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Disagreement, justification, and equitable moral judgments: A brief training study

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ABSTRACT

Although theorists agree that social interactions play a major role in moral development, previous research has not experimentally assessed how specific features of social interactions affect children's moral judgments and reasoning. The current study assessed two features: disagreement and justification. In a brief training phase, children aged 4–5.5 years ($N = 129$) discussed simple moral scenarios about issues of fairness (how to allocate things between individuals) with a puppet who, in a between-participants factorial design, either agreed or disagreed with the children's ideas and either asked or did not ask the children to justify their ideas. Children then responded to another set of moral scenarios in a test phase that was the same for all children. Children in the "agree and do not justify" baseline condition showed an inflexible equality bias (preferring only equal allocations regardless of context), but children who had experiences of disagreement or experiences of being asked to justify themselves shifted toward making equitable decisions based on common ground norms and values. Furthermore, false belief competence was related to children's decisions and justifications. These findings support the classic Piagetian hypothesis that social interactions are a catalyst of cognitive disequilibrium and moral development.

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Introduction

Most theorists agree that social interactions play a major role in moral development. Empirically, many studies have suggested links between the types of social interactions children experience and the types of moral judgments and reasoning they display. Within parent–child and familial interactions, for instance, factors such as parental warmth and responsiveness and familial discourses about moral concerns and others' emotions have been shown to predict children's commitment to moral values and standards (Dunn, 2014; Kochanska, 2002; Smetana, 1999). Researchers as early as Piaget (1932) have also explored how experiences within the other social world of childhood, that of peer interactions, contribute to moral development (Damon & Killen, 1982; Kruger, 1992, 1993; Kruger & Tomasello, 1986). This line of research in the Piagetian tradition has focused on how discursive factors (e.g., being disagreed with, being asked for justification) may help to catalyze children's comprehension of moral concepts, such as fairness, equality, and respect.

Conceptually, the strong link between social interactions and moral development makes sense. This is because morality is a social activity, and social interactions are the avenue through which children practice participating in the social activity that is morality. Morality, in this sense, refers to the common ground norms, values, and expectations regarding how individuals ought to behave that humans cooperatively co-construct and reference in their interpersonal interactions with one another (Li & Tomasello, 2021; Smetana, Jambon, & Ball, 2014; Tomasello, 2016). When morality is thus viewed as a social activity, then moral development may in turn be viewed as the process of learning how to participate in the social activity that is morality—learning how to make decisions in accordance with common ground norms and values as well as learning how to reference and reason about common ground norms and values when justifying one's decisions to others.

Research has shown that young children can, in general, reason skillfully with others (Köymen, Jurkat, & Tomasello, 2020; Köymen & Tomasello, 2020). For instance, children aged 3–5 years account for the degree of common ground they share with others when discussing joint decisions—providing more explicit justifications for potential decisions when common ground is weak versus strong (Köymen, Mammen, & Tomasello, 2016; Köymen, Rosenbaum, & Tomasello, 2014). Through discourse training, children as young as 3 years can also improve in reasoning skill. As one study showed, 3-year-olds who had practice in evaluating others' counterarguments became better at producing counterarguments themselves (Köymen, O'Madagain, Domberg, & Tomasello, 2020). Discourse trainings have also been found to be helpful at older ages. A number of studies by Kuhn and colleagues have shown that experiences of argumentation, in which students debate against others with opposing viewpoints, can be helpful for the development of critical thinking (Kuhn, 2015, 2018, 2019; Papathomas & Kuhn, 2017; Zillmer & Kuhn, 2018). Whereas students have a natural tendency to focus on reasons and justifications that support what they already believe, encounters with opposing viewpoints can motivate students to look beyond what they already believe and consider alternative ideas and perspectives (Kuhn, 2019).

Relatedly, many theorists, including Piaget (1932), have proposed that encounters with opposing viewpoints may also be helpful for stimulating development in the moral domain. For instance, a number of studies have suggested that social interactions involving “transactive” or “transforming” statements (in which children critique, extend, or build on the ideas of others) are predictive of moral development (Damon & Killen, 1982; Kruger, 1992, 1993). According to the authors of these studies, experiences of disagreement paired with co-construction of solutions may be especially helpful for development. Illustrating this view, Kruger (1993) suggested that “what is critical . . . is the opportunity the child has to compare his or her understanding to that of another and to attempt to integrate the varying perspectives” (p. 167). However, a study by Walker, Hennig, and Krettenauer (2000) found that transactive social interactions were not strongly related to moral development. Instead, “representational” interactions (in which one's partner elicited or repeated one's input) and “supportive” interactions (in which one's partner expressed positive affect or encouragement) were more related to moral development in their study. Illustrating this perspective, Walker et al. (2000) suggested that “a gentle Socratic style of eliciting the other's opinions and checking for understanding—of drawing reasoning out through the use of appropriate probes—can be effective” (p. 1045).

Overall, an abundance of research has addressed the question of how social interactions affect moral development. Yet, this question may still merit further empirical investigation. One limitation of the previous research is that previous studies did not experimentally control the features of social interactions that children experienced, which limits the causal inferences that can be made about the impacts of particular features of social interactions on development. Another limitation is that different studies had different findings, so it remains unclear which particular features do promote development. The current study aimed to address these limitations by using an experimental design to assess how different features of social interactions affect moral development. In the current study, children discussed what to do in simple moral scenarios with a puppet interlocutor. Using a puppet (rather than a more naturalistic peer or adult partner) was advantageous, despite the cost to ecological validity, because it enabled precise experimental control of the types of interactions that children experienced.

The puppet's social interaction style was experimentally assigned to children based on a between-participants factorial design, which crossed two features highlighted as important by previous research: *disagreement* (the puppet either agreed or disagreed with the children's ideas) and *justification* (the puppet either asked or did not ask the children to justify themselves). The current study also employed the logic of a basic training paradigm. The *training* phase consisted of children's social interactions with the puppet, which varied among the four conditions generated by the factorial design (i.e., there were four training conditions). Following the training phase, all children responded to another set of simple moral scenarios in a *test* phase that was the same for all children. This enabled us to assess whether the social experiences that children encountered in the training phase would affect their decisions and reasoning not only during the ongoing social interactions but also in another context.

We hypothesized that disagreement and justification would both promote moral development but for different reasons. We expected that disagreement (i.e., social experiences of being disagreed with) would trigger cognitive *disequilibrium* in the Piagetian sense. One's understanding of reality, Piaget (1954) argued, exists in a state of equilibrium between one's prior knowledge and the novel information coming in from the world. When novel information is consistent with one's prior knowledge, one may simply assimilate the novel information into one's prior schemas. But when novel information contradicts one's prior knowledge, disequilibrium occurs and one must then revise one's schemas to accommodate the novel information. As Walker et al. (2000) put it, disequilibrium is "a state of cognitive conflict that challenges current ways of thinking and stimulates development toward more equilibrated (i.e., higher level) reasoning" (p. 1034). Experiences of disagreement may trigger disequilibrium because disagreement is itself a signal that there may be information that one has not yet considered. After all, if one's belief were incontestably true, then why would anyone disagree?

We expected that justification (i.e., social experiences of being asked to justify oneself) would promote moral development for at least two reasons. First, such experiences afford children the opportunity to practice articulating the rationales underlying their own beliefs. This self-reflective process may be helpful for clarifying or refining one's own beliefs. Second, the communicative pressure to justify one's decisions to others may generate a corresponding social pressure to make decisions that others would consider justifiable. This social pressure may in turn prompt children to give more thought than they otherwise would to the justificatory criteria (e.g., common ground norms and values) that inform moral decision making.

For operationalizing moral development, it was advantageous to focus on issues of fairness (how to allocate things between individuals) because children have a known starting point and developmental trajectory in their judgments and reasoning about such issues. In making third-party judgments, young children initially have an inflexible equality bias—preferring only equal allocations regardless of context—but eventually learn to consider other norms and values, such as need and merit, which favor unequal allocations in some contexts (Rizzo & Killen, 2016; Schmidt, Svetlova, Johe, & Tomasello, 2016; Sigelman & Waitzman, 1991). This shift represents a positive development in that one is learning to make decisions in line with common ground norms and values. Moreover, because

morality is a social activity, moral development encompasses not only learning to make appropriate decisions but also learning to reason about common ground norms and values when justifying one's decisions to others. In the current study, therefore, we operationalized moral development in terms of (a) being able to enact equitable allocations that favor more deserving recipients (not only preferring equal allocations) and (b) being able to justify one's decisions to others with reference to common ground norms and values.

An important variable and source of variance to account for in the current study was false belief competence, which has been linked to moral development broadly (Lane, Wellman, Olson, LaBounty, & Kerr, 2010; Smetana, Jambon, Conry-Murray, & Sturge-Apple, 2012), as well as to children's conceptions about fairness and resource allocations specifically (Li, Rizzo, Burkholder, & Killen, 2017; Mulvey, Buchheister, & McGrath, 2016; Takagishi, Kameshima, Schug, Koizumi, & Yamagishi, 2010). Takagishi et al. (2010) found that false belief competence predicted children's willingness to make fair offers in a resource bargaining task, the Ultimatum Game, likely because it helped children to anticipate how others would react to one's offers. Relatedly, Mulvey et al. (2016) found that false belief competence predicted children's judgments of resource inequalities as unfair. Beyond just judgments, however, false belief competence may also relate to children's reasoning because the ability to recognize when others are wrong is a logically necessary condition for reasoning with others effectively (Köymen & Tomasello, 2020). Thus, false belief competence was included as a predictor to help account for potential variance in how children may tend to perform on the judgment and reasoning measures independent of their training condition.

Method

Participants

An a priori power analysis conducted in G*Power determined that 128 participants would be needed to achieve a power of .80 for detecting a medium effect size of .25 for an interaction between disagreement and justification. We aimed to recruit at least 128 children, and our recruitment efforts enabled us to complete the sample with 129 children aged 4–5.5 years ($M_{\text{age}} = 57$ months, $SD = 5$, range = 48–66; 56 boys and 73 girls). The children were recruited via emails to parents in our university's database of local birth records. More than 70% of children were ethnically White, more than 70% of parents held a bachelor's degree or higher, and more than 70% of annual family incomes were \$80,000 or higher. An additional 21 children were recruited but were excluded from the final sample due to the children's not understanding the activity ($n = 10$), parental influence ($n = 6$), excessive internet lag ($n = 1$), extreme shyness ($n = 1$), refusal to participate ($n = 1$), incomprehensible child speech ($n = 1$), or the researcher forgetting to record the session ($n = 1$). Children's families received a \$15 gift card for participating. This study was approved by the institutional review board of Duke University on October 15, 2020. The study was conducted with the consent of the parents or guardians of the children and in accordance with all relevant ethical and legal rules for psychological research in the United States.

Procedure

The study took place on Zoom. To begin, the experimenter (termed the *host*) connected with the child and the parent or guardian on Zoom. The host shared his screen over video chat so that both the child and the host could see the same stimuli (PowerPoint slides, included in the online [supplementary material](#)). The child's Self View feature was turned off so that the child could not see himself or herself. The host also helped the child's parent or guardian adjust the Zoom interface so that both the PowerPoint slides and the video of the host were visible to the child at sufficiently large viewing sizes. The parent or guardian gave consent for the child's participation and was told to not influence the child's responses. Most parents and guardians stayed and watched as their children completed the study. The study unfolded in three phases: the pre-training phase, the training phase, and the test phase. Sessions typically took around 30 min from start to finish.

Pre-training phase

The host began with a warm-up activity, which was meant to help children feel comfortable with speaking up and to familiarize children with the process of enacting allocations. A slide showed four animals, each of which was in a square box with either a green or blue border. The host asked the child whether each animal was in a green box or a blue box. The host then asked which animal was the child's favorite and what the child liked about that animal. Next, the host showed a slide with three foods (apples, grapes, and carrots) and asked which food was the child's favorite and what the child liked about that food. The host then said, "We're going to give these foods to some animals." During each of the next three slides, the child was asked to allocate foods (apples, grapes, or carrots) between two animals of the same kind (horses, birds, or bunnies), one of which was on the left in a green box and one of which was on the right in a blue box (e.g., "Look, here are two horses. They both want some apples. Should we give one of these horses more apples or both horses the same amount of apples?"). Each time the child made an allocation decision, the host moved the icons of the foods to represent enacting the decision.

Following this was the introduction of Hedgy, a hedgehog puppet (operated by the host) and the interaction partner in the training phase. Hedgy said, "Hello! I'm Hedgy, and I am so happy to talk to you today! What's your name?" After the child said his or her name, Hedgy replied, "Hello, [child's name]! Nice to meet you!" Hedgy asked the child if he or she likes to listen to stories and then followed up by saying, "Me too! I love to listen to stories! But first, I need to take a nap. I'm sleepy." Hedgy then exited. After Hedgy left, children completed two false belief tasks: a change-of-location task followed by an unexpected-contents task. In both tasks, visual animations accompanied the narration. Children's scores on the two tasks were summed to create a false belief composite score.

The change-of-location task was about two girls named Sally and Anne in a kitchen. In the story, Anne places an apple in the fridge (i.e., refrigerator) and then exits. While Anne is gone, Sally relocates the apple from the fridge to a backpack. First, the child was asked, "So, where is the apple now?" If the child said anywhere other than the backpack, the story was explained again until the child answered correctly. Next, the child was asked, "When Anne comes back into the kitchen, where will she look for the apple?" An answer of "backpack" represented failure on the task (0 points), whereas an answer of "fridge" represented success on the task (1 point). For interrater reliability, two research assistants each coded 13% ($n = 17$) of children's responses on the change-of-location test question (26% in total). Both attained a Cohen's κ value of 1.00 with reference to the complete dataset.

The unexpected-contents task featured an egg carton. The first question was, "What do you think is inside the egg box?" If the child said anything other than eggs, the host talked to the child until the child was convinced that there would be eggs inside. Next, the slideshow depicted the egg box opening and containing strawberries inside. The host remarked, "Oh, look! The box actually had strawberries, not eggs. Let's close the box." The slideshow then depicted the egg box closing. At this point, the host asked the child, "So, what is really in the box?" If the child said anything other than strawberries, the story was explained again until the child answered correctly. Next, a cartoon boy appeared beside the egg carton. The host said, "Look, here is a boy named Matt. Matt has never seen inside the box before. What will Matt think is in the box?" An answer of "strawberries" represented failure on the task (0 points), whereas an answer of "eggs" represented success on the task (1 point). For interrater reliability, two research assistants each coded 13% ($n = 17$) of children's responses on the unexpected-contents test question (26% in total). Both attained a Cohen's κ value of 1.00 with reference to the complete dataset.

Training phase

The host began the training phase by saying, "Now, we're going to listen to some more stories and decide what to do." The host asked in the direction of Hedgy, "Hedgy, are you ready to talk to us again?" Hedgy reappeared and said, "Yes." The host then told the child and Hedgy together, "[Child's name] and Hedgy, the two of you should talk *together* and decide *together* on what to do. You should try to make the most fair decisions." The host checked with Hedgy and the child to make sure that they were ready to begin and then said, "OK, let's begin!"

The training phase included six stories in a fixed order (Appendix A). The first three stories were about allocating play time with toys. The next three stories were about allocating cleanup tasks. Each

set of three stories included two stories in which one recipient was more deserving of the allocation than the other recipient (Stories 1, 2, 4, and 5) and one story in which both recipients were equally deserving (Stories 3 and 6). The stories with the equally deserving recipients were included to help prevent children from forming an expectation that the only “right answer” was to always allocate more to one of the recipients.

The stories alternated between featuring either a pair of boys or a pair of girls as the potential recipients. In the visual depiction of each story, one boy/girl was shown in a green box on the left and another boy/girl was shown in a blue box on the right. The images of which boys/girls appeared in the green boxes on the left and which boys/girls appeared in the blue boxes on the right were counterbalanced across two versions of the PowerPoint file (see [supplementary material](#)). During the narration of each story, when the host referred to the boy/girl on the left (e.g., “This girl has no musical instruments at home”), the green border surrounding that boy/girl intensified to help signify the reference. Similarly, when the host referred to the boy/girl on the right (e.g., “This girl has many musical instruments at home”), the blue border surrounding that boy/girl intensified.

The host told the stories one at a time. At the end of each story, the host asked the child, “So, should we give one of these boys/girls more play time/cleanup tasks or both boys/girls the same amount of play time/cleanup tasks?” If the child said to give more to one of the boys/girls, the host followed up by asking, “Which boy/girl should we give more play time/cleanup tasks to?” Then, Hedgy responded to the child’s decision in one of four ways based on a factorial design crossing disagreement (agree or disagree) and justification (do not justify or justify), as described below and in Appendix B. The assignment of conditions was between-participants, such that each child experienced the same kind of response from Hedgy on all six training trials:

- In the Agree + Do Not Justify condition ($n = 31$), Hedgy agreed with the child and did not ask the child to justify the decision.
- In the Disagree + Do Not Justify condition ($n = 33$), Hedgy disagreed with the child. If the child suggested allocating equally, then Hedgy suggested allocating more to the more deserving recipient (if one recipient was more deserving than the other) or more to the recipient on the left (if both recipients were equally deserving). But if the child suggested allocating more to one of the recipients, then Hedgy suggested allocating equally. Hedgy did not ask the child to justify the decision.
- In the Agree + Justify condition ($n = 33$), Hedgy agreed with the child and then asked the child to justify the decision. After the child gave a justification, Hedgy said, “Oh, OK.”
- In the Disagree + Justify condition ($n = 32$), Hedgy disagreed with the child. If the child suggested allocating equally, then Hedgy suggested allocating more to the more deserving recipient (if one recipient was more deserving than the other) or more to the recipient on the left (if both recipients were equally deserving). But if the child suggested allocating more to one of the recipients, then Hedgy suggested allocating equally. Hedgy then asked the child to justify the decision. After the child gave a justification, Hedgy said, “Oh, OK.”

After each interaction with Hedgy, the host then said, “Let’s hear the next story.” The next story was then shown. Once all six training trials were finished, Hedgy remarked, “I’m sleepy again. I need to take another nap. It was great talking to you!” Hedgy then exited, and the test phase began.

Test phase

The test phase was the same for all children and included six stories in a fixed order (Appendix C). The first three stories were about distributive fairness (allocating cookies). The next three stories were about retributive fairness (allocating punishment). Each set of three stories included two stories in which one recipient was more deserving of the allocation than the other recipient (Stories 7, 8, 11, and 12) and one story in which both recipients were equally deserving (Stories 9 and 10). The visual formatting and image counterbalancing were the same as in the training phase (see [supplementary material](#)). On Stories 7, 10, and 11, animations accompanied the narration.

The host told the stories one at a time. At the end of each story about distributive fairness, the host asked the child, “So, should we give one of these boys/girls more cookies or both boys/girls the same amount of cookies?” If the child said to give more to one of the boys/girls, the host followed up by

asking, "Which boy/girl should we give more cookies to?" The host then asked the child to justify the decision: "Why do you think we should give (the same)/(more to that boy/girl?)" After the child gave a justification, the host said, "OK. Let's hear the next story."

The phrasing of the questions about retributive fairness was slightly different. At the end of each story about retributive fairness, the host asked the child, "So, should one of these boys/girls get in more trouble, or should both boys/girls get in the same amount of trouble?" If the child said that one of the boys/girls should get in more trouble, the host followed up by asking, "Which boy/girl should get in more trouble?" The host then asked the child to justify the decision: "Why do you think (they should get in the same amount of trouble)/(that boy/girl should get in more trouble?)" After the child gave a justification, the host said, "OK. Let's hear the next story." After Story 12, the host thanked the child for participating.

Coding and reliability

Children's allocation decisions for each story were coded as to whether the children gave equally to the two recipients or more to one of the recipients (and, if so, to which one). For interrater reliability, two research assistants each coded 13% ($n = 17$) of the allocation decision data (26% in total). They attained Cohen's κ values of .99 and 1.00, respectively, with reference to the complete dataset.

Children's justifications were also coded. The coding scheme was based on an inductive assessment of the data and contained 12 types of codes (Appendix D). The 12 codes fell into two larger categories: valid forms of reasoning and invalid responses. The valid forms of reasoning were legitimate justifications—appealing to common ground norms and values—for either allocating equally or allocating more to one of the recipients. For example, one participant who allocated the same amount of cleanup tasks to the two boys in Story 6 justified the decision by noting that "they both cleaned two tables." By referencing the fact that the two boys were identical on a relevant dimension (the amount of work they had already done), the participant was indeed giving a valid reason for treating the boys the same. In another case, a participant justified the decision to allocate more cookies to one of the boys in Story 7 by noting that "he didn't have breakfast." Here, the participant was making a valid appeal to the common ground principle that those whose needs have not been fulfilled may legitimately claim more of a necessary resource (e.g., food) compared to others whose needs have been fulfilled.

Justifications were coded as invalid responses if they were tautological, unclear, or uninformative. For instance, one participant responded to the question "Why do you think we should give the same?" by saying, "it makes them have the same amount." But this was in effect only a restatement of the decision, not an explanation for why the decision was justified. Invalid responses also included references to platitudes (e.g., "It's fair," "They would be happy," "It's not nice") that were given without further explanation. To be clear, the host did not ask further follow-up questions in such cases. For the stories about retributive fairness, responses were coded as invalid if they only referenced the fact that someone committed a transgression but did not otherwise compare the two transgressors—either by noting that both transgressors did something bad, which would justify punishing them equally, or by noting a feature of the story that would justify punishing one of the transgressors more (e.g., the cognitive state of the transgressor, the fact that one transgressor stole more than the other). Without further elaboration, the mere fact that someone committed a transgression was not itself a sufficient justification for either punishing both transgressors the same or punishing one transgressor more than the other. For interrater reliability, a research assistant coded 26% ($n = 33$) of the reasoning data based on the 12 reasoning codes. Cohen's κ was .86.

Results

Allocations

Children's allocations were analyzed with multilevel logistic regression, conducted in R using the ordinal package. The dependent variable, a binary outcome, was whether children allocated more to

the more deserving recipient on each trial in which one recipient was more deserving than the other. The analyzed trials were Stories 2, 4, and 5 from the training phase (Story 1 was not included because children’s responses on this trial preceded any condition manipulation) and Stories 7, 8, 11, and 12 from the test phase.

A series of models were created and compared. First, a null model was created that included only random intercepts for participant and story. Second, a main effects model was created that added the fixed effects of age, false belief (composite score), disagreement (agree or disagree), justification (do not justify or justify), and phase (training or test). Third, a full model was created that added the interactions between disagreement, justification, and phase. Model comparisons using likelihood ratio tests revealed that the inclusion of the main effects led to a significant improvement in fit over the null model, $\chi^2(5) = 22.02, p < .001$, and that the inclusion of the interactions led to a further improvement in fit over the main effects model, $\chi^2(4) = 19.84, p < .001$. Thus, the full model with the interactions was chosen as the best description of the data (Table 1).

The full model found significant main effects of false belief, disagreement, and justification, as well as an interaction between disagreement and justification (Table 1). The main effect of age and the interaction between justification and phase were marginally significant. To probe the interaction between disagreement and justification, pairwise Wilcoxon rank sum tests with Bonferroni corrections for multiple comparisons were conducted. The post hoc tests found that children allocated more to the more deserving recipient in the Disagree + Do Not Justify condition ($M = 0.43, SD = 0.50, p < .001$), the Agree + Justify condition ($M = 0.41, SD = 0.49, p < .001$), and the Disagree + Justify condition ($M = 0.38, SD = 0.49, p = .003$) than in the Agree + Do Not Justify condition ($M = 0.22, SD = 0.42$); the former three conditions did not differ from one another, $ps = 1.00$. Thus, when examining children’s allocations across the whole study, disagreement and justification both independently promoted children’s tendencies to enact equitable allocations, but their combination did not have an additive effect in the Disagree + Justify condition.

To further probe the data, separate sets of Bonferroni-corrected pairwise Wilcoxon rank sum tests examining the interaction between disagreement and justification were conducted for the training phase data and the test phase data. In the training phase data, children allocated more to the more deserving recipient in the Disagree + Do Not Justify condition ($M = 0.41, SD = 0.50, p = .006$), the Agree + Justify condition ($M = 0.47, SD = 0.50, p < .001$), and the Disagree + Justify condition ($M = 0.42, SD = 0.50, p = .006$) than in the Agree + Do Not Justify condition ($M = 0.19, SD = 0.40$); the former three conditions did not differ from one another, $ps = 1.00$. In the test phase data, the only

Table 1
Output of the multilevel logistic regression of the allocation data.

Formula: Allocation ~ 1 + Age + FalseBelief + Disagreement * Justification * Phase + (1 Participant) + (1 Story)				
Random effects	Name	Variance	SD	
Participant	(Intercept)	0.6317	0.7948	
Story	(Intercept)	0.5443	0.7378	
Coefficients	Estimate	SE	z Value	Pr(> z)
Age	0.5097	0.2644	1.928	.053889*
FalseBelief	0.4550	0.1434	3.174	.001503**
Disagreement[Disagree]	1.4865	0.4258	3.491	.000481***
Justification[Justify]	1.7367	0.4236	4.100	4.13e-05***
Phase[Test]	0.1798	0.6760	0.266	.790235
Disagreement * Justification	-1.8346	0.5707	-3.215	.001305**
Disagreement * Phase	-0.0487	0.4806	-0.101	.919312
Justification * Phase	-0.8598	0.4818	-1.784	.074349*
Disagreement * Justification * Phase	0.2627	0.6494	0.405	.685763

Note. The reference levels for the categorical factors were agree (disagreement), do not justify (justification), and training (phase).

* $p < .10$.
 ** $p < .01$.
 *** $p < .001$.

significant contrast was between the Disagree + Do Not Justify condition ($M = 0.45, SD = 0.50$) and the Agree + Do Not Justify condition ($M = 0.24, SD = 0.43$), $p = .004$. That is, the Agree + Justify condition ($M = 0.36, SD = 0.48$) and the Disagree + Justify condition ($M = 0.34, SD = 0.48$) did not differ significantly from the other conditions. Thus, whereas justification promoted children's equitable allocations only in the training phase, disagreement promoted children's equitable allocations in both the training phase and the test phase (Fig. 1).

Allocations in conjunction with reasoning

Children's rates of enacting equitable allocations in conjunction with providing valid reasoning were analyzed with multilevel logistic regression. The dependent variable, a binary outcome, was whether children both allocated more to the more deserving recipient and justified their allocation with a valid, not invalid, justification on each trial in which one recipient was more deserving than the other. This type of response represented the most mature expression of moral reasoning as a social activity that our study assessed—the capacity to not only make an appropriate decision but also justify one's decision to others with reference to common ground norms and values. It was necessary to analyze the training phase data (Stories 1, 2, 4, and 5) and the test phase data (Stories 7, 8, 11, and 12) separately because half of the children were not asked for justification in the training phase. This time, Story 1 was included in the analysis of the training phase data because the provision of reasoning occurred after the condition manipulation.

For the analysis of the training phase data, two models were created and compared. First, a null model was created that included only random intercepts for participant and story. Second, a main effects model was created that added the fixed effects of age, false belief, and disagreement. However, the model comparison found that the inclusion of the main effects did not lead to an improvement in fit over the null model, $p = .45$, and the main effects were not significant anyways.

For the analysis of the test phase data, a series of models were created and compared. First, a null model was created that included only random intercepts for participant and story. Second, a main effects model was created that added the fixed effects of age, false belief, disagreement, and

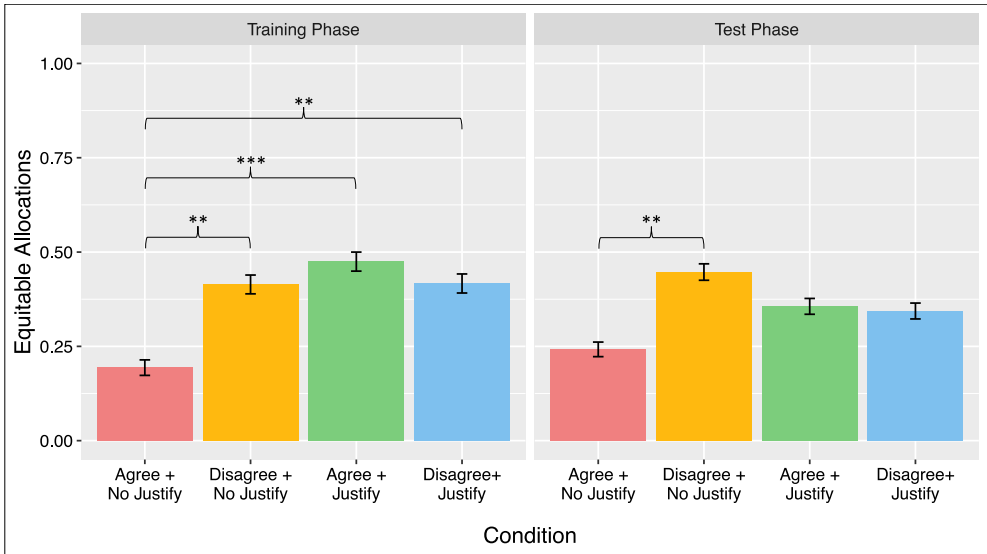


Fig. 1. Children's rates of enacting equitable allocations (giving more to the more deserving recipient) in the four conditions in the training phase and the test phase. Error bars represent standard errors. ** $p < .01$; *** $p < .001$.

Table 2

Output of the multilevel logistic regression of children's equitable allocations that were justified with valid reasoning.

Formula: Justified.Allocation ~ 1 + Age + FalseBelief + Disagreement * Justification + (1 Participant) + (1 Story)				
Random effects	Name	Variance	SD	
Participant	(Intercept)	0.7146	0.8453	
Story	(Intercept)	0.9385	0.9688	
Coefficients	Estimate	SE	z Value	Pr(> z)
Age	0.5248	0.3516	1.492	.13561
FalseBelief	0.6271	0.1941	3.232	.00123**
Disagreement[Disagree]	1.2415	0.4229	2.935	.00333**
Justification[Justify]	0.8625	0.4202	2.053	.04009*
Disagreement * Justification	-1.7942	0.5930	-3.026	.00248**

Note. The reference levels for the categorical factors were agree (disagreement) and do not justify (justification).

* $p < .05$.

** $p < .01$.

justification. Third, a full model was created that added the interaction between disagreement and justification. Model comparisons revealed that the inclusion of the main effects led to a significant improvement in fit over the null model, $\chi^2(4) = 15.05, p = .005$, and that the inclusion of the interactions led to a further improvement in fit over the main effects model, $\chi^2(1) = 9.40, p = .002$. Thus, the full model with the interactions was chosen as the best description of the data (Table 2).

The full model found significant main effects of false belief, disagreement, and justification, as well as an interaction between disagreement and justification (Table 2). To probe the interaction, Bonferroni-corrected pairwise Wilcoxon rank sum tests were conducted. There was a marginally significant contrast between the Disagree + Do Not Justify condition ($M = 0.33, SD = 0.47$) and the Agree + Do Not Justify condition ($M = 0.19, SD = 0.40$), $p = .07$. No other contrasts were significant. That is, the Agree + Justify condition ($M = 0.28, SD = 0.45$) and the Disagree + Justify condition ($M = 0.22, SD = 0.42$) did not differ significantly from the other conditions. Thus, disagreement seemed to play a minor role in promoting children's tendencies to enact equitable allocations in conjunction with articulating valid justifications for their allocations.

Discussion

The current study experimentally assessed how different features of social interactions affect children's moral judgments and reasoning about fairness. Children discussed what to do in simple moral scenarios (how to allocate things between different recipients) with a puppet interlocutor who either agreed or disagreed with the child's ideas and either asked or did not ask the child to justify his or her ideas. Children's judgments and reasoning were assessed both during the ongoing social interactions with the puppet (the training phase), which varied between conditions, and in a different context that was identical for all children (the test phase). The research aim was to identify which features of social interactions would prompt children to shift away from an inflexible equality bias—preferring only equal allocations regardless of context—toward making equitable allocation decisions and justifying those decisions in accordance with common ground norms and values.

The results suggested that social experiences of being disagreed with and social experiences of being asked to justify oneself can both be helpful for encouraging children to make equitable decisions. Disagreement had a positive effect not only in the training phase but also in the test phase. That is, children who had experienced disagreement in one social context (the training phase) were more willing to act equitably even in a different context that no longer featured disagreement (the test phase). In contrast, the effect of being asked for justification was limited to the training phase only. The absence of a carryover effect may have been due to two reasons. First, a methodological feature

of the study was that all children were asked to justify their decisions in the test phase. As such, the potential carryover effect of training phase justification on test phase performance may have been obscured by the fact that all children experienced the effect of justification in the test phase. Second, the simple format of the justification questions, which only asked children to explain their decisions, might not have elicited a sufficient degree of critical reflection to have had a lasting effect. In contrast, other studies in which children responded to counterprobe questions, which prompt children to entertain ideas that differ from what they initially articulate, may have been more successful at leading children to change their minds (e.g., Killen, Pisacane, Lee-Kim, & Ardila-Rey, 2001).

The role of disagreement as a catalyst of cognitive and moral development aligns with Piagetian theories about *disequilibrium*, “a state of cognitive conflict that challenges current ways of thinking and stimulates development toward more equilibrated (i.e., higher level) reasoning” (Walker et al., 2000, p. 1034). Our findings support the Piagetian hypothesis that social experiences of conflict and disagreement are an effective vehicle for provoking disequilibrium and development (Piaget, 1932). Interestingly, children in our study (specifically, in the Disagree + Do Not Justify condition) benefited from merely encountering someone who disagreed with them even in the absence of further discourse with that person to discover their reasoning, explain one’s own reasoning, or construct a consensus. One explanation for why disagreement alone may be so stimulating, even absent further discourse, is that disagreement is itself a signal that there may be information that one has not considered. For instance, suppose that one were to discover that someone whom one respected (e.g., a mentor, a leader) held a different political belief than oneself about an issue. The mere fact that the other person holds a different belief than oneself—even absent any discussion with that person about the rationale—may prompt one to reconsider one’s own belief. If one’s own belief were incontestably true, after all, then why would anyone have a different belief?

The value of disagreement as a developmental catalyst also accords with research from educational psychology. An influential body of research by Kuhn and colleagues has highlighted the value of argumentation as a type of social experience that helps students to develop critical thinking (Kuhn, 2015, 2018, 2019; Papathomas & Kuhn, 2017; Zillmer & Kuhn, 2018). As Kuhn (2019) put it, “Dialogue demands attention to the other” (p. 154), and engaging in discussions with others who have different viewpoints than oneself compels one to consider ideas and perspectives that one might not have otherwise considered. Although this body of research has mainly focused on the development of critical thinking in older children and adolescents, it would be interesting to explore whether the dialogic processes highlighted by this research have ontogenetic roots and analogues in younger children’s thinking, including in their social cognitive and moral development.

Some finer points of the study and results merit discussion. For one, although experiences of being disagreed with and experiences of being asked for justification were both independently helpful for moral development, they did not have an additive effect. The Disagree + Justify condition, in which the puppet both disagreed with the child and asked the child for justification, did not result in the best performance relative to the other conditions. The unexpectedly weak effect of this condition might be better explained by a practical reason rather than a theoretical reason. Namely, this condition may have been simply too overwhelming for the children. In this condition, the puppet asked the children to justify themselves immediately after voicing disagreement with the children (in a relatively lengthy way that explicitly contrasted the puppet’s own opinion with the children’s opinions). This discourse may have been too taxing for the children, who may have needed more time to process the puppet’s disagreement before switching to the task of justifying their own opinion.

Second, it should be acknowledged that none of the trainings led children to overcome their equality bias to such an extent that they acted equitably in a majority of cases. At best, the trainings only led children to act equitably around half of the time. Still, these results are consistent with previous research suggesting that a bias for equality appears strongly in young children (Rizzo & Killen, 2016; Schmidt et al., 2016; Sigelman & Waitzman, 1991). Another point worth considering is how children may have interpreted the puppet’s repeated behaviors as the training trials went on. For instance, it was likely an unusual experience for children in the Disagree + Do Not Justify condition to experience a partner disagreeing with them not just once or twice but six times in a row. Similarly,

children in the Agree + Justify condition may have found it strange that their partner repeatedly asked them to justify their decisions despite seemingly agreeing with those decisions; it is possible that, as the trials went on, these children may have interpreted their partner's repeated requests for justification as an implicit signal of disagreement. On the whole, although the tightly controlled experimental design that we used—in which the puppet's scripts in the four conditions were calibrated to be as similar as possible, differing only in certain theoretically relevant ways—was advantageous for isolating the causal effects of specific discourse features, it may have come at the price of seeming artificial to children at times, especially as the same interactions were repeated over many trials.

In addition to the social interaction conditions, false belief competence was also related to children's moral judgments and reasoning. Children with better false belief competence were more likely to make equitable decisions, and they were also more likely to make such decisions in conjunction with the provision of valid justifications for the decisions. These results complement findings from previous studies suggesting a link between children's understanding of false belief and their understanding of fairness (Mulvey et al., 2016; Takagishi et al., 2010). Even more broadly, these findings suggest a relation between false belief competence and children's skill at participating in morality as a social activity, given that children's justifications in this study were situated in a social context where children were justifying their views to another person. This relation makes sense on conceptual grounds, given that the process of reasoning with others presupposes an understanding that others could be mistaken and have false beliefs (Köymen & Tomasello, 2020).

One limitation of the current study was that the social interactions involved a puppet rather than a human. The puppet enabled us to precisely control the interaction and reduce perceptions of adult authority, but it reduced the ecological validity of the study as a result. Another limitation was the short time interval between the training phase and the test phase, both of which occurred within the same session. Future studies that assess children over longer time periods could help to clarify how social interactions affect moral development over larger timescales. A third limitation was that the topics of the moral scenarios were restricted to issues of fairness. Although fairness is a central moral concern in children's lives, it is not the only domain of morality that children navigate. Future research could examine how social interactions affect children's judgments and reasoning about other moral concerns, such as social inclusion and exclusion, group norms and practices, and selfish behavior (Gray & Graham, 2018; Nucci & Ilten-Gee, 2021).

In conclusion, when morality is viewed as a social activity that humans co-construct and participate in cooperatively, then moral development may be viewed as the process of learning how to participate in the social activity that is morality. Many theorists have proposed that social interactions play a key role in the process of moral development, but there has been a striking lack of experimental research examining which particular features of social interactions are conducive to development. Using an experimental design that manipulated the social interactions that children experienced while discussing simple moral decisions, the current study found evidence that social experiences of being disagreed with, as well as social experiences of being asked to justify oneself, are both helpful for encouraging children to overcome an equality bias and act in accordance with common ground norms and values of fairness. These findings may help shed light on the broader question of how humans have been able to shape each other, via socialization, into uniquely cooperative and moral beings.

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Appendix A

Scripts of the six stories in the training phase

Introduction to the stories about play time

"It's play time at school, and the kids want to play with toys. The kids like playing with toys, like this musical instrument, this fun game, and this truck. But only one kid can play with a toy at a time. If one kid gets more play time with a toy, that means another kid gets less play time with the toy. We have to decide who gets play time with these toys. Does that make sense? OK."

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| Story 1:
Unequal home access | "Here are two girls. They both want play time with the musical instrument. This girl has no musical instruments at home. This girl has many musical instruments at home." |
| Story 2:
Unequal prior opportunity | "Here are two boys. They both want play time with the fun game. This boy has played the fun game many times before. This boy has never played the fun game before." |
| Story 3:
Equal desire | "Here are two girls. They both want play time with the truck. This girl wants to put blocks in the truck. This girl also wants to put blocks in the truck." |

Introduction to the stories about cleanup tasks

"Look at this messy table. It's cleanup time at school, and the kids have to help do cleanup tasks, like cleaning the tables or putting stuff away. Does that make sense? OK. The kids don't like doing cleanup tasks. They think it's boring, and they'd rather do something else. But there's a lot to clean up! If one kid does fewer cleanup tasks, that means another kid has to do more cleanup tasks. We have to decide who should do the cleanup tasks. Does that make sense? OK."

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| Story 4:
Unequal work | "Here are two boys. They both do not like doing cleanup tasks. This boy has cleaned 4 tables already. This boy has only cleaned 1 table already." |
| Story 5:
Unequal discomfort | "Here are two girls. They both do not like doing cleanup tasks. This girl doesn't want to do cleanup tasks because she wants to play. This girl doesn't want to do cleanup tasks because her head really hurts." |
| Story 6:
Equal work | "Here are two boys. They both do not like doing cleanup tasks. This boy has cleaned 2 tables already. This boy has also cleaned 2 tables already." |
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Appendix B

Scripts for how Hedgy responded to the child's decisions in the four training conditions

	Agree + Do Not Justify	Disagree + Do Not Justify	Agree + Justify	Disagree + Justify
If child said to give the same:	"I think we should give the same to both boys/girls. You also think that. I guess we agree."	"I think we should give more to X. But you think we should give the same to both boys/girls. I guess we don't agree."	"I think we should give the same to both boys/girls. You also think that. So, why do <i>you</i> think we should give the same?" "Oh, OK."	"I think we should give more to X. But you think we should give the same to both boys/girls. So, why do <i>you</i> think we should give the same?" "Oh, OK."
	Host: "Let's hear the next story!"			
If child said to give more to X:	"I think we should give more to X. You also think that. I guess we agree."	"I think we should give the same to both boys/girls. But you think we should give more to X. I guess we don't agree."	"I think we should give more to X. You also think that. So, why do <i>you</i> think we should give more to X?" "Oh, OK."	"I think we should give the same to both boys/girls. But you think we should give more to X. So, why do <i>you</i> think we should give more to X?" "Oh, OK."
	Host: "Let's hear the next story!"			

Appendix C

Scripts of the six stories in the test phase

Introduction to the stories about distributive fairness

"It's snack time at school, and the kids want to eat cookies. But we don't have a lot of cookies. If one kid gets more cookies, that means another kid gets fewer cookies. We have to decide who should get the cookies. Does that make sense? OK."

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| Story 7:
Unequal contribution | "Here are two girls. They both like cookies. During snack time, all the kids were supposed to help make cookies to share with the school. This girl was lazy. She didn't work hard at all, and she only made 1 cookie to share with the school. Let's put the cookie on the plate. This girl was hard-working. She worked very hard, and she made 6 cookies to share with the school. Let's put the cookies on the plate. So, here are the cookies that we can share." |
| Story 8:
Unequal hunger | "Here are two boys. They both like cookies. This boy is very hungry because his mom forgot to give him breakfast. This boy is not hungry because his mom did give him breakfast." |
| Story 9:
Equal desire | "Here are two girls. This girl likes cookies a lot. This girl also likes cookies a lot." |

Introduction to the stories about retributive fairness

"These kids are at school. Some of these kids have been behaving badly, and they're going to get in trouble with the teacher. The kids don't like getting in trouble with the teacher. We have to help the teacher decide who should get in trouble. Does that make sense? OK."

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| Story 10:
Equal outcomes | "Here are two boys. They both put their sister's lunch in the trash, which made their sister sad. This boy put his sister's sandwich in the trash. This boy also put his sister's sandwich in the trash." |
| Story 11:
Unequal intentions | "Here are two girls. They both put their brother's lunch in the trash, which made their brother sad. This girl put her brother's lunch in the trash because she was mad at her brother. This girl put her brother's lunch in the trash because his lunch was in a paper bag that looked like trash." |
| Story 12:
Unequal outcomes | "Here are two boys. They both stole food from their friend. This boy stole one granola bar from his friend. This boy stole five granola bars from his friend." |
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Appendix D

Coding scheme for children's justifications of their allocations

Valid justifications (and proportion of all justifications)		Example excerpts
It's not fair (0.02)	<ul style="list-style-type: none"> • Saying it's not fair or wouldn't be fair for someone to have, get, or do more of X. • Saying that if someone got more X, the other person would get less X. 	<p>"That won't be fair if somebody else got more cookies."</p> <p>"If one girl gets more cookies, the second girl will get none."</p>
Both (0.19)	<ul style="list-style-type: none"> • Referencing how both recipients are similar: Both are, like, want, need, have, can have, should have, did, can do, or should do X or the same amount of X. 	<p>"They both cleaned two tables."</p> <p>"They both like cookies."</p> <p>"They both did something bad."</p>
Need/Deficit (0.14)	<ul style="list-style-type: none"> • Referencing a state of need, such as pain, sadness, hunger, or lack of food. • Referencing that someone has none of, has less of, has only a little bit of, or never got to do X. 	<p>"He never played with that game before."</p> <p>"He didn't have breakfast."</p> <p>"He's hungry, and the blue one isn't."</p>
Merit (0.08)	<ul style="list-style-type: none"> • Referencing how much work someone did or how hard-working or lazy someone is. 	<p>"He only cleaned 1 table."</p> <p>"She worked hard."</p>
Cognitive state (0.02)	<ul style="list-style-type: none"> • Indicating that someone was mad or angry. • Indicating what someone thought, knew, or did not know. 	<p>"She was mad at her brother."</p> <p>"She didn't know that her brother's lunch was inside the paper bag."</p>
Stealing more (0.03)	<ul style="list-style-type: none"> • Indicating that one recipient stole more than the other recipient. 	<p>"He stole more granola bars."</p> <p>"He stole 5, and he stole 1."</p>
Other (0.01)	<ul style="list-style-type: none"> • Giving a coherent justification not included in the other valid codes. 	<p>"Then they can trade."</p> <p>"She threw away a whole bag filled with things."</p>
Invalid justifications (and proportion of all justifications)		Example excerpts
Fair/Share/Same (0.05)	<ul style="list-style-type: none"> • Referencing "sharing" or "being fair" without explaining further. • Saying that the recipients have, got, want, need, or eat "the same" X without explicitly mentioning "both" recipients. 	<p>"They like to share."</p> <p>"It's fair."</p> <p>"They like to have the same."</p> <p>"It makes them have the same amount of play time."</p>

Appendix D (*continued*)

Invalid justifications (and proportion of all justifications)		Example excerpts
Want/Like/Have to (0.05)	<ul style="list-style-type: none"> • Saying that someone wants, likes, should get, would be happy to get, or has to do X without explaining why. • Saying that someone can have as much as they want of X. • Saying that one recipient wants X more than the other recipient without explaining why. 	<p>“She likes cookies a lot.”</p> <p>“They’re supposed to get in trouble.”</p> <p>“They would be happy.”</p> <p>“I think she wants to put the blocks in more.”</p>
Transgression (0.08)	<ul style="list-style-type: none"> • Saying that someone transgressed or is “bad” but without comparing the two transgressors. 	<p>“They put it in the trash.”</p> <p>“He stole a lot of granola bars.”</p>
Uninformative (0.34)	<ul style="list-style-type: none"> • Saying something unclear, uninformative, or irrelevant, or simply repeating oneself. 	<p>“I want to.”</p> <p>“It’s not nice to steal it.”</p>
Empty (N/A)	<ul style="list-style-type: none"> • Not providing reasoning. 	

Appendix E. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jecp.2022.105494>.

References

- Damon, W., & Killen, M. (1982). Peer interaction and the process of change in children's moral reasoning. *Merrill-Palmer Quarterly*, 28, 347–367.
- Dunn, J. (2014). Moral development in early childhood and social interaction in the family. In M. Killen & J. G. Smetana (Eds.), *Handbook of moral development* (2nd ed., pp. 135–159). New York: Psychology Press.
- Gray, K., & Graham, J. (Eds.). (2018). *Atlas of moral psychology*. New York: Guilford.
- Killen, M., Pisacane, K., Lee-Kim, J., & Ardila-Rey, A. (2001). Fairness or stereotypes? Young children's priorities when evaluating group exclusion and inclusion. *Developmental Psychology*, 37, 587–596.
- Kochanska, G. (2002). Mutually responsive orientation between mothers and their young children: A context for the early development of conscience. *Current Directions in Psychological Science*, 11, 191–195.
- Köymen, B., Jurkat, S., & Tomasello, M. (2020). Preschoolers refer to direct and indirect evidence in their collaborative reasoning. *Journal of Experimental Child Psychology*, 193, 104806.
- Köymen, B., Mammen, M., & Tomasello, M. (2016). Preschoolers use common ground in their justificatory reasoning with peers. *Developmental Psychology*, 52, 423–429.
- Köymen, B., O'Madagain, C., Domberg, A., & Tomasello, M. (2020). Young children's ability to produce valid and relevant counter-arguments. *Child Development*, 91, 685–693.
- Köymen, B., Rosenbaum, L., & Tomasello, M. (2014). Reasoning during joint decision-making by preschool peers. *Cognitive Development*, 32, 74–85.
- Köymen, B., & Tomasello, M. (2020). The early ontogeny of reason giving. *Child Development Perspectives*, 14, 215–220.
- Kruger, A. C. (1992). The effect of peer and adult-child transactive discussions on moral reasoning. *Merrill-Palmer Quarterly*, 38, 191–211.
- Kruger, A. C. (1993). Peer collaboration: Conflict, cooperation, or both? *Social Development*, 2, 165–182.
- Kruger, A. C., & Tomasello, M. (1986). Transactive discussions with peers and adults. *Developmental Psychology*, 22, 681–685.
- Kuhn, D. (2015). Thinking together and alone. *Educational Researcher*, 44, 46–53.
- Kuhn, D. (2018). A role for reasoning in a dialogic approach to critical thinking. *Topoi*, 37, 121–128.
- Kuhn, D. (2019). Critical thinking as discourse. *Human Development*, 62, 146–164.
- Lane, J. D., Wellman, H. M., Olson, S. L., LaBounty, J., & Kerr, D. C. R. (2010). Theory of mind and emotion understanding predict moral development in early childhood. *British Journal of Developmental Psychology*, 28, 871–889.
- Li, L., Rizzo, M. T., Burkholder, A. R., & Killen, M. (2017). Theory of mind and resource allocation in the context of hidden inequality. *Cognitive Development*, 43, 25–36.
- Li, L., & Tomasello, M. (2021). On the moral functions of language. *Social Cognition*, 39, 99–116.
- Mulvey, K. L., Buchheister, K., & McGrath, K. (2016). Evaluations of intergroup resource allocations: The role of theory of mind. *Journal of Experimental Child Psychology*, 142, 203–211.
- Nucci, L., & Ilten-Gee, R. (2021). *Moral education for social justice*. New York: Teachers College Press.
- Papathomas, L., & Kuhn, D. (2017). Learning to argue via apprenticeship. *Journal of Experimental Child Psychology*, 159, 129–139.
- Piaget, J. (1932). *The moral judgment of the child* (M. Gabain, Trans.). New York: Harcourt, Brace.
- Piaget, J. (1954). *The construction of reality in the child* (M. Cook, Trans.). New York: Basic Books.
- Rizzo, M. T., & Killen, M. (2016). Children's understanding of equity in the context of inequality. *British Journal of Developmental Psychology*, 34, 569–581.
- Schmidt, M. F. H., Svetlova, M., Johe, J., & Tomasello, M. (2016). Children's developing understanding of legitimate reasons for allocating resources unequally. *Cognitive Development*, 37, 42–52.
- Sigelman, C. K., & Waitzman, K. A. (1991). The development of distributive justice orientations: Contextual influences on children's resource allocations. *Child Development*, 62, 1367–1378.
- Smetana, J. G. (1999). The role of parents in moral development: A social domain analysis. *Journal of Moral Education*, 28, 311–321.
- Smetana, J. G., Jambon, M., & Ball, C. (2014). The social domain approach to children's moral and social judgments. In M. Killen & J. G. Smetana (Eds.), *Handbook of moral development* (2nd ed., pp. 23–45). New York: Psychology Press.
- Smetana, J. G., Jambon, M., Conry-Murray, C., & Sturge-Apple, M. L. (2012). Reciprocal associations between young children's developing moral judgments and theory of mind. *Developmental Psychology*, 48, 1144–1155.
- Takagishi, H., Kameshima, S., Schug, J., Koizumi, M., & Yamagishi, T. (2010). Theory of mind enhances preference for fairness. *Journal of Experimental Child Psychology*, 105, 130–137.
- Tomasello, M. (2016). *A natural history of human morality*. Cambridge, MA: Harvard University Press.
- Walker, L. J., Hennig, K. H., & Krettenauer, T. (2000). Parent and peer contexts for children's moral reasoning development. *Child Development*, 71, 1033–1048.
- Zillmer, N., & Kuhn, D. (2018). Do similar-ability peers regulate one another in a collaborative discourse activity? *Cognitive Development*, 45, 68–76.