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Michael T. Rizzo, Leon Li, Amanda R. Burkholder, and Melanie Killen

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# Lying, Negligence, or Lack of Knowledge? Children's Intention-Based Moral Reasoning About Resource Claims

Michael T. Rizzo

New York University and Beyond Conflict Innovation Lab,  
Boston, Massachusetts

Leon Li

Duke University

Amanda R. Burkholder and Melanie Killen  
University of Maryland

In a hidden inequality context, resource allocators and resource recipients are unaware that an unknowingly advantaged recipient possesses resources. The present study presented children aged 3–13 years ( $N = 121$ ) with a hidden inequality vignette involving an accidental transgression in which one resource claimant, who unknowingly possessed more resources than another claimant, made an “unintentional false claim” to resources. This unintentional false claim resulted in depriving another recipient of needed resources. Results revealed that children’s ability to accurately identify the claimant’s intentions was related to how they evaluated and reasoned about resource claims, a previously understudied aspect of resource allocation contexts. Children’s attributions of intentions to the accidental transgressor mediated the relationship between age and evaluations of the accidental transgression and the relationship between age and assignment of punishment to the accidental transgressor. With age, children who negatively evaluated the unintentional false claim shifted from reasoning about lying to a focus on negligence on the part of the unintentional false claimant. This shift reflects an increasing understanding of the accidental transgressor’s benign intentions. These findings highlight how mental state knowledge and moral reasoning inform children’s comprehension of resource allocation contexts.

**Keywords:** moral development, hidden inequality, resource claims, intentionality, fairness

Moral concepts such as fairness, justice, and rights are premised on the recognition of others as equals (Darwall, 2013). That is, individuals are—or should be—equally protected as citizens under the law (Rawls, 1971), equally respected as participants in the construction of procedural rules (Piaget, 1932), and equally entitled

to the exercise of liberties and freedoms (Sen, 2009). The equal treatment of individuals is also central to distributive justice, which concerns how resources should be allocated to recipients. A wealth of research in developmental psychology has focused on children’s conceptions of distributive justice, that is, how children divide resources among themselves and evaluate the allocation decisions of others (Blake et al., 2015; Damon, 1977; Rizzo, Elenbaas, Cooley, & Killen, 2016; Rizzo & Killen, 2016; Schmidt, Svetlova, Johe, & Tomasello, 2016; Turiel, 2015; Ulber, Hamann, & Tomasello, 2015; Wörle & Paulus, 2018).

This research has revealed that young children generally prefer equal allocations of resources (Fehr, Bernhard, & Rockenbach, 2008; Tomasello & Vaish, 2013) but may also take into account situational considerations (e.g., merit or need) that would justify numerically unequal allocations (Paulus, 2014; Rizzo et al., 2016; Rizzo & Killen, 2016; Schmidt et al., 2016; Sigelman & Waitzman, 1991). Research on children’s understanding of inequality (particularly, inequality that is not justified by situational concerns such as merit) has shown that, in many cases, children disapprove of resource inequalities (Turiel, 2015). Children allocate resources to rectify inequalities (Li, Spitzer, & Olson, 2014; Paulus, 2014; Rizzo & Killen, 2016) and also expect others to rectify these inequalities (Elenbaas & Killen, 2016). Moreover, children negatively evaluate peers’ allocation decisions that produce a resource inequality (Cooley & Killen, 2015) and may even prefer to discard a resource rather than create an inequality between recipients (Blake et al., 2015; Shaw & Olson, 2012).

Michael T. Rizzo, Department of Psychology, New York University, and Beyond Conflict Innovation Lab, Boston, Massachusetts; Leon Li, Department of Psychology and Neuroscience, Duke University; Amanda R. Burkholder and Melanie Killen, Department of Human Development and Quantitative Methodology, University of Maryland.

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Correspondence concerning this article should be addressed to Michael T. Rizzo, Department of Psychology, New York University, 4 Washington Place, New York, NY 10003. E-mail: [mtrizzo@nyu.edu](mailto:mtrizzo@nyu.edu)

However, not all types of resource inequalities are readily apparent and easily rectified. When a *hidden inequality* exists, one recipient unknowingly possesses more resources than another recipient. If the unknowingly advantaged recipient requests more resources, the existing inequality may be perpetuated unbeknownst to the allocators or recipients. Evaluating the fairness of decisions in these hidden inequality contexts, therefore, requires looking beyond the numerical outcomes of the allocations. When faced with a hidden inequality, children must also assess the mental states of the recipients to form moral judgments about their claims to resources. Thus, the hidden inequality context is advantageous for investigating how children's understanding of others' mental states relates to their ability to reason about resource allocation decisions. To our knowledge, only one study has investigated children's understanding of hidden inequalities (Li, Rizzo, Burkholder, & Killen, 2017), and many questions remain as to how children navigate the mental and moral intricacies of resource allocation decisions in this type of situation.

### Hidden Inequalities

The hidden inequality context is important to investigate because resource allocation settings in children's daily lives—as well as in broader society—often involve recipients who possess different amounts of resources, and these inequalities among potential recipients are not always apparent. In straightforward allocation contexts, the deliberate violation of equality (e.g., allocating more resources to one of two equally deserving recipients) is a prototypical type of moral transgression, given that equality is a fundamental premise of distributive justice (Rawls, 1971; Sen, 2009). In a hidden inequality context, however, the allocator and recipients do not have information about the existing resource inequality. In such a situation, would it be more fair to allocate equally (divide resources equally between recipients) or to allocate equitably (give more resources to the disadvantaged recipient)?

To investigate children's developing responses to this question, Li et al. (2017) presented children with a hidden inequality vignette in which a resource allocator had two resources to divide between two recipients. Li et al. (2017) found that children without false belief theory of mind (ToM) attributed more positive intentions to an allocator who gave more resources to the recipient who had fewer resources (an unknowingly equitable allocation) than to an allocator who gave more resources to the recipient who had more resources (unknowingly perpetuating the inequality). Children with false belief ToM, however, did not differentiate between these two types of naïve allocators. Thus, Li et al.'s (2017) hidden inequality vignette is useful for linking children's ToM skills to their moral judgments regarding the decisions of a naïve allocator.

What remains to be explored, however, is how children incorporate mental state knowledge into their own evaluations of resource claims. Investigating children's responses to resource claims is important for several theoretical reasons. First, many studies have focused on children's evaluations of the decisions of allocators (e.g., how much should X give out?), with the recipients in these studies evaluating others' distributions of resources (e.g., Rizzo & Killen, 2016; Sigelman & Waitzman, 1991). In many allocation settings, however, resource recipients are active participants in the social context with their own desires, beliefs, and intentions. Recipients may be active participants in resource allo-

cation settings because they may raise claims (e.g., "I deserve more") and negotiate for additional resources. As well, resource claims are morally relevant acts because they potentially affect the welfare of others (e.g., requesting more resources for oneself prevents someone else from receiving those resources). Children are often resource claimants in their daily lives (e.g., explaining why they deserve resources). Thus, assessing children's evaluations of resource claims will shed light on the development of children's perspectives about the fair allocation of resources. As such, a major aim of the present study was to examine how children perceive and evaluate the intentions behind a recipient's claim for resources in contexts where the claims were unknowingly based on a false premise and have the potential to result in a moral transgression.

Second, resource claims allow for moral evaluations based *primarily on intentions*, before observing the morally relevant outcomes. Previous studies have investigated how children link mental state information to their evaluations of moral actions with tangible outcomes, such as unfair allocations of resources (Li et al., 2017) or property destruction (Killen, Mulvey, Richardson, Jampol, & Woodward, 2011). However, young children's assessments of the intentions of an agent differ depending on whether the agent's action produces a negative outcome or a positive outcome (Leslie, Knobe, & Cohen, 2006). In a resource allocation context, the action (distributing resources) and the outcome (equal or unequal amounts between recipients) co-occur. Because the children in studies on resource allocation typically observe the outcomes of allocation decisions, it raises the possibility that the children's assessments of the allocations will be influenced by the outcomes.

Similarly, in the study by Killen et al. (2011), children who heard a vignette about accidental property destruction were asked to make a judgment about the accidental transgressor's intentions after the act occurred. In the case of a resource claim, however, the outcome is not yet known. Only the claim itself has been raised, without additional information regarding whether the claim will ultimately be fulfilled. Because the moral status of the claim depends primarily on the intention motivating the claim, children's evaluations of resource claims may reflect an especially focused assessment of how children link mental state information to the moral status of an action. What remains to be tested is how children link mental state information to the moral status of an action before observing the moral outcome.

Third, by focusing on children's evaluations of resource claims—rather than distributions of resources—the present study yields new insight into the reasons that children use when evaluating resource allocation contexts. In the study by Li et al. (2017), children evaluated a resource allocator who distributed resources equally or unequally to two recipients but did not assess children's reasoning for these evaluations. Plausible motivations for unequal allocations may have included favoritism (e.g., the allocator preferred one recipient over another; Shaw, DeScioli, & Olson, 2012) or a false belief about the recipients' possessions. Research by Nobes, Panagiotaki, and Pawson (2009) has shown that reasons pertaining to negligence also play a significant role in children's understanding of intentions when evaluating unintentional transgressions. A critical difference exists between condemning a false claim on account of lying and condemning a false claim on account of negligence (see Nobes et al., 2009), given that accusa-

tions of lying reflect a stronger moral breach than expectations about negligence, which pertain to carelessness rather than to negative moral intentions. Thus, the form of reasoning that children use to justify their evaluations may reflect the degree to which they understand the situation.

The present study focused on age-related changes regarding reasoning about lying, negligence, and lack of knowledge on the part of an unintentional false claimant in the context of a hidden resource inequality. A shift from reasoning about lying to reasoning about negligence and lack of knowledge would suggest that children improve, with age, at integrating their mental state knowledge into their moral evaluations of an act. Few studies have investigated children's evaluations and reasoning about resource claims (but see Schmidt et al., 2016). Thus, the present study aimed to address this gap and to extend the research on this topic by investigating age-related changes in children's reasoning about resource claims.

### Moral Judgment and ToM

Children's performance on ToM assessments has been linked to their social and moral development (Lagattuta, 2005; Leslie et al., 2006; Smetana, Jambon, Conry-Murray, & Sturge-Apple, 2012), including their understanding of resource allocations (Donovan & Kelemen, 2011). Children with false belief ToM evaluate inequitable resource allocations more negatively (Mulvey, Buchheister, & McGrath, 2016) and allocate resources more fairly (Rizzo & Killen, 2018a; Takagishi, Kameshima, Schug, Koizumi, & Yamagishi, 2010) compared with children who lack false belief ToM. Children's ToM competence has also been assessed in morally relevant contexts. Rather than linking children's moral judgments to their performance on separate, nonmoral theory of mind tasks (such as the prototypic Sally-Anne False Belief task), Killen et al. (2011) assessed the relationship between children's evaluations of an accidental moral transgression (e.g., throwing away a bag containing a peer's special cupcake) and their attributions of false beliefs and intentions to the actor (e.g., What did the actor think was in the bag?). The researchers found that children passed the morally relevant ToM assessment at later ages than they passed the prototypic ToM assessment, and that children's performance on the morally relevant ToM task predicted whether their evaluations of the morally relevant action differed from their attributions of intentions to the actor (Killen et al., 2011); in other words, the negative moral outcome (the destruction of property) interfered with children's ToM proficiency.

Further, children's ability to identify others' mental states may be particularly relevant in contexts involving social inequalities—where one group of individuals holds a higher status, or possesses more resources, than another group. Rizzo and Killen (2018b) investigated how children's status within an inequality (i.e., whether their group was advantaged or disadvantaged by a resource inequality) influenced their ability to accurately identify others' mental states and found that children who were advantaged by an inequality performed worse on subsequent ToM assessments compared with children who were disadvantaged by the inequality. These results suggest that children's ability to identify others' mental states is dependent upon contextual factors, such as the presence of an inequality and one's status within that inequality. The present study extended this literature by examining how a

claimant's false claim to resources in a hidden inequality context relates to children's ability to identify the claimant's true intentions from a third-party perspective.

### Present Study

To examine the relationship between children's moral judgments and their understanding of others' mental states, children ages 3–13 years old evaluated an accidental transgression in the context of a hidden inequality. Specifically, the accidental transgression evaluated by children was an unknowingly advantaged claimant's request for resources, referred to as an "unintentional false claim to resources" in this article. Claiming a need for resources that one does not actually need is a transgression because it potentially deprives another recipient of needed resources, but it is also accidental in this context because the claimant does not know that she or he already had the requested resources before the request.

The present study assessed whether children's intentionality understanding was related to their evaluation of the unintentional false claim and assignment of punishment to the unintentional false resource claimant. The operationalization of an accidental transgression in the form of an unintentional false resource claim is advantageous for exploring the boundaries of children's moral conceptions regarding harm. Previous studies have explored straightforward forms of harm, such as physical harm (Smetana, 1981), psychological harm (Leslie et al., 2006), and property destruction (Killen et al., 2011). The present study investigated how children evaluate resource claims as a category of moral acts.

Previous research on morally relevant theory of mind has often sampled children from ages 3 to 8 years, but even 8-year-olds do not attain ceiling rates of performance on morally relevant theory of mind assessments (Killen et al., 2011). The present study included children from 3 to 13 years of age, thereby sampling a range of ages extending from the age at which children are just beginning to pass explicit ToM assessments (Wellman & Liu, 2004) up to an age at which they would be expected to display mastery of various social–cognitive measures (Hughes & Devine, 2015; Miller, 2013).

### Hypotheses

Research has shown that children's ability to navigate morally and mentally complex situations improves with age (Baird & Astington, 2004; Killen et al., 2011; Sodian et al., 2016). The present theoretical assumption is that intentionality understanding, in particular, is critical for children's developing moral judgments. Thus, we hypothesized (H1) that children's attributions of intentions to an unintentional false resource claimant would mediate the relationship between age and evaluation of the unintentional false claim to resources. We also hypothesized (H2) that children's reasoning about their evaluations of the unintentional false claim to resources would, with age, reflect an increasingly accurate understanding of the mental state of the unknowingly advantaged claimant. Namely, as children come to realize that the unintentional false claimant did not mean to make a false claim, their reasoning accompanying negative evaluations of the act would shift from reasoning about lying to reasoning about negligence. As

well, their reasoning accompanying positive evaluations of the act would, with age, increasingly reference the unknowingly advantaged claimant's lack of knowledge.

In addition to including a direct evaluation of the unintentional false claim to resources, the present study also included a measure of punishment for the unknowingly advantaged claimant. Punishment measures reflect children's understanding of the moral status of agents' intentions, apart from the moral status of the outcomes of the act. In Killen et al. (2011), older children who negatively evaluated the accidental transgression (the destruction of property) nonetheless assigned little punishment to the accidental transgressor. As reasoned by Killen et al. (2011), these children may have recognized that although the outcome of the act was negative, the harmful outcome was not intentional and, therefore, the accidental transgressor did not deserve to be punished. If punishment measures reflect an understanding of intentionality, then in the present study, as well, children's ability to accurately attribute intentions would be expected to predict their assignments of punishments. As such, we tested the hypothesis (H3) that children's attributions of intentions to an unintentional false claimant would mediate the relationship between age and assignments of punishment to the unintentional false claimant. We also predicted (H4) that children's reasoning about punishment would, with age, reflect an increasingly accurate understanding of the mental state of the unintentional false claimant. Reasoning accompanying the endorsement of punishment would be expected to shift, with age, from reasoning about lying to reasoning about negligence, whereas reasoning accompanying the decision not to punish would, with age, be expected to increasingly reference the unintentional false claimant's lack of knowledge.

## Method

### Participants

Children ( $N = 121$ ) were recruited from schools serving middle-income families in the Mid-Atlantic region of the United States. There were three age groups: 3- to 5-years-old ( $n = 48$ ; 22 females;  $M$  age = 4.40;  $SD = .80$ ), 6- to 9-years-old ( $n = 39$ ; 20 females;  $M$  age = 8.47,  $SD = 1.25$ ), and 10- to 13-years-old ( $n = 34$ ; 18 females;  $M$  age = 12.15,  $SD = 1.21$ ). The sample was ethnically diverse with 48 (39.67%) of participants identifying as European American, 29 (23.97%) as African American, 24 (19.83%) as Asian American, 12 (9.92%) as Hispanic, and 8 (6.61%) as "other" or biracial. Written parental consent and verbal assent were obtained for all participants. An a priori power analysis revealed that to detect medium to small effect sizes at  $\alpha = .05$  and power at .08, a sample size of 121 was appropriate for the present analyses.

### Procedure

The study received Institutional Review Board (IRB) approval at the University of Maryland (Project Name: Need-based resource allocations and morally embedded theory of mind; ID: 634051-6). Individually administered sessions were conducted by trained research assistants using laptops. The interview protocol was displayed on Microsoft PowerPoint. Participants' responses were recorded on digital voice recorders

as well as by hand, and all interviews were transcribed for content coding of reasoning assessments and verification of data entry. The protocol consisted of 32 slides with colorful pictures and animations, as well as illustrations of the Likert-type assessments (see Figure 1). At the presentation of the introduction slide, which displayed an audio recorder, the interviewer explained the recording process. At the presentation of the next slide, which displayed the Likert-type scale consisting of smile-to-frown faces labeled from 1 to 6, the interviewer engaged the participant in a warm-up practice task.

The vignette was a short story about two characters, Sam and Alex (gender-matched to the participant), who were told to bring juice for their upcoming class field trip. The following script (boy version shown) was read aloud, accompanied by seven slides illustrating the narrative:

This is Sam. This is Alex. Their class is going on a field trip. And all of the students were told to bring juice for the field trip. Without juice, they will get very thirsty! Look, Sam has a lot of juice boxes at home that he could bring with him on the field trip. But, look, Alex does not have any juice boxes at home that he could bring with him on the field trip. The night before the field trip, Sam went to bed without putting juice in his backpack. While Sam was asleep, his big brother put two juice boxes in Sam's backpack and zipped it up [Sam is shown lying in his bed under a blanket with a black eye mask over his eyes]. In the morning, Sam sees that his backpack is zipped up. Sam grabs his backpack and runs off to school. [Memory check: Did Sam see inside his backpack before he left for school?] At school, before the class leaves for the field trip, the teacher says, "Does anyone need any juice? I have two extra juice boxes for anyone who does not have any juice." Alex says to the teacher, "I do not have any juice boxes." Sam also says to the teacher, "I do not have any juice boxes."

The memory check ("Did Sam see inside his/her backpack before he/she left for school?") assessed whether children understood that Sam lacked access to information about his or her resource possessions. Participants who answered incorrectly ("Yes") were retold the story up to two times. All participants correctly answered the memory check before moving on to the other assessments.

**Attribution of intentions.** After the memory check, participants were assessed on their Attribution of Intentions to the claimant who made an unintentional false claim to resources. Consistent with past research (Killen et al., 2011), this question assessed participants' understanding of the unintentional false claimant's mental states regarding the unintentional false claim. Participants were asked, "Did Sam think he was doing something OK or not OK by saying that he/she does not have juice?" Participants who responded, "OK" were coded as having passed the assessment (1), whereas participants who responded, "not OK" were coded as having failed the assessment (0).

**Evaluation of the false claim.** To assess children's evaluation of the unintentional false claim to resources, participants were asked: "Do you think it was OK or not OK for Sam to say that he does not have juice? How OK or not OK?". The *Evaluation of the False Claim* was assessed on a 6-point Likert-type scale (1 = *really not OK*, 2 = *not OK*, 3 = *a little not OK*, 4 = *a little OK*, 5 = *OK*, 6 = *really OK*). To assess children's reasoning for their evaluation, participants were then asked the follow-up reasoning probe: "Why?"

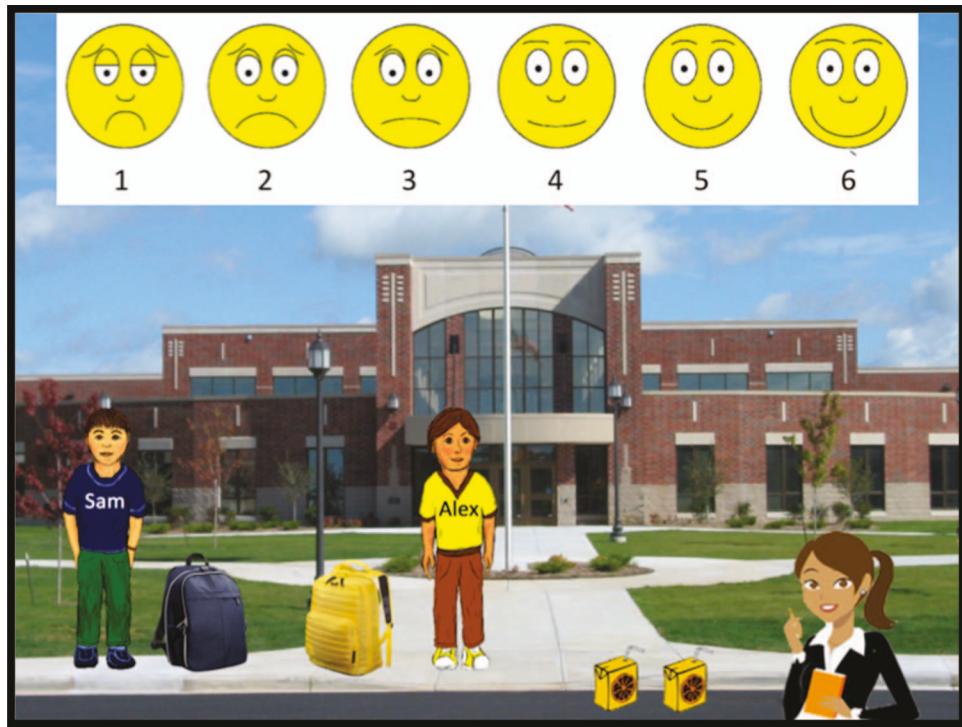


Figure 1. The resource allocation setting with the unknowingly advantaged claimant (Sam), the other claimant (Alex), the resource allocator (teacher), and the Likert-type scale. This picture shows the boy-version; an identical set of slides depicted the same content with girls as the protagonists. See the online article for the color version of this figure.

**Assignment of punishment.** To assess children's *Assignment of Punishment* to an individual who made an unintentional false claim to resources, participants were asked: "Do you think Sam should get in trouble for saying he had no juice?" Children who responded, "No" to the initial question were coded as "0." Participants who responded, "Yes" were then asked the follow-up question: "A little trouble or a lot of trouble?" A little trouble was coded as "1" and a lot of trouble was coded as "2." To assess children's reasoning for their Assignment of Punishment, participants were then asked the follow-up reasoning probe: "Why?"

**Reasoning.** Three research assistants coded the participants' responses using coding categories based on previous literature on children's conceptions of fairness, moral judgments, and theory of mind (Killen et al., 2011; Nobes et al., 2009; Rizzo et al., 2016; Ruck & Tenenbaum, 2014; Sigelman & Waitzman, 1991). The coding system consisted of three target categories: (1) *Lying* (e.g., "She didn't tell the truth"), (2) *Lack of Knowledge* (e.g., "She doesn't know about the juice"), and (3) *Negligence* (e.g., "She should have looked in the bag"). References to these three conceptual categories were then included in the analyses. Participants who referenced other concerns, did not provide a verbal reason, or provided an uncodable response (e.g., "because I just think so") were coded as *Uncodable* and were not included in the primary analyses or figures. Interrater reliability was assessed across three coders on the basis of about 25% of the interviews ( $n = 27$ ), with all Cohen's  $\kappa > .84$ . Responses on the reasoning assessments that made reference to one category were coded with a weight of 1.0,

while responses that made reference to two categories received double-codes such that each code was given a weight of 0.50.

### Data Analytic Plan and Descriptive Statistics

To test our hypotheses that children's Attribution of Intentions would mediate the relationships between Age and Evaluation of the False Claim (H1) and between Age and Assignment of Punishment (H3), two separate mediation analyses were conducted using the standard procedure detailed by Baron and Kenny (1986). To test our hypotheses that children's reasoning for their Evaluation (H2) and Punishment (H4) would change with Age and be related to their Evaluation and Assignment of Punishment, analyses were conducted on participants' references to the three conceptual reasoning categories (Lying, Lack of Knowledge, and Negligence). To examine how children's reasoning was related to their Evaluation and Assignment of Punishment, dichotomous variables were created for participants' Evaluation of the False Claim and Assignment of Punishment measures (Evaluation of the False Claim: OK, Not OK; Assignment of Punishment: No Punishment, Punishment) to determine how children's reasoning differed based on whether they thought the false claim was OK or not OK, and whether they assigned punishment or not. Reasoning assessments for each of these measures were then analyzed with repeated measures analysis of variances (ANOVAs; see Posada & Wainryb, 2008). Preliminary analyses revealed no significant differences by gender. Thus, gender was excluded from the final

analyses. Descriptive statistics regarding the proportion of children in each of the three age groups passing the Attribution of Intentions assessment are provided in Table 1.

Recent research has argued for the importance of establishing a “mature” baseline against which children’s responses can be compared, as well as for validating the proposed measures by ensuring that they are interpreted in the intended manner by a mature sample (Coley, 2000; Nobes, Panagiotaki, & Bartholomew, 2016). To address these important concerns, a pilot sample was collected with adult participants (ages 18- to 28-years-old;  $n = 23$ ). The adult sample was at ceiling for each of the assessments (Attribution of Intentions:  $M = 1.00$ ,  $SD = 0.00$ ; Evaluation of the False Claim:  $M = 5.52$ ,  $SD = 0.67$ ; Assignment of Punishment:  $M = 0.05$ ,  $SD = 0.22$ ), which suggests that adults understood each of the assessments (and, specifically, positively evaluated the unintentional false claim).

## Results

### Evaluation of False Claims to Resources

**Mediation analyses.** A preliminary univariate ANOVA was conducted to examine how children’s Evaluation of the False Claim developed with Age. Results revealed a significant main effect for Age,  $F(2, 118) = 9.36$ ,  $p < .001$ ,  $\eta_p^2 = .14$ . Specifically, the older age group ( $M = 3.62$ ,  $SD = 1.21$ ) evaluated the unintentional false claim more positively than did the middle ( $M = 2.28$ ,  $SD = 1.39$ ;  $p < .001$ ) and younger ( $M = 2.40$ ,  $SD = 1.66$ ;  $p = .001$ ) age groups. The younger and middle age group did not differ in their Evaluations ( $p > .99$ ).

To investigate the hypothesis (H1) that Attribution of Intentions to the false claimant would serve as a mediator between Age and children’s Evaluation of the False Claim, mediation analyses were conducted (Baron & Kenny, 1986). First, Age was a significant predictor of both children’s Evaluation of the False Claim ( $b = .32$ ,  $SE = .04$ ,  $p < .001$ ) and Attribution of Intentions ( $b = .35$ ,  $SE = .013$ ,  $p < .001$ ). Attribution of Intentions was also a significant predictor of Evaluation of the False Claim ( $b = .33$ ,  $SE = .08$ ,  $p < .001$ ). Moreover, in the full mediation model, children’s Attribution of Intentions remained a significant predictor of their Evaluation of the False Claim ( $b = .27$ ,  $SE = .28$ ,  $p = .002$ ), supporting the mediation hypothesis. Age, however, also remained a significant predictor of Evaluation of the False Claim ( $b = .211$ ,  $SE = .042$ ,  $p = .022$ ), indicating that Attribution of Intentions partially mediated the relationship between Age and Evaluation of the False Claim. Approximately 16% of the variance in children’s Evaluation of the False Claim was accounted for by the predictors ( $R^2 = .16$ ). Thus, increased Age was associated with

more positive moral Evaluation of the False Claim to resources, as partially mediated by changes in the accuracy of children’s Attribution of Intentions to the false claimant.

**Reasoning for evaluation of the false claim.** Initial descriptive analyses revealed that 35% of participants referenced the claimant’s Lack of Knowledge, 17% of participants referenced Lying, and 17% of participants referenced Negligence. The remaining 31% of participants did not provide a response or provided a response that did not fit within any of the three conceptual categories (e.g., “I just think so”). Younger children were more likely than children in the middle and older age groups to not provide a response or to provide a response that did not fit within any of the three categories ( $ps < .001$ ). No difference was found between the middle and oldest age groups ( $p = .15$ ). Given that our hypotheses focused on the three conceptual categories, analyses were conducted across participants’ references to Lack of Knowledge, Lying, and Negligence (see Figure 2). To investigate how children’s evaluation of the false claim was related to their reasoning, participants were split into two groups: those who reported that the false claim was “Not OK” ( $n = 78$ ) and those who reported that it was “OK” ( $n = 43$ ).

To investigate the hypothesis (H2) regarding children’s reasoning for their Evaluation of the False Claim, a 3 (Age)  $\times$  2 (Evaluation: OK, Not OK)  $\times$  3 (Reasoning: Lying, Lack of Knowledge, and Negligence) ANOVA with repeated measures on the last factor was conducted. Pairwise comparisons (with Bonferroni adjustments) were conducted to follow up on significant effects. A main effect of reasoning was found,  $F(2, 230) = 12.53$ ,  $p < .001$ ,  $\eta_p^2 = .10$ . This effect was explained by an Age  $\times$  Reasoning interaction ( $F(4, 230) = 7.70$ ,  $p < .001$ ,  $\eta_p^2 = .12$ ) as well as by an Evaluation  $\times$  Reasoning interaction ( $F(2, 230) = 11.79$ ,  $p < .001$ ,  $\eta_p^2 = .09$ ).

Furthermore, there was a significant three-way Age  $\times$  Evaluation  $\times$  Reasoning interaction,  $F(4, 230) = 3.21$ ,  $p = .014$ ,  $\eta_p^2 = .05$ . To clarify the interaction, follow-up analyses were conducted to examine age-related changes in children’s reasoning based on their Evaluation of the False Claim. Specifically, for children who evaluated the false claim to be “Not OK,” younger children were more likely to reference Lying than Negligence ( $p = .028$ ), whereas older children were more likely to reference Negligence than Lying ( $p = .032$ ). No differences were found for children in the middle age group. For children who evaluated the false claim to be “OK,” children in the middle and older age groups were more likely to reference Lack of Knowledge than Lying or Negligence (all  $ps < .001$ ). Children in the older age group were also more likely to reference Negligence than Lying ( $p = .05$ ). No differences were found for children in the youngest age group.

Thus, children reasoned about the false claim differently based on their Evaluation of the False Claim and their Age. Regarding children who evaluated the false claim to be not OK, younger children focused primarily on the wrongfulness of lying about needing the resources (e.g., “She shouldn’t have lied to the teacher about her juice”), whereas older children focused more on the negligence behind the false claim, arguing that the claimant should have looked in their bag (e.g., “She should have checked her bag before saying she needed some”). These results suggest that, even among children who evaluated the false claim to be not OK, the underlying reasons for their Evaluation changed with Age. Further, for children who evaluated the false claim to be OK, it was not

Table 1  
The Proportion of Children in Each Age Group Who Passed the Attribution of Intentions Measure

Age group	( <i>n</i> )	Proportion of children who passed the Attribution of Intentions assessment
Younger (3–5 years old)	(46)	.37
Middle (6–9 years old)	(39)	.46
Older (10–13 years old)	(34)	.79

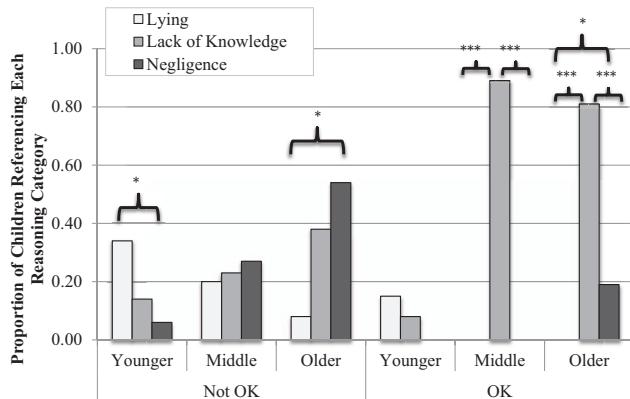


Figure 2. Proportion of children referencing Lying, Lack of Knowledge, and Negligence when reasoning about their Evaluation of the False Claim by Age and Evaluation. All participants were split into groups based on age (Younger, Middle, Older) and whether they evaluated the false claim to be OK or Not OK. Participants who provided *Uncodable responses* are not depicted in the figure. Younger-Not OK ( $n = 35$ ), Middle-Not OK ( $n = 30$ ), Older-Not OK ( $n = 13$ ), Younger-OK ( $n = 13$ ), Middle-OK ( $n = 9$ ), Older-OK ( $n = 21$ ). Asterisks indicate significant differences (\*  $p < .05$ . \*\*\*  $p < .001$ ).

until 6–9 years of age that children reasoned about the false claimant's Lack of Knowledge at high rates, providing further evidence that younger children have a difficult time identifying others' intentions in complex contexts, such as hidden inequality situations.

## Assignment of Punishment

**Mediation analyses.** To examine how children's Assignment of Punishment developed with age, a Univariate ANOVA was conducted across the three age groups. Results revealed a significant main effect for Age,  $F(2, 117) = 8.13, p < .001, \eta_p^2 = .12$ . Specifically, the older age group ( $M = .21, SD = .41$ ) assigned less punishment than did the middle ( $M = .74, SD = .72; p = .005$ ) and younger ( $M = .81, SD = .85; p = .001$ ) age groups. The younger and middle age groups did not differ in their Assignment of Punishment ( $p > .99$ ).

To investigate the hypothesis (H3) that Attribution of Intentions would serve as a mediator between Age and Assignment of Punishment to the false claimant, mediation analyses were conducted (Baron & Kenny, 1986). First, Age was a significant predictor of both children's Assignment of Punishment ( $b = -.33, SE = .019, p < .001$ ) and Attribution of Intentions ( $b = .35, SE = .013, p < .001$ ). Attribution of Intentions was also a significant predictor of Assignment of Punishment ( $b = -.38, SE = .13, p < .001$ ). Moreover, in the full mediation model, children's Attribution of Intentions remained a significant predictor of their Assignment of Punishment ( $b = -.31, SE = .13, p = .001$ ), supporting the mediation hypothesis. Age, however, also remained a significant predictor of Assignment of Punishment ( $b = -.22, SE = .02, p = .016$ ), indicating that Attribution of Intentions partially mediated the relationship between Age and Assignment of Punishment. Approximately 19% of the variance in children's Assignment of Punishment was accounted for by the predictors ( $R^2 = .19$ ). Thus,

increased Age was associated with less Assignment of Punishment to the false claimant, as partially mediated by changes in the accuracy of children's Attribution of Intentions to the false claimant.

**Reasoning for assignment of punishment.** Initial descriptive analyses revealed that 39% of participants referenced the claimant's Lack of Knowledge, 17% of participants referenced Lying, and 12% of participants referenced Negligence. The remaining 32% of participants did not provide a response or provided a response that did not fit within any of the three conceptual categories (e.g., "I just think so"). Younger children were more likely than children in the middle and older age groups to not provide a response or to provide a response that did not fit within any of the three categories ( $ps < .001$ ). No difference was found between the middle and oldest age groups ( $p = .55$ ). Given that our hypotheses focused on the three conceptual categories, analyses were conducted across participants' references to Lack of Knowledge, Lying, and Negligence (see Figure 3). To investigate how children's assigned punishment was related to their reasoning, participants were split into two groups: those who assigned punishment ( $n = 55$ ) and those who did not assign punishment ( $n = 65$ ). One child did not complete this assessment and was not included in the analyses.

To investigate the hypothesis (H4) regarding children's reasoning for their Assignment of Punishment, a  $3$  (Age)  $\times$   $2$  (Punishment: No Punishment, Punishment)  $\times$   $3$  (Reasoning: Lying, Lack of Knowledge, and Negligence) ANOVA with repeated measures on the last factor was conducted. Pairwise comparisons (with Bonferroni adjustments) were conducted to follow up on significant effects. A main effect of reasoning was found,  $F(2, 228) = 11.06, p < .001, \eta_p^2 = .09$ . This effect was explained by an Age  $\times$  Reasoning interaction ( $F(4, 228) = 4.95, p < .001, \eta_p^2 = .08$ ) as well as by a Punishment  $\times$  Reasoning interaction ( $F(2, 228) = 10.27, p < .001, \eta_p^2 = .08$ ).

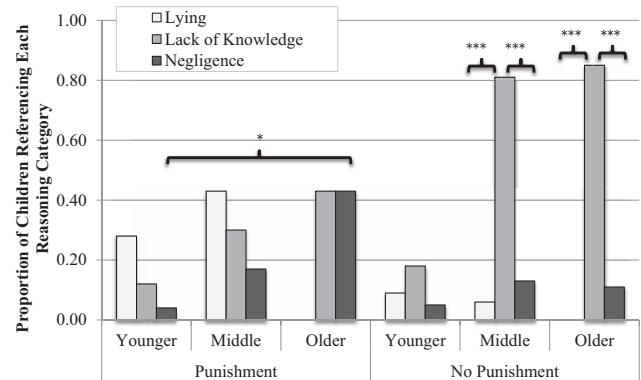


Figure 3. Proportion of children referencing Lying, Lack of Knowledge, and Negligence when reasoning about their Assignment of Punishment by Age and Assignment of Punishment. All participants were split into groups based on age (Younger, Middle, Older) and whether they assigned punishment (Punishment) or did not assign punishment (No Punishment). Participants who provided *Uncodable responses* are not depicted in the figure. Younger-Punishment ( $n = 25$ ), Middle-Punishment ( $n = 23$ ), Older-Punishment ( $n = 7$ ), Younger-No Punishment ( $n = 22$ ), Middle-No Punishment ( $n = 16$ ), Older-No Punishment ( $n = 27$ ). Asterisks indicate significant differences (\*  $p < .05$ . \*\*\*  $p < .001$ ).

Furthermore, consistent with children's reasoning for their Evaluation of the False Claim, there was a significant three-way Age  $\times$  Punishment  $\times$  Reasoning interaction,  $F(4, 228) = 2.97, p = .02, \eta_p^2 = .05$ . To clarify the interaction, follow-up analyses were conducted to examine age-related changes in children's reasoning based on their Assignment of Punishment to the false claimant. Specifically, regarding children who assigned punishment, older children were more likely than younger children to reference Negligence ( $p = .03$ ). No differences were found for the middle age group, or references to Lack of Knowledge and Lying ( $ps > .05$ ). Regarding children who did not assign punishment, children in the middle and older age groups were more likely to reference Lack of Knowledge than Lying or Negligence ( $ps < .001$ ). No differences were found for the youngest age group. Thus, mirroring children's reasoning for their evaluations, children reasoned about whether or not the false claimant should be punished differently based on their Assignment of Punishment and Age.

## Discussion

The novel findings of this study were that children's recognition of the unintentional nature of a false claim to resources mediated age-related changes in their evaluations of the resource claim and their assignment of punishment to the resource claimant. Moreover, children's reasoning provided insights into how the application of mental state knowledge to evaluations of an accidental transgression develops with age. Children who negatively evaluated the false claim increasingly focused on negligence, rather than lying, with age, whereas children who positively evaluated the false claim increasingly focused on how the claimant did not know that they already possessed resources. A similar pattern of results was also found for children's reasoning about their assignment of punishment. Thus, the present study documented novel findings regarding (a) how children evaluate resource claims in the context of hidden inequality; (b) the relationships between children's attributions of intentions, evaluations of resource claims, and assignments of punishment to unintentional false claimants; and (c) how children's reasoning about resource claims differs based on their evaluations of the false claim, whether or not they assigned punishment to the false claimant, and their age.

## Children's Perceptions of Hidden Inequalities

To our knowledge, Li et al. (2017) is the only study to have examined children's understanding of the hidden inequality context, and their study investigated children's evaluations of resource allocations, as opposed to resource claims. In this study, younger children evaluated an unintentional false claim in the hidden inequality context negatively, whereas older children—who displayed a more accurate understanding of the claimant's intentions—provided less negative evaluations of the false claim. These findings indicate that children's understanding of unintentional false claims to resources develops significantly throughout childhood, becoming more complex and incorporating numerous concerns such as perceptions of whether or not the claimant was aware of their false claim, whether or not the claimant was lying (i.e., misrepresenting their awareness of the false claim), and whether or not the claimant was negligent before raising the false claim.

Children's reasoning about their evaluations of the resource claim in the hidden inequality context also showed an important

developmental trend. Consistent with our hypotheses, with age, children increasingly focused on the claimant's mental state (lack of knowledge) when reasoning about their evaluations. Among children who recognized the unintentional nature of the false claim and evaluated the false claim positively, there was an age-related increase in explicit references to the claimant's lack of knowledge. As well, an age-related shift was documented even among children who negatively evaluated the false claim, in which younger children referenced lying and older children focused on the wrongfulness of negligence. The transition from reasoning about lying to reasoning about negligence suggests that older children did indeed incorporate the claimant's mental states into their evaluations (i.e., they were aware that the claimant did not know that they were committing a transgression). Thus, children's increasing references to the negligence of the claimant provided an important insight into how children's evaluations of resource claims develop throughout childhood.

Another factor, in addition to improved ToM capacities, that may explain why references to negligence increased with age is that older children have greater responsibility for taking care of their own possessions. If the children who viewed the vignette considered the characters to be same-age peers, then the older children may have projected more expectations of responsibility (e.g., for packing one's own supplies) than the younger children. It is possible that younger children—who may be less responsible for packing their own bags—expected the protagonist to trust that their parents would pack their bags for them. Future research should examine this possibility by assessing how children's own experiences and responsibilities relate to their perceptions of false claims to resources.

The present results also provide new information regarding whether children think individuals should receive punishment for making a false claim to resources. Punishment measures provide insight into children's understanding of the moral status of an agent's intention that differs from what can be gleaned from evaluation measures alone. When considering an accidental transgression, in particular, children often recognize that while the outcome of the action was bad (e.g., it is bad that someone's special cupcake was thrown away), it does not necessarily mean that the agent was acting on negative intentions or deserves to be punished (Cushman, Sheketoff, Wharton, & Carey, 2013; Killen et al., 2011). Similar results were found in the present study, such that children who were able to accurately identify the unintentional nature of the false claim assigned significantly less punishment than did children who misperceived the act to be intentional.

Children's reasoning for their assignment of punishment also provided an interesting insight into their perceptions of false claims. Diverging from Killen et al. (2011), where participants who did not assign punishment to the accidental transgressor were thought to focus more on negligence, in the present study, children who assigned punishment to the false claimant increasingly focused on negligence with age. One possible explanation for this discrepancy is that the accidental transgressor in Killen et al. (2011) actually acted on a positive, prosocial intention (to help clean up the classroom), whereas the unintentional false claimant in the present study acted on a neutral intention (to acquire resources for one's own benefit). It is possible that children are more lenient when it comes to punishing those who are negligent but

have positive intentions than when punishing those who are negligent while only looking out for themselves.

Thus, the present results extend our understanding of how children perceive resource claims, particularly those involving a hidden inequality between resource claimants. Resource allocation decisions are more than mathematical and involve more than quantities of resources to be given or received (Rawls, 1971; Sen, 2009). Rather, resource allocation decisions occur in socially situated settings involving resource allocators, who act on the basis of their intentions and beliefs, and claimants, who also act on the basis of their own needs and mental states. As such, the present study contributes to the emerging consensus that resource claims also constitute morally relevant actions and are recognized as such by children (see also Schmidt et al., 2016).

Resource claims, in particular, allow for a focused assessment of how children's ability to accurately identify others' mental states relates to their evaluations of accidental transgressions in the absence of immediately observable morally relevant outcomes. The outcomes of moral actions have been shown to influence children's attributions of mental states to actors (Killen et al., 2011; Li et al., 2017; Rizzo & Killen, 2018b). Here, children evaluated the moral status of an action—the resource claim—in the absence of any co-occurring information about the outcome of the resource allocation. Even in the absence of information about the outcomes of a moral action, children's intentionality attributions toward a moral action informed their evaluations of the action. Thus, these findings are important for documenting the link between children's understanding of intentions and moral actions as such in their moral development. Given that hidden inequality contexts are undoubtedly frequent occurrences in children's daily lives—children often do not know who has what resources at home—future research should continue to examine this important context and how it may be used to assess the role of mental state information in children's understanding of resource allocations.

### Intention Understanding in Moral Judgment

Extensive research has documented how false-belief ToM understanding relates to children's moral evaluations in numerous contexts (Mulvey et al., 2016; Smetana et al., 2012; Takagishi et al., 2010). Recently, however, researchers have called for an investigation of a broader range of ToM assessments when investigating how mental state understanding influences individuals' thinking (Miller, 2013). We measured mental state knowledge by assessing children's attributions of an individual's intentions within the context. This measure of intentionality attribution was found to be significantly predictive of moral evaluations and assignments of punishment. The attribution of intentions assessment is similar to the false belief assessment in that both assessments elicit inferences about others' mental states, which are known to differ from one's own mental states. Attributions of intentions are especially important to assess when evaluating recipients' claims to resources because the intentions of the resource claimant determine the moral status of the claim. When resources are scarce, or when resources are necessary for avoidance of harm (as in our study), then the intentions behind—and implications of—resource claims may gain additional significance.

The findings provided novel evidence that children's social-cognitive ability to accurately attribute intentions to others plays

an important role in their moral judgments. Consistent with our hypotheses, the developmental patterns indicated that children's developing ability to accurately infer others' intentions in morally relevant contexts mediated the age-related changes in their evaluations of false claims to resources and their assignment of punishment to individuals who make those false claims. That is, children's attributions of intentions to the unintentional false claimant explained the relationship between age and children's evaluations and assignment of punishment.

This is the first study, to our knowledge, to examine relationships between mental state knowledge and moral judgments about resource allocations from early childhood through middle and late childhood. Previous studies (e.g., Killen et al., 2011; Takagishi et al., 2010) have focused on false belief ToM competence that is achieved by 5 years of age, with limited conclusions on the connections between ToM and morality in middle and late childhood. Yet, clearly, conflicts stemming from misattributions of intentions and morally relevant decisions occur throughout life. More importantly our results showed that a thorough understanding of resource claims continues to develop until as late as 10 to 13 years of age. As with the results of Killen et al. (2011), these results suggest that children's ability to incorporate mental state knowledge into their moral judgments does not simply coincide with mastery of nonmoral false belief tasks at 4 or 5 years of age but rather emerges over a protracted developmental trajectory.

### Limitations and Future Directions

Many questions remain as to how children's intentionality understanding informs their evaluations of actions within the resource allocation context. For one, the present finding that intentionality understanding continues to develop into as late as 10–13 years of age was novel. Why do children, who typically master first-order false belief at 5 years (Wimmer & Perner, 1983) and second-order false belief at 7–8 years (Miller, 2013), struggle with the intentionality assessment into late childhood? One possibility is that morally relevant actions exert an "interference" effect on the accuracy of mental state inferences, as even adults are prone to being influenced by moral considerations when attributing mental states (Donovan & Kelemen, 2011; Guglielmo, Monroe, & Malle, 2009). A worthwhile direction of future research may be to investigate what makes morally relevant intentionality attribution especially difficult for children and adults.

A novel component of the present study is that children's evaluations of resource claims were studied separately from their evaluations of resource allocations. Whereas previous research (Li et al., 2017) has studied resource allocations in isolation from resource claims, it will be important for future research to investigate children's evaluations of allocators, claimants, and their interactions simultaneously and within the same settings. Resource allocation contexts are dynamic, involving interactions between both allocating and receiving parties. Analogously, psycholinguistic research on communication has benefitted tremendously from not only studying language comprehension and language production in isolation but also from studying how production and comprehension interact dynamically in communicative exchanges (Pickering & Garrod, 2004).

Another question for future research concerns how children evaluate resource allocators' distributions in light of the claims

raised by recipients. An allocator who decides to allocate equally between two parties, despite one party claiming a greater need for resources, may or may not be committing a moral transgression depending on the allocator's mental state, the legitimacy of the claimants' requests, and other factors. As well, claimants may raise conflicting claims to resources, because claimants may request resources for different reasons (Schmidt et al., 2016). How might children evaluate resource claims in light of the other, potentially legitimate claims being raised in a given situation? For instance, if a given claimant expresses an urgent need for a certain resource, then would it be a moral transgression for another claimant to request the resource on the basis of merit or procedural rules?

Another important limitation of the present study, and direction for future research, is that it is possible that children misinterpreted the evaluation and attributions of intentions questions. For example, children may have misinterpreted the question "Do you think it was OK or not OK for Sam to say that she/he does not have juice?" to be asking whether it was factually OK or not OK for Sam to say that she/he does not have juice. This interpretation would have led children—even those who possessed the ToM competence to recognize that the act was not morally blameworthy—to say that the action was factually not OK, which would mean that the present results underestimate young children's ability to accurately identify others' mental states. To control for this possibility, a comparison sample was collected with adult participants ( $n = 23$ ) to assess the responses of people with mature levels of ToM competence and language comprehension. These results revealed that adults interpreted the questions in a moral, rather than factual, sense, but future research should continue to examine this distinction by adding follow-up probes to determine how children are interpreting the questions.

Additionally, Nobes et al. (2016) demonstrated how even young children focus more on intentions than outcomes following an act when making trait attributions (e.g., "Is Sam a good or bad person?") than when evaluating the moral status of an action (e.g., "Is what Sam did okay or not okay?"). The goal of the present study was to examine the relation between children's understanding of others' mental states and their evaluations of actions, not agents. However, an interesting direction for future research would be to directly examine the role of ToM in children's attributions of traits (e.g., nice/mean, good/bad, naughty/not naughty) to agents after their actions. Relatedly, it is also possible that the fixed order of the questions used in the present study primed participants to interpret the assessments in an unintended manner. Nobes et al. (2016) also documented how the wording of a previous question (e.g., an agent-focused trait attribution assessment or an action-focused evaluation) can influence how children respond to a subsequent punishment assessment, with children in the agent-focused question condition assigning punishment more in line with intentions than those in the act-focused question condition (also see Bearison & Isaacs, 1975; Nelson, 1980). The present study focused on the mediating role of children's understanding of others' intentions in their developing act-based evaluations and punishments. Future research, however, should continue to investigate these questions to determine if children's understand-

ing of others' intentions also relates to their agent-focused trait attributions.

A final limitation of the present work, however, is that despite the important insights provided by children's verbal reasoning for their evaluations and assignment of punishment, it is important to remain cautious when interpreting children's verbal reasoning data. Given that the youngest children were significantly more likely to provide no response or to provide an uncodable response, it is possible that younger children are more aware of these concerns than they are able to articulate, which would potentially suggest an earlier understanding of these concepts. Additionally, a subset of participants used counterintuitive reasoning to justify their evaluations and assignment of punishments (e.g., reasoning about Lack of Knowledge to justify why the claim was not okay [17%] and assigning punishment [11%]). It is possible, for example, that children were referencing Lack of Knowledge as a mitigating factor for why the claim was "a little bit not okay" as opposed to "really not okay." It is important for future research to continue to investigate these situations experimentally.

In conclusion, the present study provided novel evidence regarding how children's understanding of others' mental states is intricately linked with their perceptions of resource claims in contexts of hidden inequalities. Children are both the victims and the perpetrators of inequalities. Investigations into the developmental trajectories of children's conceptions of fairness may be informative to societal efforts to address inequalities. Social inequality has become an important topic in societal discourse and, thus, understanding its developmental origins will be both significant and timely.

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