Children's reactions to inequality: Associations with empathy and parental teaching

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ABSTRACT

While children generally prefer equal distributions of resources, we know little about the contextual and individual variability in these preferences. The present work examined experimental manipulations and associations between individual differences in empathy and parental teaching of "just world beliefs", and children's perceptions of, and reactions to, unequal distributions. Children (aged 5–8, *N* = 96) watched videos of two puppets receiving unequal resources in varying contexts: distribution by one or multiple individuals, crossed with taking the perspective of the advantaged or disadvantaged puppet. Age was positively associated with perceived unfairness. Behavioural reactions to distributions were associated with individual and contextual factors: Greater cognitive empathy and lower teaching of just world beliefs were associated with increased rectification, and children with greater affective empathy favoured the disadvantaged puppet, but these relations only emerged in certain contexts. Findings provide guidance for interventions aimed at promoting morality, suggesting emphasis on behavioural responses to inequality and empathy-training.

Introduction

Inequalities in society are pervasive, with the gap between advantaged versus disadvantaged individuals and groups widening over the past few decades (Seligson, 2019). Children also face inequalities, from observing discrepancies in toys among peers to the differential financial situations of families. On a daily basis, children navigate social interactions that require consideration of who needs and/or deserves what (Nancekivell, Van de Vondervoot, & Friedman, 2013). Developing a conceptual understanding of equality and fairness is a crucial step in children's social and moral development. While there is much recognition that children prefer distributions that are equal (Baumard, Mascaro, & Chevallier, 2012; Burns & Sommerville, 2014; Geraci & Surian, 2011; Shaw & Olson, 2013), recent work suggests that the individual and contextual variability in children's evaluation of distributions has yet to be fully understood (Elenbaas, 2019). The present work addresses this gap by examining the separate and joint effects of contextual and individual factors on children's perceptions of, and reactions to, unequal distributions. The focal contextual factors are the number of distributors making unequal allocations and children's perspective (of the advantaged or disadvantaged recipient). The individual differences assessed were children's age, cognitive and affective empathy, and parent teaching of just world beliefs.

Preference for equality in children's own and observed allocations

Demonstrating preferences for equality, when children themselves allocate resources, the majority distribute evenly (Olson & Spelke, 2008; Schmidt, Svetlova, Johe, & Tomasello, 2016; Smith & Warneken, 2016) even when it comes at a personal cost (Blake & McAuliffe, 2011). For example, children, as young as three, prefer to make equal distributions (Baumard et al., 2012), even when they could keep resources to themselves (Warneken, Lohse, Melis, & Tomasello, 2011). However, this tendency to make equal distributions shows further increases throughout the preschool years, with five-year-olds demonstrating significantly higher preferences for equality compared to three-year-olds (Rochat et al., 2009). Within the school-age years, children (6- to 8- year olds) will even discard extra resources at personal cost to themselves rather than distribute them unequally (unlike 3- to 5-year olds; Shaw & Olson, 2012).

When observing *others* distribute resources, very young children demonstrate negative reactions to inequality (Smetana & Ball, 2019; Wörle & Paulus, 2018). For instance, Geraci and Surian (2011) found that 12- to 18-month olds showed sensitivity to the distributive actions of others, as evidenced by preferring to look at agents who approach a fair distributor (as opposed to an unfair distributor) and increased selection of the fair distributor at the end of the task. Children (4- to 9-

year olds) generally view unequal distributions as unacceptable, even when authority figures indicate that such behaviours are appropriate (Smetana & Ball, 2019). Moreover, aversion to inequality in other's distributions seems to increase with age, as relative to younger children, school-age children (5- to 6-year olds) demonstrated increased protests when wealthy recipients are given more resources (Wörle & Paulus, 2018) and a tendency to correct inequalities through sharing more with previously disadvantaged recipients (Li, Spitzer, & Olson, 2014).

Together this work demonstrates that, in the absence of other cues, preschool and school-age children tend to make equal distributions and, when others make unequal distributions, they protest by allocating more resources to the disadvantaged party to "equalize" the situation (Burns & Sommerville, 2014; Geraci & Surian, 2011; Shaw & Olson, 2012). However, the fact that following unequal distributions, children provide more to a disadvantaged party also suggests that their adherence to principles of equality may shift with additional information. For instance, children's preference for equal distributions may shift when contextual cues are present, such as when one recipient has greater need (Rizzo & Killen, 2016) or when one party puts in more effort (Baumard et al., 2012). This notion is discussed below with an examination of the various contextual features that may affect children's own and perceptions of others' distributions.

Context affects equality preferences

Specific cues within a context may cause children to shift from equality preference to merit- or needs-based approaches. When children make their own distributions, merit-based norms are found, with work showing that preschoolers (Baumard et al., 2012; Kanngiesser & Warneken, 2012; Nelson & Dweck, 1977) as well as school-aged children (Sigelman & Waitzman, 1991) allocate rewards based on how much effort recipients have put into a task (although see Elenbaas, 2019, for evidence that school-age children prefer equality despite understanding merit-based distributions).

When children observe the distributions of others, similar sensitivity to contextual cues are found. For instance, in a group of 3- to 8-year olds, with increased age there was an increased acceptance of unequal distributions when rationalizations were provided. However, only at the oldest age did children differentiate between legitimate (merit or needs-based) and idiosyncratic reasons (egocentric demands) for inequality (Schmidt et al., 2016). In terms of their behavioural reactions to inequalities generated by others, 3- to 8-year-olds were found to perpetuate uneven distributions that were based on a recipient's merit (suggesting they accepted this form of inequality), but rectify those inequalities that were based on discrimination, such as gender (Rizzo, Elenbaas, & Vanderbilt, 2020). Similarly, reflecting a sensitivity to need, 10- to 11-year olds allocated more resources to societally disadvantaged groups to rectify past inequalities (Elenbaas & Killen, 2016). Such charitable sharing, wherein individuals rectify inequalities by allocating more resources to a "poor" recipient, emerges around five years of age (Paulus & Leitherer, 2017).

Outside of cues to merit or need, other contextual features influence children's resource allocations. For instance, the characteristics of the recipients play a role: preschool-age children generate more equal distributions when the recipient is a collaborator versus a competitor (Nilsen & Valcke, 2018), a friend versus an acquaintance (Moore, 2009), a friend versus a disliked peer (Paulus et al., 2015), or kin versus non-relation (Lu & Chang, 2016). School-aged children demonstrate more altruistic distributions to (experimentally manipulated) in-group members (Gummerum, Takezawa, & Keller, 2009). Further, the behaviours of peers within the context affects children's distributions. For instance, Engelmann and colleagues found that when there was no clear "need" on the part of a recipient (i.e., no hunger reported), 5-year-old children followed the behaviour of two antisocial (confederate) children and kept a resource (cereal bar) for themselves instead of sharing

it with another child (but shared when the recipient was noted as being hungry; Engelmann, Herrmann, Rapp, & Tomasello, 2016).

In the present study, we extended previous research on contextual factors by examining the composition of the distributors. More specifically, following the work by Engelmann and colleagues showing that witnessing multiple distributors make unequal allocations influenced children's distributions, we examined whether witnessing one person making unequal distributions repeatedly is viewed by children differently than multiple people each making an unequal distribution. Such a comparison could be akin to a child receiving fewer resources from the same classmate repeatedly, versus being disadvantaged repeatedly by different classmates. That is, is one scenario perceived as being more (un)fair and in need of repair than another?

Perspective-taking and (un)equal distributions

In addition to the objective, contextual features of the distribution, the "lens" adopted by an individual may impact how a distribution is perceived. For instance, within an adult population, asking participants to focus on the feelings of one person (as opposed to adopting a more objective perspective) during uneven distributions resulted in lower perceptions of the fairness of the distribution, potentially due to anger on behalf of the victim (Urbanska, McKeown, & Taylor, 2019). However, when participants distribute resources, perspective manipulations are moderated by context: adults who actively focus on the perspective of a potential collaborator show more generous distributions, but active focus on the perspective of a potential competitor leads to more selfish distributions (i.e., "reactive egoism", Epley, Caruso, & Bazerman, 2006; Nilsen & Valcke, 2018). Thus, it appears that actively focusing on the perspective of a potential recipient impacts both perceptions of fairness and distributions, but that this varies by who the recipient is (e.g., collaborator or competitor).

In the present study, we explored whether manipulating children's focus of attention on differing recipients (the advantaged or disadvantaged recipient) would influence their perceptions, and reactions, to inequality. Past work has found that focusing children's attention on the feelings of others enhanced their generosity (Howard & Barnett, 1981). Here, we sought to explore whether active focus on the perspective of the disadvantaged recipient would result in a greater sense of unfairness and more rectification.

Individual differences in perceptions of inequality

Children's reactions to (un)equal distributions also depend on their own characteristics. As noted above, age is associated with differential perceptions and reactions to unequal distributions (Elenbaas & Killen, 2016; Paulus & Leitherer, 2017; Schmidt et al., 2016; Smetana & Ball, 2019). When allocating resources, children's socio-cognitive skills appear to matter. For instance, theory of mind (ToM) skills show associations with distributive behaviours with some studies showing that better ToM predicts more generous distributions (Sally & Hill, 2006; Takagishi, Kameshima, Schug, Koizumi, & Yamagishi, 2010; Wu & Su, 2014) and the tendency to find unequal distributions wrong (Mulvey, Buchheister, & McGrath, 2016), but other studies show opposite effects (Cowell, Samek, List, & Decety, 2015). Beyond age and socio-cognition, there are likely other individual characteristics associated with children's responses to inequality, or that make contextual features within a distribution scenario more/less salient.

Cognitive and affective empathy

Various theories posit that aversion to unjust distributions are triggered by spontaneous emotional reactions caused by the distress of the disadvantaged recipient (Decety, Meidenbauer, & Cowell, 2018; Hoffman, 1990). Thus, individual differences in empathy may relate to differing reactions to inequality. Indeed, greater empathy (in these

studies, broadly defined) demonstrate increased perception of injustice (Urbanska et al., 2019) and more generous distributions of valuable resources, even at personal cost (Barraza & Zak, 2009). However, while empathy is conceptualized in general as reflecting one's capacity to appreciate and share the thoughts and emotions of others, it is a multidimensional construct, which comprises an affective component (sharing an emotional response of others) and a cognitive component (the ability to put oneself in another person's mind to understand their thoughts/feelings). These different components have different developmental paths: affective empathy develops early and shows only modest increases through a child's first few years, whereas cognitive empathy shows more drastic increases across preschool and school-age, in consort with the enhancement of ToM abilities (Dadds et al., 2008; Decety, 2010; Imuta, Henry, Slaughter, Selcuk, & Ruffman, 2016). Moreover, affective and cognitive empathy have differential relations with morality (Decety & Cowell, 2014). For example, cognitive empathy, but not affective empathy, is associated with justice sensitivity in adults (Decety & Yoder, 2016). Thus, explored in the present study, within a child population, cognitive empathy may have a stronger association with fairness. In contrast, building on past work showing that an emotional prime increased 3–6-year-olds prosocial sharing (Williams, O'Driscoll, & Moore, 2014), affective empathy may be associated with behaviour indicative of support.

Belief in a just world

Past research has also demonstrated a role for parent characteristics in shaping children's moral reasoning (Berkowitz & Grych, 1998; Lavoie, Leduc, Crossman, & Talwar, 2016). Within the context of resource distributions, greater parental empathic concern is associated with preschoolers' elevated electrophysiological responses to another's pain and increased resource-sharing (Decety et al., 2018). Despite work in this vein, little research has examined the role of parental teachings of broader worldviews concerning resource distribution. One important worldview pertains to the world as a *just place*. Research in the adult literature demonstrates that people have a fundamental need to believe the world is just, a world in which people get what they deserve and deserve what they get (Lerner, 1980; Lerner & Miller, 1978; Lipkus, Dalbert, & Siegler, 1996). Such a belief is adaptive, allowing people to view the world as stable and retain an expectation that they too will get what they deserve (for review, see Hafer & Begue, 2005). Although there are adaptive functions, just world beliefs can nevertheless translate into perceiving injustice as deserved and can serve to justify existing inequalities (Hafer & Begue, 2005; McCoy & Major, 2007). Given the relevance of just world beliefs for reactions to inequality in adults, we explored whether parental teaching of BJW could affect how children respond, for instance, with less aversion to inequality.

While there may be main effects of individual differences, it is also plausible that individual factors show stronger relations in certain contexts and/or that individual differences alter the role of context. For example, prior research has demonstrated that children show a preference for in-group (versus outgroup) recipients during distributions, but only among children with weak ToM (Mulvey et al., 2016). Thus, in the present work, while cognitive and affective empathy and parental teaching of BJW may be associated with children's perceptions of the inequality generally, these relations may depend on contextual factors, such as number of distributors and children's perspective "lens".

Present investigation and summary of predictions

The present work addresses the gap in the literature regarding the individual and contextual variability in children's responses to inequality (Elenbaas, 2019), through an examination of procedural manipulations and individual measures, and importantly, the interaction between these factors. Children between the ages of 3 and 8 were recruited for this study given that there is increased sensitivity to

principles (in)equality and need/merit within this age range (Elenbaas, 2019; Schmidt et al., 2016).

The two procedural manipulations were *number of distributors* and *perspective-taking* (of either the advantaged or disadvantaged recipient). Children observed videos in which either one or four actors distributed resources (beads) to two puppets, where one puppet continually received more beads than the other. During this observation, children were asked to think about the thoughts and feelings of either the disadvantaged or advantaged puppet. The dependent measures of interest were participants' ratings of fairness, the number of resources distributed by the participant to each puppet (after viewing all distributions), and the puppet chosen by the participant to hold and play with at the end of the task.

As outlined in the body of the introduction, we anticipated that the *number of distributors* may impact children's perceptions of the scenarios. That is, that children may view the single distributor situation as more acceptable than the multiple distributor given that it seems less like collective "bullying" or as though the one distributor has a valid (unseen) reason for repeatedly giving an unequal distribution. For the manipulation of *perspective-taking*, we anticipated that children who were asked to take the perspective of the disadvantaged puppet would show more aversion to the distributions, as evidenced by lower fairness ratings and more resources provided to the disadvantaged puppet.

With respect to individual differences, we anticipated replicating past work showing *age effects*, wherein older children would view the inequality as less fair and show increased attempts to rectify the situation. Beyond age, as outlined earlier, we anticipated that children with higher *cognitive empathy* (as per Decety & Yoder, 2016), would rate the scenarios as more unfair and be more likely to rectify the situation when they themselves distribute resources, but that children with greater *affective empathy* may show more behavioural approach of the disadvantaged puppet. Further, we anticipated that those children whose parents endorsed higher *parental teaching of BJW* would rate the scenarios as more fair and show less rectification towards the disadvantaged puppet.

Finally, we suspected that potential associations between children's characteristics and their reaction to inequality may be moderated by the procedural manipulations. For instance, those children with greater *cognitive* or *affective* empathy may be more impacted by the *perspective conditions* (given their greater ability to appreciate another's perspective), such that for those children with higher empathy there would be a greater reaction to the inequality (through fairness rating or behaviour) when in the disadvantaged recipient (versus advantaged) condition. Further, we anticipated that *taught BJW* would interact with the *distributor* context, such that those children who had been taught more about just world beliefs might perceive the multiple distributor scenario as less aversive than the single distributor. This is because having multiple people give the same recipient fewer resources repeatedly may be viewed as more normative by these children.

Method

Participants

One hundred forty-nine participants aged 3- to 8-years old were recruited from a lab database of families interested in participating in research ($n = 65$) and a children's museum within an urban setting ($n = 84$). Two participants' data were excluded from analysis due to disruptive behaviour during the task.

There were three age groups of participants: 3- to 4-year olds ($n = 51$, $M_{age} = 48.76$ months, $SD = 6.87$ months), 5- to 6-year olds ($n = 53$, $M_{age} = 72.75$ months, $SD = 7.54$ months), and 7- to 8- year olds ($n = 45$, $M_{age} = 95.36$ months, $SD = 6.69$ months). However, during testing, researchers observed that a number of younger children (3- to 4-year olds) had difficulty understanding the questions of the task (e.g., not responding, always choosing final point on scale items).

Further analysis of responses (provided in the Supplemental File) suggested that the younger children may not have fully understood the task, thus, data from the 3- to 4-year olds ($n = 51$) was subsequently excluded from the analyses.

The final sample was 96 children between 5 and 8 years old (53 girls, 43 boys). 81% of parents reported English as the first language; other languages were French (10%), Romanian (2%), Urdu (2%), Arabic, Chinese, Farsi, Greek, Hindi, Portuguese, Punjabi, and Spanish (all 1%). Parent reported ethnic background of the children was: 21% Canadian, 53% Caucasian/European, 10% East Asian, 6% Middle Eastern, 3% Hispanic, 3% South Asian, 2% Black, 1% Southeast Asian, and 10% undisclosed. (When parents specified more than one background, both were included in the previous numbers.) The majority of parents reported education of an undergraduate degree or higher (Parent 1: 78%, Parent 2: 80%). Parent respondents were 67% mothers and 28% fathers.

Design

The design was a 2 (distributor condition) × 2 (perspective condition) × 4 (trial) mixed measure design. Between-subject conditions (i.e., distributor and perspective conditions), which specific puppet received more beads, and the order of distribution (i.e., advantaged versus disadvantaged receiving first bead) were counterbalanced across participants. The conditions (i.e., four possible combinations of distributor and perspective conditions) as well as the counterbalancing (i.e., four possible combinations of who was the advantaged vs. disadvantaged puppet, and who received the first bead) resulted in the creation of sixteen different distribution videos. The dependent variables of interest were the *fairness ratings* (after each distribution scene), *final distribution* (number of stickers given to the disadvantaged puppet), and the *chosen puppet* (i.e., advantaged versus disadvantaged).

Procedure

Participants completed the task in either a laboratory or museum setting, during a 20-min session involving the distribution task and parent completion of questionnaires. Parents provided informed written consent and children provided verbal assent before participating. Participants sat at a table with a laptop in front of them and the researcher beside them. The researcher began with an introduction video which introduced both puppets (order of introductions was counterbalanced), and a statement about the puppets' goals (to build a necklace using beads). The researcher then showed one of the distribution videos. Sixteen silent video recordings were made of two puppets ("Sally" and "Martha", both blonde, White, female puppets with different hairstyles and outfits) sitting on a table, each with a necklace string in front of them. The videos consisted of four video clips (distribution scenes), with still images of the puppets with their beads before and after each clip.

Distributor conditions

For the one distributor condition, one woman (with brown hair tied back) wearing a yellow t-shirt entered the room four times and distributed the beads (Fig. 1a). In the multiple distributor condition, four different women wearing different coloured t-shirts (all with brown hair tied back) entered the room one at a time and distributed the beads (Fig. 1b). The distribution scenes occurred four times, and at each distribution the same puppet was consistently given more beads than the other.

Perspective conditions

Children were asked to take the perspective of either the advantaged or the disadvantaged puppet. Researchers facilitated perspective taking by asking children questions throughout the task about the goals/feelings/deservingness of one puppet. During these questions, only an image of the perspective puppet was shown (Fig. 1c).

Perspective questions asked during distribution task video

Before each of the four distribution scenes, participants were asked "What does [perspective puppet's name] want to happen in the next scene?" (*goals* question) while viewing an image of the perspective puppet with their beads. After each distribution scene, participants were asked, "How do you think [perspective puppet's name] is feeling right now?" (*feelings* question) while viewing an image of the perspective puppet with their beads. The goals and feelings questions facilitated perspective taking by focusing participants on the internal state of the perspective puppet, and were used as validity checks to ensure that participants understood the puppets' goals (i.e., each puppet would want beads) and feelings (i.e., sad if receiving less beads). Next the researcher showed an image of both puppets with their beads, and physically placed a paper picture frame over the laptop screen to frame the perspective puppet. Participants were then asked, "Should this puppet have got that many beads? Yes or no?" prompting thoughts of the puppet's *deservingness*. This question encouraged participants to consider the deservingness of their perspective puppet during the previous distribution scene.

Coding and scoring of questions

Two research assistants blind to the perspective and distributor conditions independently coded responses to the goals and feelings questions.

Goals question

The coding scheme labelled answers as 1 (puppet gaining resources), or − 1 (puppet giving resources to the other puppet) (or "do not know", "no response", "other"). Inter-rater reliability between two coders was calculated by intraclass correlations, *ICC(1)* = 0.92, indicating excellent agreement between raters.

Feelings question

Responses were coded as 1 (positive emotion), 0 (neutral emotion), or − 1 (negative emotion) (or "do not know", "no response", "other"). Inter-rater reliability between two coders was again calculated by intraclass correlation, *ICC(1)* = 1.00, indicating full agreement between raters.

Dependent variables

Fairness

Following each video (after the perspective questions), participants were asked to rate, "How fair was what happened in the last video?" on a 5-point Likert-type scale ranging from −2 (Very Unfair) to 2 (Very Fair), both verbally and presented with a visual scale. This question measured perceptions of the *fairness* of the distribution. Researchers repeated this process four times: once for each distribution scene. As one of the main dependent variables of interest, fairness represented children's perceptions of the distribution.

Sticker distribution

When the four distribution videos were finished, children viewed an image of both puppets with their final bead distributions on the laptop screen until the end of the testing session. The researcher then placed the Sally and Martha puppets (previously hidden from view) on the table, in pre-determined positions, equidistant from the participant (position on right/left side was counterbalanced). The researcher gave the participant five stickers and told them they could distribute the stickers to the puppets however they wanted. We asked children to distribute a different item (stickers) than that distributed by actors
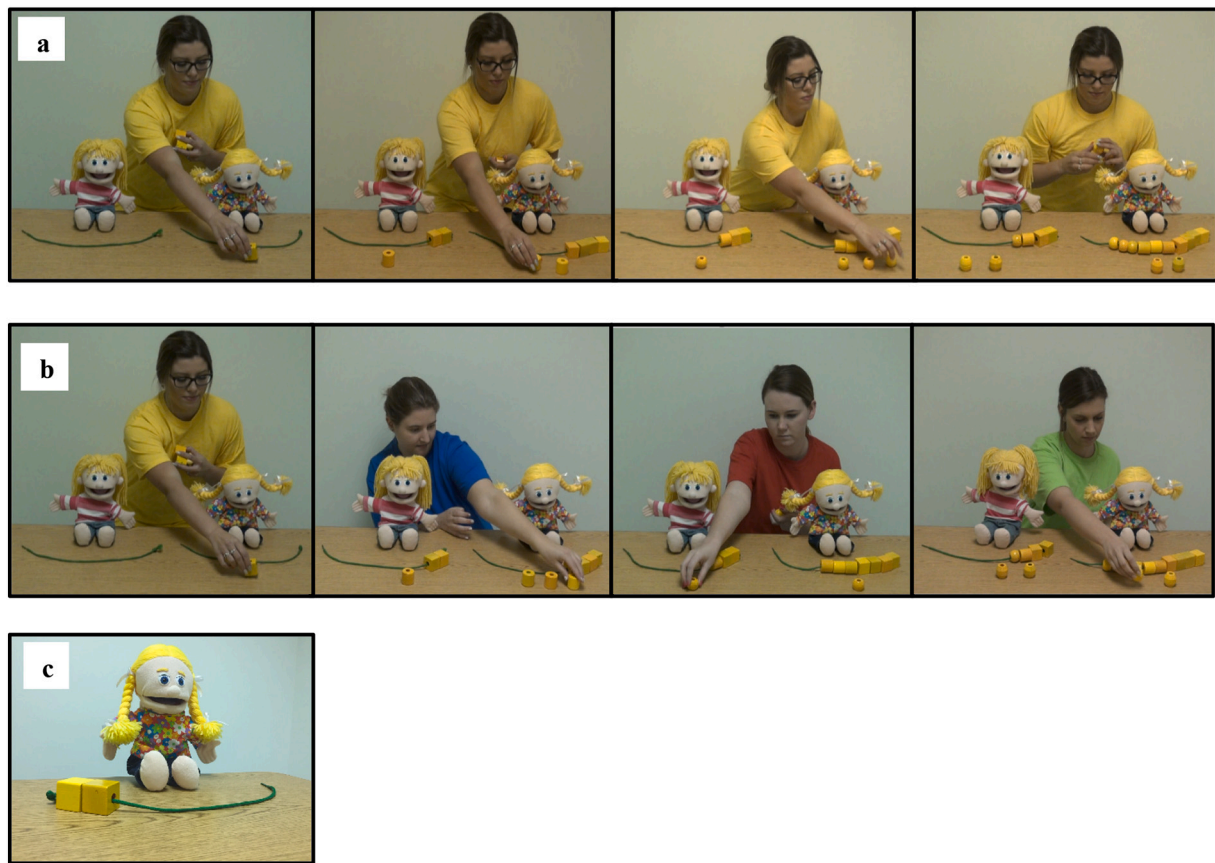
Fig. 1. Distribution task video screenshots.
a) One distributor condition: same woman distributing beads for four trials/ scenes.
b) Multiple distributor condition: four women distributing beads for four trials/ scenes.
c) Example image of the perspective puppet shown during perspective taking goals/feelings/deservingness questions.

(beads) as we wanted to see how they would treat the puppets generally, rather than in relation to the specific task. Moreover, we wanted to ensure children were not just giving resources to the disadvantaged puppet because there was more room on her string, whereas the advantaged puppet's string was full. If the children initially did not distribute the fifth sticker (i.e., distributed two to each puppet; $n = 20$; 21% of sample), they were prompted to distribute the final sticker as we were interested specifically whether children would favour the advantaged or disadvantaged puppet faced with uneven resources.[1] The number of stickers distributed to the disadvantaged puppet was one of the main dependent variables of interest.

Chosen puppet

The researcher then told participants that they could hold and play with one of the puppets before it was time to go, stating that participants could pick their "favourite" puppet. If children indicated that they did not want to choose, or wanted to choose both, the researcher then prompted them to choose just their favourite puppet. This dichotomous measure was also one of the main dependent variables of interest and was intended to reflect children's approach behaviour towards either puppet.

Parent questionnaires

Parents completed two questionnaires (with pen and paper) while their child participated in the study.

Cognitive and affective empathy

Participants' empathy was assessed via parent-report using the Griffith Empathy Measure (GEM: Dadds et al., 2008), a 23-item parent-report questionnaire that uses a 9-point Likert scale ranging from -4 (Strongly Disagree) to 4 (Strongly Agree). Seven items are reverse scored. This measure reflects two aspects of empathy: cognitive empathy (6-item subscale) referring to the ability to intellectually understand another person's emotions (e.g., "It's hard for my child to understand why someone else gets upset" reverse scored), and affective empathy (9-item subscale), reflecting the ability to have an emotional response congruent with or reflective of another person's emotional state (e.g., "My child becomes sad when other children around him/her are sad."). Higher scores on each subscale reflect greater empathy. Previously, the GEM has revealed good inter-rater reliability between parents, good internal consistency for the affective empathy subscale ($\alpha = 0.83$) and adequate internal consistency for the cognitive empathy subscale ($\alpha = 0.62$; Dadds et al., 2008). For our sample, internal consistency values are consistent with those reported by Dadds and colleagues (Affective Empathy, $\alpha = 0.84$; Cognitive Empathy, $\alpha = 0.59$[2]). Moreover, parents' responses on the two subscales were not

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[1] No individual differences (i.e., age, gender, affective/cognitive empathy, taught BJW) were found for those children who refused to distribute fifth sticker ($ps > 0.257$). There was no relationship between refusal to distribute the final sticker and distributor or perspective condition ($ps > 0.417$). Therefore, this variable was not analysed further.

[2] When reviewing individual items of the GEM cognitive empathy subscale, one item did correlate as well with the others (item 3). If removed, Cronbach's alpha for the cognitive subscale increases marginally ($\alpha = 0.63$). Analyses run

Table 1
Descriptive statistics for outcome variables (fairness ratings at each trial, stickers to dis. puppet, chosen puppet) by experimental condition.

	One distributor condition		Multiple distributor condition	
	Advantaged puppet perspective	Disadvantaged puppet perspective	Advantaged puppet perspective	Disadvantaged puppet perspective
	(*n* = 24)	(*n* = 21)	(*n* = 27)	(*n* = 24)
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*
Fairness trial 1	−1.37 (0.97)	−1.14 (1.01)	−1.30 (1.35)	−1.46 (0.88)
Fairness trial 2	−1.04 (1.43)	−1.38 (1.02)	−1.81 (0.48)	−1.50 (1.06)
Fairness trial 3	−1.67 (0.87)	−1.52 (0.87)	−1.52 (1.16)	−1.67 (0.76)
Fairness trial 4	−1.54 (1.02)	−1.38 (1.36)	−1.73 (0.87)	−1.54 (0.93)
Stickers to dis. puppet	2.87 (0.85)	2.86 (1.01)	3.00 (0.83)	3.46 (1.02)
Chosen puppet	0.43 (0.51)	0.29 (0.46)	0.35 (0.49)	0.14 (0.35)

Note. N = 96. Fairness ratings range from −2 (very unfair) to 2 (very fair); stickers to disadvantaged puppet range from 0 to 5; Chosen puppet is coded: 0 (disadvantaged) or 1 (advantaged).

significantly correlated (*p* = .093), consistent with prior research (Dadds et al., 2008). Given their independence, we examined the two subscales separately.

Belief in a just world (BJW)

Parents were asked to reflect on the degree to which they teach their children principles associated with just world beliefs. Parents were first oriented to this task by reflecting on the extent to which they themselves endorse just world beliefs by responding to the 7-item scale developed by Lipkus et al. (1996). Next, reflecting our main interest, parents completed a modified version of the BJW Scale, which asked them: "To what degree do you teach the following ideas to your children (through actions or words)?" Two example items are: "that the world treats people fairly", "that people get what they deserve" rated on a 6-point scale with anchors ranging from 1 (Not at All) to 6 (Very Much). Higher scores reflect greater parental teaching of just world beliefs. The scale showed good reliability (α = 0.84). Parental ratings of their own and taught BJW were significantly correlated (*r* = 0.52, *p* < .001).

Results

Preliminary analyses

There were no significant differences in age, gender, birth order, or parental education (as a proxy for SES) across experimental conditions (i.e., participants in each distributor and perspective condition were similar regarding demographic factors). Mean item responses for the questionnaires were: Affective empathy: *M* = 1.31, *SD* = 1.17; Cognitive Empathy: *M* = 1.25, *SD* = 1.09; Taught BJW: *M* = 3.21, *SD* = 0.90) with no outliers detected. Descriptive statistics for outcome variables by experimental condition are displayed in Table 1. Prior to addressing the main goal, several analyses were conducted to understand children's responses within the task.

Goals and feelings manipulation checks

To assess whether participants in each condition responded to the goals and feelings questions in the same way (i.e., across conditions, children understood that the puppet would want to gain beads, felt sad if they received less, etc.), we conducted two 2 (distributor condition) × 2 (perspective condition) × 2 (age group) × 4 (trial) mixed-methods ANOVAs. The dependent variables were the coded responses to the goals and feelings questions at each of the four trials. For the

goals analysis, no significant main effects were found (*ps* > 0.243), indicating that age, perspective, and distributor condition did not have effects on children's understanding of the puppet's goals in the distribution scenarios, as expected. For the feelings analysis, a significant main effect of perspective condition was found (*p* = .002), as was expected; namely, participants in the advantaged perspective condition felt more positive emotion at the outcome, compared to those in the disadvantaged condition who felt more negative emotion. A marginal effect of age was found (*p* = .073) indicating that older children rated the feelings as slightly more negative than younger children. No significant effect of distributor condition (*p* = .611) was found, indicating that this experimental manipulation did not affect the feelings scores.

Fairness ratings over trials

Potential changes in fairness over the four trials were examined in a 2 (age group) × 2 (distributor condition) × 2 (perspective condition) × 4 (trial) mixed ANOVA analysis. Results revealed no significant main effect of trial (*p* = .162) nor interactions between other conditions and trial (*ps* > 0.134), suggesting that children's perceptions did not change over time. Notably, results revealed that neither distributor condition (*p* = .241) nor perspective condition (*p* = .384) were significant. Thus, children rated the fairness of the distributions as relatively unfair (*M* = −1.46), no matter the distributor or perspective condition. The main effect of age was marginally significant (*p* = .066), indicating that, across trials, the 7- to 8-year olds (*M* = −1.62, *SE* = 0.11) generally perceived the scenarios as slightly less fair than the 5- to 6-year olds (*M* = −1.31, *SE* = 0.12). As children's perceptions of fairness did not change over the trials, subsequent regression analyses on fairness ratings were conducted on ratings at the final trial, as it was after this trial that children experienced all the distributions.[3]

How do context, empathy, and BJW affect responses to unequal distributions?

Our main goal was to examine the role of contextual factors and individual differences (and possible interactions) in children's reactions to unequal distributions. To do so, we conducted three hierarchical regression analyses for each dependent variable (final trial fairness rating, stickers given to disadvantaged puppet, and chosen puppet), following procedures outlined by Aiken, West, and Reno (1991). Linear regression was used for the continuous dependent variables (fairness, sticker distribution) whereas logistical regression was used for the dichotomous variable (chosen puppet). For all regression analyses, age (in months) and gender were entered in the first step. To examine main

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(*footnote continued*)
with item 3 removed revealed the same pattern of findings, therefore the item was retained.

[3] An identical pattern of results was found when a composite measure across the last three trials was used.

Table 2

Bivariate correlations between predictor variables (age, gender, affective empathy, cognitive empathy, taught BJW) and outcome variables (fairness rating at trial 4, stickers to disadvantaged puppet, chosen puppet) across all conditions.

	Affective empathy	Cognitive empathy	Taught BJW	Fairness rating	Stickers to disadvantaged puppet	Chosen puppet
Age (in months)	−0.005	−0.169	−0.090	−0.321**	0.186	−0.079
Gender	−0.190	−0.203*	−0.017	−0.114	0.151	−0.070
Affective empathy	–	0.174	0.098	0.111	0.029	−0.045
Cognitive empathy	–	–	−0.134	−0.048	0.041	−0.108
Taught BJW	–	–	–	0.066	−0.143	−0.148
Fairness rating	–	–	–	–	−0.304**	0.145
Stickers to disadvantaged puppet	–	–	–	–	–	−0.477*

Note: Gender is coded: 0 = girls, 1 = boys; Chosen puppet is coded: 0 = disadvantaged, 1 = advantaged.

* $p \leq .05$.
** $p \leq .01$.

effects of experimental manipulations of context, we entered distributor condition and perspective condition in the second step. To examine main effects of individual differences, we entered the individual difference measure of focus (i.e., mean-centred values for affective empathy, cognitive empathy, or taught BJW) in the third step. The interactions between distributor condition and perspective condition, between distributor condition and the focal individual difference, and between perspective condition and the individual difference were investigated by creating two-way interaction terms using mean-centred variables; these interaction terms were entered in the fourth step. The fifth step of the regression models investigated the three-way interaction between the two conditions and the focal individual difference (though, this step was not significant in any analysis, $ps > 0.087$, so we do not report it further). Significant two-way interactions in the models were probed further using simple slopes analyses using simplified models (wherein non-significant interaction terms were removed).

Table 2 displays bivariate correlations between predictor and outcome variables. Statistics for full regression models are displayed in Tables 3, 4, and 5. Below, results are organized by dependent variables (fairness ratings, stickers distributed to disadvantaged puppet, and choice of puppet), rather than predictors, to reduce redundancy in reporting.

Fairness ratings

For each regression analysis predicting fairness, age was the only significant predictor (Table 3). Older children perceived the unequal distributions to be to be less fair. Contrary to hypotheses, neither the context (i.e., conditions) nor individual differences in empathy or taught just world beliefs impacted children's ratings of fairness.

Stickers distributed to disadvantaged puppet

For each regression analysis, age contributed significantly, with older children giving more stickers to the disadvantaged puppet (though, only marginal for the analysis with BJW; Table 4).

Affective empathy

When investigating affective empathy, no main effect or interactions between other variables and affective empathy emerged.

Cognitive empathy

While there was no main effective of cognitive empathy, the model did yield a significant interaction between cognitive empathy × distributor condition. That is, the distributor condition moderated the relationship between children's levels of cognitive empathy and the number stickers they distributed to the disadvantaged puppet. To interpret this interaction, we conducted simple slopes analyses (with non-significant interaction terms removed; Fig. 2). In the multiple distributor condition, there was a statistically significant relationship between cognitive empathy and stickers distributed, $\beta = 0.35$, $B = 0.29$, $B\ SE = 0.11$, $p = .010$, such that children with higher cognitive empathy gave more stickers to the disadvantaged puppet. In contrast, for the single distributor condition, this relationship was not significant ($p = .155$), demonstrating that cognitive empathy did not relate to stickers given to the disadvantaged puppet in this context.

Taught belief in a just world

While the main effect of taught BJW was not significant, taught BJW interacted with perspective condition to predict the stickers distributed to the disadvantaged puppet. This interaction was analysed further using simple slopes analyses (with non-significant interaction terms removed; Fig. 3). When participants took the perspective of the disadvantaged puppet, there was a significant negative relationship

Table 3

Regression analyses examining effects on fairness ratings.

Predictors	Affective empathy	Cognitive empathy	Taught BJW
Step 1: R^2, (df,df) ΔF, p	0.12, (2, 90) 6.05, **0.003**	0.12, (2, 90) 6.05, **0.003**	0.11, (2, 86) 5.16, **0.008**
Age: β, B (SE B), p	−0.33, −0.03 (0.01), **0.001**	−0.33, −0.03 (0.01), **0.001**	−0.30, −0.02 (0.01), **0.005**
Gender: β, B (SE B), p	−0.09, −0.19 (0.21), 0.374	−0.09, −0.19 (0.21), 0.374	−0.11, −0.24 (0.21), 0.270
Step 2: R^2, (df,df) ΔF, p	0.13, (2, 88) 0.59, 0.556	0.13, (2, 88) 0.59, 0.556	0.12,(2, 84) 0.63, 0.533
Distributor condition: β, B (SE B), p	−0.05, −0.11 (0.21), 0.617	−0.05, −0.11 (0.21), 0.617	−0.08, −0.17 (0.21), 0.439
Perspective condition: β, B (SE B), p	−0.10, −0.20 (0.21), 0.336	−0.10, −0.20 (0.21), 0.336	−0.08, −0.17 (0.21), 0.416
Step 3: R^2, (df,df) ΔF, p	0.15, (1, 87) 1.85, 0.177	0.14, (1, 87), 1.44, 0.233	0.12, (1, 83) 0.25, 0.622
Individual difference: β, B (SE B), p	0.15, 0.13 (0.10), 0.177	−0.12, −0.12 (0.10), 0.233	0.05, 0.06 (0.12), 0.622
Step 4: R^2, (df,df) ΔF, p	0.16, (3, 84) 0.51, 0.674	0.16, (3, 84), 0.34, 0.797	0.12, (3, 80) 0.33, 0.992
Distributor condition × Individual difference: β, B (SE B), p	−0.14, −0.19 (0.19), 0.320	−0.08, −0.11 (0.20), 0.594	0.01, 0.02 (0.25), 0.930
Perspective condition × Individual difference: β, B (SE B), p	−0.10, −0.14 (0.19), 0.464	−0.12, −0.16 (0.20), 0.420	−0.04, −0.05 (0.26), 0.840
Distributor condition × Perspective condition: β, B (SE B), p	0.06, 0.14 (0.46), 0.759	−0.05, −0.11 (0.44), 0.809	0.04, 0.10 (0.45), 0.821

Note. Significant p values in **bold**. Model n's: affective/cognitive empathy ($n = 94$), taught BJW ($n = 90$). Individual difference refers to affective empathy/cognitive empathy/taught BJW, which were run in separate analyses.

Table 4

Regression analyses examining effects on stickers to disadvantaged puppet.

Predictors	Affective empathy	Cognitive empathy	Taught BJW
Step 1: R^2, (df,df) ΔF, *p*	0.06, (2, 91) 3.09, 0.051	0.06, (2, 91) 3.09, 0.051	0.06, (2, 87) 2.84, 0.064
Age: *β, B (SE B), p*	0.23, 0.02 (0.01), **0.027**	0.23, 0.02 (0.01), **0.027**	0.21, 0.01 (0.01), 0.051
Gender: *β, B (SE B), p*	0.10, 0.18 (0.19), 0.344	0.10, 0.18 (0.19), 0.344	0.12, 0.22 (0.19), 0.250
Step 2: R^2, (df,df) ΔF, *p*	0.10, (2, 89) 1.58, 0.211	0.10, (2, 89) 1.58, 0.211	0.10, (2, 85) 1.74, 0.182
Distributor condition: *β, B (SE B), p*	0.13, 0.24 (0.18), 0.195	0.13, 0.24 (0.18), 0.195	0.13, 0.24 (0.19), 0.206
Perspective condition: *β, B (SE B), p*	−0.12, −0.22 (0.18), 0.229	−0.12, −0.22 (0.18), 0.229	−0.14, −0.26 (0.19), 0.174
Step 3: R^2, (df,df) ΔF, *p*	0.10, (1, 88) 0.09, 0.772	0.11, (1, 88) 0.95, 0.332	0.11, (1, 84) 1.21, 0.275
Individual difference: *β, B (SE B), p*	0.03, 0.03 (0.09), 0.772	010, 0.09 (0.09), 0.332	−0.11, −0.12 (0.11), 0.275
Step 4: R^2, (df,df) ΔF, *p*	0.13, (3, 85) 1.08, 0.361	0.21, (3, 85) 3.93, **0.011**	0.19, (3, 81) 2.58, 0.059
Distributor condition × Individual difference: *β, B (SE B), p*	−0.02, −0.03 (0.17), 0.880	0.45, 0.50 (0.17), **0.003**	−0.15, −0.21 (0.21), 0.322
Perspective condition × Individual difference: *β, B (SE B), p*	0.17, 0.21 (0.17), 0.223	0.14, 0.16 (0.17), 0.337	0.34, 0.44 (0.22), **0.047**
Distributor condition × Perspective condition: *β, B (SE B), p*	−0.31, −0.62 (0.40), 0.128	−0.30, −0.61 (0.37), 0.100	−0.32, −0.66 (0.39), 0.092

Note. Significant *p* values in **bold**. Model n's: affective/cognitive empathy (*n* = 94), taught BJW (*n* = 90). Individual difference refers to affective empathy/cognitive empathy/taught BJW, which were run in separate analyses.

between taught BJW and number of stickers distributed to the disadvantaged puppet, $β = -0.37$, $B = -0.37$, B $SE = 0.17$, $p = .034$. In contrast, when participants took the perspective of the advantaged puppet, this effect was non-significant ($p = .793$). This pattern resulted in the emergence of a significant simple effect of the perspective condition, but only among children whose parents do *not* endorse teaching just world beliefs ($p = .030$). Among these children, taking the perspective of the disadvantaged puppet was associated with more stickers distributed to that puppet. In contrast, among children whose parents report teaching *more* just world beliefs, the effect of perspective condition was non-significant ($p = .614$).

In summary, across the models investigating children's distribution of stickers towards the disadvantaged puppet, older children consistently gave more stickers. Furthermore, children with higher cognitive empathy gave more stickers to the disadvantaged puppet when in the multiple distributor condition. Finally, children with low taught BJW gave more stickers to the disadvantaged puppet after taking their perspective; that is, these children showed more sensitivity to the perspective manipulation.

Choice of puppet

Given the dichotomous nature of the dependent variable of children's choice of puppet, we used logistic regression to investigate whether affective empathy, cognitive empathy, or taught BJW might predict which puppet they chose, as well as whether distributor or perspective condition may moderate the potential associations. Statistics for regression models with choice of puppet as the dependent variable are displayed in Table 5. A marginal main effect of perspective condition emerged in step 2 of all models. We further computed simple effects coefficients using simplified models to probe significant

interactions.

Affective empathy

When investigating affective empathy, a significant two-way interaction between affective empathy × perspective condition emerged. To further probe this significant interaction, simple effects coefficients were computed using simplified regression models (with non-significant interaction terms removed). Because logistic regression produces unstandardized regression coefficients (B) which are the log of the odds ratio, we used PROCESS to calculate the simple effects, which expresses the results in log-odds metric. When participants took the perspective of the disadvantaged puppet, affective empathy levels had no significant effect on the probability of choosing the advantaged over the disadvantaged puppet, $B = 0.61$, $SE = 0.38$, $OR = 1.84$, $p = .109$. That is, children taking the disadvantaged puppet's perspective were overall more likely to choose the disadvantaged puppet. In contrast, when participants took the advantaged puppet's perspective, their level of affective empathy significantly affected their choice, such that higher affective empathy related to increased likelihood of choosing the disadvantaged puppet; $B = -0.91$, $SE = 0.36$, $OR = 0.40$, $p = .011$ (Fig. 4). This pattern of slopes yielded a result wherein, among children with lower affective empathy, there was a significant effect of perspective condition on choice of puppet ($p = .002$), such that children were more likely to choose the puppet that aligned with the perspective they had taken. However, among children with average affective empathy ($p = .065$) or higher affective empathy ($p = .326$), this effect of perspective taking condition on choice of puppet diminished, such that children were more likely to choose the disadvantaged puppet in either perspective condition.

Table 5

Regression analyses examining effects on choice of puppet.

Predictors	Affective empathy	Cognitive empathy	Taught BJW
Step 1: $χ^2$ (df), *p*	0.97 (2), 0.615	0.97 (2), 0.615	0.99 (2), 0.611
Age: *B (SE), Wald (df), p*	−0.01 (0.02), 0.69 (1), 0.405	−0.01 (0.02), 0.69 (1), 0.405	−0.02 (0.02), 0.86 (1), 0.353
Gender: *B (SE), Wald (df), p*	−0.22 (0.47), 0.22 (1), 0.639	−0.22 (0.47), 0.22 (1), 0.639	0.67 (1.46), 0.21 (1), 0.645
Step 2: $χ^2$ (df), *p*	4.61 (2), 0.100	4.61 (2), 0.100	4.54 (2), 0.103
Distributor condition: *B (SE), Wald (df), p*	−0.51 (0.47), 1.14 (1), 0.286	−0.51 (0.47), 1.14 (1), 0.286	−0.52 (0.48), 1.18 (1), 0.277
Perspective condition: *B (SE), Wald (df), p*	0.91 (0.49), 3.45 (1), 0.063	0.91 (0.49), 3.45 (1), 0.063	0.90 (0.49), 3.38 (1), 0.066
Step 3: $χ^2$ (df), *p*	0.025 (1), 0.615	1.80 (1), 0.179	3.18 (1), 0.075
Individual difference: *B (SE), Wald (df), p*	−0.11 (0.22), 0.25 (1), 0.614	−0.31 (0.23), 1.77 (1), 0.184	−0.49 (0.28), 2.96 (1), 0.085
Step 4: $χ^2$ (df), *p*	18.37 (3), < **0.001**	2.01 (3), 0.570	0.30 (3), 0.959
Distributor condition × Individual difference: *B (SE), Wald (df), p*	1.36 (0.72), 3.62 (1), 0.57	−0.60 (0.46), 1.73 (1) 0.19	0.15 (0.58), 0.07 (1), 0.794
Perspective condition × Individual difference: *B (SE), Wald (df), p*	−2.43 (0.73), 11.13 (1), **0.001**	−0.04 (0.48), 0.01 (1), 0.929	0.05 (0.64), 0.01 (1), 0.938
Distributor condition × Perspective condition: *B (SE), Wald (df), p*	3.05 (1.57), 3.80 (1), 0.051	0.60 (1.05), 0.32 (1), 0.569	0.46 (1.07), 0.19 (1), 0.666

Note. Significant *p* values in **bold**. Model n's: affective/cognitive empathy (*n* = 94), taught BJW (*n* = 90). Individual difference refers to affective empathy/cognitive empathy/taught BJW, which were run in separate analyses.
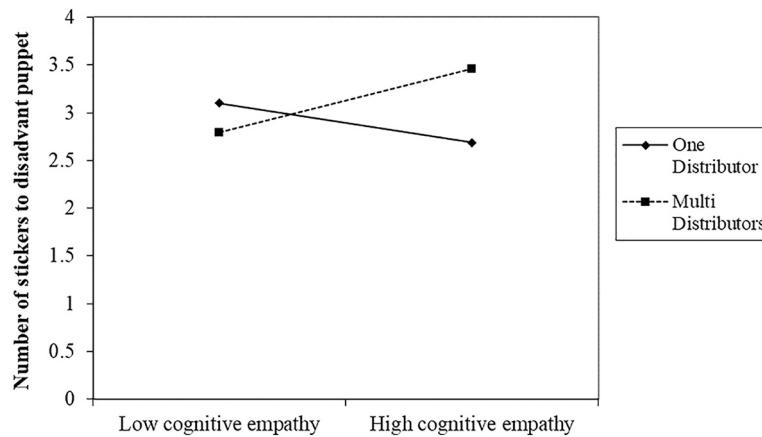
Fig. 2. Simple slopes for effect of distributor condition on outcome of stickers distributed to disadvantaged puppet, for low and high cognitive empathy (using values from simplified model).

Cognitive empathy

When investigating the effects of cognitive empathy on choice of puppet, no other significant predictors or interactions were found.

Taught belief in a just world

Investigating taught BJW, a marginal main effect of taught BJW was found. No other significant interactions were found.

In summary, across the models investigating children's choice of puppet, we see that the perspective condition marginally predicts children's choice of puppet. That is, children in the disadvantaged perspective condition are more likely to choose the disadvantaged puppet. However, for those children with high affective empathy, this distinction diminished, and across both perspective conditions, they more often chose the disadvantaged puppet.

Discussion

The present work examined the independent and joint effects of contextual (number of distributors, perspective) and individual factors (affective and cognitive empathy, taught BJW) on 5- to 8-year olds' perceptions of, and reactions to, repeated unequal distributions. We had anticipated that our procedural manipulations would affect children's responses to the inequality. Interestingly, we found little evidence for this (though there was a marginal effect of perspective on children's choice of puppet). Nevertheless, as discussed below, both conditions were found to moderate associations between children's individual characteristics and their reactions to inequality. In the following

sections, we highlight the primary findings and discuss potential theoretical and practical implications.

With respect to the perspective manipulation, children who were asked to focus on the disadvantaged puppet were marginally more inclined to choose to hold this puppet than children in the advantaged condition. Thus, similar to previous studies that have sought to enhance children's feelings towards another individual through emotional inductions (Howard & Barnett, 1981), we found a trend whereby just asking children to consider a disadvantaged recipient's feelings lead to more prosocial behaviour towards that individual/puppet. Such findings have theoretical relevance in the sense that it suggests increased direction to consider the perspective of a disadvantaged individual may affect behaviour. Though, as noted below, this manipulation was more effective for certain children (i.e., those who had lower affective empathy or lower parental teaching of BJW).

The lack of main effect of distributor condition may have been due to diverse ways children interpreted the scenarios and rationalized the motivations of the distributor(s). For instance, in both distributor scenarios a child could have viewed the distributor(s) as unreasonably discriminatory or as potentially acting in a purposeful way (because of some unknown factors). In the future, asking children open-ended questions about their attributions of the recipients and/or motivations of the distributors would allow for assessing how children interpret ambiguous inequality scenarios, and whether such interpretations are associated with individual characteristics.

We predicted that individual differences in children's age, cognitive and affective empathy, and taught BJW would be associated with their
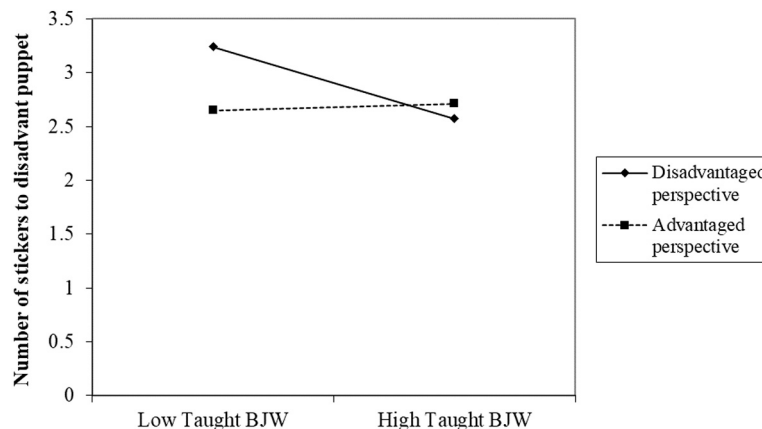

Fig. 3. Simple slopes for effect of perspective condition on outcome of stickers distributed to disadvantaged puppet, for low and high taught BJW (using values from simplified model).
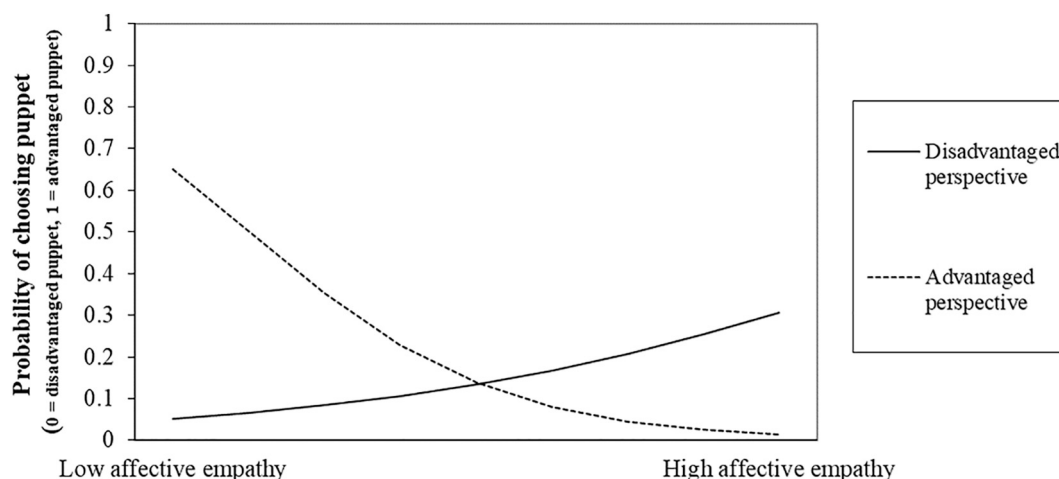
Fig. 4. Simple slopes for effect of perspective condition on the probability of choosing either the advantaged or disadvantaged puppet, for high and low affective empathy (using values from simplified model).

reactions to the inequality. The only individual characteristic that showed a main effect was age, which related to several outcomes: Older children rated the distributions as less fair and gave more stickers to the disadvantaged puppet. This age effect is consistent with numerous studies demonstrating that from the early preschool years to later childhood, children show increased preferences for equality (Blake & McAuliffe, 2011; Fehr, Bernhard, & Rockenbach, 2008; Olson & Spelke, 2008) and show increased protests and corrections to unequal distributions (Paulus & Leitherer, 2017; Shaw & Olson, 2013; Wörle & Paulus, 2018). While we did not find anticipated main effects of affective/cognitive empathy or taught BJW, we found these characteristics interacted with the procedural manipulations in various ways.

First, when presented with inequality perpetuated by multiple distributors, children with higher cognitive empathy provided the disadvantaged puppet with more stickers. Thus, those children who are better able to understand another's thoughts and feelings showed a greater inclination to rectify the inequality by providing additional resources to the disadvantaged puppet. Within this condition, our results are consistent with previous findings indicating that higher levels of empathy in general may be one of the most important predictors of compensatory behaviours to counteract injustice (Eisenberg & Mussen, 1989), and relate to more generous distributions of resources to others (Barraza & Zak, 2009). Moreover, these findings are consistent with past work by Decety and Yoder (2016), wherein cognitive (but not affective) empathy related to adults' reactions to unjust situations. As articulated by Decety and Yoder, conscious attempts to adopt another person's perspective may lead individuals to consider others via cognitive processes, thereby allowing for greater overlaps between representations of self and other, leading to greater endorsement of justice principles for all. More specifically, our findings support past research demonstrating that higher general empathy is associated with higher compensation for victims of inequality in resource distribution scenarios (Leliveld, van Dijk, & van Beest, 2012). However, this study is the first to demonstrate associations with children's cognitive empathy specifically on their corrective behaviours towards disadvantaged recipients.

Interestingly, this interaction suggested that cognitive empathy was not associated with stickers provided to the disadvantaged puppet within the single distributor context. This could suggest that, when there is repeated exposure to the same distributor, those children with higher cognitive empathy were simultaneously trying to appreciate the perspective of both parties. That is, they may have been trying to understand the thoughts and motivations of the one distributor (i.e., to make sense of her repeated behaviour) at the same time as reflecting on the puppets' feelings, thus attenuating the relation between cognitive empathy and behaviour within this condition.

Second, there was an interaction between affective empathy and the perspective condition in the choice of puppet: Children with higher parent-reported affective empathy (i.e., greater sharing of the emotional responses of others) were more likely to choose the disadvantaged puppet than the advantaged puppet, regardless of the perspective taking condition. Put another way, those children who generally show more of an emotional response to others' emotions showed more approach to the disadvantaged puppet, regardless of the perspective. This finding is contrary to our prediction that the perspective effect would be greater for those with higher empathy and instead suggests, interestingly, that the manipulation is more effective for those with lower empathy. Children with low affective empathy were more likely to choose the puppet whose perspective they had taken.

Our finding that children with greater affective empathy are more likely to favour the disadvantaged puppet (no matter the context) also provides support for Cialdini, Brown, Lewis, Luce, and Neuberg' (1997) theory of empathy's relation to injustice: that empathy in general makes the observer more closely linked to the victim, as if the injustice happened to themselves. In relation to our findings, it follows that children high in affective empathy chose to universally favour the disadvantaged puppet, as they may have been more personally linked to her perceived emotions. In contrast, among children who are low in affective empathy, promoting a close alignment prompts them to actively consider the disadvantaged puppets' feelings, and subsequently relates to more favouring of the disadvantaged puppet. Thus, it may be the case that previous findings showing that preschool-age children feel more positively towards advantaged recipients (Ahl & Dunham, 2019; Li et al., 2014) can be attenuated through active consideration of a disadvantaged perspective. More practically, this finding regarding empathy may suggest that explicit instruction to adopt the perspective of the disadvantaged puppet can "compensate" for otherwise lower prosocial tendencies towards victims among children with lower affective empathy.

Though it is speculative, it is interesting to compare the different findings for the two types of empathy. That is, our results suggest that cognitive empathy may relate to more corrective behaviour towards the disadvantaged puppet (giving more stickers) whereas affective empathy may relate to more approach or support behaviour (choosing to hold the disadvantaged puppet). This would be a useful avenue to pursue in future work, namely, to create paradigms that allow for children to demonstrate various corrective or supportive behaviours to be exhibited following unequal distributions and assess the degree to which their cognitive versus affective empathy relates to each category.

Third, considering the possible role of BJW, we did not find that parental teaching of just world beliefs increased children's acceptance of inequality overall. Nevertheless, this characteristic was associated with how children responded to the perspective conditions. In particular, among children whose parents reported less teaching of just world beliefs, perspective mattered. Specifically, when BJW teaching was low, children provided more stickers to the disadvantaged puppet when they took the perspective of that puppet relative to when they took the perspective of the advantaged puppet. In contrast, among children whose parents reported greater teaching of just world beliefs, this effect of perspective was attenuated, and children distributed a similar number of stickers to the disadvantaged puppet. These results suggest that for children with low parental just world teaching, focusing on the disadvantaged puppet may have increased awareness of the negative affect that would result from receiving less (and thus, led them to give more), as opposed to those children who focused on the feelings of the advantaged puppet. However, when BJW teaching is high, children may have also held the competing view that this distribution was warranted, such that taking the perspective of the disadvantaged puppet did not lead to greater rectification. Such an interpretation is consistent with BJW principles (Lerner, 1980; Lipkus et al., 1996) in that children who are taught that people get what they deserve may make the corresponding judgment that these puppets deserved what they got, and subsequently did not strive to correct the inequality. This study is one of the first of its kind to not only investigate just world beliefs in young children (as taught by their parents), but also to examine how these beliefs actually shape children's behaviours towards victims of distributive injustice.

The three interaction findings that we observed suggest that indeed contextual and individual differences have joint effects on children's behavioural reactions to inequality. However, it is important to point out where we did not observe such effects, with the most notable area being how the unequal situations were *perceived* (i.e., ratings of fairness) which did not differ according to contextual or individual factors (other than age). This lack of association diverges from other recent findings, such as those by Urbanska et al. (2019) with adolescents and adults, which showed that self-reported empathy (measured broadly) related to ratings of fairness. Nevertheless, this past work employed a dictator game, as opposed to the present work where the unequal situation was obvious (one puppet always received more), and the unfairness was apparent across the majority of children. Given this, there may be less room for individual differences or more subtle context cues (such as one versus multiple distributors) to play a significant role in children's perceptions. Moreover, the fact that perceptions of fairness did not relate to individual differences (such as level of empathy) is consistent with a theory that judgments of fairness in resource distribution scenarios are largely based on underlying universal concepts of morality as opposed to individual differences in empathy (Blair, 1996; Leliveld et al., 2012, Study 1). For instance, Geraci and Surian (2011) argue that children base their evaluations of unequal distributions on tacit principles of fairness which, if true, should make them less permeable to individual factors. Indeed, Smetana and Ball (2019) also did not find that individual differences (e.g., in social competence) related to reports of fairness.

Limitations and future directions

While the present work provides evidence for associations between children's characteristics and their response to inequality, it is not without limitations. The most notable feature is that we did not report the responses of younger children (i.e., 3- to 4-year olds). We did not want to misrepresent children's reactions by reporting data that possibly resulted from a misunderstanding of the questions (and/or difficulty engaging in the perspective manipulation). Therefore, we took the conservative approach of not including their responses, which prevented us from examining a larger developmental span, as well as

reduced the number of participants in each condition. Future work would greatly benefit from examining individual differences within this younger range, particularly considering the large number of studies that have focused on the preschool-age range when examining children's reactions to inequality (Baumard et al., 2012; Paulus et al., 2015; Warneken et al., 2011). Second, while our work highlights the interactions between individual characteristics and contextual factors, the mechanism by which a certain characteristic may give rise to a certain behavioural response is unknown. This study opens many doors for future work in this area – for instance, research employing physiological measures may allow for understanding the connection between children's empathy and response to inequality (e.g., Decety et al., 2018). Furthermore, asking children to rate their own emotional state in a continual fashion may allow for understanding how cognitive or affective empathy impact responses (and/or whether rectifying situations leads to greater mood boosts for those with greater empathy). The elements of the task also require mention. For instance, the type of resource children distributed to the puppets (stickers) was different than the one seen distributed in the videos (beads), which may have impacted our findings. This approach was adopted as we were interested in how children would treat the puppets generally, rather than in relation to the specific distribution they previously witnessed. Further, while young children are sensitive to the type of resource being distributed, both items would be considered "luxury" items (Essler, Lepach, Petermann, & Paulus, 2020). In addition, the puppets and distributors were all White females. As previous work has shown that children can interpret ambiguous actions of various ethnic groups in different ways (McGlothlin & Killen, 2006; McGlothlin & Killen, 2010), and also that young children tend to show in-group biases towards others of the same race and gender (Renno & Shutts, 2015) our findings may be specific to our stimuli. Future work should include puppets and actors that reflect greater ethnic diversity. Finally, we recognize that the majority of our sample reported an ethnic background of Canadian, Caucasian or European and the sample was generally well-educated, limiting the generalization of our findings. Though, it should be noted that past work with diverse samples has not found that children's race or ethnicity, nor approximate family income related to judgments of allocations (Elenbaas, 2019).

Conclusions and applications

In summary, the present study is, to our knowledge, the first to examine separate and joint effects of children's individual characteristics (reported by parents) and contextual factors for perceptions and reactions to inequality. We found that, while the contextual manipulations and individual differences (cognitive and affective empathy, taught BJW) did not relate to children's perceptions of fairness, they did relate to children's behavioural reactions to unequal distributions through subsequent resource allocations and choice of puppet. It may be the case that while judgments of a situation are based on relatively stable views of what is/is not fair, how children act in the face of unfairness is more subject to influence. Though current findings need replication, they provide some guidance for educational interventions aimed at promoting equality or morality, namely suggesting that the emphasis be on behavioural responses to inequality as opposed to perceptions of fairness per se. For instance, our study suggests that asking children to actively consider the perspective of a disadvantaged recipient may lead to more prosocial behaviour, particularly for those who may not be inclined to do this naturally (e.g., those with lower affective empathy).

Moreover, though speculative, our study suggests that enhancing empathy through interventions, within home or educational settings, may facilitate greater responses to inequality. Previous research has demonstrated that empathy training produces significant positive benefits such as reducing aggressive behaviours and improving social cognition in children and adolescents (Ornaghi, Brockmeier, &

Grazzani, 2014; Şahin, 2012). While many current programs consider empathy as a unitary construct, results here suggest that programs could target cognitive or affective aspects of empathy, depending on the particular behavioural response they are hoping to influence (e.g., correction of past wrongs versus support towards disadvantaged groups). The finding that parental teaching of just word beliefs attenuated children's allocations to the disadvantaged puppet has implications for parenting approaches, but also for a greater awareness as to the potential messages children may be receiving about BJW in society at large, such as through television, books, or in the school setting. Moreover, parents and educators may wish to help children consider broader societal forces at play when discussing issues of inequality.

Together, our research suggests that children do not have a universal response to inequality; individual differences in how they understand and relate to others, as well as teachings from parents, interact with context to influence their behaviour.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.appdev.2020.101189.

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