-type: none"> • Shared identity, member identification, social capital and psychological safety each strongly, positively and significantly correlated with and had a significant main effect on knowledge use (outcome). 	<ul style="list-style-type: none"> • Consulted statistician regarding conducting factor analysis given small sample size. Decision to try it, recognizing limitations.

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Qualitative Data Analysis con't...	<ul style="list-style-type: none"> To set up the Phase II Qualitative Study and inform sampling, descriptive statistics, t-tests and ANOVA used to examine the influence of specific demographics on the variables of interest to this study (knowledge use, shared CoP identity, Determined significant differences between the CoPs and potential demographic differences that might explain them. 	<ul style="list-style-type: none"> All variables (above) lost their significance when entered together in a multiple regression model to predict knowledge use. Multicollinearity was not an issue. Suggests factors of interest exert influence on knowledge use through one another (as per propositions guiding study). Mediation analysis tested an analytic framework of how these variables might exert their influence on knowledge use through one another. Framework was not supported. Questions remain about how variables inter-relate to influence knowledge use. <p><i>Key Differences per CoP</i></p> <ul style="list-style-type: none"> Differences between CoPs found that CoP B had higher average ratings for all variables of interest (shared CoP identity, member identification, social capital, psychological safety and knowledge use). However, the only significant differences between CoPs were shared CoP identity and psychological safety. The intent was to determine whether specific variables should be focused upon in Phase II Qualitative Study. The intent of all of the above analyses was to inform what to examine in more depth in Phase II Qualitative Study <p><i>Examination of demographic differences and by level of knowledge use</i></p> <ul style="list-style-type: none"> Since relationships were established 	

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Qualitative Data Analysis con't...		<p>between the above variables and knowledge use, additional analyses were conducted to examine whether differences existed based on demographics using pooled CoP data. The intent was to determine whether specific sample demographics and their perspectives would be useful to examine in Phase II Qualitative Study.</p> <ul style="list-style-type: none"> Although a desired analysis, small sample size precluded ability to analyse how members with lower, intermediate and higher levels of knowledge use influenced shared identity, member identification, social capital and psychological safety. (See below for explanation of how this was addressed in the qualitative study) 	
PHASE II QUALITATIVE			
Connecting Phase I Quantitative to Phase II Qualitative Study – Areas of Focus	<p><i>Areas of Focus</i></p> <ul style="list-style-type: none"> Examined Quantitative Findings to determine areas to examine in depth qualitatively. 	<p><i>Areas of Focus</i></p> <ul style="list-style-type: none"> Overall, statistical findings for Research Questions 1 and 2 supported original propositions that shared identity, member identification, social capital and psychological safety were related to knowledge use, but how 	<p><i>Areas of Focus</i></p> <ul style="list-style-type: none"> Given small sample size, finding that factors of interest each significantly related to knowledge use (outcome), but not clear how these inter-relate to

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
<p>Connecting Phase I Quantitative to Phase II Qualitative Study – Areas of Focus con't...</p>		<p>these inter-related to influence knowledge use was not clear (i.e., multiple regression analysis and mediation analysis not supported).</p> <ul style="list-style-type: none"> • Significant differences were found between CoPs with respect to shared CoP identity and psychological safety. • Overarching framework specifies that the more strongly one perceives a shared CoP identity to exist, experience member identification with CoP, psychological safety and social capital the higher the knowledge use. • Desire to analyse how members with different self-reported levels of knowledge use (lower, intermediate, higher) rated the presence of a shared CoP identity, experienced member identification, psychological safety and social capital. However, small sample size did not allow this. 	<p>influence knowledge use, Phase I Quantitative Study Findings were used loosely to inform what to explore in the Phase II Qualitative Study.</p> <ul style="list-style-type: none"> • Shared CoP identity, member identification, social capital, psychological safety and knowledge use and their relationships were areas to explore qualitatively and as such informed the development of the interview guide and what to examine in supporting CoP documents. • An inability to statistically analyse data per knowledge use level (lower, intermediate, higher) due to small sample size, led to the decision to calculate the average levels of knowledge use (conceptual + instrumental) for each survey respondent, group individuals into lower, intermediate and higher levels of knowledge use and use that to inform qualitative sample and explore proposed relationships of conceptual framework

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
<p>Connecting Phase I Quantitative to Phase II Qualitative Study – Sampling</p>	<p><i>Sampling Approach</i></p> <ul style="list-style-type: none"> Consistent with a sequential mixed-methods design, a subset of the survey respondents were eligible for the Phase II Qualitative telephone interviews by using a nested sampling approach (Collins et al., 2007). 	<p><i>Purposive Sampling</i></p> <ul style="list-style-type: none"> Subset of survey respondents formed qualitative sample (nested approach) Key criteria for sampling subset of survey respondents: 1. Experience participating in the CoP was desirable to inform factors of interest, thus members had to have participated in at least 5 CoP meetings. 2. Survey respondents with different levels of knowledge use (lower, intermediate, higher) 	<p><i>Purposive Sampling Decisions for Interviews</i></p> <ul style="list-style-type: none"> Within the two key sampling criteria (at least 5 CoP meetings attended and represent different knowledge use levels (lower, intermediate, higher), efforts were made to sample diverse perspectives. Significant differences in terms of knowledge use and/or other factors of interest based on gender and education led to decision to sample based on these demographics. Major interest of this study is to understand how people of difference cohere in ways that enhance knowledge use. Non-local public health sectors (research, NGO) were a minority in the CoPs and on surveys. Efforts made to capture their perspectives qualitatively. Roles assumed in CoP (e.g., Co-Chairs) or as part of work (TCAN, front-line practitioner sampled as members assuming such roles may

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Connecting Phase I Quantitative to Phase II Qualitative Study – Sampling con't...			have different experiences within the CoP.
Interview Guide Development	<ul style="list-style-type: none"> Interview guide structured around shared identity, member identification, social capital, psychological safety and knowledge use and the three research questions of interest to this study. 	<ul style="list-style-type: none"> Semi-structured interview guide reviewed by two members of the dissertation committee for face and content validity and two members of the LEARN Team to ensure questions were understandable from a practice (real-world) perspective. 	<ul style="list-style-type: none"> Revisions made accordingly and ready for implementation.
Ethics Updated and Approved for Phase II		Approved end of December 2010	Move forward with Phase II.
Recruitment	<ul style="list-style-type: none"> Members of LEARN CoPs informed about dissertation study, plans for Phase I including consent and confidentiality and that eligible members will be contacted via telephone to determine interest. Purposively sampled N=14 representing lower, intermediate and higher levels of knowledge use (at least 2 people per group) and within that diverse perspectives 	<ul style="list-style-type: none"> Members of each CoP informed during one of their regularly scheduled CoP teleconference meetings. Recruitment began in December 2010 and ended February 2011 1 did not return calls or emails, 2 moved on, no longer CoP members Rest replied promptly and willing to participate Overarching case N=14: <u>CoP A</u>: n=2 lower, n=2 intermediate, n=3 higher knowledge use <u>CoP B</u>: n=2 lower, n=3 intermediate, n=2 higher knowledge use 	<ul style="list-style-type: none"> Combination of initial telephone call followed by email effective to reach members quickly.
Initial Test of Interview Guide	<ul style="list-style-type: none"> Reflections on interview process documented Interviews conducted via telephone and audio-recorded using Audibility. 	<ul style="list-style-type: none"> First two people interviewed (representative for each CoP) Demonstrated complete openness, accommodation 	<p>Decisions to Ensure Interview Quality</p> <ul style="list-style-type: none"> Reviewed verbatim transcripts against recorded interviews to ensure consistency

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Initial Test of Interview Guide con't...			<ul style="list-style-type: none"> • Reviewed verbatim transcripts to ensure questions were not leading, elicited answers relevant to the study questions, • Debriefed with one committee member about interview process and approved to continue
Conduct of remaining interviews	<ul style="list-style-type: none"> • Interviews scheduled easily and at mutually beneficially times 	<ul style="list-style-type: none"> • 14 audio-recorded telephone interviews lasting approx. 90 minutes each completed and transcribed verbatim by external organization (Audibility) • Similiar issues were discussed among interviewed members by the 12th participant. Two additional interviewees were also interviewed to confirm no new ideas were emerging to inform the research questions. 	<ul style="list-style-type: none"> • Reviewed transcripts against recorded interviews to ensure consistency with positive results • Interviews completed after the 14th person based on saturation of themes (contributes to trustworthiness), with the caveat that if analyses displayed gaps (i.e., themes not fully developed or lack of range of responses to adequately describe important themes, interviewees would be approached again for follow-up and / or additional interviews would be conducted) – the latter was not found.
Collection of CoP Documents	<ul style="list-style-type: none"> • CoP Documents (meeting minutes, Community Charters and Learning Agendas, WebEx discussion posts, recorded meetings) collected 	<ul style="list-style-type: none"> • Investigator had access to WebEx and downloaded all CoP documents of relevance per CoP • Meeting Minutes: N=18 CoP A 	<ul style="list-style-type: none"> • Meeting minutes from each CoP's inception through to end of study period examined to understand their respective evolution and

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Collection of CoP Documents con't...		<p>N=13 CoP B</p> <ul style="list-style-type: none"> • Community Charters and Learning Agendas N=1 CoP A and N=1 CoP B • Discussion Posts: N=8 CoP A N=12 CoP B • Recorded Meetings: N=3 CoP A N=2 CoP B In-person meetings not captured via audio-recording or in real-time because none at time of Phase II Qualitative Study 	<p>better construct each case study description, with a focus on supplementary data sources emerging throughout the study period (Phase I and II).</p> <ul style="list-style-type: none"> • Recorded meetings did not become a feasible data source until Phase II Qualitative Study period. Recorded teleconference meetings were transcribed and served as an alternative to 'field observations.'
Phase II Qualitative Analysis	<p><u>Stage 1: Open Coding</u></p> <ul style="list-style-type: none"> • Paper and pencil review of all transcribed interviews reviewed • Labelled segments of text using predetermined coding scheme while also capturing emerging ideas from the data (i.e., a mix of deductive and inductive approaches). • Reviewed text contained within categories generated from open coding to ensure that text fit there. • Compared and contrasted categories generated from coding to determine which are redundant and should be discarded and which should be subsumed into another category. 	<ul style="list-style-type: none"> • Staggered scheduling of interviews to allow review and adjustments to interview guide or process and paper and pencil generation of coding scheme that would be used in NVIVO 9 for formal analysis. • Nine higher order concepts (or branches) emerged, each with multiple sub-branches, twigs. • Text within twigs and sub-branches of a branch displayed, for the most part, a range of responses from interviewees and supplementary data sources, providing support for theoretical sufficiency. 	<ul style="list-style-type: none"> • Comparison of the first two interviews based on open coding with remaining interviews yielded similar findings. Thus, test interviews were retained in data analysis. • At this point, the decision was made not to conduct follow-up interviews or additional interviews as branches (its sub-branches and twigs) displayed saturation in the range of ways that interviewees described issues contained within it. Contributes to trustworthiness.

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Phase II Qualitative Analysis con't...	<ul style="list-style-type: none"> • Categories restructured into higher order concepts (i.e., branch) through process of making logical connections between the research data and the conceptual framework guiding the study and theories and literature that informed it. • Text that comprised the categories that were subsumed under a higher order concept (branch) were compared and contrasted and reorganized as needed into newly named sub-categories (i.e., sub-branches) and / or sub sub categories (or twigs). • Text that comprised twigs and sub-branches of a branch were reviewed to see if concepts discussed had a range of responses (i.e., positive to negative responses or other range) to determine theoretical sufficiency (Charmaz, 2006). 		

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Discussion of Key Findings	<p><u>Stage 2: Inter-Coder Reliability</u></p> <ul style="list-style-type: none"> • A person not involved with the study but had familiarity with qualitative inter-coder reliability served as an check on the investigator's coding. • The individual examined randomly selected text that the investigator had coded under sub-branches of a given branch to ensure the text matched the definition of the category or whether it reflected something else entirely. • Although not presented in dissertation report in detail, the individual also coded random paragraphs across three interview transcripts using coding scheme from above. % of similarity in coding between investigator and independent coder check was not checked per se, but rather used to determine what issues or questions the process might have surfaced that would point to potential issues to fix in coding before moving forward with subsequent analysis. 	<ul style="list-style-type: none"> • A few issues were raised from this stage of the analysis regarding the conceptual clarity of specific branches or sub-branches that comprise it. These were resolved through discussion and helped to fine-tune differences between distinct but tightly inter-related branches. 	<ul style="list-style-type: none"> • Revisions to categories made based on inter-coder reliability assessment. • Contributed to trustworthiness.
	<p><u>Stage 3: Axial Coding</u></p> <p>Using constant comparisons, purpose was to identify relationships within each</p>	<p>The importance of a given branch and themes discussed specific to that branch in relation to its relationship with other factors and more specifically to knowledge</p>	<ul style="list-style-type: none"> • Stage three built on efforts of open coding and inter-coder reliability.

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Discussion of Key Findings con't...	embedded case: <ul style="list-style-type: none"> amongst sub-branches that comprised a given branch between branches (and sub-branches) and outcome of interest (i.e., knowledge use, types of) between branches that emerged as important influencers of knowledge use (e.g., Shared Identity, Social Capital, etc).	use (the outcome of interest) was identified by: <ul style="list-style-type: none"> the amount of text/presence of thick descriptions that pertained to a specific issue across interviews the number of interviewees who mentioned a particular issue the emotion with which interviewees discussed a particular issue. Instances where a few interviewees conveyed strong emotion, provided rich descriptions or spoke frequently about a particular issue were also noted as important themes. 	
	<u>Stage 4: Selective Coding</u> <ul style="list-style-type: none"> Discerned differences in how interviewees per and across CoPs reported with respect to main factors identified to influence knowledge use. 	Compared and contrasted what interviewees said based first on: <ul style="list-style-type: none"> lower, intermediate and higher levels of knowledge use, as determined by averaging their self-reported levels of conceptual and instrumental use from the Phase I survey as well as sector. differences also examined based on Phase I statistically significant findings (e.g., by gender, education, roles) pattern matching of findings across embedded units to construct LEARN CoP case results 	<ul style="list-style-type: none"> Stage four built on axial coding outcomes. Narrative description of LEARN CoP case findings developed and models depicting relationships between factors of interest and knowledge use constructed. Thick descriptions of each embedded unit also constructed to explicate how LEARN CoP case relationships unfolded within these specific sites.
	<u>Stage 5: Member Checks</u> Presentations on study findings presented by study investigator to members of each embedded unit during one of their regularly scheduled meetings.	<ul style="list-style-type: none"> Attendees at each meeting included, for the most part, most members who were interviewed. Feedback provided indicated that findings resonated with members experiences with their CoP 	<ul style="list-style-type: none"> No revisions needed as a result of member checks. Provides support to trustworthiness of study.
	Phase I and II findings and cross-CoP comparisons discussed in the	<u>Key Findings</u>	<ul style="list-style-type: none"> Small sample size in

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Discussion of Key Findings con't...	<p>discussion section.</p> <ul style="list-style-type: none"> Findings also compared and contrasted to conceptual framework guiding study. 	<p><u>Phase I Study:</u> see Table 8.</p> <p><u>Phase II Study:</u> Relevant information/knowledge ultimate determinant of whether knowledge gained from LEARN CoP gets used.</p> <p>Social Capital main driver to enable knowledge use (i.e., through interaction, familiarity with co-members, development of quality relationships (characterized by reciprocity, trust, etc). Social capital was linked to conceptual and instrumental types of knowledge use. Social capital also contributed to or detracted from the development of other factors of interest to this study (e.g., Shared identity, member identification/sense of belonging and psychological safety).</p> <p>Shared Identity helped diverse members get on the same page and provided a shared conceptual framework that guided members – i.e., in terms of what they paid attention to (including types of knowledge), how to behave. As a guiding framework, shared identity was qualitatively linked as facilitating conceptual types of knowledge use but was not linked to instrumental uses. Shared understandings of ‘who we are’ formed an anchor point for member identification).</p> <p>Member identification/sense of belonging helped to explain why / how social capital and shared identity exerted their effects on knowledge use as well as on inter-relationships between social capital and shared identity.</p>	<p>Phase I quantitative study may have limited power to find significant differences based on analytic framework or make definite statements based on the findings. Thus, Phase I findings loosely informed Phase II qualitative study.</p> <ul style="list-style-type: none"> Despite small sample size, response rates per embedded unit (CoP A and B) were deemed representative of the respective CoPs. Phase I findings likely not generalizable beyond LEARN CoP case. Transferability of Phase II qualitative study up to the reader to determine based on thick descriptions and assessment of audit trail. <p>Likely that the concepts in the conceptual framework guiding the study and the conceptual framework itself are important to other types of social entities and thus applicable for replication in other contexts.</p>

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Discussion of Key Findings con't...		<p>Members who had higher levels of knowledge use (as reported in Phase I survey) tended to report neutral to stronger levels of identification/sense of belonging with the CoP or what it represents. Moreover, the more strongly identified / stronger sense of belonging, the more likely the member was to express enthusiasm for the CoP, commit to the CoP, actively participate and be motivated to engage in knowledge use (e.g., share what they know, make efforts to engage in discussions, make efforts to use CoP knowledge in instrumental ways).</p> <p>Psychological safety was deemed important to cultivate in a CoP context (as were the other factors), and contributed to knowledge use (linked to conceptual types directly and through social capital (i.e., interaction) led to instrumental types. Psychological safety also helped diverse perspectives to be heard (i.e., overcoming potential for groupthink behaviours, which did not emerge in the study). Overall, other factors such as external constraints (organizational mandates / work priorities and responsibilities, level of experience around CoP topic area emerged as a stronger influence on members propensity to speak up and engage in knowledge use such as exchanging knowledge than psychological safety.</p> <p>Other factors also facilitated use of CoP knowledge in practice and also contributed to or detracted from the development of social capital, shared identity, member identification / sense of belonging (e.g.,</p>	

Steps	Brief Description	Comments and Outcomes	Major Decisions or Conclusions
Discussion of Key Findings con't...		<p>mechanisms of interaction, leadership, alignment between CoP and work/organizational / Ministry priorities, etc).</p> <p>“Alignment” (as termed by CoP members) of CoP identity and priorities with other nested configurations internal and external to the CoP emerged as particularly important to member identification and consequent member motivation to engage in knowledge use processes.</p>	

Appendix 9: Branches, Sub-Branches, Twigs and Properties

Branch: Knowledge Use

Sub-branches	Twigs (if applicable)	Properties/Description
Conceptual	Accessing Knowledge	<ul style="list-style-type: none"> • access to information/ knowledge from members across Ontario and guest speakers within and beyond Canada • access to knowledge shared by other members during meetings • access to abstracts, literature, knowledge from experts (e.g., through presentations) and researchers and their work
	Awareness/Learning	<ul style="list-style-type: none"> • increased awareness of the importance of the CoP topic area or reinforced need to focus efforts on CoP topic area within and beyond CoP • learned from members from across Ontario in terms of their knowledge, experiences with addressing CoP topic area, including lessons learned • learning from members re: what they did, how they did it (through practice sharing) influenced some members motivation to speak up and ask more questions or to do the same • hearing, becoming aware of / learning about what co-members were doing across the province (during structured practice sharing time) influenced confidence in one's own approaches (i.e., feeling like on the right track because others doing similar things), which influenced a sense of comfort, sense of community, commitment and accountability to shared cause • learning how to do one's work better through hearing co-members' lessons learned and experiences • increased knowledge and fast-tracking around specific tobacco control issues
	Sharing CoP knowledge	<ul style="list-style-type: none"> • members and / or LEARN Team shared links to materials and resources/software, websites, ads developed, etc • information / knowledge (e.g., journal abstracts, literature reviews, evidence-based backgrounders) pertinent to CoP topic area was shared within CoP and uploaded onto shared online WebEx space • members posted pertinent information / resources on shared online WebEx space • CoP relevant workshops and professional development opportunities available in broader Ontario tobacco control shared with members • shared resources/materials developed for initiatives and/or grant proposals • shared successes of TCAN/local public health agencies or other organizations related to CoP topic area • shared CoP knowledge products, members' materials and resources beyond CoP boundaries (i.e., with members' organizations) • shared information in CoP enabled members to discern relevance and potential applicability in practice (e.g., whether it is evidence-based and thus useable)

Sub-branches	Twigs (if applicable)	Properties/Description
Instrumental	Efforts to Use via Discussion	<ul style="list-style-type: none"> • reviewed and discussed scientific evidence (e.g., LEARN backgrounders and findings) regarding specific topic in relation to members' needs or actual experiences and how to apply knowledge in work • discussions to help a presenting co-members determine best approach to gain access to target population • contributed to grant proposal(s) • Co-creation of new knowledge based on research-practice interactions – involves iterative discussions about research ideas to address practice needs, including who and best way to sample, potential methods to use, implications of research and best way to disseminate to reach target audiences
	Decision-making	<ul style="list-style-type: none"> • using CoP knowledge to inform decisions in one's work or organization • decisions about whether to adapt another member's initiative to local context • adapted resources, processes, templates, initiatives
	Implementation	<ul style="list-style-type: none"> • adopted, adapted, implemented resources / initiatives shared in CoP • developed resources (e.g., toolkits, materials) for campaigns, programs / interventions or advocacy • CoP members engaged in knowledge development with researchers (co-creating research projects at various stages or throughout the research cycle) • not as much experimentation
Symbolic		<ul style="list-style-type: none"> • use of CoP supported / reinforced an organization's decision to focus on CoP topic area • evidence-based backgrounder developed by LEARN Team confirmed assumptions and justification for decisions made around specific tobacco use issue. • not many instances of symbolic knowledge use and when asked for examples, was actually reflected of instrumental uses.
Deliberate Non-Use		<ul style="list-style-type: none"> • deliberate decisions not to share CoP knowledge with work organization (i.e., to share or implement initiatives) • desire to capture legacy of work in tobacco control that addresses specific CoP topic.
Process Use		<ul style="list-style-type: none"> • Evidence of learning from study process and stimulating ideas for future improvements • Attempts to form working group around key issues that were flagged as important to address in CoP A. • Co-Chairs taking notes during interviews around concepts study was asking about (e.g., building sense of belonging, shared identity) as issues to think about cultivating in the CoP and in other groups involved with.

Branch: Information/Knowledge

Sub-branches	Twigs	Properties/Description
Observability		<ul style="list-style-type: none"> members observed progress of co-members and the organizations they represent and this enhanced motivation to take action and achieve the same successes external others (e.g., municipalities) that observed impacts of CoP members activities in other municipalities motivated their interest to implement similar activities in their own localities – contact CoP members to learn more and to implement
Relevant Knowledge		<ul style="list-style-type: none"> enhanced perception of credibility of CoP and its work attracted members to CoP table and keeps them participating enhanced participation (peripheral to more active, at least temporarily) when CoP knowledge fit with current work priorities or needs research interest in the CoP waning (CoP A) because CoP knowledge and discussions not often relevant to research sector (e.g., discussion of methodologies) formed anchor point for member identification – lack of relevant information to a sector challenged understanding of how one fits in with the CoP identity and detracted from identification/belonging; contextualized member interactions in the CoP main determinant of ultimate use of CoP knowledge in practice - enhanced propensity for knowledge use, including learning, sharing with co-members or external others (i.e., organizations members represent) and to lesser extent symbolic use types of relevant knowledge included scientific research and evaluation (e.g., short evidence-based backgrounders on topic areas that could be used as a communication tool to persuade management or organizations targeted for change; practice-based experiences, lessons learned, resources such as creatives, as well as cutting edge topics / novel ideas and initiatives increased propensity for members to speak up, share what they know, ask co-members questions about their approaches/methods, engage in issue orientation
	Types of Relevant Knowledge: Scientific Research and Evaluation	<ul style="list-style-type: none"> includes researchers and scientific research, including but not limited to evidence-based LEARN Backgrounders, literature reviews, journal abstracts / publications, evaluations backgrounders short, concise, credible, useful to increasing awareness and to give to supervisors or external agencies to pitch issues access to researchers feature of CoP that attracted members to join gratefulness for researchers at table, but disappointment (in CoP A) around access to additional researchers with broader range of interests around CoP topic area research expertise around the province, but not at table and not being utilized (CoP A) under researched CoP topic area challenges availability of relevant knowledge, members confidence to take action and the ability of the CoP to define who we are and what we are here to achieve. <p>access to research findings around CoP topic area increased awareness of extent of need / reaffirmed the need for CoP topic area</p>

Sub-branches	Twigs	Properties/Description
Relevant Knowledge con't...	Types of Relevant Knowledge: Practice-based experiences and resources	<ul style="list-style-type: none"> • Documentation of practices, member's resources (pamphlets, signs, logos, templates), experiences and lessons learned regarding initiatives targeted to address CoP topic area • Access to member practices makes other members' work easier – don't have to reinvent, can work off ideas of others • Evaluated practice-developed initiatives are valued and enhance individual / organizational decisions to use that knowledge
	Types of Relevant Knowledge: Cutting Edge / Novel Ideas and Initiatives	<ul style="list-style-type: none"> • value placed on new and “fresh” ideas • out of province experiences good sources of novel ideas • information on cutting edge topics (e.g., hookah) desired particularly if there is an scientific evidence-base to support it.
	Credibility of the Source	<ul style="list-style-type: none"> • researchers deemed credible, practitioners less likely to challenge researchers or critique work because they don't have that expertise • practitioners credible, but among practitioners more critical assessment of knowledge shared than with researchers because do not have that knowledge base • credibility of source increases trust in member / person and their knowledge, which increases likelihood of use

Branch: Social Capital

Sub-branches	Twigs	Properties/Description
Structural Social Capital	Participation	<ul style="list-style-type: none"> • some members more frequently attend CoP meetings than others and are more visible • participation in the CoP exposes members to one another and facilitates networking • CoP hinges on voluntary participation thus member participation essential if the CoP is to effectively achieve what it sets out to do • as members participate over time, they gain a better understanding of what they want to get out of the CoP and collectively achieve. • range of use of CoP knowledge reported (e.g., rarely through to everything learned about CoP topic) as result of participation in the CoP
	Networking, Relationships and Familiarity	<ul style="list-style-type: none"> • new connections forged to some greater or lesser extent with CoP members from across the province and from different sectors that they did not know before. • strengthening of pre-existing relationships as a result of CoP participation • making connections builds familiarity with other members and what they bring to the table (i.e., knowledge, skills, interests) • familiarity of members and their work enhanced those members perceived credibility • familiarity with other members contributed to a sense of comfort, which enhanced ease with which members interacted and led to knowledge use (see comfort) • networking and building familiarity and relationships strengthened sense of belonging; relationships became anchor point for member identification / belonging • being a distributed CoP that primarily relied on teleconferences and WebEx was a difficult medium to work with and the development of relationships helped to build comfort and sense of belonging that were needed to make the CoP work; A few members indicated building relationships detracted from sense of belonging, involvement in CoP and use of CoP knowledge • stronger relationships perceived to render members more willing to open up, speak up and have frank discussions with co-members; less likely when do not know someone very well.

Branch: Social Capital

Sub-branches	Twigs	Properties/Description
Structural Social Capital con't	Linkages and Partnerships	<ul style="list-style-type: none"> • Bridging silos and building linkages with researchers, NGO and public health to share knowledge, co-develop and/or implement initiatives • LEARN Team or specific CoP members link external people to the CoP (e.g., bringing different researchers/evaluators into the CoP to address topics of interest to the CoP or being asked to sit on an external committee to keep them in the loop about CoP activities – i.e., serve as knowledge transfer agent) • bringing research representative on CoP to a TCAN meeting to share work and discern how to work together – useful to local public health agencies accessing researcher’s resources and facilitating implementation of their local plans
	Negotiation	<ul style="list-style-type: none"> • members collectively negotiated how CoP should function or operate • negotiation of shared understandings of ‘who we are’ as CoP and what we want to achieve and reification of those understands occurred as members interacted around practice area • negotiation and sensemaking around information shared in CoP
	Accountability	<ul style="list-style-type: none"> • Reflects the actions members take to work towards the collective purpose/goals of the CoP. • Members demonstrate accountability to CoP and its members by participating • Members demonstrate accountability by sharing their work, posting resources on WebEx for other members to access when asked or when they say they will • Members, particularly those with higher levels of knowledge use, become accountable to the standard set by other members and the progress they have made in their work around CoP topic area.
Cognitive Social Capital	Recognition and Respect	<ul style="list-style-type: none"> • recognizing others and their work – celebrating successes, positively or enthusiastically receiving others’ work occurred in both CoPs, more evident in CoP B • feeling recognized by co-members for work accomplished / contributions to CoP bolstered sense of productivity, value and motivation to become more involved in CoP (e.g., take on Co-leader role) and continue to share what they know and contribute to discussions • being recognized by CoP members across province for work accomplished as part of one’s organization enhanced positive construed external image and one’s sense of pride for being a representative and a part of their work organization

Sub-branches	Twigs	Properties/Description
Cognitive Social Capital con't...		<ul style="list-style-type: none"> • when a member felt recognized by peers, it made them feel like their co-members respected them • members were respectful / honouring of other member's organizational rules and procedures (e.g., did not use information shared in CoP unless have permission from source) • CoP members respectful of one another and their work • feeling recognized and respected increased sense of comfort to continue to speak up and share what they know (i.e., psychological safety and speaking up) • feeling recognized and respected built members trust that members valued their opinion and would remain open to their contributions • feeling recognized and respected increased one's confidence in their knowledge
	Trust	<ul style="list-style-type: none"> • observing how members consistently acted towards one another (i.e., their receptiveness, willingness to help others, openness to be transparent with their work contributed to mutual trust • members whose work was trusted as credible increased chances of use of their knowledge • members trusted that others would respect their work and not use it without permission, which increased feelings of safety and propensity to share knowledge • trust facilitated knowledge sharing and exchange because members felt comfortable and safe to speak up.
	Reciprocity	<ul style="list-style-type: none"> • widespread willingness in CoP to help one another out • consistent willingness of members to help each other out contributed to mutual trust • members accessing information from others and others helping out • willingness to help one another out influenced member commitment and accountability to co-members
	Comfort	<ul style="list-style-type: none"> • comfort influences member's willingness to speak up to share ideas and progress with work • comfort influences ease with engaging in conversations with co-members that lead to linking together to work on shared initiative • comfort influences members propensity to ask for help or access information/knowledge (including outside of meetings) • developing comfortable relationships with people facilitates integration of new members in CoP or in Ontario tobacco control system more broadly

Branch: Shared Identity

Sub-branches	Twigs	Properties/Description
<p>CoP Attributes that define the CoP</p>		<ul style="list-style-type: none"> • Core / central attributes that define the CoP reflect characteristics that members felt best represented the essence or real meaning of their respective community – their philosophy / values, what they stood for • Core attributes that define the CoP shaped what topics, issue and information members attended to and prioritized for action, how they made sense of information, how they behaved and acted • Some core attributes members commonly used to define the ‘who we are’ as our CoP also were identified as attributes that defined how the CoP was distinctive from other comparable groups (see CoP Distinctiveness) • Common attributes members used to define respective CoPs (e.g., (presence/absence of) common purpose/goal, evidence-based, CoP topic area, networking, information, knowledge sharing and learning, community of practice, inclusive, local public health focused, aligns with work, information that circulated in CoP, relationships) • CoP defining attributes commonly used as basis for making comparisons to comparable group-identified external reference group(s) – CoP – external group comparisons made primarily by CoP A, whereby CoP A wished to aspire to be more like CoP B • Core attributes and the in-group – external reference group comparisons this shaped influenced members perceptions of how external others viewed them (construed external image) and CoP’s niche in the broader Ontario tobacco control community / its impact on topic area in local communities • Core attributes commonly used to define CoP emerged as anchor points that facilitated members’ ability to identify with the CoP (i.e., key characteristics / values that defined the CoP reflected things that were important to CoP members, which attracted them to the CoP, kept them returning and/or strengthened sense of belonging).
<p>CoP Distinctiveness</p>		<ul style="list-style-type: none"> • common attributes members used to define their CoP distinctiveness (e.g., presence/lack of) common purpose/goal, WebEx and its knowledge repository, CoP topic area, etc) • served as anchor points that facilitated members’ ability to identify with the CoP (i.e., key characteristics / values that defined the CoP reflected things that were important to CoP members, which attracted them to the CoP, kept them returning and/or strengthened sense of belonging). • attributes commonly identified as what makes CoP distinct from comparable others influenced members perceptions of their CoP’s niche in the broader Ontario tobacco control community / impact on local public health • CoP defining attributes (core and distinctive) commonly used as basis for

Sub-branches	Twigs	Properties/Description
CoP Distinctiveness con't...		making comparisons to comparable group-identified external reference group(s) – CoP – external group comparisons made primarily by CoP A
Common Purpose / Goal	Common Purpose and Its Importance	<ul style="list-style-type: none"> • Need shared understandings of ‘who we are’ as a CoP to determine purpose of the group and need common purpose to define ‘who we are’ as a CoP • creates common voice and synergy; lack of shared understanding of ‘who we are’ / common purpose to clarify it renders CoP dysfunctional – too much inferring due to individual perspectives and agendas • helps members with diverse perspectives get on the same page, • shared understanding of ‘who we are’ as a CoP / common purpose enables collective work to enduring / sustain itself despite turnover • helps shape a ‘collective’ orientation rather than an individual one; members work together to accomplish shared goal. Individual agendas ideally not the focus • can be used as barometer to measure progress • common purpose / goal that members are passionate about or resonates with their values / what is important to them enhances identification with the cause, motivation to get involved and contributes to commitment (both affective (want to be there) and normative types (should be there)) • presence of broader tobacco control movement around CoP topic area strongly clarified CoP common purpose/goals, makes collective work tangible – easier to know what and how to coordinate and take action (i.e., instrumental types of knowledge use) • lack of common purpose/goal constrained understanding if CoP is a sharing and learning CoP (conceptual knowledge use) versus ‘doing’ CoP (i.e., instrumental knowledge use) • facilitates cohesion, cognitive social capital (e.g., sense of comfort and support that have backing of members who are in this for the same reason, are there to help, and can back them up when take CoP knowledge to external others (i.e., in face of backlash, can say there are people across the province who are doing similar things and can back this as important to do))
Shared Identity as Guiding Framework	Shared Identity Influences KU	<ul style="list-style-type: none"> • core and distinctive attributes commonly used to define CoP also found to be referred to by CoP members (seen in interviews, meetings, discussion posts) to help them make sense of what issues are most important to prioritize in the CoP, what information is most important to pay attention to, what is considered appropriate behaviour to achieve the collective goals by acting in identity-consistent ways • shared identity kept CoP and its knowledge top-of-mind outside of CoP meetings • shared identity influenced knowledge use by serving as a framework that guided what information circulated in CoP, what issues / information is most important to the CoP to pay attention to, share with others (internally or in own organization) and

Sub-branches	Twigs	Properties/Description
Shared Identity as Guiding Framework con't...		<p>potentially use (e.g., evidence-based initiatives)</p> <ul style="list-style-type: none"> • attributes commonly used to define ‘who we are’ as a CoP influenced types of knowledge use (through social capital) (e.g., ‘knowledge sharing and learning’ commonly linked with conceptual uses; ‘evidence-based’ linked to instrumental or deliberately non-use) • collectively negotiated shared identity documented in annually renegotiated Community Charter and Learning Agendas and was used by Co-Chairs to inform topics and discussions for meetings and model identity consistent-values and behaviours, inform development of knowledge products that address members needs • meeting agenda topics that were identified from the Community Charter and Learning Agenda increased interest, propensity of members to speak up and engage in iterative discussions • meshing of CoP identity with philosophy / shared understandings of ‘who we are’ as an organization influenced knowledge use (e.g., member initiative that did not cohere with what their division at work was about did not get implemented)
CoP Niche		<ul style="list-style-type: none"> • increased awareness around CoP topic area in Ontario tobacco control community • perceived impact of CoP in Ontario local public health tobacco control community and in local communities influenced construed external image (perceptions ranged as ‘floating out there’ to increasing awareness around CoP A topic and increased awareness and impact through implementation of initiatives in local communities around CoP B topic area (it increased local communities observability of other communities work around the topic area, which increased their own interest)

Branch: Member Identification/Sense of Belonging

Sub-branches	Twigs	Properties/Description
Anchor Points for Identification		<ul style="list-style-type: none"> • core and distinctive attributes that members commonly used to define the CoP formed anchor points for member identification as did other things that were important or of value to members (e.g., CoP topic area, common purpose/goal, tobacco control movement / history of experience in tobacco control field, relationships in CoP, WebEx, the CoP itself, relationships with co-members; member’s work organization / job); • identification with some aspect(s) of CoP attracted members to CoP, kept them coming back, created sense of belonging
Sense of Belonging	Degree of Belonging	<ul style="list-style-type: none"> • too strong a sense of belonging may make CoP exclusive, limiting diverse membership and diverse knowledge circulating in the CoP (TCAN representation perspective) • members with similarities (e.g., being with members from same sector, profession, job position such as TCAN Coordinator, contextual) gravitated to one another and tended to ‘bond’ together and facilitated learning, knowledge exchange and co-creation of knowledge • research sector neutrally identified with CoP with intermediate and higher levels of self-reported knowledge use • NGO sector weakly identified with/sense of belonging to CoP and low levels of knowledge use, • members from local public health agency sector expressed range of identification / sense of belonging (weaker, neutral, stronger) with varying levels of knowledge use (e.g., although not always consistent finding, lower levels of knowledge use reported among those with weaker sense of belonging) • peripheral members perceived to be weakly identified / experience less sense of belonging • a few peripheral members interviewed reported weaker identification / belonging but was not a consistent finding • Co-Chairs strongly identified with / experienced strong sense of belonging and commitment to CoP • member identification/sense of belonging created sense of trust that others on CoP are working towards same end and can turn to them for help – not doing it alone • stronger identification with one’s work organization meant weaker identification with CoP • stronger identification with one’s work organization increased members commitment and accountability to their work and in turn use of CoP knowledge that could help accomplish their work responsibilities • stronger identification with one’s work organization increased sense of pride (construed external image) by serving as a representative and voice for that organization on the CoP • perceived that stronger sense of belonging enhances members willingness to be share information, speak up and have ask potentially tough questions and have frank discussions; renders members to feel more comfortable and safe to speak up in these ways. Less likely to engage in these behaviours when don’t feel like one belongs.

Sub-branches	Twigs	Properties/Description
Sense of Belonging con't...	Importance	<ul style="list-style-type: none"> • member identification / sense of belonging influenced members personal sense of value in the CoP, helped them derive value from participation in CoP • sense of belonging made members feel they had a voice in the CoP and a right to speak up • made them feel connected with and trusting of co-members, easier to turn to co-members for help, created sense of comfort
Within-Group Distinctions	Core and Peripheral	<ul style="list-style-type: none"> • distinctions made based on members who participate more frequently and more visible versus peripheral members or “lurkers” • More active / core members spoke up more and shared what they know / contributed to discussions more in CoP versus peripheral members • challenge to get peripheral members more involved • not enough known about “lurkers,” but desire to hear their voice even if they do not have much to contribute in terms of initiatives underway in topic area • communication breakdowns or us-them distinctions did not surface based on peripheral / core members
	Sectors	<ul style="list-style-type: none"> • members representing local public health sector did not perceive distinctions within CoP based on sector (felt it was inclusive) • members representing minority-represented sectors (e.g., research, NGO) on CoP noted the CoP was very local public health focused, including information that circulated; although not consistent finding, some evidence that this detracted from some of these members identification/sense of belonging to the CoP (i.e., weaker to neutral identification/belonging) and knowledge use • despite distinctions reported by sector among members from sectors with minority representation on the CoP, it did not create in-group versus out-group biases amongst members in CoP, communication breakdowns and all members, regardless of sectors, indicated, at very least, learning from others in the CoP
Motivation		<ul style="list-style-type: none"> • member identification / sense of belonging influenced knowledge use in conceptual ways; was described as an ‘automatic’ sort of thing to do • member identification / sense of belonging inspired commitment in CoP and motivated members to listen to co-members, learn from them, share what they know with co-members • regardless of degree of identification / belonging to CoP, identification with one’s work organization motivated members to share what knowledge was gained from CoP with work organization

Branch: Psychological Safety and Speaking Up

Sub-branches	Twigs	Properties/Description
<p>Climate of Safety</p>	<p>Feeling safe</p>	<ul style="list-style-type: none"> • climate of safety important in a CoP context • climate of safety existed in the CoPs • although interviewees could not speak for sure for all members, they felt safe to take interpersonal risks (e.g., speak up, be transparent with their work) without excessive fear of what others might think or how they might react. • feeling safe increased members propensity to expose the methods / approaches they used with respect to the initiatives they shared with co-members • feeling safe facilitated members openness to receiving constructive feedback on their work • feeling safe to take interpersonal risks was important to cultivate in a CoP context and , but members believed other factors better explained why some members (e.g., peripheral) did or did not speak up (e.g., level of experience, culture of professionalism, etc) • environment that was welcoming and enabled members to feel safe contributed to members sense that they have support among co-members to help them when needed
	<p>Power dynamics</p>	<ul style="list-style-type: none"> • members described their CoP as an ‘equal playing field,’ where all members voices mattered regardless if new, seasoned, job position / professional status • inherent power dynamics noted when Ministry representative present at CoP meeting(s) - rendered members more hesitant to speak up and share what they know, question Ministry assumptions, plans/actions, although a few did speak up in these ways when Ministry presented.
	<p>Openness</p>	<ul style="list-style-type: none"> • CoP members were open to new ideas and perspectives, but not a lot of ‘out of the box’ thinking • CoP members were open to feedback and asked for it from members which facilitated story telling and iterative discussions where members learned from one another’s contributions (e.g., their own experiences, lessons learned from actions they have taken) • evidence of members suggesting to branch into new literatures to understand CoP topic area (e.g., get into marketing literature)
<p>Speak Up</p>		<ul style="list-style-type: none"> • the propensity for members to actually speak up and contribute to CoP discussions (i.e., whether members do speak up and what does it take for this to happen) • feeling safe in the CoP facilitated members propensity to speak up • propensity for members to share unorthodox, novel or half-baked ideas • members more likely to speak up to provide ideas, feedback, ask questions when input was solicited – this led to increased learning and iterative discussions where members shared lessons learned from related experiences • speaking up to share what one knows, what one believes, thinks or feels helped to clarify assumptions, questions
<p>Transparency</p>		<ul style="list-style-type: none"> • exposing the methods / approaches used in one’s initiatives increased awareness, learning, storytelling (i.e., members sharing their experiences, lessons learned) and / or problem

Sub-branches	Twigs	Properties/Description
Transparency con't...		<p>solving</p> <ul style="list-style-type: none"> • exposing one's methods / approaches more likely when initiative achieved a level of development (e.g., after it had been developed or implemented more so than when in conceptual stages) – limited opportunities for improving approaches by obtaining co-members input in more conceptual stages • exposing one's methods / approaches enabled members to discern whether knowledge is useable (e.g., in some instances, initiatives that were not evaluated led to deliberate non-use by local public health agencies) • propensity for members to expose their thoughts, approaches used in their work, errors or problems encountered and lessons learned • members openness to be questioned or challenged (expected by members because of how public health tobacco control culture operates) Helps to get members on the same page – including clarifying 'who we are' as the CoP. • exposing methods / approaches behind work enabled members to determine credibility, relevance and potential applicability of knowledge in their work practices (e.g., influenced learning, decisions to use knowledge, deliberate use). This increased trust in other members knowledge
Issue Orientation		<ul style="list-style-type: none"> • climate of safety facilitated members propensity to question or challenge the information that co-members shared regardless of who they were, although some more hesitant with the Ministry • focusing on the issues at hand made helped bring to light differing perspectives and discussions about what CoP should be prioritizing and this contributed to development of shared understandings of 'who we are' as a CoP

Branch: Mechanisms of Interaction

Sub-branches	Twigs	Properties/Description
Community of Practice		<ul style="list-style-type: none"> • provided space for rare provincial networking • without CoP, new connections with members across province not possible for some members or possible but may have taken time to happen • without CoP access to researchers (particularly in CoP B) not likely to have happened as quickly or easily • enabled ‘front-line’ practitioners had access to first-hand knowledge rather than waiting to hearing it through TCAN Coordinator or Manager • provided learning from colleagues across TCANs and different sectors, a space for knowledge exchange and co-creation of knowledge • in absence of CoP may have had formed linkages with others who have needed knowledge, but may have taken a while to find out who had it so it could be accessed and potentially used • CoP offered space to apprentice people new to Ontario local public health tobacco control, navigate the complex system and acculturate • provided a space that offered multiple modes of interaction to encourage knowledge exchange (e.g., through WebEx, in-person meetings, teleconferences, working groups, etc) • CoP provides an environment to raise awareness of existing workshops by CoP members • CoP provided a space for members to enact culturally embedded norms of behaviours that defined CoP members (see Culture) • CoP provided anchor point for member identification / belonging • CoP as developed by LEARN Team was deemed an effective model for other chronic disease prevention areas
WebEx	Knowledge Repository	<ul style="list-style-type: none"> • WebEx provided features such as email, posting of member contact information, ability to post and download CoP agendas and knowledge and discussion posts • useful, easy and needed knowledge repository that facilitated members use of knowledge gained from the CoP (e.g., sources from knowledge repository downloaded by members and shared with colleagues at work or adapted for use in local contact • tool that other organizations would benefit to have • connected people across geographic distances • external CoP members working on similar issues, including community organizations being targeted for change should have access to knowledge repository – may serve as a mechanism to attract new members and interest
	Communication Tool	<ul style="list-style-type: none"> • discussion posts not a feature of WebEx that is frequently used, but WebEx facilitates networking and knowledge use (sharing, learning) among members who use it • WebEx provides ‘space’ for members to speak up and feel safe (overcomes potential vulnerabilities) • WebEx kept members that more weakly identified with / felt sense of belonging to CoP

Sub-branches	Twigs	Properties/Description
WebEx con't...		<p>connected to CoP - enabled them to stay up to date on CoP meetings when didn't attend, assessment of relevance of meeting agenda topics and if they want to attend, access to CoP knowledge where relevant, potential to become more involved if relevant issues surface down the road, etc</p> <ul style="list-style-type: none"> • easy access to member contacts, meeting agendas and meeting minutes
Medium of Interaction	In-person Meetings	<ul style="list-style-type: none"> • increased attendance than teleconferences • increased productivity compared to teleconferences • members are focused and engaged during in-person meetings (easier to tell if someone is not paying attention compared to teleconferences) • dynamic flow of discussions (no interruptions as per teleconferences) allows for deeper levels of knowledge exchange, co-creation of knowledge, problem-solving • less hesitation for members to speak up • in-person meetings created familiarity with other members, opportunities to network, the building of relationships, linking up to work on shared projects • in-person meetings helped break down barriers due to preconceived notions of co-members representing particular level of status (e.g., highly accomplished members became 'real' and approachable when put name to a face and saw how they engaged in the CoP in-person meetings • reconnected members and renew relationships • offered opportunities for personal and professional conversations, including over lunch hour • helped members to feel accepted by co-members as members of the group • seeing everyone gathered together contributed to member identification /sense of belonging • the more often that members attended in-person meetings contributed to strengthening of sense of belonging • allowed newcomers opportunity to feel more comfortable with the group and acculturate / learn the ways of the CoP • important space that enabled members to collectively negotiate shared identity • served to reinvigorate members around their shared purpose for being a part of the CoP • helped to buffer negative effects of membership turnover
	Teleconference	<ul style="list-style-type: none"> • variable attendance at monthly teleconferences • monthly / regular teleconferences important to keep CoP top of mind and members connected • easier to skip out on teleconferences and focus on other things that need attending to in business of day • mixed perceptions regarding usefulness of teleconferences – however, teleconferences largely seen as less engaging, less productive than in-person • teleconferences have technical challenges (mute, unmute – disrupts flow of conversation) • discussions not as dynamic as at in-person meetings - less iterative and deeper levels of

Sub-branches	Twigs	Properties/Description
Medium of Interaction con't...		knowledge exchange and problem solving <ul style="list-style-type: none"> • easier to not pay attention and multi-task • can't see who is on the line, increases feelings of vulnerability which can limit propensity of members to speak up and share sensitive or other information • many members do not speak during teleconferences
	Frequency of Interaction	<ul style="list-style-type: none"> • at least bi-annual in-person meetings needed, more if feasible • monthly teleconference meetings help to keep members connected and CoP top-of-mind • frequency of interaction is important to keep CoP and knowledge top-of-mind outside of CoP meetings • frequency with which members interacted facilitated members becoming familiar with one another, building stronger relationships by getting to know one another on professional and personal basis (e.g., as seen in working groups) • more frequent interaction contribute to sense of belonging; infrequent participation in CoP detracted from sense of belonging
Practice Sharing		<ul style="list-style-type: none"> • structured time for members to present or informally update / share what they are working on or have worked on, lessons learned and opportunity to voice challenges with work and engage members in problem solving • served as a mechanism that enhanced members awareness of what is going on across province and learning from others, including what worked or did not work around initiatives to target CoP topic area, what the evidence suggests, etc. • generated instrumental types of knowledge use especially interactive discussions to make efforts to use knowledge (i.e., how to apply) • provided space where members would ask presenters questions about how they went about their work, presenters made their methods and approaches transparent, and members being open to different perspectives • provided a space that (depending on topic – i.e., information / knowledge) engaged member interest • structured time for practice sharing enabled a space for social capital to develop – enabled members to interact, become familiar with others and their work • enabled members to identify others with similar interests or needs and stimulated formation of working groups • enabled members to share experiences and development of shared understandings which contributed to sense of belonging • provided space that through sharing and interacting around practice area reinforced shared understandings of 'who we are' • provided a space where members could be transparent (i.e., psychological safety) with methods and approaches behind work being shared, which contributed to member trust and respect regarding co-members and their credibility as information sources

Sub-branches	Twigs	Properties/Description
Practice Sharing con't...		<ul style="list-style-type: none"> • sharing knowledge during structured practice sharing time created sense of having contributed to CoP, enhanced personal sense of productivity and perceived personal value to the CoP, which motivated increased ownership and involvement in CoP (highly prevalent for those with higher levels of knowledge use and Co-Chairs) • opportunities to share progress made by the organization members represent with colleagues across province enhanced positive construed external image, particularly when their reported progress was positively acknowledged by co-members (social capital: recognition and respect), which created a sense of pride and motivation to get more involved as means to enhance positive distinctiveness of one's organization
Working Groups		<ul style="list-style-type: none"> • members with similarities (e.g., / local community context, interests) come together to form working groups • working groups addressed specific topic that reflected CoP topic area and aligned with organizational / work priorities • deeper sense of shared identity formed in working groups • stronger sense of belonging developed working group members • development of personal and professional relationships, more closely knit ties • working groups provided a space for working group members to be supportive, recognize one another's work and create a sense of mutual respect • efforts to work on resources or other working group related activities during work time (i.e., outside of working group or CoP meetings) • deeper levels of iterative exchange and co-creation of knowledge, resources or other knowledge products (i.e., instrumental use)
Community Charter and Learning Agendas		<ul style="list-style-type: none"> • negotiated decisions of "who we are" as a CoP, what we want to achieve and what is central and distinctive about the CoP • served as tool to guide planning of CoP meeting topics, helped to inform development of knowledge products • served as reference tool to remind and guide members about what CoP is about and how to act in identity consistent ways

Branch: Leadership

Sub-branches	Twigs	Properties/Description
LEARN Team		<ul style="list-style-type: none"> • managed government funding to develop, implement and support CoP and provide ongoing logistical and structural support • linked CoP to broader activities in the tobacco control system (kept CoPs connected, viable and in coherence with activities of system in which they were embedded) • engaged member input for topics of interest to members so LEARN Team can develop appropriate knowledge products (e.g., topics for backgrounders) • addressed CoP members scientific knowledge needs (developing evidence-based backgrounders, identifying relevant journal abstracts, updates on conferences attended, securing research guest speakers) • made members aware of opportunities for professional development / skill development in Ontario and sharing knowledge from conferences, workshops, priority shaping documents (e.g., Scientific Advisory Committee Report on Tobacco Control, etc) • facilitated ongoing engagement of members to find out what their knowledge needs are and requested member feedback on knowledge products developed to meet their needs • developed documentation of practices (practitioner initiatives that show promise) to help others replicate in their local communities for purpose of building evidence based on practice • LEARN Leadership provided personal touch, which was an attractive feature to members to continue to participate in the CoP • contributed to climate of trust and psychological safety in CoP by modelling behaviours of openness to diverse perspectives, reciprocity, respect for others work and listening to and attending to their needs • presented questions, ideas or share opportunities available to stimulate discussion in CoP or on WebEx discussion threads to get members more involved • facilitated discussions and collective negotiation around ‘who we are’ as CoP
LEARN Co-Chairs	Impressions of LEARN Co-Chair Role	<ul style="list-style-type: none"> • perceived to be time consuming to assume role • contributed to climate of trust and psychological safety in CoP by the way Co-Chairs facilitated meetings and modeled behaviours of respect and encouraging everyone to speak up, share what they know, and have a say • encouraged input on member information needs and desired knowledge products • presented questions, ideas or shared opportunities to stimulate discussions in CoP or get members more involved • facilitated shared understandings of who we are as CoP by annually revisiting Community Charter and Learning Agendas, reminding members of the collectively negotiated key principles that guide the CoP and its work, focusing on topic areas that reflected negotiated identity
	LEARN Co-Chair experiences	<ul style="list-style-type: none"> • assuming co-chair role identified as a rewarding experience –strong sense of belonging, commitment, sense of productivity because of contribution to CoP

Sub-branches	Twigs	Properties/Description
LEARN Co-Chairs con't...		<ul style="list-style-type: none"> • stepping down from CoP role detracted from things member could participate in (e.g., in-person meetings due to how many local public health member representatives could attend a meeting), which detracted from sense of belonging • increased connections • strengthening of relationships with other Co-Chairs and strengthening of pre-existing relationships due to their Co-Chair role and frequency of contact • increased self-reported knowledge use (on Phase I surveys) and efforts to use CoP knowledge (share with co-members or external others, use CoP knowledge to inform decisions at work) • not a time consuming role • experienced challenges to get peripheral members to speak up and get more involved ; motivation to get members to speak up more in CoP, engage in discussions and share what they know • modeled behaviours that encouraged equality among members (peripheral, more active, novice to expert, etc), ready to 'step in' if discussions become threatening to co-members although this was noted to not have been an issue • facilitated meetings and made efforts to engage member input on knowledge needs and desired knowledge products
Individual Initiative	Commitment to Organizational Learning	<ul style="list-style-type: none"> • members with history of experience in tobacco control or more experience around CoP topic area displayed identification with tobacco control movement and fellow members committed to that movement • members with history of experience in tobacco control took initiative to speak up, share their knowledge, including approaches/methods and lessons learned accrued over time and take on mentoring roles • members with more experience in CoP topic area wanted to or felt should be part of the CoP to convey their knowledge so they can help co-members (even when co-members were not known to them) • members with more experience in CoP topic area motivated to share what they know and help other members out
	Personal Outcomes	<ul style="list-style-type: none"> • CoP voluntary, up to member to make the CoP what they want it to be • voluntary membership meant members came to the table with specific intentions and needs and would make efforts in the CoP to meet those needs (e.g., share information with colleagues at work to facilitate their work, make use of knowledge in practice) • sense of contribution and productivity (e.g., by presenting work in CoP and receiving positive feedback and recognition) enhanced motivation for greater involvement and continued engagement in knowledge use (sharing, exchange, etc) • sense of productivity enhanced members confidence in their own knowledge, helped members find their 'place' in the CoP (i.e., they could locate how they fit in the CoP), which enhanced belonging and commitment

Sub-branches	Twigs	Properties/Description
Individual Initiative con't...		<ul style="list-style-type: none"> • individual initiative to get more involved in CoP among members of working groups that formed within the CoP – i.e., members invested time to work on working group project outside of CoP meetings
	Personality and Confidence	<ul style="list-style-type: none"> • degree of extroversion versus introversion influences members speaking up • Level of confidence in one's own knowledge perceived to influence members speaking up (less confident, less likely to speak up versus more confident more likely to speak up) and propensity to engage in transparency
	Linking Agents	<ul style="list-style-type: none"> • CoP members who connected or linked the CoP with external people or organizations who also did work that would inform CoP topic area • Researcher representatives (particularly in CoP B) linked CoP with other researchers to carry out research of interest to members • instances where CoP members served as a conduit between CoP and external committees interested in tuning in to CoP (e.g., Ministry sub-committees).

Branch: Image and Commitment

Sub-branches	Twigs	Properties/Description
Construed External Image	Perceptions	<ul style="list-style-type: none"> • how members perceived that external others viewed the CoP influenced members sense of pride / empowerment • representing one’s organization on the provincial CoP bolstered personal sense of pride • how co-members were perceived to view the organization that one represented on the CoP shaped sense of pride (i.e., construed external image whereby CoP is seen as external group and organization a member represents on the CoP is in-group) • positive construed external image influenced member motivation and commitment to shared purpose being worked towards by the CoP • positive construed image influenced member motivation to share more to enhance positive distinctiveness of one’s organization and in turn shape their own positive self concept • construed external image that evolved from in-group versus external reference group comparisons influenced members desire to enhance positive distinctiveness of their CoP (the in-group) by aspiring to become more like the external reference group (e.g., another CoP) • CoP provides relevant and credible knowledge, which enhanced perceived image and reputation of CoP
Commitment		<ul style="list-style-type: none"> • members invested time and energy in the CoP because they wanted to be there (affective commitment) and / or because they felt they ought to be there (normative commitment) • commitment to the CoP (whether affective or normative) influenced accountability to CoP and co-members; • motivated members to take initiative to share what they know and use knowledge gained in practice • commitment to the CoP influenced motivated members to continue to participate and see CoP grow and sustain itself

Branch: External Factors

Sub-branches	Twigs	Properties/Description
Infrastructure	Multiple Levels of the System and Infrastructure	<ul style="list-style-type: none"> • system also comprised of Health Promotion Resource Centres, NGO, Community Health Centres and target populations – local communities, which comprise community organizations, school settings, etc • infrastructure allows opportunities for sharing at multiple tables (e.g., Provincial Committees and Sub-Committees, TCAN,) • information / knowledge shared in CoP often duplicative of what is heard at other tables for TCAN representatives on the CoP - not the case for issue for front-line workers, researchers, NGO • established infrastructure that supports communication, knowledge exchange and capacity building across system (e.g., workshops, conferences, committees, technical assistance and training (e.g., through resource centres such as PTCC, YATI) • Ministry – TCAN - local public health agency structure perceived top-down • new players in Ontario public health tobacco control may feel lost navigating the infrastructure and vast array of learning opportunities offered in the system, (CoP offers way to orient newcomers)
	Geography	<ul style="list-style-type: none"> • Ontario public health tobacco control community geographically dispersed; some TCAN are isolated from others • Local public health tobacco control practitioners tend to interact and access knowledge within their specific TCAN
	Ontario Tobacco Control Community Size	<ul style="list-style-type: none"> • size of Ontario public health tobacco control community is small • belonging to close-knit community said to enhance familiarity among players – makes it more comfortable and easier to drop barriers, access people and ask questions, speak up to share what one knows, engage in transparency

Sub-branches	Twigs	Properties/Description
Culture	Values and Norms	<ul style="list-style-type: none"> • CoP and broader Ontario local public health tobacco control culture values knowledge exchange and learning • values and norms of behaviour that are conducive to learning that played out in CoPs emerged from a broader culture of professionalism (e.g., openness to and respect for diverse perspectives, transparency where it is expected that one’s approaches will be questioned to ascertain credibility and players are open to sharing) • value evidence-based practices in Ontario local public health tobacco control community and its nested configurations • evidence-based culture and policies of Ontario local public health tobacco control shaped what information got prioritized and used in their work (if knowledge gained in CoP had an research/evaluation-based, increased likelihood of use, deliberate non-use in its absence) • culture of higher-up approvals before taking action– created culture of needing to “dot all “i’s” and cross “t’s” before taking action • public health culture dedicated to helping others, thus professionals in this field guided by norms of reciprocity (willingness to help others out in CoP) • broader Ontario (local) public health tobacco control cultural values and norms of behaviour became embedded in shared understandings of ‘who we are’ as the CoP • shared value system influenced member identification / sense of belonging • Ontario public health tobacco control has strong shared repertoire and cultural artefacts (e.g., shared language – ‘lots of acronyms’)
Alignment with Ministry Context	Alignment with Political / Ministry Priorities and Mandates	<ul style="list-style-type: none"> • Ministry philosophies priorities, mandates shape direction of PTCC, TCAN/local public health agencies’ scopes of services and funding • Ministry mandates and funding determine feasibility of CoP taking action on specific topics that address CoP topic area • Ministry mandates, priorities and philosophies around priority topic areas and / or presence of broader tobacco control movements influenced clarity CoP members had about what they were coming together to achieve, what needs to be done (i.e., provided clarity re: common purpose); influenced networking, linkages and partnering, propensity to use CoP knowledge in efforts to work toward collective goal. Lack of Ministry guidance detracted from CoP identity and formation, clarity and action around a common purpose • commissions scientific reports that provide evidence-based recommendations that guide tobacco control practice (e.g., TSAG Report), which were shared in CoP • political elections influenced timing of evidence generated in CoP (i.e., CoP B) to avoid controversies • presence of Ministry representatives at CoP meeting(s) influenced members propensity to speak up

Sub-branches	Twigs	Properties/Description
Alignment with Organizational Context	Organizational Priorities and Policies	<ul style="list-style-type: none"> • CoP knowledge that aligned with organizational philosophies or priorities were deemed relevant and influenced potential of it being used (i.e., implemented). When did not align, deliberate non-use more likely • evidence-based policies led to deliberate non-use of programs shared in CoP when did not have evaluation; more likely to gain approval for use when evaluated • knowledge use (e.g., sharing, decision-making, knowledge development, deliberate non-use) was influenced by how ‘aligned’ the knowledge was with organizational priorities, policies (e.g., evidence-based) • organizational policies influenced members’ ability to use certain social media in initiatives to address CoP-relevant topic areas • ‘alignment’ of CoP knowledge alignment with organizational priorities shaped members engagement in CoP activities or working groups • organizational priorities around CoP topic area influenced level of readiness to use CoP knowledge • organizational permission needed for CoP members to share or use their knowledge beyond CoP boundaries. This sometimes slowed down the speed with which knowledge gained from CoP could be adapted to another local public health agencies’ local context, but worthwhile in long-run – avoided not reinventing the wheel • staff brought forward ideas, initiatives, etc gained from CoP but required managerial or higher approval before taking action • challenges with getting researchers to table – busy schedules, not in their mandates (perception of members) • researchers in both CoPs indicated that their organizational mandates / priorities enabled them to sit as a CoP member and offered opportunities to keep up with what was occurring across province and conduct research that is relevant to practice
	Work, Roles and Responsibilities	<ul style="list-style-type: none"> • information sharing, decision-making and knowledge development occur when ‘aligned’ with work roles and responsibilities • percentage of work time dedicated to CoP topic area shaped who became more active members versus “peripheral” CoP members • changes in position or lack of CoP alignment with work role and responsibilities created membership turnover or lack of CoP participation/commitment, sense of belonging, knowledge use • work priorities and requirements influence engagement in CoP working groups • type of position held, responsibilities to uphold influenced the ways in which CoP knowledge was used (e.g., TCAN Coordinators more likely to share CoP knowledge with colleagues; front line practitioners more likely to share and where appropriate/possible use instrumentally (particularly in CoP B). • TCAN representatives experienced some duplication in what they heard at CoP table versus

		<p>other tables at which they sat.</p> <ul style="list-style-type: none"> • front line staff (health promoters, public health nurses) got first hand knowledge rather than wait to hear from TCAN representatives • level of readiness to take action on CoP knowledge is a function of work priorities / responsibilities (which is shaped by organizational mandates/priorities) • ‘alignment’ of CoP work with organizational/work priorities influenced commitment and accountability and knowledge use (e.g., lack of ‘alignment of CoP knowledge with work priorities / responsibilities influenced conceptual, instrumental, non-use) • level of experience around CoP topic area was a function of organizational / work priorities and responsibilities
	Level of Experience	<ul style="list-style-type: none"> • some members with limited knowledge base / experience around issues pertinent to CoP topic area and had CoP topic area as work priority / responsibility influenced use of knowledge gained from CoP in practice (more likely to learn and make use) • more experience / progress around CoP topic area tended to lead to less use of CoP knowledge because had ‘passed that point already,’ but also became important sources of knowledge for co-members • level of personal / organizational experience / readiness in CoP topic area influenced peripheral to more active levels of participation in CoP and member propensity to speak up in CoP • members of different levels of experiences wanted to be part of the CoP (i.e., affective commitment) • members with more experience in CoP topic area also felt they should be part of CoP (i.e., normative commitment) because they had knowledge that could help co-members
	Local Community Context	<ul style="list-style-type: none"> • local community needs, environment/landscape shaped local public health agencies decisions about what issues to address (i.e., shapes priorities) • local community needs informed topic areas that some CoP working groups formed to address and contributed to shared understandings of ‘who we are’ as a CoP • local public health agencies that served rural/urban local communities influenced what knowledge gained in the CoP was deemed feasible / relevant to use in their local community context
Resources	Funding	<ul style="list-style-type: none"> • funding (with Ministry backing) facilitated members ability to take action around CoP topic area in their organization and to use CoP knowledge to help those efforts • under-funded CoP topic area constrained ability of members to take action on CoP knowledge • ongoing funding essential to CoP viability
	Human Resources	<ul style="list-style-type: none"> • Public health staff is transient (constant turnover) • Smaller TCAN/health units had less capacity in terms of staff • Public health staff contend with multiple priorities, which creates time constraints • LEARN Team management of funds and provision of secretariat support was essential to CoPs viability – members could not sustain the CoP without such supports
Time	Time Constraints	<ul style="list-style-type: none"> • Ministry mandates, Provincial Working Groups, Mandatory Programs and Services, Scopes of

		<p>Services, other constrained members workloads</p> <ul style="list-style-type: none"> • scheduling conflicts or time constraints challenge participation and use of knowledge • time constraints challenge involvement in CoP when participation was based on personal interest rather than work requirements
	Duration of CoP Existence	<ul style="list-style-type: none"> • member participation, ownership, speaking up, knowledge sharing improved the longer CoP was in existence and longer members participated • CoP development takes time, patience and nurturing – things don't happen over night.
	History of Experience in Tobacco Control	<ul style="list-style-type: none"> • tobacco has long history of knowledge, successes, engrained values and ways of operating including an infrastructure of sharing • strong need to capture and pass on tacit historical knowledge that has developed over the history of Ontario tobacco control movement to future change agents • personal history in tobacco control became part of one's identity and motivated desire to mentor and pass on accrued historical knowledge for future tobacco control generations • members' history of experience working in tobacco control / chronic disease prevention more broadly increased familiarity with tobacco control landscape and relationships with people in the field

Reliability Check – Key areas of disagreement or need of clarification

The person who conducted the reliability check of the coding that led to the tables above felt that the categories “Practice Sharing” and “Knowledge Use” were similar and should be collapsed. While practice sharing did encompass member’s sharing what they know, practice sharing actually referred to a structured activity or mechanism of interaction on LEARN meeting agendas devoted to giving time for member’s to speak up and share what they know. What member’s shared was coded under “Knowledge Use” to help elucidate the relationship. A mutual agreement was reached to keep “Practice Sharing” as a sub-branch under “Mechanisms of Interaction.” Another issue that was raised related to the branch “Information/Knowledge.” The reliability coder noted that “Types of Knowledge” (e.g., research and evaluation, practice-based experiences and resources) were types of knowledge that members reported to be relevant and should be combined under “Relevant Knowledge.”

Appendix 10a: Thick Description of CoP A

Results for the CoP A will be presented first followed by the CoP B. Each embedded unit describes how the CoP it came to be, the type of CoP, its characteristics (e.g., duration of existence, type of CoP, membership, and the types of supports available to them such as leadership and funding). How members used knowledge gained from their CoP and how each CoP fared with respect to “Shared Identity,” “member identification/sense of belonging,” “Social Capital” and “Psychological Safety and Speaking Up” are described with an emphasis on the factors that emerged as most important to group dynamics (i.e., how members cohere) and to their use of knowledge in the respective CoP. Differences in findings based on member’s level of knowledge use (lower, intermediate, higher), sector represented (local public health, research, NGO) or other will be weaved into the descriptions where appropriate.

CoP A Development

CoP A was the first LEARN CoP to be implemented and at the time of this study’s data collection had been operating for a little over two years. This section provides historical context on the early years of the CoP A, using information drawn from CoP documents (i.e., Community Charters and Learning Agendas, meeting minutes, recorded meetings, WebEx) from the CoP A inception to time of data collection. The LEARN Team developed the LEARN CoPs using information collected from consultations with over 100 members across the seven TCANs. The LEARN Team developed the CoP according to the topic areas that local public health tobacco control practitioners identified as a priority, their learning needs (e.g., what types of evidence they require and formats), and their preferred CoP structure (e.g., duration of meetings and preferred medium(s) of interaction, etc) (Lambraki, 2008). CoP A addressed a priority topic area identified by practitioners across the seven TCANs. LEARN Team asked TCAN and local public health agency Tobacco Control Coordinators/Managers to put out calls for public health tobacco control practitioners with a work focus on the CoP A topic area to join.

LEARN Team also approached researchers known to focus on the CoP A topic area to describe the CoP A and ask them to participate. Thirteen people across Ontario representing primarily Ontario local public health agencies (n=10) and researchers (n=3)⁸ were invited to an in-person meeting hosted by the PTCC in Toronto in the Fall of 2008 to meet one another and to discuss the CoP A and what members seek to get out of it. A Community Charter was developed that described the collectively negotiated purpose and objectives of the CoP, membership and expectations of members, roles and responsibilities (e.g., of LEARN leadership), the values or principles that CoP members were to uphold, critical business issues, information and other resources available to members, and measures of success. The Community of Charter was revisited annually, usually during an in-person meeting, and collectively renegotiated. After one year of operation, LEARN leadership (Learn Team and CoP A Co-Chairs) also introduced an exercise where members collectively negotiated a Learning Agenda. The Learning Agenda detailed the topics/issues that members wanted to address during the upcoming year and was annually renegotiated along with the Community Charter. These living documents reflected members shared understandings of ‘who we are’ as the CoP A and guided members understanding of what issues and types of information were relevant to the CoP, what the CoP valued and acceptable norms of behaviours. The purpose and objectives as outlined in Community Charter at the time of the study included serving as a platform for knowledge exchange and networking where local public health practitioners and their partners could:

⁸ At the time of data collection, only one researcher and that researcher’s staff remained stable CoP members. Another researcher attended periodically. The third stopped attending shortly after the CoP was implemented in 2008.

“problem solve and build a shared understanding, knowledge base and skill set in (the CoP A topic area)...discover and share evidence-based practice and practice-informing evidence and use to inform decision-making in program and policy development... build upon and enhance existing approaches...create linkages between researchers and practitioners and use practice-based evidence to direct research... build upon member experiences by understanding what works with which (CoP A specific) populations and under what conditions... develop Guiding Principles around (CoP A topic area)” (CoP A: Community Charter, 2011).

Type of CoP and Funding

The CoP A was designed to be a distributed CoP, bringing together different members across Ontario via bi-annual in-person meetings held in Toronto, Ontario as well as monthly teleconferences in conjunction with WebEx webinar. Members also had ongoing access to one another outside of meetings via their shared online space (hosted by WebEx) that allowed members to engage in discussion forums, post or access CoP-related information, email one another and gain access to member contact information (name, organization represented, coordinates).

Funding for the LEARN CoP came from Public Health Ontario (formerly from The Ministry of Health Promotion and Sport). The LEARN Team managed the LEARN CoP including the distribution of funds to support the development, implementation and maintenance of the CoP's developed under this project (e.g., the CoP A). This included, but was not limited to salaries for LEARN Team staff, PTCC staff involved with the LEARN CoP (e.g., Media Network, administrative support, other), external consultants or contracted organizations that either provided secretariat support and / or contributed to the development of the LEARN CoP and / or its knowledge base (e.g., partnership work conducted with Propel Centre for Population Health Impact at the University of Waterloo), technical costs (e.g., to cover costs of WebEx, teleconferences, in-person meetings including travel and accommodations). Activities or projects that members wanted to pursue as a CoP required external sourcing from funding agencies although LEARN Team provided support as feasible to help members secure funding.

Membership

CoP A was described in interviews, the annual Community Charters, and some meeting minutes as “*inclusive*” of different members. These different members included primarily TCAN and local public health agency practitioners but also researchers and, at the time of the study, NGO. Members were expected to be actively working in the CoP A topic area (i.e., involved with program/policy development, research, evaluation or other), to act as a conduit between the CoP and their own networks by providing ongoing updates and sharing CoP information, and to participate in monthly meetings and regularly visit and contribute to the WebEx.

Early in the CoP development, the LEARN CoP Coordinator (a member of the LEARN Team whose primary role at the time of data collection was to liaise directly with the CoP A Co-Chairs and with members to ensure LEARN Team was supporting CoP needs) posted a discussion thread on WebEx to solicit member input on what perspectives/individuals they would like to see at the CoP A table. LEARN Team, and the LEARN CoP Coordinator in particular, took action to locate people that members identified and gauge their interest to participate. As colleagues of members began to hear more about the CoP A, some expressed interest in joining. Members reported this information during CoP meetings. A decision was made to have prospective members submit a bio to the LEARN CoP Coordinator. Upon submission, the LEARN CoP Coordinator would send a mass email with the name

and bio of each interested person and asked members to approve or decline. A majority of CoP A members liked having access to prospective member's bios and wanted access to each member's bio on WebEx. Membership bios were deemed important to CoP A networking efforts because members got to know the expertise and skills of all members and as such know who to contact if they needed specific information or assistance. The membership voting process, however, had mixed impressions. Some members felt that having a say in who was approved to join the CoP A contributed to their sense of ownership over their community. A few members, however, said this process countered shared understandings of 'who we are' as the CoP A – that being, one that is inclusive rather than exclusive. Moreover, these members noted that no one who wanted to join was ever denied rendering the voting process irrelevant. Shortly after the interviews completed, CoP A members decided to abolish the voting process but continue to circulate the bios.

Membership size issues were raised by LEARN Team in the CoP A after it became a focus of discussion in the CoP B (see CoP B Thick Description in Appendix 11b below). In August 2009, members collectively negotiated to limit the CoP to 50 members to allow for optimal communication and a trusting atmosphere at monthly teleconferences and in-person meetings. The decision for a 50 member cap was informed by: budgetary considerations as well as member discussions of what their experiences had been in terms of other groups and what organizational literature and experts suggested was ideal.

Meetings

At the time of the study, the LEARN CoP A met monthly via teleconference/ WebEx, and bi-annually in an in-person meeting. For teleconferences, members would call into the conference call and log in to an online space called "WebEx." WebEx enabled members to view meeting materials (i.e., meeting agenda, power point presentations, or other meeting materials) and follow along live. WebEx also offered a side chat box where members could see a list of names of those who had also logged in for the meeting and chat with specific members or the entire group to ask questions or other if they pleased. WebEx also served as an online knowledge repository that stored all CoP information. WebEx will be discussed again below. In-person meetings were held approximately six months apart in Toronto, Ontario. The LEARN Team and support staff oversaw the logistical / technical planning of the in-person meetings. Specifically, the LEARN Team and support staff booked the technical equipment needed to run the meetings, the venue, catering, arranged transportation and overnight accommodations for members as needed and covered all costs. A "Networking Night" was arranged for the evening prior to the in-person meeting, which allowed CoP A members to come together for an informal evening of socializing and networking at a restaurant. No references were made to this networking opportunity in interviews conducted with CoP A members. This may be a function of members not present the night prior to the in-person meeting.

Leadership

The LEARN Team as well LEARN CoP Co-Chairs reflected formal leadership roles within the CoP A. The LEARN Team played a critical role in the development and implementation of the LEARN CoP, including the management and allocation of funds to support the CoP infrastructure and ability to support members and their knowledge needs. According to CoP documents (e.g., Community Charters and Learning Agendas, meeting minutes), the LEARN Team supported the CoP infrastructure by researching, implementing and managing viable platforms for member interaction and communications (e.g., online space like WebEx, in-person meetings including travel and accommodation arrangements to have members attend from across Ontario). LEARN Team also supported member knowledge needs by finding as well as developing knowledge products/resources that reflected members' voiced evidence needs and would

improve their knowledge and skills around their practice area. The LEARN Team allocated resources to identify journal abstracts, other scientific data such as tobacco use monitoring survey findings and/or practice-generated resources. They also commissioned literature reviews and committed to producing two to three evidence-based LEARN Backgrounders and one to two documentations of practices yearly on issues of relevance to CoP members. All CoP generated knowledge products/resources were stored on the CoP A online space WebEx. LEARN Team also encouraged members to “*actively contribute, share and co-develop resources*” (CoP A Community Charter: 2010) and post them on WebEx.

At the time of this dissertation, the LEARN Team was comprised of four core members. The investigator of this dissertation was situated at Propel Centre for Population Health Impact, UW as part of a collaborative partnership with PTCC and assumed the role of Developmental Evaluator for the LEARN CoPs. The remaining three core staff were located at PTCC, CCO in Toronto and assumed the roles of LEARN Team Lead, Scientist, and the LEARN CoP Coordinator. The LEARN Team Lead was in charge of managing the LEARN Project (liaising with the Manager of PTCC and funders, managing funds, overseeing the planning, implementation and ongoing management and expansion of the LEARN CoPs). The Scientist conducted applied research that was relevant to the LEARN CoP practice area and with the Team Lead, oversaw the development of CoP evidence through the development of LEARN backgrounders as well as documentation of practices (DoP). The LEARN CoP Coordinator had the most visible role on the CoP B of all the LEARN Team members within the LEARN CoPs as evidenced by their attendance at all meetings and interviewees often referring to this person, being aware of his/her name and contributions. Additional PTCC staff contributed to the LEARN Project (e.g., PTCC staff, students filling co-op positions or training opportunities and a new hire at the time of data collection who carried out the DoP).

One year after the CoP A launch (prior to the dissertation), it transitioned from an externally facilitated CoP model (i.e., LEARN CoP Coordinator and paid consultant with speciality in facilitation) to one that was led internally by CoP members. This transition was a significant milestone towards CoP A members taking more ownership over their CoP. Discussions for such a transition, however, were initiated by the LEARN Team at PTCC and in particular the CoP Coordinator rather than CoP A members. Prior to the transition, the LEARN CoP Coordinator was in charge of developing, implementing and attending to the ongoing maintenance of the CoP and member needs. Other key responsibilities included serving as the main contact person for CoP members to address all their requests/inquiries/needs, working with the external contract facilitator to develop meeting agendas, organize meeting logistics (including taking polls to identify a consistent date for monthly teleconference and bi-annual in-person meetings, securing guest speakers or members who were willing to present their work during meetings, moderating meetings, stimulating discussions on WebEx) and facilitate meetings. The CoP Coordinator also developed LEARN CoP newsletters, engaged member input on their information needs, how they want the CoP to operate, who they wanted to sit at the table and promising practices that might be eligible for documentation (i.e., DoP), keeping abreast of new developments in the CoP practice area (e.g., by sitting at external committees/tables/networking, approaching prospective members, identifying and injecting into CoP meetings relevant evidence such as Ministry documents, Ministry funded reports such as the TSAG, literature and practices, contacting experts and promoting training, workshop/conferences or other professional development opportunities available in the province that would benefit CoP members work).

When the transition to the internal leadership model was made, The CoP Coordinator maintained all of these key responsibilities, but no longer developed a LEARN newsletter and played a more supportive rather than direct role in terms of organizing meetings. The externally contracted

facilitator was replaced by the Co-Chair positions. However, the CoP Coordinator did help facilitate meetings if a LEARN Co-Chair was not available to attend a particular meeting. At the time of the transition, LEARN Co-Chair positions were instituted to take on a range of responsibilities including organizing meetings.

According to the CoP A Community Charter, CoP A Co-Chairs were responsible for the: *“the overall guidance and direction of the CoP and ultimately for its performance...enhancing the skills and knowledge of members of the CoP by creating a common culture of expectations around the use of those skills and knowledge, and holding individuals accountable for their contributions to the collective result.”* To execute these responsibilities, Co-Chairs were to *“regularly engage with the CoP membership to listen to their needs and concerns and reflect this to the LEARN Team...serve as a liaison between the CoP and the LEARN Team to allow the LEARN Team to effectively support the CoP...facilitate an annual CoP discussion to renew the Community Charter and develop a year-long Learning Agenda...draft agendas for CoP meetings, identify and occasionally recruit guest speakers...facilitate meetings...facilitate discussions about the CoP’s role in the Smoke-Free Ontario system, member recruitment, and broader issues that affect the CoP.... share ideas and examples of work with other CoP members, thereby setting an example and motivating others to do the same..(and) act as an ambassador of the CoP to outside organizations and groups”* (CoP A Community Charter September 2010: 2-3).

At least two Co-Chair positions lasting one to two years were developed. New or existing Co-Chairs were nominated or volunteered after the first year. Efforts were made to ensure an experienced Co-Chair remained in the position to help new Co-Chairs adjust to the position and ensure a smooth transition for the CoP as a whole. Although members nominated other members to become LEARN Co-Chairs, interviewees described challenges with getting members to step forward to assume the responsibilities. Non Co-Chairs that were interviewed commonly perceived the position to be a lot of work. In contrast, Co-Chairs did not feel that the position was demanding and they all described enjoying the position as will be discussed shortly.

LEARN Team and LEARN Co-Chairs were described to impact the CoP A in various ways that were pertinent to this study. While LEARN Team was described as behind the scenes, they – and more specifically the LEARN CoP Coordinator - were also identified as instrumental to facilitating members use of CoP knowledge. The information injected into the CoP by the LEARN Team such as LEARN Backgrounders (one in particular was commonly mentioned) and contributions to meeting discussions were important means through which members became aware of information/knowledge, which provided the seeds to other types of knowledge use as described in this illustrative quote:

The CoP Coordinator was described as *“amazing... She’s the go-to person as far as any questions you might have ...any questions or ideas that you have, she gets back to people promptly. She picks up on the ideas from meeting conversations, will send an email back to you saying this was discussed and I want to know a little bit more, or could you follow up with this? ...That personal touch and just the hard work and dedication of the staff that are coordinating the CoP and updating the WebEx (makes gaining access to and using the CoP knowledge easier)”* (D: Inter KU, LPHA; p. 5).

LEARN Co-Chairs were also identified as important to facilitating knowledge use because of the climate of informality and comfort they engendered in the CoP. Co-Chairs were commonly described as peers of members in the CoP A who facilitated opportunities to learn and share while leaving it up to members to make the CoP work in a way that fits with their needs and schedules. Members described both the LEARN Team and Co-Chairs as helping to make the CoP a trusting and safe place to information and ideas.

Co-Chairs commonly stated that *“my goal as a co-chair was to hopefully develop an environment where others would feel safe to speak up...just by being open to anything that anyone had to say...welcoming new idea and if the need arose, that we would, in our role as co-chair, protect people....but membership has been respectful of one another, so we haven’t had to step in, in that capacity”* (F: High KU, LPHA; p. 27).

Member responses harmonized with the LEARN Co-Chair’s comments:

“...The atmosphere that’s created, it doesn’t matter who you are, everybody’s encouraged to speak up” (C: Inter KU, TCAN; p. 30).

Assuming the Co-Chair position also had benefits to members who filled the position. Co-chairs (current at the time of data collection and former) had the higher levels of knowledge use, got to network with and get to know different members across Ontario, felt comfortable, described a stronger sense of belonging to the CoP A than other members, and they felt safe to speak up. These members commonly explained:

“I’ve been able to get a lot more out of the CoP in terms of my goals because I’m in this larger responsibility which isn’t much...but I think that just because having to Co-Chair teleconferences lets you get to know other participants in the CoP. And...there’s more of an interest there when you have to specifically comment on things and are called to task at meetings rather than just being an indirect participant” (G: High KU, LPHA, p. 2).

They also stated they experienced *“pride in the leadership,”* which helped to *“develop more of a commitment to the group, and I guess inherent in that is that it also allows us to maintain that commitment once we have moved on and made room for someone new to assume that role”* (F: High KU, LPHA; p. 32).

These members stressed the importance to uphold the rotational Co-Chair position whereby one Co-Chair continues on after a year of service for continuity, but that a new person preferably with a different background (e.g., represents a different sector, region, perspective, etc) also assumes the position. This was seen as important to: enhance member ownership over and commitment to the CoP, ensure that new ways of thinking and doing get injected into the CoP to facilitate new understandings of how to tackle issues of importance, and ensure CoP sustainability.

Leadership was also exhibited by CoP A members. Co-chairs as well as non co-chairs, typically those with intermediate and higher levels of knowledge use, commonly reported feeling passionate about the CoP A topic area, and for those with more experience in tobacco control, passionate to pass on their knowledge to newer generations. This passion also motivated these members to take initiative and make their experience with the CoP what they wanted it to be (this often being, developing relationships with new people and gaining knowledge from colleagues across the province that could help them do their work better, easier and faster). For a few of these members (largely those with lower to intermediate levels of knowledge use), seeing their role in the CoP as one of their own making was enough to make them *“feel comfortable (in the CoP) and say what (they) needed to say.”*

Knowledge use

Interviews revealed that all CoP A members used CoP knowledge and the frequency of use largely reflected the levels of knowledge use they self-reported on the Phase I Survey (i.e., lower, intermediate and higher levels of knowledge use). Although not a specific focus of the study, instances of process types of knowledge use were found. Through the topics addressed in the

interviews some members (but more so those with higher levels of knowledge use) raised salient issues that facilitated or constrained their use of CoP knowledge – issues which they brought back to their CoP to discuss together shortly after they had completed their interviews. These issues pertained primarily to shared understandings of ‘who we are’ as the CoP A, and the need for an actionable common purpose/goal. These issues will be discussed later.

Data sources (interviews and supplementary CoP A documents) also revealed conceptual and instrumental types of knowledge use, deliberate non-use and to a lesser extent symbolic knowledge use. However, there was a heavier emphasis on conceptual types of knowledge use as indicated by this illustrative quote:

“...I’m not sure if there’s a lot of stuff being implemented, but there’s a lot of potential to really address the need...and increasing our awareness of the needs of (the CoP topic area), through supplying...the evidence...I think we have more resources at our fingertips (as a result of the CoP A)” (B: Low KU, LPHA; p. 37-38).

A large volume of instances describing conceptual types of knowledge use were reported across all CoP A members. The sub-branch “Conceptual Knowledge Use” as described by members largely reflected members’ accessing CoP knowledge (through “Practice Sharing” or by connecting with other members) and sharing it beyond CoP boundaries. Researchers, TCAN Representatives, Tobacco Control Managers/Coordinators in local public health agencies and CoP Co-Chairs were more likely to discuss having shared knowledge gained from the CoP with their TCAN or organization. Local public health agency representatives and NGO were more likely to discuss learning from CoP knowledge. However, all members reported that CoP knowledge increased their awareness/learning about issues pertinent to the CoP A practice area that they were not aware of before and strengthened their resolve that the CoP A topic area was an important area for focused attention.

Members also reported using CoP knowledge in instrumental ways. Interviews, meeting minutes and discussions posts revealed that instrumental types of knowledge use in the CoP A largely centred on members’ making efforts through discussions with co-members or colleagues at work to discern whether an idea or initiative shared in the CoP A could be adapted for use in their organization or work. To a lesser extent members reported using scientific evidence shared within the CoP to inform decisions of how to target CoP A relevant target population(s) in a provincial campaign or adapt aspects of other member’s program materials / resources in their own CoP topic relevant issues. Conversely, some members noted that when members shared their practices and members engaged in discussions around it, that process contributed to their awareness and learning. Thus, instrumental types of knowledge use also led to conceptual types of use.

Although much less frequently discussed, a few instances of symbolic knowledge surfaced in interviews or CoP documents. For instance, CoP discussions about what constituted an appropriate target population for the CoP A confirmed or ‘justified’ decisions that their local public health agencies had made about the same issue.

Instances of “Deliberate Non-Use” were also identified in interviews and meeting minutes. Learning about others’ activities around the CoP topic area (i.e., through structured “Practice Sharing” time) enabled members to discern whether they could take action in similar ways at that given time. Additionally, sharing CoP information with one’s work organization and engaging in discussions about its potential use also led to deliberate non-use. Different factors affected the use of CoP knowledge. The “Information/Knowledge” that circulated within the CoP A was a powerful determinant of member use of CoP knowledge and is described next.

Information/Knowledge

According to most CoP A members, at the end of the day when it came time to use CoP knowledge, the decision would boil down to its relevance in relation to one's needs. Information/Knowledge emerged as the most important factor that determined whether or not members would use CoP knowledge: "...if I heard something valuable I would use it one way or the other" (D: Inter KU, LPHA; p. 21). However, members did state that other factors made it easier for them to use CoP knowledge (i.e., networking and relationships, trust, shared identity, a sense of belonging and safety). These findings will unfold shortly.

Information/knowledge that members deemed to be relevant included research evidence or evaluations of initiatives that were pertinent to the CoP A topic area, practice-based initiatives of co-members with an interest in innovative ideas. The presence or absence of these characteristics influenced the use of CoP knowledge. Members particularly those with intermediate and higher levels of knowledge use described an interest in understanding whether a given initiative had worked elsewhere so they could bring that information back to their organizations.

Scientific research or evaluated interventions (programs, policies or services) were also more positively received by organizations that members represent and if relevant to organizational or work priorities tended to be used in some fashion. LEARN Team also supplied evidence-based information/knowledge that responded to CoP A member's needs. Since the CoP A launch, the LEARN Team had developed three evidence-based backgrounders, identified several relevant journal abstracts, regularly disseminated via email media reports on CoP relevant topics, and commissioned one literature review on a topic that was of interest to the CoP A members and brought in the authors to contextualize the findings. The latter activity generated discussions among members and helped them to reflect on what the findings meant in relation to their work (e.g., identifying promising theories or models that might best inform how to approach their work or develop their interventions). The LEARN Team Scientist also initiated a practice-based research study that responded to member's identified needs. A working group that engaged interested CoP members was developed to collectively work on the development and implementation of that study. Members across knowledge levels revealed that these sources of evidence (from research and practice), re-affirmed the importance of addressing the CoP topic area, increased member's awareness about the needs of the population(s) targeted by the CoP A and served to identify gaps in the program delivery around CoP A relevant population(s). Increased awareness of these issues motivated members to want to learn more about what other members are doing and "*find something that maybe will fit the way we deliver services that we could pilot (in our agency)*" (D: Inter KU, LPHA; p. 7).

Although not a frequent phenomenon in CoP A data, some instances were found where scientific research informed decisions within the CoP (e.g., defining the target population(s) of interest to the CoP A) as well some programs or campaigns being implemented by the organizations that members represented. Evaluated interventions were also more likely to receive approval by organizational superiors than interventions that had not been evaluated regardless of its innovativeness. For instance, all interviewed members enthusiastically recalled an intervention that a guest speaker was involved in implementing in a province outside of Ontario. Interviewed members overwhelmingly commented that the information shared provided fresh ideas and was something they were interested in implementing themselves. Meeting minutes also captured members feedback to the guest speaker presentation stating "*(name of TCAN sub-committee) has found the information from this meeting very useful as they plan regional activities targeting (CoP population) over the next two years. They are contacting (name of guest speaker) regarding the concepts developed by post-secondary graphic arts students to see if these concepts can be used to help guide the design of a poster campaign for (CoP target population)*" (CoP A Meeting Minutes, February 2009; p. 1).

However, it was uncovered that “*there was little evidence supporting the effectiveness of the intervention*” (e.g., no outcome evaluation, no underlying program theory, etc)” (CoP A Meeting Minutes, May 2009; p. 5). Some interviewed members described the evidence-based culture and policies of their work organizations. When sharing the intervention with their work organization, supervisors deliberately declined its use because it had not been evaluated. In contrast, “(name of another initiative), it had been evaluated and (when I took it) forward to my management, I got an immediate ‘yeah sure. Look into this and see if we can partner with them’” (F: High KU, LPHA, Co-Chair; p. 10). Members rarely indicated sharing CoP knowledge with groups or organizations beyond their work organization.

Overall, the frequency with which members or their organizations moved forward with the actual implementation of an initiative they heard about in the CoP A was limited (i.e., moved beyond making efforts to discern how CoP knowledge might be applied in practice). Members often described the CoP practice area as “*underfunded and under researched*” (F: High KU, LPHA, Co-Chair; p. 12) and lacking infrastructure (i.e., surveillance, programs and policy work). Very little was known about the CoP A topic area, the target population(s) and how to best access them, and what works in terms of tobacco use reduction, for whom and under what conditions. The state of evidence on the CoP A practice area also impacted LEARN Team attempts to develop Documentation of Practices (DoP) relevant to CoP members. (Documentation of Practices reflected promising practices (e.g., programs, policies, services, other) that Ontario local public health agencies had conducted and evaluated. The LEARN Team worked with the people who developed these promising initiatives to reconstruct the key steps in its development, implementation and evaluation, including resources developed and lessons learned). No such DoP were completed for the CoP A because few health units had implemented initiatives that targeted the CoP A topic area and fit the criteria needed for the DoP.

Although CoP A topic area was increasingly being recognized as an issue in need of increased understanding and action, members stated the Ministry had not outright declared it a priority and were not clear in what their plans were around the issue. Lack of Ministry direction was identified as a key reason for the limited CoP-relevant knowledge. Lack of Ministry direction had implications for what issues organizations that members represented on the CoP were able to meaningfully address as well as the development of shared understandings of ‘who we are’ as the CoP A. The latter factor (i.e., Shared Identity) emerged as another crucial factor that impacted CoP member’s ability to galvanize coordinated and sustained action on CoP knowledge. These findings will be described next.

Shared Identity

When asked whether shared understandings of ‘who we are’ as the CoP A existed among members, members across levels of knowledge use and sector commonly stated something akin to the following quote: “*I feel somewhat disjointed in understanding exactly what we’re trying to accomplish*” (A: Low KU, NGO; p. 17).

To assess if this was truly the case, members were asked what characteristics / attributes they felt best defined their CoP (i.e., central or core attributes) and what characteristics set the CoP apart from other comparable groups (i.e., distinctive attributes) to see if members perceptions of ‘who we are’ as the CoP A converged. Overall, commonalities did emerge across members with respect to perceptions of ‘who we are’ as a CoP. CoP documents including meeting minutes, WebEx discussion posts and Community Charters also contained similar attributes when describing what the CoP A was about. Common attributes that reflected the ‘core’ of ‘who we are’ as the CoP A included, (bolded text added to highlight core attributes):

*“We’re a **Community of Practice**,” “A group of individuals who work in or are interested in (CoP A topic area)...as it pertains to **tobacco prevention and cessation**” in efforts to “combine efforts...respond to issues in a more **coordinated way**” so that members working in this area do “**not reinvent the wheel**.” Members also commonly defined the CoP A as a social group “**aligned with the work that I do**.” For most members across levels of knowledge use, the CoP A was also defined as “**inclusive...the CoP involves practitioners, researchers and policy makers who are keenly interested in (CoP A practice area)**. However, sectors that had minority representation on the CoP A (e.g., NGO, research) felt the “(CoP A) is **local public health focused**.” Another commonly mentioned attribute was “**To discover and share evidence-based practice and practice-informing evidence**.” However, the most commonly cited core attribute that all members mentioned and was found in abundance in supporting data sources that defined the CoP was that the CoP A is “**about networking, the information, and knowledge sharing – the sharing of ideas, resources and experiences**”...and “**learning from...the work that other people have been doing**.”*

Similarities were also found with respect to what attributes make the CoP distinct from other comparable groups that members were aware of or belonged as members. Members frequently noted that the CoP A is a “**sort of repository for the evidence**” and felt the online space that housed the evidence, called “**WebEx**,” was what made the CoP different from others. Members also noted that the CoP is where “**you get first hand knowledge**” and is “**unique**” in that “*I don’t find anybody else delivering this particular opportunity (targeting the CoP A topic area) within the Strategy*” (D: Inter KU, LPHA; p. 33)

Despite these commonalities, some confusion as to ‘who we are’ as the CoP A became evident. Although members agreed this CoP was definitely about knowledge sharing, they were unclear on whether the CoP A should be about ‘learning’ or ‘doing.’ Lack of a common purpose or goal was the source of this lack of clarity. In fact, members across all levels of knowledge use, and sectors identified the lack of a “**Common Goal or Purpose**” as both a core and distinctive feature that defined their CoP. The perceived lack of a common purpose or goal in the CoP was so prominent that it prompted virtually all members to make strong comparisons between the CoP A and that of the CoP B (the other CoP of interest to this study). According to CoP A members, the CoP B addressed an issue that had a lot of provincial support (i.e., Ministry support, clear plans of action and funding to support actions). To CoP A members, the CoP B had a common purpose or goal, which made clear the question about ‘who they are’ as the CoP B.

The following quotes illustrate common identity-based comparisons that members, largely among those with intermediate and higher levels of knowledge use, made about the importance of a common purpose/goal in terms of CoP functioning and also to knowledge use:

“CoP B runs really well because they have that provincial campaign to be working on so I think there has been more interest from this CoP to do the same because that’s what’s keeping them together and that’s what’s really working” (G: High KU, LPHA, Co-Chair; p. 11)

CoP A members described CoP B “*as a bit different in that they have common goals and objectives...where I see the CoP A as more ‘let’s learn from each other and research and things like that. Whereas CoP B one is they’re at the doing phase so people are committed to the goals*” (C: Inter KU, TCAN; p. 32).

Members also perceived a “*difference in enthusiasm*” between colleagues that are on the CoP B compared to members who are part of the CoP A because CoP B “*chose to collaborate on initiatives... they’re working on a goal-oriented project...and went forward and got funding...*” (F: High KU, LPHA, Co-Chair p. 3).

Members felt that a common purpose/goal helped to clarify shared understandings of ‘who we are’ as a CoP and vice-versa and when shared understandings existed it helped to solidify members because they shared a common reason for being a part of the CoP. Members also noted that being oriented around a common purpose/goal and the shared understandings of ‘who we are’ as the CoP created “*power in numbers*” (B: Low KU, LPHA, p. 9) and the potential for greater public health impact. A common purpose/goal was also perceived to “*strengthen people’s commitment to the CoP*” (D: Inter KU, LPHA; p. 21), provided members with a reason for them to ‘want’ to continue to attend instead of feeling like they ‘ought to’ attend, and would offer current and prospective members something meaningful that resonated with their interests, values and/or priorities and could help to buffer turnover effects and increase sustainability.

Lack of a common purpose/goal was perceived to detract from the benefits described and also negatively impacted member’s perception of the niche the CoP had carved for itself within the broader Ontario public health tobacco control community and the value it brought to the local level. Some members felt the CoP A was increasing awareness around the topic area and contributing to capacity building (see Social Capital section below) such that people would be better equipped to take action to address this issue down the road. However, other members stated:

“I don’t think we are recognized by the broader community. I think we’re still seen as a very little group out there floating” (F: High KU, LPHA, Co-Chair, p. 31).

Such perceptions of the CoP A image (i.e., negatively construed external image) seemed to dishearten members (usually those with intermediate and higher levels of knowledge use and those most involved such as LEARN Co-Chairs) and consequently were the most vocal about why the CoP niche has not been defined and what needs to be done about it. All members (and especially those just described above) pointed to a lack of Ministry direction with respect to the CoP A topic area as the main culprit. Members, particularly those with intermediate and higher levels of knowledge use, felt strongly about the need to align CoP efforts with the Ministry’s plans for the CoP topic area as described in this illustrative quote:

“We need to understand the perspective and the direction that the Ministry is taking...What’s their philosophy (about the CoP topic area)? Do we, from our experience, espouse that philosophy? Do we want to get in line with it or send something off to the Ministry people and say this is what we think as practitioners? I don’t see that kind of level of stuff going on with this group...but I’m not quite sure that the group functions that way...maybe that’s not how it’s meant to be, I’m not an expert on Community’s of Practice. People can do what they want, but I think gee we’re out front there, the people in the Community of Practice pretty well know a lot about the (CoP topic area). So, if something really seems not to work or wouldn’t work, we need to make a statement about those things...This should be a focus of discussion in the CoP and... it’s sort of the elephant in the room. Nobody’s talking about it. I think we need to share the knowledge back to the Ministry people. So we need an avenue of communication to the Ministry, at least” (E: High KU, Research; p. 37).

Shortly after the completion of member interviews, meeting minutes and recorded meetings showed that at least one member who was interviewed raised the question of member interest in working together to determine a common purpose/goal or project that they could work on together:

“It’s (name of CoP A member). I was wondering if there’d be any interest as a group looking at where we might work collectively towards something... – I’m thinking – we’re in the middle of a budget freeze currently and this happens regularly for us (members laugh) so finding funding for programs is difficult and I think this is an issue for other health units as well. So, I’m wondering if there is interest in a collective targeting the (population(s) of interest to the CoP A) and maybe as a collective develop a strategy that we then propose to the Ministry to get funding um...synergistically I guess and share resources? I sort of feel that this is really great hearing what people are doing, but then trying to find the resources to try and replicate or ...move it forward in our own communities is difficult. I don’t know if there is any interest out there in looking at something of that nature?”
(Recorded Meetings: January 2011, p. 16).

Shortly after data collection was completed, LEARN Co-Chairs circulated an email to CoP A members. The email notified members that a working group was being formed to begin discussions around developing something tangible that interested members could collectively work on. Members who had an interest in this were asked to contact the LEARN Co-Chairs or LEARN CoP Coordinator.

Other characteristics that members used to define ‘who we are’ as the CoP A also influenced the kind of knowledge deemed relevant in the CoP A and how knowledge that circulated in the CoP was used. For instance (and as already discussed), members defined their CoP as evidence-based. Interviews and CoP documents had numerous instances that emphasized members’ predisposition to attend to and take action on scientific findings and evaluated practices over information that did not have an evidence base. The characteristics used to define the CoP A also reflected the values or principles that members sought to uphold, including values regarding appropriate professional behaviours, inclusiveness of diverse perspectives, and their commitment to advancing the CoP topic area. The characteristics served as anchor points for member identification because they reflected what members valued or felt was important to them in some way and provided common cues that guided what members paid attention to and how they behaved in the CoP. These and other findings that pertain to member’s identification are described below.

Member Identification / Sense of Belonging

Most members (across lower, intermediate and higher levels of knowledge use and who represented TCAN/local public health agency and research sectors) described themselves as identifying with/experiencing a sense of belonging to the CoP A but in a neutral way (i.e., they weren’t disidentified with the CoP A, but they also weren’t strongly identified). A few members did strongly identify with/experience a sense of belonging to the CoP. These members were typically at intermediate and higher levels of knowledge use, represented the local public health sector and included members who had assumed a LEARN Co-Chair position at some point during the CoP existence. A member with lower levels of knowledge use and represented the NGO sector acknowledged belonging to the CoP A, but not to any significant extent.

Despite members reporting different degrees of belonging to the CoP A, they also commonly stated that feeling like they belonged to the CoP A was important for a number of reasons. A sense of belonging made members feel like a valued part of the CoP, which in turn made them feel more “engaged” and “invested” and motivated their sense of commitment and accountability to the group and its members to ensure its success. These experiences in turn contributed to members continued participation and to help one another out. This made it easier for members to approach one another. Members were also motivated to “*listen more,*” learn from co-members, share what they know and make efforts to work together to achieve the collective aims of their group. A sense of belonging was shaped by and helped to cultivate a sense of trust among members. To CoP A members, a sense of belonging meant that members were aware of their co-members, their knowledge and skills and

reliability as information sources. The relationship between a sense of belonging and trust also made members feel comfortable and safe to speak up in the CoP, share their opinions and also made it easier to turn to their co-members for information, guidance or other help.

Several factors contributed to member identification/ sense of belonging to the CoP, which set in motion the key processes described above. In the previous section it was mentioned that characteristics that members commonly used to define 'who we are' as the CoP A were also the characteristics that members used to describe what it was about the CoP A that were important to them in some way (e.g., it aligned with their values or priorities). Often the salient defining characteristics influenced member's identification with/sense of belonging to the CoP A and kept them coming back. To recap, identity characteristics commonly used to define the CoP included we're: "*a Community of Practice*," focused on "*(name of CoP A practice area)*," "*aligned with my work*," "*evidence-based*," "*local public health focused*," "*about "networking*," "*information*," "*knowledge sharing*" and "*learning*." and (lack of a) "*common purpose or project*." Members were asked what it was about the CoP A that attracted them to join and made them feel a sense of belonging and kept them coming back. Members expressed that it was because the CoP A topic area was something they were passionate about and also was an issue that their work organization addressed. These issues made them feel like they had a place in the CoP A and interacting with others who shared similar interests and priorities also contributed to their sense of belonging.

While almost all members indicated they felt some degree of belonging to the CoP (weaker to stronger), the majority of members across different sectors and levels of knowledge use also indicated that they felt a stronger sense of belonging to their own organization and/or sector than with the CoP. TCAN, research and NGO representatives in particular were most vocal about this experience. Identifying with/feeling a stronger sense of belonging to one's work organization had implications for knowledge use and member's continued participation in the CoP A. It created a sense of accountability to one's work organization and increased the likelihood that members would share and discuss with their work colleagues knowledge gained from the CoP that aligned with their work responsibilities/priorities. Identifying with/ experiencing a sense of belonging to one's organization also impacted knowledge use within the CoP itself. Specifically, members experienced a sense of pride when they showcased the work of their organization or TCAN region to CoP members across the province and received positive feedback. This experience improved their perception of how colleagues across the province viewed their organization and work (i.e., construed external image), which strengthened their sense of pride in their organization, their role in that organization and their sense of belonging to that organization. Additionally, construed external image and the pride it engendered reinforced members continued participation and sharing of practices (see Practice Sharing below) within the CoP. Issues pertaining to identification with/sense of belonging to one's work organization or sector will be discussed again below.

Defining characteristics of the CoP A that reflected the values and norms of behaviours (i.e., culture) of Ontario public health and member's work organizations also served as anchor points for member identification/sense of belonging because it enabled members to understand how they fit in to the CoP. For instance, being a "*Community of Practice*" that was "*evidence-based*" also had specific meanings to members about what was appropriate norms of behaviour in the CoP A. Being a part of a community of practice had a common meaning to members across levels of knowledge use and sectors:

"I think part of belonging to a Community of Practice is not only to, you know, learn from other people, but it's also to share your experiences and your knowledge" (A: Low KU, NGO; p. 12).

All members indicated that simply by being a part of the CoP in and of itself contributed to a sense of belonging (to varying degrees). Moreover, members indicated that by virtue of being part of the CoP A all members belonged and everyone had an “*obligation to participate*” (D: Inter KU, LPHA, p. 29) and be respectful of others as they work together around the CoP’s practice. These were also norms of behaviours that were culturally embedded in Ontario public health. Being “evidence-based” and about “networking, knowledge sharing and learning” (also highly valued practices in Ontario public health and local public health agencies), meant that the CoP offered a mechanism for members to engage with similar others to use CoP knowledge (e.g., knowledge exchange and the develop evidence that is relevant to practice) that could further the work of their organization to which they also (and typically more strongly) identified.

The “*information*” that circulated in the CoP was also a critical feature that originally attracted many members to the CoP A. As already stated above, scientific evidence was a highly valued type of information and the prospect of members having access to researchers and their expertise was:

“something that really excited me at the beginning. I was really looking forward to having that research evidence background from them that would help us as the practitioners work together to see where we should be going and sort of inform where we’re going” (F: High KU, LPHA, Co-Chair; p. 12).

However, these members also commonly noted a gap with respect to the research representation on the CoP A. While members acknowledged and strongly valued the research representation at the CoP A table and their context-specific program of research, they also desired researchers who conducted CoP A relevant research that examined additional contexts and issues that could help them with their work.

Members across levels of knowledge use and sectors also stated that the CoP information brought them back to the CoP. Topics addressed on agendas that appealed to members motivated their interest to attend a CoP meeting and contribute to its discussions. However, (and as stated above) a stronger sense of belonging to one’s organization and work responsibilities better explained whether or not member would participate in a given CoP A meeting than the agenda topics slated for discussion that day alone.. For instance, TCAN representatives commonly described CoP knowledge as repetitive of what they hear at the tables they sit at outside of the CoP. Despite this, TCAN representatives continued to attend to ensure they were up-to-date on what was occurring across the province so they can best support the work of their TCAN.

However, CoP information contributed to member’s identification/sense of belonging. CoP information helped members to locate where or how they fit into the CoP A (if at all), which influenced the degree of belonging they experienced to the CoP A. To elaborate, the majority of members (largely TCAN and local public health representatives) felt the CoP was “inclusive” of diverse members and information was relevant to their sector’s needs. In contrast, minority representatives (i.e., research and NGO sectors) defined ‘who we are’ as the CoP A as focused on local public health agency issues, which in turn shaped the information that the CoP also focused on. To these minority representatives, the information shared within the CoP A was not always relevant to their sector’s needs. This experience had consequences as illustrated in the quotes below.

“I think the...interest for the researchers is waning....I suppose if you looked at what’s been discussed (in the CoP); how much discussion has there been of program evaluation and research methodology for instance ...that would interest researchers and contribute to their work (and) not be a resource for all the practitioners but not get anything back” (E: High KU, Research; p. 28-29).

“There’s always a divide between NGO’s and the people in the community because we...do things differently and we have different areas that we’re interested in...I think that ... usually we have somewhat different interests and information needs because we’re looking from a provincial perspective whereas they’re very localized...Even though our goals are probably the same, how we go about them may be different... Historically this has had some impact on our interactions...” (A: Low KU, NGO; p. 21).

While the researcher and NGO sectors noted that this disconnect in terms of the CoP’s relevance to their sector’s needs did not create tensions between them and other CoP A members, the NGO sector did state that it had created:

“different levels of connectedness (with members in the CoP A)...My colleagues at the other NGOs like Cancer and Lung, we have much more in common and so I think there’s a bit more of a shared camaraderie. I work with them on so many different issues that I have deeper relationships with them” (A: Low KU, NGO; p. 22).

Although TCAN/local public health representatives did not mention sector-based distinctions, similar comments were made by them with respect to identifying with/experiencing a stronger sense of belonging with a group of people who shared commonalities (e.g., TCANs identified with/felt a strong sense of belonging with other TCAN representatives they worked with and local public health practitioners felt this way about other practitioners).

While lack of sector-relevant information did impact the research and NGO sector’s identification with/sense of belonging to the CoP A, it had differential impacts on these member’s respective participation levels, propensity to speak up in the CoP or to use CoP knowledge. As already stated, the research sector strongly identified with their research team and as such participated when they could so they could keep abreast of developments across the province and applied relevant CoP knowledge where appropriate. The research sector also saw the CoP A as a means to promote their research team’s work and as such contributed to the CoP A discussions, shared their research materials and findings as a means to help inform local public health practitioners’ work and link up with them to implement their programs in a greater range of local communities. In contrast, the NGO sector reported rarely speaking up during CoP meetings and limited use of CoP knowledge. Despite this, the NGO sector did describe valuable learning experience from the CoP A membership set up as described here:

“When I talk to someone who represents say (name of a local public health agency) and really understand what works in their organization...or what the challenges are in their area – because coming from a provincial foundation you don’t necessarily think of the nuances of the different regions... then I find I’m more likely to keep that in mind...It makes me appreciate the challenges that they face” (A: Low KU, NGO; p. 26).

While sector-based differences were noted by a few (i.e., the research and NGO sector), almost all members described distinctions within the CoP A based on core and peripheral members. Core members were described as the most visible and vocal members of the CoP A. These members were also identified to spend a higher percentage of their work responsibilities centred on the CoP A topic area and / or had higher levels of experience (and thus knowledge to share) as it related to the topic area. Peripheral members or “lurkers” were not visible or vocal during CoP meetings. Most interviewees reported a lack of understanding of this group of members, but suspected that these members likely did not spend a lot of their work time on the CoP A topic area or were newer to addressing the issue and did not have much to report about. However, two members both who experienced a lower sense of belonging to the CoP A and had lower levels of knowledge use provided

greater insights. For the NGO, the issue was as already described a lack of relevance of the information to their sector's needs. For the local public health practitioner, the issue was one of level of experience in the CoP A topic area. Although challenging to LEARN Co-Chairs to get lurkers to become more involved, these peripheral members stated that an attractive feature of the CoP A was that it enabled members to "*be as involved as we want to be*" (B: Low KU, LPHA, p. 22) and this kept them connected. Although not deemed divisive in terms of CoP A member dynamics, members described wanting to hear from the peripheral members, even if they did not have much to talk about.

Overall, a consistent finding in the CoP A was that to overcome within-group distinctions (based on sector or on peripheral membership), stimulate interest, participation, and strengthen a sense of belonging to the CoP would benefit from shared understandings of 'who we are' that centre around an actionable common purpose/goal and is inclusive of the different players at the table and their respective information needs.

Psychological Safety also contributed to member identification/sense of belonging. Findings pertinent to feeling safe in the CoP A will be described next.

Psychological Safety and Speaking Up

Recall that the Community Charter outlined the principles that members collectively negotiated were important to engender within the CoP A and as such reflected acceptable norms of behaviours. CoP A Principles included being "*appreciative of and inclusive of diversity (e.g., regional/cultural, and linguistic), open to discussions outside of members' own comfort zones,*" "*evidence-seeking,*" and "*open to learning and (to) work (on) areas of mutual benefit*" (CoP A Community of Charter, 2010; p. 3). Some of the attributes that members used to define 'who we are' as the CoP were embedded within these guiding principles with impact on CoP A climate. All members described the CoP as a "*very warm and inviting...inclusive welcoming group*" (D: Inter KU, LPHA; p. 11). All members commonly described members to "*...have a positive attitude towards (the CoP A) and feel like it's a safe place...*" (B: Low KU, LPHA; p. 30).

The experience of safety within the CoP environment was important for several reasons. While CoP A members did not make direct comments that a trusting and safe environment influenced their attendance in the CoP A or propensity to network with other members, they commonly reported that it did create a sense of comfort among members, helped them to feel like they belonged, which made it easier for them to speak up to share their information and perspectives in the CoP. Members with intermediate and higher levels of knowledge use commonly stated that a climate of safety made one "*more open to new ideas.*" CoP documents revealed evidence of member suggestions to dip into different areas of the scientific literatures or link up with non-traditional partners as a means to shed a different light on their topic area (e.g., marketing literature or partnering with environmental organizations). However, it was not clear if such suggestions were acted upon. Members also commonly stated that new, unorthodox or half-baked ideas were not highly prevalent in the CoP A, but that members handled differing opinions and ideas in a welcoming and respectful manner. Meeting minutes and recorded meetings provided support to interviewees' comments. Respect for co-member's work and recognition for their achievements, in turn, were powerful contributors to the development of trust, comfort and psychological safety in the CoP A. The strong presence of reciprocity that existed among CoP A members was also identified as a strong contributor to the development of psychological safety. Member receptiveness to receive requests for help from other members created a sense of safety and ease to approach co-members for information or other assistance.

Members also commonly stated, "*...If people feel comfortable and they feel safe, they will speak up and share*" (D: Inter KU, LPHA; p. 28). Interviews and supporting CoP documents (i.e.,

meeting minutes, recorded meetings and discussion posts) revealed that some members did speak up to share their information, ask questions and / or provide feedback. Feedback, however, was primarily given when it was requested by the person presenting or sharing information in the CoP A. While engaging in these behaviours did not necessarily lead to radical ways of approaching their work, it did help to build members understanding of how to improve their work and do it more easily.

Additionally, to speak up and impart one's knowledge to others and/or question others on their perspectives, methods or decision-processes, helped to put members on the same page regarding the priorities of the CoP A and ensured that CoP discussions were consistent with what the CoP A was negotiated to be about (i.e., consistent with the CoP identity).

Despite the presence of a psychologically safe environment, members with intermediate and higher levels of knowledge use (most notably LEARN Co-Chairs) commonly noted the challenges with getting peripheral members to speak up during meetings. Thus, members indicated that while cultivating a psychologically safe environment was important, it did not account for why some members chose not to speak up. The previous section on member identification/sense of belonging discussed the "Other factors" (e.g., work priorities, level of experience, and relevance of CoP information to sector needs) that influenced peripheral member's propensity to speak up. Mechanisms of interaction (e.g., in-person meetings, teleconference meetings, working groups, and the on-line space WebEx), and issues pertaining to individual initiative/characteristics (e.g., confidence in one's knowledge were also identified as differentially influencing member's propensity to speak up in the CoP, use CoP knowledge among other impacts. These other factors will be discussed later in the description of the CoP A.

Social Capital

Member interactions with one another and the softer aspects of relationships that developed through those interactions (e.g., respect, reciprocity, trust, comfort) weaved through virtually all factors that emerged as important to members cohering as a collective. Social capital enabled members to socially construct shared understandings of 'who we are' as the CoP A, influenced member identification/sense of belonging with the CoP or other organization as well as psychological safety and member's propensity to speak up to share their knowledge and insights. These factors in turn also shaped the development of social capital. Social capital also emerged as a powerful vehicle through which members used CoP knowledge. In fact, social capital was the only factor of interest to this study that was linked to instrumental types of knowledge use. The following summarizes the key findings regarding structural and cognitive social capital, how it inter-related with shared identity, member identification/sense of belonging and psychological safety and in turn on knowledge use.

Members with intermediate and higher levels of knowledge use made new connections with public health practitioners from different local public health agencies across the province, and a few partnered on shared topics of interest. Some members noted the CoP offered an opportunity for connections to be forged that might not otherwise have happened. Pre-existing relationships with co-members also strengthened as a result of members participating in the CoP A. Members with lower levels of knowledge use made few new connections and did not know many co-members prior to joining. As stated earlier, these members also tended to be peripheral members, did not identify/feel a sense of belonging to the CoP A to any great extent, and rarely used CoP knowledge. Although all members across levels of knowledge use felt that developing relationships enabled CoP members to better utilize them to gain resources, access their feedback and work collaboratively, peripheral members were more likely to pick up the phone and call a member outside of CoP meetings if they wanted to access information regardless of their familiarity with that member. In contrast, members

with intermediate and higher levels of knowledge use reported contacting members for information that they had built relationships with:

“So if... someone out in (name of city) was doing something that I thought was intriguing; if I didn’t necessarily know the person as well I may not feel as apt to pick up the phone and call or email. Whereas if I had met and talked about it in person and kind of developed that relationship, (I) might feel more inclined to do that...” (C: Inter KU, TCAN, p. 16).

Comfort was identified as the reason why members with intermediate and higher levels of knowledge use tended to reach out to members they knew to access information or ask for help. These members also commonly said comfort made it easier for them to speak up and share their information in the CoP. Members who identified with/felt a stronger sense of belonging to the CoP A (e.g., particularly Co-Chairs), experienced the greatest sense of comfort.

Additional factors that contributed to a sense of comfort included pre-existing relationships with members, being a part of a community of members who come from local public health (this was pertinent to TCAN/local public health representatives) and shared understandings and experiences, and/or shared a common passion and goal. Simply by being a part of the CoP made members across levels of knowledge use feel comfortable with one another even though they did not necessarily know everyone well. Trust in co-members also cultivated a sense of comfort.

Reciprocity (i.e., member’s willingness to help each other) was a common and predictable behaviour that existed in the CoP A. This predictability contributed to mutual trust. A welcoming environment where members and their contributions were positively acknowledged and respected also contributed to trust. Being positively acknowledged for one’s work made members feel respected, valued and a productive member of their CoP.

Not only did these experiences build trust and in turn comfort, it also strengthened member perception that it was safe for them to speak up and strengthened their identification with/ sense of belonging to the CoP, which influenced their motivation to take initiative and continue to use CoP knowledge (i.e., through sharing, contributing to discussions around CoP knowledge, other).

Members particularly those with intermediate and higher levels of knowledge use stressed: *“you have to have these (acknowledgement, acceptance, trust, comfort) as a basis before people feel more comfortable with sharing information and sharing of their ideas”* (F: Higher KU, LPHA; p. 26).

Factors that enabled members to feel safe to speak up also contributed to cognitive social capital. Transparency in one’s work methods influenced the development of trust because it enabled assessments of co-member’s credibility as information sources. In-person meetings and frequency of meetings were also important to the development of trust and comfort, which will be discussed later. Members across levels of knowledge use also noted that the CoP A was welcoming of current and new members, were receptive to one another, acknowledged and respected one another and felt comfortable with others in the CoP and this was essential to both the sustainability of that group and to knowledge use:

“...Everybody likes to feel appreciated and everybody likes to feel welcome. So, certainly if the group wasn’t like that I certainly would find that a turnoff...but there’s no issue with that with this Community of Practice. Certainly this has an impact on whether people will continue with (the CoP). In these busy times, with such competing entities...for time and meetings et cetera, that if you don’t feel those kind of things you’re not going to attend and if you don’t attend, (the CoP is) not going to have the information to share.” (D: Inter KU, LPHA; p.27)

Structural social capital and cognitive social capital were also linked to member identification/sense of belonging. Increased frequency of interaction among members (particularly via in-person meetings) led to familiarity, which contributed to member's identification with/sense of belonging. Recognition and respect, reciprocity, trust and resulting comfort also contributed to member identification/sense of belonging. Comfort was commonly deemed essential to ensure that diverse CoP A members felt like they belonged, an experience that would ensure the viability of the CoP. A few members with intermediate and higher levels of knowledge identified comfort and a sense of belonging as more easily enabling new members to connect with seasoned members, learn about the Ontario tobacco control system, its culture and capacity building opportunities.

The development of structural and cognitive social capital in the CoP A also contributed to capacity building and knowledge use. Members with intermediate and higher levels of knowledge use described that being a part of the CoP and more specifically interacting with other members to exchange knowledge helped them to develop their personal capacities (i.e., knowledge and skills):

"I develop a level of expertise that I probably would not have developed as quickly had I been doing this entirely on my own as I was previously" (F: High KU, LPHA, Co-Chair; p. 30).

Even a seasoned tobacco control professional stated,
"In my work, I didn't focus much on (type of tobacco control content area) ...I didn't have the knowledge base in that area, so (participating in the CoP) certainly has fast-tracked me around some of those pieces" (D: Inter KU, LPHA; p. 30).

Bringing members together to interact as a community and exchange knowledge was also described as the seeds to collective action: *"(It) creates a lot more energy around the topic and more potential for stuff to happen..."* (B: Low KU, LPHA; p. 37).

While members commonly identified lack of relevant information (and funding to support CoP activities) as hindering collective action (and thus potentially higher types of instrumental knowledge use) in the community, they did describe how the need for information primed them to be more open to (i.e., psychological safety) the different ideas and activities that CoP members have done in the area, and to look for ways to *"...align practices... collaborate...on projects (and)... see if we can piggy back on some of (member's) initiatives or take them and use them within our own communities"* (CoP A: Meeting Minutes, February 2010; p. 4)

Interviews and meeting minutes revealed that such partnering opportunities (which could lead to action and potentially instrumental use) were more likely to emerge when members interacted during structured practice sharing time (a mechanism of interaction that will be discussed later). All data sources revealed instances where members discussed the potential to dovetail their work to implement CoP related knowledge or initiatives.

"All the TCANs have to be working on something to do with (the CoP A topic area)...So I know that TCANs are doing things so if we're all working on separate projects, bringing something together that we can work on provincially...can create a difference in terms of (tobacco use) reduction. The Youth Development Specialist from our TCAN and I at our last in-person (CoP) meeting, we presented on all the different projects that we've done and that was really good because (name of public health unit) is now considering taking over one of our projects to implement it in (their area)..." (G: High KU, LPHA, Co-Chair; p. 6).

Some instances emerged where members actually linked or partnered up with other CoP A members (practitioners with practitioners and practitioners and researchers), which contributed to some coordination of activities and knowledge use:

“...Funds were available (in my TCAN area) to support some initiatives. We were able to highlight some of the things that we learned about (name of a program spearheaded by another CoP member)...The (Youth) Development Specialists followed up with (contact of the program) to look at opportunities to do some year end support of some of their campaigns and initiatives. So again, that opportunity was born through the CoP. Sometimes out of sight out of mind, but because (the CoP) brings that connection and people together, it was at the forefront of our mind and when approaching some of this planning we thought to include them (D: Inter KU, LPHA; p. 4).

Some instances were found where research representatives on the CoP A were brought by members (i.e., TCAN representatives or local public health agency managers) to some TCAN tables to “talk about their initiatives and how we can be engaged in their planning...I’ve known (name of researcher) for several years so I think building on those relationships and bringing those individuals to this region has been key to helping local public health units gain access to the (study population of researchers) and we’re starting to see a lot more communication between local public health units and (that study population). So there are some great benefits in making these connections and (accessing) their resources so that folks can complete their plans and implement new programs.” (L: Inter KU, TCAN; p. 13).

The research sector in turn described what evolved as a result of the connections made on the CoP A: *(The CoP) has connected us to things going on in (name of health unit); learning what they're doing or linking with them, and helping them with some of their projects. And you know they've used our materials and our (staff) for some of their outreach (in a specific setting) in their area. So we had a partnership on that...The last face-to-face meeting, I sat next to a woman from (name of local public health unit) and we subsequently set up a meeting with one of my staff who oversees (a specific setting) in that area (that we have been having) problems gaining access to ... So I made the contact, then my staff...(had) the meeting and ma(de) some inroads...By (working) together we (could) enhance programming and reach (the target population in that setting). So that's being facilitated by connections in the CoP and that's the kind of thing that should happen a lot at the programming level” (E: High KU, Research; p. 42).*

Linking with the external environment also enabled CoP knowledge use (i.e., largely conceptual types). Alignment of CoP A efforts with the broader environment in which the community was embedded was also found. A few members noted that as a result of their participation in the CoP, they became the “conduit between” not only their work organization but other tables that they sat at. Not only were these CoP members dedicated to sharing what they had learned from the CoP at those tables, they also made efforts to provide updates on activities from these groups to the CoP.

With the help of LEARN leadership, the CoP A members were also continually informed about the latest tobacco control documents (e.g., TSAG or SAC reports), workshops, conferences, and other opportunities in which members could participate or shared information gathered from these opportunities to members. Efforts were also made to link the CoP A with organizations that could benefit them. For instance, members identified a need to develop the knowledge, skills and abilities to evaluate their initiatives – knowledge that would enhance individual’s capacities and inform improvements in how the CoP A topic area is addressed. At the time that data collection for this study ended, LEARN leadership engaged the Ontario Tobacco Research Unit (OTRU) to ascertain whether they could provide evaluation guidance and support for CoP A member initiatives. OTRU was receptive and an evaluation working group was subsequently being formed for interested members to

join. Despite ample instances of sharing of practices and resources and some collaboration, all members consistently stressed that a collective purpose/goal and funds to support it would amplify coordination and collaboration that could lead to action to address the CoP A topic area that reflected higher types of instrumental uses (e.g., implementation of programs or services). They also stressed that a common purpose/goal would bolster all members interest to participate, potentially catapult peripheral members to more active roles, and “*create synergy*” by members working together.

Other Factors

“Other Factors” contributed to or detracted from knowledge use, as well as the development of shared identity, member identification/sense of belonging, psychological safety and speaking up and / or social capital in the CoP A. References to some of these factors were weaved into the findings outlined above. The following describes these and other factors that emerged most prominently in the CoP A in more detail.

Mechanisms of Interaction

Different structures including the CoP itself, in-person meetings, teleconferences, the online space WebEx (including its online discussion post feature), structured time for practice sharing, and working groups contributed to or detracted shared identity, member identification/sense of belonging, psychological safety and speaking up, social capital and to knowledge use.

The CoP

The LEARN CoP was described to enable a rare opportunity for different players in the Ontario public health system to belong to a network of similar others, build relationships with them, feel safe to speak up and exchange knowledge and work together to address issues that align with their collectively negotiated understandings of ‘who we are’ as the CoP A and ‘what we want to achieve,’ “*just by providing a place to do it*” (B: Low KU, LPHA; p. 31). Members across levels of knowledge use described the CoP A as providing a “*one-stop shop... (for) regularly updated (evidence from science and practice)*” (B: Low KU, LPHA; p. 16) that pertained to the CoP A topic area and an online knowledge repository where this information could easily be accessed. The CoP also allowed members an opportunity to meet people from across the province, strengthen pre-existing relationships and develop new relationships with people they may not otherwise have met. Another key benefit members experienced “*from the CoP (was) learn(ing) that there are gaps in our work across the province and what is available to us (to help bridge these gaps). So, bringing that information back to groups like a TCAN or other group’s coalitions within regions and health units is really important so we know what we should be working. That knowledge I would not have gained if I wasn’t a part of the CoP*” (G: High KU, LPHA, Co-Chair; p. 27).

In-Person and Teleconference Meetings

In-person meetings emerged as a powerful ‘space’ that facilitated the use of CoP knowledge, the development of a shared identity, member identification/ sense of belonging, and psychological safety through its ability to generate social capital. Teleconferences were less favourable with respect to these issues although it did have some benefits as will unfold below.

Members across levels of knowledge use and sector identified the in-person meetings as a strong generator of social capital. The term “*solidify*” was commonly used to describe how it contributed to networking and relationships. According to members, “*face-to-face meetings are much better attended than the teleconferences*” (F: High KU, LPHA, Co-Chair; p. 14). Attendance at in-person meetings “*solidif(ied) member participation and input at meetings... and the whole relationship amongst the group*” (E: High KU, Research; p. 12) because it “*lets you put a face to a*

name” (C: Inter KU, TCAN; p. 21) and this helped to build familiarity.

Opportunities to put a name to a face dissolved barriers because often *“you’re part of a network or coalition and you have preconceived ideas of what they might look like or who they are, but when you see them in-person it makes it real...and less intimidating to approach them, especially people that are very learned in their field or come with a lot of credentials...Once you’ve met them and see they are just an everyday person just like everyone else, you’re more apt to pick up the phone and call them”* (D: Inter KU, LPHA; p. 14).

Familiarity and viewing co-members as equals in turn helped members to feel like they belonged to the group. Members with intermediate and higher levels of knowledge use stated that familiarity and observing first hand how members act towards one another (i.e., their receptiveness, willingness to help, credibility as information sources) also contributed to mutual trust. These experiences were described to help with knowledge exchange because members felt comfortable and safe to speak up. Feeling safe in in-person meetings also enabled members to *“not hesitate to speak up and share their ideas...The in-person meetings are where you really have the great discussions...”* (A: Low KU, NGO; p. 12).

Frank and open discussions not only enhanced knowledge use (e.g., led to different members sharing their experiences, lessons learned or initiatives to contribute to the discussions), it also culminated in the development of *“a really great learning agenda that is directing us...”* (G: High KU, LPHA, Co-Chair; p.5). Thus, in-person meetings provided a powerful structure for the development of social capital. Social capital contributed to psychological safety and members propensity to speak up, both of these factors influenced knowledge use and contributed to the development of living documents (i.e., shared identity) that guided what topics or issues and consequently information the CoP focused upon in subsequent meetings.

In contrast, teleconferences challenged networking and relationship building because *“it’s hard to identify all the different voices on the phone and develop relationships that way...”* (C: Inter KU, TCAN; p.14). Lack of awareness of who was on the line was perceived to put members on guard and potentially limit their propensity to feel safe and speak up to share information. Teleconferences also lacked the networking that in-person meetings enabled over lunch or on breaks. These informal opportunities for interaction enabled members to get to know one another on a more personal level which helped build familiarity, trust and comfort, knowledge exchange and, at times, partnering to try to address CoP related initiatives. Members also noted that teleconferences lacked accountability because the lack of visibility made it easier for them to “lurk” rather than actively participate. Multi-tasking was also identified as an issue. Recorded meetings also captured the sound of people typing on computers during teleconference meetings (CoP A Recorded Meeting, December 2010). Members also characterized discussions in the CoP A as *“a show and tell kind of feel ...and not enough let’s problem solve here, let’s look at general strategies and what should be happening and who should orchestrate that”* (E: High KU, Research; p. 5).

WebEx

Recall from discussions about shared identity that the online WebEx space was identified as a characteristic of the CoP A that made it distinct from other comparable groups. WebEx served multiple functions. It was a tool used during meetings to allow attendees to see, live, meetings materials and offered a chat function where members could ask questions or communicate with specific or all attendees. WebEx also featured a place where members could start or respond to a discussion thread. WebEx was also a knowledge repository, which was consistently identified as an attractive and extremely useful feature of the CoP A and one that would benefit other groups in the Ontario public health system. WebEx features influenced the study factors in different ways. WebEx

facilitated communication between LEARN members during meetings and the chat option allowed LEARN Co-Chairs to communicate with one another during meetings as a way to more effectively moderate the meetings. The knowledge repository feature of WebEx allowed members to easily access CoP knowledge at any time. All members described using the WebEx to download CoP information (LEARN Backgrounders, literature reviews, presentations, member resources) to share it with colleagues or use it in their work. Discussion posts were less frequently used and a review of posts over time revealed that LEARN CoP Coordinator largely posted discussion topics to stimulate discussion and while members responses to these posts were more frequent in the early days of the CoP, they decreased as time passed including at the time of data collection. As such, discussion posts were not a particular useful mechanism for stimulating knowledge use in the CoP A.

Interestingly, WebEx also emerged as a space that helped to create a sense of safety among members with lower levels of knowledge use: WebEx is as an “*anonymous*” environment where “*we can post information...give an update on a project and not feel like we’re going to be judged or criticized...*” (B: Low KU, LPHA; p. 29). Members with lower levels of knowledge use and who described themselves as not feeling much of a sense of belonging to the CoP A also described WebEx as an important way to keep less involved members up-to-date with information and activities of the CoP. According to these members WebEx helped keep them tied to the CoP. Keeping peripheral members connected in turn could lead to their greater involvement down the road rather than losing them all together.

Practice Sharing

Recall that practice sharing reflected structured time during CoP A meetings for members and guest speakers to formally or informally showcase what they are working on, provide updates on progress with current initiatives that members were working on, or bring up challenges that they were encountering with their initiatives. Recorded meetings revealed several instances where members provided input or feedback on initiatives and how to work through challenges (usually when solicited) based on their own experiences/lessons learned.

Providing an opportunity for members to share their practices had interesting impacts. When a member did share his or her practices, it made them feel productive. Positive feedback from members made them feel like a valued contributor and member of the CoP, which strengthened their sense of belonging to the CoP and motivated them to engage in practice sharing again and / for a few get more involved in the CoP (e.g., assume a LEARN Co-Chair position). Practice sharing also made members more aware what others were doing across the province and also helped members to identify others with similar interests or information needs. Interviews, recorded meetings and meeting minutes revealed some instances of members linking or partnering with people who shared a commonality in some way to discuss the potential of adapting an initiative used in one local community to another one, coordinate activities to gain access to a hard to reach context and implement an initiative or to form working groups within the CoP. The latter is described next.

Working Groups

Working groups reflected sub-groups of members within the CoP who decided to work together on a specific CoP-relevant issue. Working groups were not common in the CoP A as reflected by the few members who discussed their existence in interviews and the few instances captured of their activities in meeting minutes (May 2009; August 2009). While discussions of forming working groups around specific topics existed in the CoP A, only one had formally formed and was operating at the time of the Phase II qualitative study. This working group collaborated to develop an intervention that addressed the CoP topic area in an under-examined setting. An interest in addressing this setting emerged from member discussions during meetings, but it was the LEARN Team Scientist who responded to these conversations by proposing a study and inviting interested

members in the planning and implementation of the intervention. The few members who discussed the working group were persuasive about its unique and important role in facilitating the development of factors of interest to this study. The working group helped to “*build trust and synergy (even over teleconference) because you have a concrete goal*” that everyone is working closely together to achieve (F: High KU, LPHA, Co-Chair; p. 26). This smaller, more “intimate group” also provided a ‘space’ for more iterative processes, enabling deeper levels of exchange of knowledge around a common and more focused goal. Stronger interpersonal bonds and sense of belonging were also forged as members got to know one another on personal and professional levels. Time was invested by working group members both during scheduled working group (largely teleconference) meetings and member’s work time to engage in higher types of instrumental use such as developing intervention materials that would fulfill the group’s goals.

While similarities brought members together into working groups, dissimilar interests or priorities kept members apart:

“(our work) doesn’t have a clear connection with (the specific issue addressed by the CoP A working group described above) – It’s not our main focus with our funding.... So, we’re less connected to (the project) although I listen attentively in case there’s some little idea I could get my organization involved...” (E: High KU, Research; p. 24).

External Context

The external context was another significant “other factor” that contributed to or detracted from CoP knowledge use as well as shared identity, member identification/sense of belonging, psychological safety and social capital. These contextual factors included: The Ministry Context, organizational context and the structure and culture of the Ontario public health tobacco control community as well as time. Issues that pertain to the Ministry context, culture of the Ontario public health system, and time, emerged as salient external issues that facilitated or detracted from members cohering and their use of CoP knowledge and will be discussed here.

Alignment with Ministry and Organizational Priorities and Context

Recall that while the CoP A topic area was gaining increased attention as a priority area, at the time of the study the Ministry had not made clear its directives around this issue. Since Ministry directives shaped in particular Ontario local public health agencies priorities, their lack of direction had a ripple effect that impacted CoP A members ability to mobilize their efforts and take action to address the CoP A topic area in a tangible way. Specifically, lack of Ministry direction meant limited funding opportunities in the CoP A topic area. Lack of priority meant that Ontario public health agencies had different levels of experience in the topic area and as such lack of needed practical evidence (e.g., how to successfully access relevant CoP A target population(s) and what interventions work for them). Lack of Ministry directives also was said to confuse members about ‘who we are’ as the CoP A and ‘what we are here to accomplish’ (i.e., are we about knowledge sharing and learning or are we about forging a common purpose/goal and taking action on it similar to the CoP B).

Another strong theme was members desire to ensure that CoP A efforts “aligned” with Ministry philosophies and plans (or, if need be for the CoP A to look into shaping Ministry plans) about what needed to be done to address their practice area. A desire for alignment extended beyond the Ministry to other nested configurations that comprised the broader landscape in which the CoP A was embedded. Members frequently made comments about ensuring the focus of the CoP A aligned with member’s organizational priorities and/or specific work roles and responsibilities. Members also described a desire to keep abreast of and if possible align efforts with what was occurring more broadly around the CoP topic area within and beyond Ontario. Alignment emerged as important because it helped members locate where the CoP A fit in within the Ontario public health tobacco

control community and validated them as a social entity that had public health impact around the COP A topic area. Feeling validated created a sense of pride because it meant that external others positively perceived the CoP A as credible and important (i.e., construed external image). Alignment was also believed to create synergy by facilitating coordination and streamlining efforts, enabling a sense of belonging to something bigger that had the supports (organizational and human resources, money, time) needed to achieve greater public health impacts. Alignment with the broader Ontario public health community also manifested in more implicit ways as will be explained when discussing Culture below.

Culture

The culture of the broader Ontario public health tobacco control community was another external factor that influenced the organizations that members represented and the CoP A. Values that emerged as important largely revolved around: learning and professional development; evidence-informed decision-making; understanding and tailoring efforts to address the needs of priority populations (including the sub-populations that comprise them); accountability; impact-oriented through linkages and partnerships (i.e., achieving public health gains as a result of coordinating efforts to make a difference; excellence in professional practice (having the right knowledge, at the right time to take right action); and what constitutes appropriate professional behaviour for public health (e.g., culture of respect and openness to diverse people and perspectives, transparency, etc). Many of these cultural attributes translated into members shared understandings of ‘who we are’ as the CoP A. These shared understandings served as an implicit guide of what information was important (i.e., types of evidence to attend to and use) and how to act in ways consistent with these culturally-ingrained understandings of ‘who we are’ as a CoP embedded within a broader interconnected constellation that comprised the Ontario public health tobacco control system. These identity-attributes in turn helped to shape how members interacted with one another and the quality of relationships developed. These norms of behaviour in turn helped to cultivate a sense of belonging for members (because members belonged essentially to the same professional group and had shared experiences and understandings of what that meant to them), a psychologically safe environment, and the use of knowledge (i.e., relevant, evidence-based knowledge). A drawback that members noted to stem from the broader Ontario public health tobacco control/local public health agency culture was the focus on doing things ‘right,’ which often meant a reluctance on members part to share half-baked thoughts/ideas or initiatives prior to it being implemented.

Time

Members commonly noted improvements or strengthening of most factors examined in this study as the CoP evolved over time. Members observed and expressed experiencing increased comfort among co-members over time (particularly the more often they attended in-person meetings). Discussions, characterized by iterative exchange of knowledge also improved over time. The duration of time that members had been attending meetings, particularly in-person meetings, was another factor that was important to build and “solidify” relationships with other members, their commitment to the community and their propensity to feel comfortable enough to speak up to share information or ideas and / or ask questions.

“There is certainly lots of discussion at the meetings. I think it’s getting—you know, at the beginning it was slow and maybe not as much participation, but certainly I notice that with every meeting coming along, that there is much more participation and input from members. So, I think that as it’s growing...” (D: Inter KU, LPHA; p. 12).

Appendix 10b: Thick Descriptions of CoP B

Background on CoP B Launch

The Case B was implemented in Spring of 2009. TCAN Consultations identified the CoP B topic area as a priority for Ontario local public health agencies. The CoP formed to provide a funded and coordinated platform that would bring together people across the province working on the topic area as part of a broader movement that had evolved in Ontario from the early 2000's. The following provides a brief historical overview of how this movement emerged gathered through CoP documents. In early 2000, Ontario local public health agencies began to address the CoP B topic area and major milestones that were achieved. The topic area was also declared by World Health Organization as a 'World No Tobacco Day' theme and consequently became an issue for different countries and some Canadian provinces. In 2008, concerted effort was directed towards addressing the topic area across Ontario when the majority of the seven TCANs identified as a priority for their regional action plans. TCANs also made efforts to identify opportunities for joint action in support of the topic area and a meeting was held in April 2008 to discuss opportunities for collaboration. A workshop was held in one TCAN the following month to highlight their lessons learned around the CoP B topic area and to inspire similar work across the TCANs. Consistent with their mandate to provide Ontario local public health agencies with technical assistance and training to support practitioner's tobacco control work, PTCC launched a website that provided information on the CoP B topic area, researched and developed reports and delivered workshops and consultations specific to the topic area. The LEARN CoP Coordinator attended a meeting that convened local public health agency practitioners across the province who worked on the topic area and raised the issue of creating a CoP that could serve as a platform to advance provincial work around the topic area. In spring of 2009, the CoP B was launched to: facilitate linkages between public health and the organizations they wished to impact and provide a mechanism for knowledge exchange and coordinated action.

In Spring 2009, an in-person meeting was convened in Toronto that brought together ~30 people. Attendees included TCAN representatives, local public health agency tobacco control managers/coordinators, health promoters, consultants with experience in CoP B topic area, representatives (executive directors) of organizations that were targeted for change as well as PTCC/LEARN Team Staff. During this meeting members collectively negotiated a Community Charter that described the purpose and objectives of the CoP B, membership and expectations of members, roles and responsibilities (e.g., LEARN Leadership), the values/principles that CoP members were to uphold, information and other resources available to members, and measures of success. Immediately after the meeting, the LEARN CoP Coordinator started a discussion thread on the CoP B online WebEx space to solicit member input on additional people that they would like to see at the table. A meeting was held the following month. At that meeting, members confirmed the contents of the Community Charter, which was subsequently posted on WebEx and members had until mid-summer to post suggestions to revise or add to the Charter. The Community Charter was collectively renegotiated annually at in-person meetings.

The overall purpose of the CoP B was *“to encourage and support the use of evidence (both scientific and practice-based) to make evidence- informed decisions when developing and planning...activities and policies in Ontario (that are relevant to the CoP B topic area).”* The specific objectives included to: *“provide a platform and forum to share learnings and experiences with tobacco control practitioners and the...organizations across Ontario (they wish to impact) thus increasing our understanding of what works with which populations and under what conditions...provide a platform for problem-solving and building a shared understanding, knowledge*

base and skill set; provide access to scientific evidence (when available) in the (CoP B topic area; build member capacity to (enact the three-pillars of the SFO: prevention, protection, cessation) and (impact target population); identify how we can integrate knowledge learned through (topic area) to other chronic disease prevention initiatives across Ontario; and provide opportunities for provincial/multi-TCAN planning and development of local action initiatives” (CoP B Community Charter July 2010; p. 2)

A collaborative that was comprised of some CoP B members was formed (summer of 2009) shortly after the launch of the CoP B. The collaborative submitted a grant proposal to the Ministry of Health Promotion on behalf of all seven TCANs, governing bodies of organizations that were targeted for impact, and PTCC to expand on work completed to date around the topic area. The grant, which will be referred to henceforth as the “Healthy Fund” was awarded to support an existing project that addressed the CoP B topic area, with funding end-date of March 2011.

Funding

LEARN team managed government funding for the LEARN CoP, allocating dollars to the ongoing development, implementation and maintenance of the project’s embedded units (i.e., CoP A, CoP B and others). Fund distribution included but was not limited to: salaries for LEARN Team staff as well as other PTCC staff and external consultants or contracted organizations that either provided secretariat support and / or contributed to the development of CoP B related knowledge (e.g., evidence-based Backgrounders, Documentation of Practices (DoP), evaluation of the LEARN CoPs, etc), and technical costs (e.g., to cover costs of the collaborative online space WebEx, teleconferences and in-person meetings including travel and accommodations). When feasible, PTCC allocated additional funds to support members to pursue specific CoP related activities or projects. Overall, initiatives that members wanted to pursue required member efforts to develop and submit grant proposals from funding agencies. As already stated, a key source of funding that support work around the CoP B topic area was the “Healthy Fund.” Another key source of funding and knowledge development for the CoP emerged from the studies led by research representatives on the CoP B. The role of research linkages will be described later in this section.

Type of CoP

The CoP B functioned as a distributed CoP given that members were geographically dispersed across Ontario. The CoP B met in a variety of ways, including face-to-face, teleconference, webinar, virtual space (WebEx), email and phone. Members meet monthly via teleconference and webinar using the virtual space “WebEx” and face-to-face biannually in Toronto. These methods of meeting will be discussed shortly below.

Membership

The CoP was comprised of representatives from the TCAN, Ontario local public health agencies, researchers, and the community organizations that the work of interest to the CoP B intended to impact. At the time of the Phase II qualitative study there were 25 CoP B members with a maximum membership cap of 50 members. This was a decision that members made to facilitate optimal communication and the development of a trusting atmosphere in meetings. However, at the prompting of CoP B members, a decision was made in early 2010 to allow people external to the community access to the information contained on community’s online WebEx space. After discussion within the CoP:

“the decision was made to expand the WebEx collaborative space to any Ontario public health practitioner (at local and provincial level) working in (CoP B topic area) – so as to permit province-

wide planning. The (name of) project funded through the (Healthy Living Fund) is using the space for project documents, for example. The CoP membership remains at 50 for the time being. To allow for sharing of draft materials that may not be ready for a wider audience, a separate folder for draft materials was created on WebEx accessible to CoP members only” (CoP B: Meeting Minutes January 2010; p. 3).

Members also negotiated a process for bringing in additional CoP members. Prospective members required sponsorship by an existing CoP member or LEARN Team staff who could vouch for their fit with the community. A bio of prospective members and their experience in the CoP B topic area was circulated to members and the sponsor held responsibility to orient the new member to the CoP (purpose, history, activities, expectations of membership as described in the Community Charter, etc) to ensure active participation. An account was created for each new member on the CoP’s collaborative online space “WebEx” so that new members could receive CoP communication emails. WebEx also served other functions as will be discussed in different sections below.

Meetings

Monthly CoP B teleconference meetings were consistently held on the same day of each month unless otherwise stated. Prior to teleconferences, members were sent an email with an agenda and information on how to log on for the meeting (teleconference) attached. Members also had the option to log on to the collaborative online space WebEx where they could view meeting materials live (i.e., agenda, presentations, other meeting materials) and follow along. WebEx also offered features that included viewing names of other attendees that had logged on to the online space, a chat box that enabled members to post a question or make a comment to selected or all members at any point during the meeting. In-person meetings occurred twice a year at a venue in Toronto.

A couple of months prior to in-person meetings, the CoP Coordinator sent a registration form that members needed to complete to indicate attendance so that LEARN team could make the necessary arrangements for venue, catering, travel and accommodations and the networking evening for members that would arrive the night before. The networking evening provided members an opportunity to go out for dinner together and get to know one another better. Interviewed members did not say much about this event. LEARN leadership consistently made calls for CoP members to indicate agenda items or topics of interest to them and sent an email to members with the agenda attached a week or two prior to the meeting. Meetings minutes were at first taken by the LEARN CoP Coordinator and in August of 2009, this responsibility was shifted to members. Once a member took meeting minutes, they were exempt from taking them for the rest of the year unless they volunteered again. Interviews, recorded meetings and meeting minutes all revealed long pauses before a member indicated that he/she will assume the minute taking role for that particular meeting. All meeting times, agendas, meeting minutes and meeting materials (for teleconference and in-person) were uploaded to WebEx for members to access, review and / or provide feedback.

Leadership

Formal leadership roles in the CoP included the LEARN Team staff (both core members and contracted facilitators) and LEARN Co-Chairs. The LEARN Team was described in the description for the embedded unit CoP A. During the course of the first eight months of the CoP B existence, The LEARN Team and a paid consultant with experience in the CoP B topic area provided leadership and secretariat support to the community. For the first nine months of the CoP B’s existence, the LEARN CoP Coordinator and the contracted facilitator led all aspects of meetings including soliciting member input to develop agendas, securing guest speakers or encouraging members to present their work. In

February 2010, these responsibilities shifted to the LEARN Co-Chairs that members elected. The LEARN staff continued to set up and arrange logistics for teleconferences/webinars and in-person meetings, occasionally organized for guest speakers to present at meetings, investigated different ways to improve members' connectivity, networking and knowledge exchange, and also contributed to the evidence needs of the community. For instance, existing websites pertinent to the CoP B topic area (i.e., pre-existing websites pertaining to the project funded by Healthy Fund was migrated to PTCC, CCO to make regular updates easier and add functionality to the site. As part of the 'Healthy Living Fund' that was secured to build on a previous CoP B related initiative, a database was also created by PTCC's Media Network staff that enabled members to populate activities undertaken in their local communities that pertained to the CoP B topic area.

LEARN Team supported CoP evidence needs by scanning the scientific literature for relevant articles, and developing two to three paged evidence-based backgrounders that summarized literature to respond to information needs of the CoP. LEARN Team also drew on PTCC's Media Network to provide regular updates of media reports pertinent to the CoP B topic area. The LEARN Team also supported initiatives of CoP members to advance practice (e.g., they assisted with an environmental scan of partnership efforts/practices that pertained to a specific CoP B issue, evaluated the CoP, and documented the development and implementation of innovative practices developed by local public health agencies using case study methodology (i.e., Documentation of Practices – DoP) so that other health agencies could replicate. Issues pertinent to the knowledge products generated and shared within the LEARN CoP B will be described below under "Information/Knowledge."

LEARN Co-Chairs also assumed formal responsibilities in the CoP as alluded to above. According to the CoP Community Charter, Co-Chairs "*are responsible for the overall guidance and direction of the CoP and ultimately its performance. They are primarily responsible for enhancing the knowledge and skills of members*" and the application of these capacities to carry out the collective goals of the CoP B (CoP B Community Charter, July 2010; p. 2-3). Co-Chairs served as a liaison between the CoP and the LEARN Team. They listened to CoP member needs and concerns and communicated this to the LEARN Team so that they could effectively support the community. Co-Chairs also facilitated meetings, led discussions about issues that concerned CoP functioning (e.g., member recruitment) and were to set an example for other members by modelling the types of values and behaviours that members negotiated were important to 'who we are' as the CoP B. The specific means through which leadership facilitated shared understandings of 'who we are' as the CoP B will be described under section "Shared Identity" below. Impacts of leadership on the other factors of interest to this study will also be described in relevant sections below.

Co-chairs were selected on the basis of member's volunteering or being nominated. The election process was informal. Descriptions of Co-Chair elections were described as "*tense*" because members were not always readily forthcoming to assume the role. Interviews revealed a perception that the role was time intensive. In contrast, Co-Chairs reported that the role was not burdensome on their time and was very rewarding for them. In fact, Co-Chairs indicated cultivating new connections and strengthening of relationships with members across the province, increased use of CoP knowledge (through sharing or actual use of COP knowledge within or beyond the CoP boundaries), stronger sense of belonging and commitment to the CoP and the sense that it was safe for them to take interpersonal risks in the community. Co-Chairs assumed their role for at least one year. After the first year, new or existing CoP Co-Chairs could volunteer or be nominated for the role with the aim that one longer-serving CoP Co-Chair would be in place at any given time. A Co-Chair who had assumed the role would serve to mentor new Co-Chairs and ensure a smooth transition process. The injection of new Co-Chairs was seen as a way to increase member ownership over the CoP. At the time of data collection, three members had assumed the Co-Chair position although one had to step down from the role due to time constraints that emerged from changes in work roles and

responsibilities. Issues pertinent to external context (e.g., organizational/work priorities will be discussed later).

A key principle that was communicated in the CoP B Community Charter was that leadership was a “*shared responsibility*.” Specifically, the Charter stated: “*as a community, each member of the community shares accountability for the success of the CoP. While secretariat support is provided via the LEARN project, it is the members of the CoP who are ultimately responsible for leadership, development and implementation of initiatives*” (CoP B Community Charter July, 2010, p. 5).

Interviews revealed member agreement with the principles negotiated in the Community Charter. “*You’re only as good as your weakest link, right? It’s up to us to facilitate all the initiatives and make a difference...*” (N: High KU, LPHA; p. 22). Individual initiative was evident among members across levels of knowledge use and representatives from research and practice as will become evident in the remainder of the CoP B description. Indeed members across levels of knowledge use described themselves as “*passionate*” (H: Low KU, LPHA; p. 56) about the work of the CoP, taking initiative to share CoP knowledge back with their work organizations and otherwise using it, which “*has helped me advance my work and made my job so much easier*” (M: High KU, LPHA, Co-Chair; p. 29)

Knowledge Use

Despite categorizing interviewed members into lower, intermediate and higher levels of knowledge use in this study, marked differences in how these members used CoP knowledge were not found. For instance, members with lower levels of knowledge use appeared to use CoP knowledge as frequently as members with higher levels of knowledge use. Overall, members described the CoP B as “*a very productive group*” with a lot of information being shared and “*lots of opportunity to contribute, too*” and as such was “*(participating in the CoP B was) time well spent*” (K: Inter KU, Research; p. 2). Ample evidence also emerged in interviews and CoP documents (meeting minutes, recorded meetings, discussion posts on WebEx) that CoP knowledge was used in conceptual ways. Several instances were found where members reported accessing CoP information, sharing their work with other members or sharing knowledge that they gained from the CoP primarily with their work organization. Some members across levels of knowledge use also reported sharing CoP knowledge (e.g., statistics pertaining to the CoP topic area) with the organizations whose work the CoP B intended to impact.

All members reported accessing CoP related knowledge from the collaborative online space WebEx which housed all the materials. Increased awareness and learning also occurred across levels of knowledge use and sectors. Members at lower levels of knowledge use reported: “*most of my knowledge that I’ve learned about in this area has from this Community of Practice. So anything about how to start moving on a by-law or how to move on policy in terms of (CoP B topic area)...all the how-to’s, what campaigns seem to work and what campaigns don’t seem to work, (who are the best people to target), all that kind of stuff came directly from (the CoP B)*” (H: Low KU, LPHA; p. 14).

Members with intermediate levels of knowledge use reported that “*seeing what’s happening in other regions or other TCANs...that has been a real eye-opener to me*” (J: Inter KU, TCAN; p. 28). Members with higher levels of knowledge use commonly indicated increased awareness of how the topic area could be applied to different contexts. Sharing was also a common phenomenon in the CoP B. Members across levels of knowledge use presented or informally shared their work with CoP members in the CoP and consistently reported regularly taking knowledge gained from the CoP back to colleagues at their work. All members also reported learning new things from members

representing different sectors (e.g., researchers learned from practitioners, practitioners learned from researchers as well as from members or guest speakers that represented the community organization the CoP B targeted for change.

Instrumental types of knowledge use were also frequently found. Members reported CoP B as a static agenda item at their TCAN meetings to update on what was occurring in the CoP B. Members also engaged in discussions with CoP members or colleagues at work about how to use CoP knowledge in their work efforts, use it to inform decision-making, and / or adapt the information (e.g., resources developed by members from other local public health agencies) to their work. Examples of instrumental knowledge use will unfold in subsequent sections.

Fewer instances of symbolic knowledge or deliberate non-use were reported. Members commonly reported that “*usually, our planning is done based on the research that’s available*” (J: Inter KU, TCAN; p. 10). However, a few members noted that in light of limited information on a specific CoP B topic, decisions were made based on assumptions that were later justified by evidence-based backgrounders that LEARN Team developed for the CoP. With respect to deliberate non-use, members noted not making use of knowledge gained from the CoP when it did not align with: Ministry interests, work being done in member’s organizations, member’s specific work responsibilities, or when an organization had “*used that idea already*” (I: Low KU, LPHA, Co-Chair; p. 22) Issues pertaining to relevance of CoP information/knowledge will be discussed next.

Information/Knowledge

Members consistently described CoP information/knowledge as “*very educational,*” “*relevant and useful*” to their organizational/work priorities. Knowledge gained from the CoP was deemed relevant when it fit with the broader movement that the CoP B contributed to, member’s organizational or work priorities/responsibilities and was ultimately what determined member’s use of CoP knowledge in practice.

A variety of sources of information were available to support the work of the CoP B. Some resources were provided by LEARN Team over the course of the CoP B existence and included a number of journal abstracts, five evidence-based LEARN Backgrounders, and three Documentation of Practice (DoP) that informed members knowledge needs around CoP B specific issues. Other resources were available through the work conducted on the initiative that was funded by the Healthy Fund (e.g., a Guide/toolkit specific to the initiative and addressed CoP B topic area; a website dedicated to the funded initiative, including frequently asked questions, earned media, advertisements). Additional sources of CoP information included: media coverage reports, guest speakers who were not members of the CoP B (and represented research, public health practitioners and community organizations), presentations by members about projects or research that they were involved with, and resources members developed and used in their work (e.g., project plans, templates, “*creatives*” such as logos, toolkits and other resources). All CoP information was stored in WebEx and posted by members of the CoP and the LEARN support team.

Information sources derived from science or practice were used by members across levels of knowledge use in conceptual and instrumental ways. Scientific evidence was commonly identified as a highly relevant and got used by members of different levels of knowledge use, positions and sectors. Evidence-based organizational cultures and policies was a common reason why CoP B members valued scientific evidence for use. LEARN Backgrounders and information from research, evaluations and environmental scans were also used by practitioners in materials that they assembled to pitch initiatives at different meetings (e.g., at the municipal level or in community organizations being targeted for change):

“...Some of the L.E.A.R.N. backgrounders and documents I’ve pulled from WebEx and are put into packages when I meet with each municipality as we now are advocating for (describes CoP B relevant initiative being pitched) at the local level. So most of my resources, the policy scan that’s on that website, are all shared with (types of organization) to show them (what’s been occurring across the province with respect to the CoP B topic area)” (The evidence-based documents were used to show “here lies the evidence. Here is why we want to do this. Here’s what others have done.” (M: High KU, LPHA, Co-Chair; p. 10).

Access to the research sector on the CoP was also identified as critical. The “information that (name of research member) has presented so far, I think it’s given the members of the Community of Practice a really good idea of the needs out there and what the numbers are telling us that yes...there is a growing concern with (specific tobacco issue) right now...and we do need to work in that area ... to (improve the public’s health)” (I: Low KU, LPHA; Co-Chair; p. 9).

Sharing of practices during CoP meetings, databases that captured CoP B relevant activities per local public health agency, and DoP were also used by members across levels of knowledge use. DoP reflected initiatives (programs, interventions, policies, other) that a given local public health agency had implemented in the CoP B topic area. LEARN team documented each step of the development, implementation and evaluation of the initiative including lessons learned. DoP were successful in imparting valuable information to members about how to approach specific issues such as how to partner with specific groups or pass policies in contexts of interest to the CoP B. Tracking CoP B relevant activities per local public health agency and sharing practices of activities were also useful to members when trying to persuade organizations targeted for change to implement CoP B relevant initiatives. Some members across lower to higher levels of knowledge use said that providing examples of what other local communities of have accomplished and how easy it was increased the receptiveness of organizations that were targeted for change to follow suit. Some members with lower to higher levels of knowledge use also reported progress in getting local government as well as local organizations to support CoP B relevant initiatives (e.g., programs, policies, etc):

“We submitted the motion report to Council for our county. Council has gone in asking for a (type of initiative to address CoP B topic area). I’m also participating in a meeting next week with the head of (a governing body being targeted for impact) for the (name of city) and we’re going to be hosting at the end of the month a Town Hall meeting asking for public input on (CoP B relevant issue)...We have three municipalities within our county that are interested in moving forward” (M: High KU, LPHA, Co-Chair; p. 10).

Members also valued the “creatives” (i.e., logos, marketing materials, program materials and evaluation tools) that members had developed for their initiatives. Some members indicated using these resources when planning and implementing activities in their region and helped them not have to reinvent the wheel. The provision of updates from the media network, an organization subsumed with PTCC, CCO on issues pertinent to the CoP B topic area were also shared with colleagues at work and those working within the CoP B topic area as well.

The research sector represented on the CoP also described using practice-based evidence to inform research:

“The other big part that I’ve sort of been engaged with, with the COP, was the (development of a type of product). We had the findings from the (name of study) where we evaluated the impact of (a specific initiative and the knowledge product was developed to) help enable other (target populations) to (know how they could implement the same initiative). The CoP was very interested in that and ...(we) focus grouped (members) about what the content of the (knowledge product) should

contain, who we should make our primary audience, how long it should be...and the CoP had all this insight that we incorporated into our approach. Then, the CoP was a good way to disseminate the (knowledge product) once it was completed' (K: Inter KU, Research; p. 15).

Social Capital

As already stated, members use of CoP knowledge ultimately rested on whether it was relevant to their needs (i.e., the information/knowledge aligns with their information needs as shaped by organizational/work priorities). However, it was social capital (i.e., the connections and development of supportive and trusting relationships) that enabled members to access, exchange, adapt/implement CoP knowledge. Social capital also exerted a strong influence on (and was also influenced by) the development of shared identity, member identification/sense of belonging and psychological safety which also contributed to or detracted from members' propensity to cohere in ways that also influenced knowledge use.

Members across levels of knowledge use and sectors (practitioners and researchers) reported making new connections with practitioners across the province. A few indicated building connections beyond public health with local community organizations the CoP B targeted for change, indicating *"that has been a fantastic linkage and...that's what I look to gain more from in the future, expanding upon some of those partnerships"* (M: High KU, LPHA, Co-Chair; p. 4).

Members across levels of knowledge use also described their participation in the CoP as *"strengthening pre-existing relationships,"* and *"building relationships with folks from across the province"* which enhanced their use of CoP knowledge:

"The people I've met (in this Community of Practice), I have a lot of them on speed dial and a lot of them in my e-mail address book at work and we frequently use them. And, (my health unit), we're in a perfect position because we are kind of behind the eight ball ...and everyone else has been moving so far ahead of us that most knowledge for us is just a phone call away" (H: Low KU, LPHA; p. 5).

Others expanded that having close relationships with certain individuals made it easier for them to call or email them to access information or learn about their initiatives.

Close relationships tended to develop among members who worked on common issues, shared similarities in context or experiences as depicted in this illustrative quote:

"...we're finding there's core groups of people who are working within specific areas who are kind of meshing and merging....So if you've got people who are working more with (type of population to address the CoP B topic area)...they'll kind of group off. Other groups who are talking about (a specific CoP B relevant issue) ...those people connect more. But, while the CoP provides the opportunity for members to network, I think a lot of that connectivity ...happens in the sub-chats and after meetings. So it's at meetings where we have presentations, share information and where that people let others know 'yes, I'm working on this too.' Quite often an idea will be highlighted and then either it'll be tabled to another meeting or people will say 'oh, the three of us can work on that and we'll get together once the call's done'" (M: High KU, LPHA, Co-Chair; p. 18-19).

Thus, the findings suggest that members gravitated to others who shared similar characteristics of some type. Consequently, sub-groups or working groups were formed within the CoP, which will be discussed later. Trust amongst members also emerged as an important feature in the CoP B. Members across levels of knowledge use identified trust as an important influence on their feeling safe to speak up in the CoP B because *"...I trust that if I'm going to say 'hey, I've got a new idea,' I know it's going to be met with...helpful questions and I know that it's a safe place for me"* (H: Low KU, LPHA; p. 46).

Trust was also important to member's use of CoP knowledge across levels of knowledge use as described in the following illustrative quote:

"It's like your parents. If you don't trust your parents, you're not going to take their advice or use information that they're giving you. Realistically, if you trust your coworkers and their opinions, you'll give (their information) a shot...If you trust somebody, you're going to go up to them for more information. More information can get exchanged... you're going to use their initiative or use their program – whatever they're working on – more than somebody that you might not trust" (N: High KU, LPHA; p. 34)

When asked what contributed to the development of trust in the CoP, members commonly identified sharing similar characteristics with co-members (e.g., they came from the same sector such as public health practitioners, addressed similar issues, dealt with similar local contexts and / or shared similar experiences and barriers), feeling a sense of belonging, a CoP environment that encouraged members to feel safe to speak up to share their approaches to their work, the consistency with which co-members acted towards one another (e.g., displaying respect for other member's work made evident through how co-members responded to other's contributions or seeking co-member's permission to use the resources their local public health agency had developed), displays of reciprocity, and the passion they displayed for the CoP issue. Members commonly reported that the CoP B was *"a really good group that works really well and is really passionate about the topic"* (J: Inter KU, TCAN; p. 12). Passion for the issue meant that members were committed to the collective cause and thus were trusted allies that they could rely on for help. Trust had reciprocal influences on the above factors as well and contributed to a sense of comfort.

Linkages and partnerships were also common occurrences in the CoP that depicted what members meant by *"a really good group that works really well."* Interviews, meeting minutes and recorded meetings contained several instances of how CoP members (and other beyond the CoP) linked or partnered up and how this contributed to coordination and enhanced and expedited the use of CoP knowledge. Members reported piggy backing on others initiatives, learning from others experiences, using *"creatives"* (i.e., practice-developed resources), and coordinating activities or project materials as illustrated here:

"Our (name of) initiative wouldn't have happened without (name of another initiative). It certainly made it easier. I would think that if the Community of Practice wasn't there, I still would have found him, but it would have taken a lot longer. And it would have been a lot more work than how easy it was through the Community of Practice...(the other initiative) had already done all the work and ... we were just starting. So, it was a phone call and many, many emails that went back and forth that said, 'okay, we'd like to do this. We see that you've done this; how did it work?' The creative was shared and used ...right down to they were ordering signs and we got in on that buy rather than having to work with a different sign company to do it...Everything is shared and we say to the rest of the Community, 'hey, I'm ordering these. Does anyone else want some because it's cheaper to do it that way...Or, I'm creating posters; can we order some for you? So I mean...a partnership and that happens all the time in this Community" (H: Low KU, LPHA; p. 49-50)

Joint work also emerged between research and practice. Conversations during CoP B meetings often spurred practice-based research that directly influenced knowledge use in the CoP B. The research representative on the CoP B also played a critical linking role by bringing in different researchers and graduate students to address the community's information needs.

The research representative noted,

“...At different times I’ve been able to engage different researchers. (Name of researcher) who’s another scientist at (Name of Organization where the CoP B research representative works). I brought her to the table saying, “I think this subject area actually sits with your research a little better than mine.” (Name of researcher) is another person that I’ve used to bounce ideas off that have been generated at the CoP...she’s a researcher at (name of organization)...I (also)...identified a graduate student and (research staff) that (are now) working on projects for the CoP. So that’s been a good opportunity to work on something that’s (a) going to be used, and (b) is identified as a priority for a Community of Practice. Hopefully it (provides these people I’ve brought in) a networking opportunity to meet with people from across the province” (K: Inter KU, Research; p. 2-3).

Practitioners across levels of knowledge use identified the research sector on the CoP B as a critical asset to the CoP B. Access to researchers was reported to be a rare opportunity for the practitioners and it helped get research work done that they needed but their local public health agencies did not have the capacity to execute on their own. Data sources also revealed ample instances where research-practice interactions led to the development and use of practice-relevant scientific and evaluation evidence that they took back to their local community organizations to promote action on CoP B relevant issues. Data sources (interview with research sector, meeting minutes) revealed that the researcher and graduate students linked in through the researcher also benefited from this exchange. Graduate students had opportunities to get feedback from CoP B members on the relevance of their research ideas and members facilitated their work by writing letters of support so that students could secure funding for their ideas that would benefit the CoP.

The researcher also reported benefiting from the research generated in the CoP. The work of the CoP B aligned with the researcher’s organizational mandates and thus fit with performance evaluation requirements. Participation also aligned with funding agencies requirements to have knowledge users like CoP B members or their local public health agencies as collaborators. Presentations at conferences and publications also emerged from the CoP B research. The researcher also noted that through relationships built with co-members and discussions that enabled, practitioners found out about previous research that the investigator had conducted (unrelated to the CoP B topic area) which they used to address other priority areas they were working on in their local public health agencies.

At the time of the Phase II qualitative study, LEARN partnerships were also forged between the CoP B and external organizations. Evaluation was a common issue of interest to members. After collectively identifying common evaluation needs across members, LEARN Team, a Co-Chairs and a few members met with the OTRU (Ontario Tobacco Research Unit) to identify evaluation priorities and see what support they could provide. A partnership emerged where OTRU would provide tools to support member’s different projects.

Interviews and recorded meetings also captured how networking led to partnerships with governing bodies of organizations that the CoP B members targeted for change and the impact this had on knowledge use:

“Alright and now we’re going to move on to our next piece of important information that just goes to show you how the CoP networking can really have great opportunities open up to us. (Name of a CoP B member) and I (another CoP B member) started working together – she approached me about a contact (at the governing body that oversees the community organizations we were both trying to get on board to address the CoP B issue)... and between the two of us – more her than me she has done some valuable steps forward and she is going to talk about that today and its really about ongoing work around (CoP B) messaging specifically with the (population made accessible through the

governing body connections)” (CoP B recorded meetings: November 2010; p. 13).

Working groups were also formed among other CoP B members who had forged or were working to develop partnerships with community organizations to address the CoP B topic issue. Members reported coming together in these working groups to discuss their experiences with these community organizations – i.e., what had worked to get them on board and the types of activities they were receptive to implement. Members of the working group also developed toolkits and other resources that helped to expedite these community organizations’ ability to address the CoP B topic.

Another common practice in the CoP B was to recognize and celebrate member’s progress with initiatives they were leading. Discussion posts revealed a stream of links to media clips (e.g., news articles) featuring the work of members and their respective local public health agencies around the CoP B topic area. Interviews, meeting minutes and recorded meetings also contained instances where members brought up other member’s successes and congratulated them on their work. Such recognition was described to reinforce the collective purpose that brought members together, bolstered celebrated member’s sense of belonging and commitment to the CoP and its work, confidence that their work was done well, created a standard that other members reported wanting to match or exceed and motivated members to want to support co-members in their local public health agency’s efforts to address the CoP B topic area.

Shared Identity

Social capital powerfully influenced use of CoP knowledge. A powerful contributor to the development of social capital in the CoP B was shared the clarity members had about ‘who we are’ as the CoP B and what we are here to achieve. The majority of members across CoP because *“everyone’s working towards the same goals”* (H: Low KU, LPHA; p. 33). A critical reason why members had clarity about ‘who we are’ as a social group was because *“the CoP B topic area has become pretty much a provincial priority...”* (J: Inter KU, TCAN; p. 15). In fact, members described the CoP B being a part of a *“broader movement”* (K: Inter KU, Research; p. 24) in Ontario that has *“the leadership...of the...Ministry”* (L: Inter KU, TCAN; p. 27) and *“our Public Health Standards and the TSAG Report from the province ...tell us that we must be working on this. So we all know that we are all members of the CoP because the CoP is here to bring people working in (CoP B topic area) together to help move policy forward and promote and educate”* (M: High KU, LPHA, Co-Chair; p. 27).

Funding via the “Healthy Fund” was also commonly described to have “pushed” the CoP B topic area forward and in the process of members interacting, sharing, and working in this practice area, this *“is something that has really strengthened (our understandings of who we are as the CoP B)”* (J: Inter KU, TCAN, Co-Chair; p. 15).

Central and distinctive attributes that members commonly used to define the ‘who we are’ as the CoP B were found in interviews and also in the CoP Documents including the CoP B Community Charters, Learning Agendas, meeting minutes, recorded meetings and discussions posts. Central or core attributes that members felt best defined the CoP B included as *“local public health focused,”* comprised of people who are *“passionate”* about *“making a difference”* in the CoP topic area, who *“share a common work priority”* and *“common goal.”* Within that broader focus were different domains of focus such that some members focused on the CoP topic area in one context while other members focused on other contexts. Which contexts groups of members focused on was shaped by the characteristics and needs of the local communities that their health unit serves (i.e., the external context). Another defining core attribute was a *“community of practice”* where members with similar interests came to help each other out. The CoP B was also about *“knowledge sharing,*

networking...and idea sharing” as a way to “*build capacity around the topic – you know, identifying the evidence and really making it clear to our local communities that we need to do this work and here are our strategies that have been effective based on research*” (L: Inter KU, TCAN; p. 26).

Common attributes that defined the distinctiveness of the CoP B in comparison to other comparable groups also emerged and included the “*WebEx*,” which was identified as a one-stop shop for information and resources and access to first-hand new information of what is happening across the province around the CoP B topic area, and again, the “*common goal*” members were working towards backed by Ministry support and funding. Members across levels of knowledge use commonly indicated “*...So, when I joined (name of CoP B), I knew what I was there for, I knew where we were moving towards, and as time went by and I went to more meetings, that just strengthened*” (H: Low KU, LPHA; p. 44).

Developing shared understandings of ‘who we are’ as the CoP B was important because it “*keeps everybody on the same page...moving in the same direction (so that) initiatives ...get accomplished down the road*” (N: High KU, LPHA; p. 23). It also created a sense of belonging and confidence when “*members realize(d) that they’re not the only one in the province (working on these things)*” (K: Inter KU, Research; p. 24).

Members across levels of knowledge use also felt that shared understandings of ‘who we are’ as the CoP B and more specifically their working towards together towards the same goal brought a diverse set of members together and it also helped them to bridge their differences. Working towards the same common purpose/goal provided a point of commonality around which different members could interact, which helped provide a foundation through which relationships could develop and members could begin to feel comfortable to exchange their knowledge, learn about and from one another in ways that created common understandings.

A common purpose/goal also formed an anchor point for member identification, which motivated member accountability to share and use CoP knowledge (see Member Identification/Sense of Belonging below). While members across levels of knowledge use were clear that if they needed specific information they would get it, they also commonly noted: “*...if we didn’t have that shared sense of community and shared goal to work towards...that knowledge of why we’re sitting around the table in the first place...it makes (our work and use of CoP knowledge) very difficult...Like, if someone was here for this reason and somebody else was here for that reason...nothing meshes*” (H: Low KU, LPHA; p. 35).

Member perceptions of the niche that the CoP B had carved for itself within the broader Ontario public health tobacco control community and the value it brings at the local level were positive. The CoP B was commonly viewed as “*very valuable to the (Ontario) comprehensive tobacco control (community). It actually makes somebody in my position who is not a...TCAN Coordinator, it makes my job a lot easier because it takes out...the middle man...I can go right to the sources and get the resources that I need. I don’t have to wait two or three weeks for an email from the TCAN Coordinator or somebody else to say, ‘you know, this is what’s going on here and let’s try this.’ ...It lets me try new ideas without going through that whole process...It’s a really great time saver.*” (I: Low KU, LPHA, Co-Chair; p. 38)

Others described the CoP B as providing a platform to showcase the progress made around the topic area across the province and facilitate learning that can inform actions in different regions as illustrated in this quote:

“(The CoP shows) that innovation is happening across the province. It’s not just in these places like Toronto where there’s a really large health unit with a lot of people. Things are happening. In (name

of TCAN) they're happening, in (name of another TCAN), they're happening. The skills and capacities across the province are really deep. People's experiences are different too...The (name of two TCANs) have been dealing with (type of tobacco issue of relevance to the CoP B) for a lot longer, and the CoP allows these other communities that are sort of bracing themselves to learn from what they've experienced..." (K: Inter KU, Research; p. 8).

At a local level, members felt that the CoP was *"fast-tracking a lot of things in different municipalities because they're able to take these resources and experiences from other municipalities...When (municipalities) heard what other municipalities were doing and how they were getting it done, I think this might have prompted them to put it in the forefront, and...get it done in a short amount of time"* (I: Low KU, LPHA, Co-Chair; p. 41)

While shared understandings of 'who we are' as the CoP B helped to clarify what members were coming together to achieve and how to achieve it, it was through member's identification with what makes the CoP B what it is that motivated members to take actions in efforts to achieve their collective goals.

Member Identification/Sense of Belonging

At the time of the interviews, members across levels of knowledge use commonly stated that they felt like they belonged to the CoP B. A sense of belonging meant that members felt like their opinions were valued and were perceived to be a valuable contributor to the CoP. While members across levels of knowledge use said they would use relevant CoP knowledge regardless of a sense of belonging, they also said it contributed to social capital and facilitated knowledge use. A sense of belonging was described to increase a sense of comfort to contact co-members and access needed information. It also increased their motivation to participate in the CoP and interact with co-members to learn from them, share their knowledge with the community and take actions to help achieve the collective goals of the community:

"when you feel that sense of belonging...you're going to be more motivated to work. You're going to feel like you're a part of the (CoP B), and then you're going to facilitate these initiatives out in your local community...and then the public will see the benefits as well" (N: High KU, LPHA; p. 23).

A sense of belonging helped members feel like everyone in the CoP was working towards the same goals and this made them feel more comfortable to speak up to share their knowledge, ask questions and trust that members would be supportive and receptive of their contributions. A sense of belonging to the CoP also inspired a sense of commitment to the CoP and accountability to the shared cause, which made members trust that others were acting in similar good faith. A sense of belonging also motivated members to treat one another like a valued and welcomed member of the group just as they had been treated when they joined.

Four factors emerged as particularly important contributors to a sense of belonging and included: sharing a common goal, similarities with others, the relationships developed among co-members, the CoP's fit with organizational / work priorities and responsibilities, the knowledge exchanged in the CoP, and roles or positions assumed by members. These were also some of the attributes that members commonly used to define who we are as the CoP B and as such became anchor points for member identification. Recall that a sense of belonging made members feel like co-members were working towards the same collective goals. Reciprocally, having an actionable common purpose/goal was found to resonate with member's values or what they felt passionate about and this served as an anchor point that they could identify with and keep them coming to the CoP. Knowing that others were there working towards the same goal strengthened belonging because it

made them feel like they had the support or backing of their co-members and they shared similar values or interests.

Sharing similar characteristics with some (or all) co-members also contributed to member identification/sense of belonging. Members who shared common characteristics, such as representing the same profession or shared similarities in terms of the local communities they served (i.e., rural versus urban) and how to tailor CoP B efforts to those specific contexts among other examples also shared a sense of belonging. Members more easily identified with others who shared these similarities because they understood one another's realities and experiences as illustrated here:

“Knowing that...somebody else has been through the same thing that you've been through...helps to create that sense of belonging... that sense of community (I: Low KU, LPHA, Co-Chair; p. 33).

Although subgroups of members who shared specific similarities within the broader CoP B tended to “bond” together (H: Low KU, LPHA, p: 48), members noted that this did not hinder interpersonal dynamics in the CoP B or member's propensity to share their knowledge with the broader group.

Social capital also contributed to member identification/sense of belonging. Members across levels of knowledge use commonly stated that as members interacted and became more familiar with one another (particular when they would see each other again at in-person meetings), it strengthened their sense of belonging to the CoP because they shared the experience of being members in the same CoP and shared similar goals. This in turn increased their “*comfort level and help(ed) members to share more*” (M: High KU, LPHA, Co-Chair; p. 34). Developing closer relationships with some members also served as an anchor point for member identification and consequent sense of belonging:

“...The relationships that you have...you don't want to leave those (because) you feel like you share a story...an experience...you see others doing...similar (work and) it keeps you here...” (N: High KU, LPHA; p. 25).

Relationships were also an anchor point of identification for the research sector represented on the CoP B: “*...I feel like I have a working relationship with several of the members...So I feel a sense of responsibility. I feel a sense of wanting to do a good job. I feel that I've benefited (from the CoP B) and want to make sure that I'm equally helping them (K: Inter KU, Research; p. 27).*

Members across levels of knowledge use also described that they identified with/felt a sense of belonging and commitment to the CoP B because its common goal/purpose aligned with their organizational/work priorities and responsibilities. Additionally, the more amount of time members spent addressing the CoP B topic as part of their work responsibilities also influenced their degree of their identification with that issue and motivation to actively participate and engage in knowledge use behaviours. Identifying with the CoP B common purpose/goal because of its alignment with their work priorities/responsibilities was consistently linked to members taking CoP knowledge back to colleagues at their work and to share with co-members what their local public health agencies were doing. It also contributed to some member's positive construed external image and consequent pride which further enhanced knowledge use:

“I take pride when I can go back to my co-health educators at my local level and I can share with them or...my supervisor the fact that our local health unit...has done work that's considered the gold standard on a provincial website that's been share with other health units. And that's a total sense of pride and that's something that our health unit loves to hear too...And those communities that have (more experience in the CoP B topic area) can speak to that and I think they (too) have a sense of

pride in the fact they were leaders and other people are seeking information from them and continue to mentor people in that area” (M: High KU, LPHA, Co-Chair, p. 34-35).

The knowledge shared within the CoP was also an anchor point that attracted members to the table and kept them coming back because it was necessary for them to “*successfully do what I need to do in my position*” (H: Low KU, LPHA; p. 41). While alignment of the CoP B topic area and consequently the knowledge that was shared in the CoP emerged as important anchor points for member identification with/sense of belonging to the CoP, they were also perceived to detract from a sense of belonging for some non local public health sectors. More specifically, the CoP B membership was comprised of a few people that represented the community organizations that the CoP B wanted to impact. None of these representatives completed the Phase I Survey and therefore, were not interviewed. While not a widespread observation among members, a few (Co-Chairs) noted that these community organization representatives never participated in the calls and when they tried to get one of them to an in-person meeting that individual expressed “shock” that the CoP would even consider them because the community was a meeting for public health people.

Broader mandates were identified as responsible for the distinctions in sectors represented on the CoP B described above. Members described Ontario local public health agencies as mandated by the Ontario Public Health Standards to address the CoP B topic area. The community organizations targeted for impact, however, were described to not have a mandate to address tobacco use issues. Another common issue that members noted among members was the differences between members who actively participated in the CoP B and those who did not. This distinction will be addressed later when discussing “Psychological Safety and Speaking Up.”

Job positions at work (i.e., TCAN representatives) or roles that members assumed in the CoP (i.e., Co-Chairs, research representatives, practitioners with more experience in the CoP B topic area) also contributed to member identification/sense of belonging, which had implications for knowledge use. TCAN representatives commonly noted that they identified with/felt a sense of belonging to their work organization and that their role in the organization was to keep up-to-date on priority issues and communicate that information back to their TCAN regions to help facilitate local public health practitioners’ work. Thus, TCAN representatives commonly reported sharing back to their TCAN what they learned from the CoP B (and as such their role as knowledge transfer agent also determined the type of knowledge use they typically engaged in – that is, conceptual uses).

Assuming a Co-Chair role served as a strong anchor point for member identification/sense of belonging and consequent sense of commitment and ownership over the CoP. Co-Chairs described a strong motivation and enthusiasm to ensure the CoP B and its work was successful and sustainable. Co-Chairs also experienced a strong sense of contribution and productivity in the CoP as a result of their role, which also motivated them to share more and motivate others in the CoP to do the same.

Although not a formalized role, members with more experience in the CoP B topic area were actively sought out by co-members (as described earlier) for information and guidance. Being recognized as an important knowledge source in the CoP contributed to their identification with/sense of belonging to and ownership over the community because had found their niche within it, which motivated them to help co-members and share their knowledge even though they were not necessarily gaining anything new for use from the CoP largely because they had “*passed that point already*” (I: Low KU, LPHA, Co-Chair; p. 22).

The research sector also identified with the role of researcher on the CoP B and while the CoP B was acknowledged to be largely local public health focused, filling a role that other members could not help to cultivate a sense of belonging to the CoP and motivation to help co-members by generating scientific evidence that met their CoP B relevant practice needs.

Psychological Safety

CoP B members across levels of knowledge use and sectors described the CoP B as an environment that was friendly, open to diverse perspectives, supportive of one another, lacking in status-based hierarchies (i.e., *oh...we've moved so much farther than you have so you shouldn't really be here*") (H: Low KU, LPHA; p. 19), had a leadership style that welcomed and encouraged everyone to contribute and was a safe place for members to speak up to share their knowledge and views. Despite this, differences were still noted between core and peripheral CoP B members. Co-Chairs were most vocal about this issue, describing trying to get peripheral members to speak up as one of their frustrations. Members across levels of knowledge use thought it was essential for members to feel safe so that they could feel free to speak up and share their knowledge and what was on their mind. However, they also felt that other issues were responsible for peripheral member's lack of speaking up. The most commonly identified reason members felt that others were not speaking up was a function of their (and their local public health agency's) level of experience in the CoP B topic area and as such confidence in their knowledge.

Members described the CoP as being at "*different levels of readiness*" (N: High KU, LPHA; p.2) around the CoP B topic area and that some members "*maybe don't feel comfortable to speak up because, you know, what could I possibly add to this conversation that's going to mean anything to these people that have maybe a lot more experience...than I do...So, maybe it's that intimidation factor*" (I: Low KU, LPHA, Co-Chair; p. 14)

When asked what else was conducive to getting members to speak up in the CoP B, members commonly stated that they felt more comfortable to ask questions or share ideas with others who shared similar experiences because they shared that commonality. Members were also asked about the quality of information that was generated when members did speak up to contribute to discussions. As already stated earlier, members tended to present their initiatives when it had been planned or implemented rather than when it was being conceptualized. Ontario local public health's culture to speak when they know they have done things right was identified as the reason for this. However, members also noted that by hearing others practices and having the researchers support their knowledge needs, new initiatives and learning were made possible. Members reported learning how to do their work better and easier by having access to CoP generated research and other members lessons learned, creatives and other resources. Having the researcher on board also contributed to more exploration-types of learning by suggesting other contexts that the CoP topic area might benefit to explore.

Other Factors

Other factors emerged as potent facilitators of both for different members cohering and knowledge use. The following will focus on the main factors that emerged as most important in the CoP B context.

Mechanisms of Interaction

Providing a space where members can come together and speak up to share their knowledge and ideas emerged as a potent facilitator of both for members cohering as a social group and their use of CoP knowledge. Such spaces, or mechanisms of interaction, included the Community of Practice itself, in-person meetings, teleconferences, WebEx, practice sharing, and working groups.

Community of Practice

The Community of Practice itself emerged as extremely important to knowledge use, shared identity and sense of belonging, by providing a space where members could interact, build relationships, and share, discuss and take action around their practice area. The CoP was repeatedly described as providing a space where members could:

“build relationships with other folks from across the province and have that network that you can just pick up the phone and... (find out more about) an initiative (a member) is working on...without the CoP, I probably wouldn’t have a close relationship with certain individuals who are working in common areas” (L: Inter KU, TCAN; p. 4).

The CoP also enabled connections with the community organizations they wished to impact and facilitated a few practitioners learning about how to approach such organizations in their local communities (and tailoring their approach accordingly). Members also indicated feeling a sense of belonging to the CoP B by virtue of being a part of the community. Sense of belonging in turn was strengthened in part by the relationships that grew out of participation in the CoP B space. Members also noted that being a part of the CoP has provided a space where members across the province could become clear on what we were about and what we were there to accomplish. Without the CoP *“we would still be turning wheels on this whole initiative”* (H: Low KU, LPHA; p. 52)

Medium of Interaction

Several ‘spaces’ were instituted within the CoP B to get members to interact. These included in-person meetings, teleconferences, WebEx, Practice Sharing and Working Groups, in-person meeting networking dinners. Some of these emerged as commanding mechanisms that facilitated knowledge use as well as shared identity, member identification/sense of belonging and psychological safety and their respective inter-relationships.

In-Person Meetings versus Teleconferences

In-person meetings emerged as extremely important facilitator of all the factors of interest to this study primarily because it enabled a space for members to interact and develop the quality of relationships and psychological experiences needed for members to engage in knowledge use behaviours. Face-to-face interactions allowed members to see one another in person; to make them real. The following quote illustrates well what members typically said about this medium of interaction:

“...Public health is a unique field in that a lot of us that work in the field find it interesting and important, but it’s also something we’re very personally passionate about. It’s one of those jobs where ...you give it your all. When you’ve met people face-to-face, that’s sort of more validated, that people are on the same page, and you’re going to feel less like you’re bothering someone and more like you’re engaging them in something that you care about and you think they will care about too” (K: Inter KU, Research; p. 14)

While teleconferences were described as friendly and inviting, members admitted their propensity to multi-task during those monthly sessions. In-person meetings on the other hand were more productive. Members described these meetings as commanding their full focus and where *“everybody is a lot more motivated and accountable for their actions and a lot more work gets done...”* (H: High KU, LPHA; p. 2)

WebEx

The online collaborative space called WebEx was deemed a valuable and important feature of the CoP because it served as a knowledge repository for all CoP knowledge.

Members explained that the WebEx was populated by information that addressed CoP member's different levels of readiness around the CoP B topic area (from novice to expert), which facilitated knowledge use and helped members avoid reinventing the wheel.

"...You can to the WebEx space, you can look at any number of different resources from around the province and pick and choose, and really tailor it to the needs of your community. It's a great time saver and I think it leaves you more open to a bigger variation and choice of different resources...There's resources for people who are at very different stages (with respect to the CoP B topic area)" (J: Inter KU, TCAN; p. 38).

The WebEx was also served as a unique feature of the CoP B that other groups that members belonged to did not offer. WebEx also kept members who were unable to participate as frequently as they used to (e.g., due to changes in work priorities) connected to the Community. Access to the WebEx for these members was also said to help keep them updated on *"the new developments that are going on around the province...(to see what) is working great for another (region), and (decide if this is) something that we might like to try here."* (I: Low KU, LPHA; Co-Chair; p. 11).

The repository was also valuable to the CoP B topic area as evidenced by interest from people external to the CoP in accessing its information. While LEARN Team enabled non CoP members from public health to gain access to the WebEx materials, members also felt it was a good way to attract prospective members. Members felt that *"(WebEx) shows some transparency"* (L: Inter KU, TCAN; p. 6) and added to the credibility of the CoP B and the broader movement it contributed to because the information contained on WebEx clearly communicates that the CoP B is committed to and making progress towards achieving a common goal and that people with similar goals are welcome to join.

Practice Sharing

Structured time for practice sharing contributed to knowledge use. It offered an opportunity for members to take initiative to speak up and formally or informally present on their initiatives, listen and learn from co-member's practices, and to contribute to discussions by providing their lessons learned that could inform co-members awareness of how they could do their work better and vice-versa. Practice sharing also showed members what could be done around the CoP B topic area and set a standard that other members could aspire to. Practice sharing also enabled research-practitioner interactions and the development of practice-based research.

Practice sharing also provided an opportunity for members to contribute to their CoP, which helped them feel a sense of productivity and a valued part of the team – i.e., a sense of belonging (particularly when members responded favourably to their input). Time taken to share practices and present progress made by members and the local public health agencies they represented was seen as a success for the broader movement that the CoP B work contributed to. This reportedly strengthened members' sense of shared identity and their commitment to continue their efforts. Sharing also enabled members to identify similar others and forge linkages or working groups which will be described next.

Working Groups

Working groups were common fixtures in the CoP B. These working groups were either initiated as a result of the LEARN Team and Co-Chairs in response to members requests (e.g., the COP B Evaluation Steering Committee that involved in a partnership with OTRU), the broader project that was funded by the Healthy Fund and specific members working in partnership with provincial-level governing bodies of specific types of organizations that they were targeting for impact. Regardless of whether the working group emerged from within the CoP B or initiated

externally in the regions that members represented, members who shared similar interests were always invited to join the working groups and move the specific initiative forward. These working groups emerged as a space where members cultivated a sense of belonging as they worked together outside of CoP B meetings on a specific issue of mutual interest. Members of these working groups also reported feeling free to speak up and share their opinions, ask questions and assistance with others within these groups. A lot of energy was also invested in generating knowledge within these groups and using it in their work. For instance, members from specific regions led to the development of a toolkit that would facilitate their work with the provincial governing body of a type of organization that members wanted to influence. The external context was another critical factor that shaped which members would cohere more strongly than others and influenced member's use of CoP knowledge. These issues will be discussed next.

External Context

Ministry Priorities

Earlier it was described that Ministry mandates that directed local public health agencies to focus energy on the CoP B topic area and funding to support those activities enabled a lot of the momentum that was seen in the CoP B. Another key factor that provided the rationale for members to participate in the CoP B, network, cultivate relationships and use CoP knowledge was the organizational and specific work responsibilities that members had to fulfill as illustrated by this quote:

“(Addressing issues specific to the CoP B) has been a goal mandated through our TCAN. So just based on that, then that now comes down into my local health unit where it becomes part of our operational planning. So I know that’s a requirement for me, to be (working) on this. Even now through the next five years, the plan that has been released - the TSAG Report - for the next five years in tobacco, a big chunk of that is (the CoP B topic area). So that directs my work on a daily basis that I need to be moving forward...So that right there is my number one motivating factor” (M: High KU, LPHA, Co-Chair; p. 11-12)

As already stated, TCAN representatives were also very vocal about their strong commitment to their work role and responsibilities to support their local public health colleagues in their work. These members consistently reported their dedication to bring CoP knowledge back to their work organizations, which was a major motivator for their participation in the CoP B. Similar findings were also found for the researcher who described organizational mandates that supported work at the science-practice interface and how such activities were incorporated into performance evaluations. Consequently, ensuring that the CoP B aligned with the mandates of the Ministry, work organization priorities, and member work responsibilities validated to member's superiors the relevance of their continued participation and contributions to the Community.

Efforts were also continuously made to align the CoP B with activities occurring in the broader Ontario public health community. For instance, LEARN Team and Co-Chairs as well as and members themselves frequently shared information about conferences, workshops and technical assistance and training opportunities that would enhance member's knowledge, skills and abilities around the CoP B topic area or otherwise build capacity around the CoP B topic area.

Appendix 11: Additional Theoretical Implications

Theoretical Implications relating to Organizational Commitment and Psychological Safety Literatures.

The combination of organizational identity and Social Identity Approach also makes contributions to the organizational commitment literature by illustrating how a common purpose shapes CoP identity, forms an anchor point for member identification and enhances commitment to the shared cause. In this study, member identification gave rise to two types of commitment – affective (wanting to continue to participate in the CoP) and normative (feeling like one should participate in the CoP). This finding was particularly salient among members who identified more strongly to the CoP (or its cause as will be discussed shortly). These findings provide qualitative support to quantitative studies that have examined this issue and have found that member identification with a social organization gives rise to or increases their commitment to that social organization (Foreman et al.). Although Allen et al., (1990) identify three types of commitment (affective, normative and continuance), only the first two emerged as important in this study. Moreover, the study adds more detail to Allen et al., (1990) quantitative finding that affective and normative types of commitment are distinguishable concepts that are somehow related. Indeed, members wanted to continue to participate in their respective CoPs to learn what others across the province were doing around the same topic area. More strongly identified members wanted to continue to be a part of the CoP because they felt a strong obligation to help their co-members out in their efforts to address their collective cause by imparting what they had come to know via their working experiences with the CoP topic. To the investigator's knowledge, the link between identification, commitment and knowledge use particularly in a CoP context have not previously been examined. Since CoPs depend on voluntary participation, and commitment keeps members engaged, findings ways to better understand how to enhance commitment seems paramount.

Another contribution of this study is its examination of psychological safety in relation to knowledge use. Psychological safety is defined as a state where members of a social organization feel it is safe to take interpersonal risks and has commonly been examined in relation to organizational learning (Edmondson, 1999). Although related, the investigator draws a distinction between knowledge use and organizational learning. Both knowledge use and organizational learning involve access to, sharing, exchange, discussion and concrete actions based on knowledge. However, simplistically stated, organizational learning occurs when actions taken are reflected upon to derive lessons learned and those lessons are integrated in future actions in ways that change/improve organizational paradigms, processes or procedures (Lipshitz et al., 2002). Knowledge use may not encompass such processes. With the exception of an unpublished study led by Dr. John Garcia which examined the relationship between psychological safety and knowledge use in the context of Ontario local public health agencies, to the author's awareness, no published studies exist that examine these relationships. Moreover, this study provides deeper understanding of how psychological safety emerges (e.g., through an interplay of social capital and in particular trust as well as culture) to influence knowledge use.