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Opinion Versus Knowledge: The Influence of Testimony Format on Children's Judgments in Morally Relevant Contexts

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ABSTRACT

Research Findings: To test children's use of testimony of others, 3 – 9 years ($N = 227$) made judgments about a potential peer transgression in which the intentions of the protagonist were ambiguous, after hearing two different forms of testimony. The 2 forms of testimony were (a) opposing *opinion-based* testimony from an adult authority versus a peer consensus group and (b) *knowledge-based* testimony (eyewitness testimony) that was counter to the participants' initial judgments. Findings revealed that when testimony was presented in an opinion-based format, children were likely to side with the opinion that reflected their own interpretation of the peer encounter, regardless of whether the opinion came from a peer consensus or an adult authority. However, when knowledge-based testimony was introduced in support of the opposite of children's initial interpretation of the ambiguous peer encounter, children most often changed their initial judgment to align with the new testimony. That is, children used knowledge-based testimony but not opinion-based testimony to evaluate a potential transgression. **Practice or Policy:** These findings demonstrate that the way in which testimony is delivered to children has a direct influence on their decision making about peer interactions and has relevance for teacher–student discourse in the classroom.

A number of recent studies have shown that young children are critical consumers of information from others (Chen, Corriveau, & Harris, 2013; Fusaro & Harris, 2008; Jaswal, Carrington Croft, Setia, & Cole, 2010; Koenig, Clement, & Harris, 2004). That is, rather than automatically accepting information from others, children selectively decide whether to accept others' testimony (Boseovski, 2012; Jaswal & Neely, 2006). For example, young children accept testimony supported by three individuals who form a consensus over one individual dissenter (Chen et al., 2013; Fusaro & Harris, 2008) and prefer to learn new facts from an adult rather than a child (Jaswal & Neely, 2006; VanderBorghet & Jaswal, 2009). These studies indicate that from as early as the preschool years, children are aware that some people are more likely to provide accurate testimony than others.

What has not been studied, however, is whether children's critical use of testimony information can be generalized to situations in which children make morally relevant decisions, such as deciding who is the victim and who is the transgressor in a morally relevant social interaction. The majority of previous research on children's selective learning from others has focused on children's judgments in more obviously pedagogical contexts, for example, when learning of the names, functions, or characteristics of novel objects or entities (Birch, Vauthier, & Bloom, 2009; Chen et al., 2013;

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Einav, 2014; Fusaro & Harris, 2008; Koenig & Harris, 2005). Little is known, however, about how children use testimony information when acquiring knowledge about morally relevant social encounters. Therefore, in the current study, we investigated the role of testimony when children make inferences about peer transgressions and specifically whether testimony format (opinion based vs. knowledge based) influences children's acceptance of others' testimony in this context.

The Role of Testimony Format: Opinion Versus Knowledge

One important but underinvestigated aspect of children's selective learning from others is how children evaluate different formats of testimony when they decide whether to accept information, particularly when that testimony is provided in less explicitly pedagogical contexts. Previous studies have mostly examined the role of *opinion testimony* in children's learning, often by introducing informants who propose beliefs or thoughts (Fusaro & Harris, 2008). For example, the majority of studies on testimony have used opinion information from others, such as "They will show us which they *think* is ..." (Corriveau, Kim, Song, & Harris, 2013).

Few studies thus far have examined how children weigh opinion testimony versus other types of testimony such as *knowledge testimony*, through which informants transmit an accurate fact about the given task rather than an opinion. It has been shown, however, that both children and adults differentiate between statements of *opinion* versus *fact*. For example, statements of religious belief are judged to be less objective than statements of factual belief (Heiphetz, Spelke, Harris, & Banaji, 2013, 2014). Reflecting such objectiveness in fact-based statements, eyewitness testimony often plays a crucial role in everyday settings, such as the police investigation of crimes, because of its purported high level of accuracy (Kebbell & Milne, 1998; Memon, Gabbert, & Hope, 2004). Thus, it may be that the cues children use to decide whether to accept others' opinion testimony (e.g., the number of individuals sharing the same opinion, the authority of informants) do not generalize to all social contexts in which children make decisions about what they experience in everyday peer encounters. Rather, in some circumstances children may prefer to rely on testimony that purports to convey more accurate information, such as knowledge-based testimony.

Supporting this proposition, previous research has shown that children are sensitive to the accuracy and expertise of others' testimony when determining from whom to learn. For example, when children learn new words or the rules of games, they selectively rely on informants who have a verified history of having provided accurate information in the past rather than informants with a history of inaccurate past performance (Birch, Vauthier, & Bloom, 2009; Einav, 2014; Koenig & Harris, 2005; Pasquini, Corriveau, Koenig, & Harris, 2007). Furthermore, previous studies have found that children change their initial perception about an object or image when testimony supporting another interpretation includes elaboration on the counterintuitive nature of the claim (reflecting a more detailed knowledge-based form of testimony) but not when the testimony merely introduces a counterintuitive claim with no further explanation (Lane, Harris, Gelman, & Wellman, 2014).

For example, in one study by Lane et al. (2014), children heard counterperceptual claims regarding an object (e.g., calling a bar of soap a "rock"). Half of the children heard testimony emphasizing the distinction between the object's appearance and reality (e.g., "This looks and feels like a rock. But really and truly it's not a rock. Really and truly this is soap"), whereas the other half of the children heard a simple explanation of the object with no acknowledgment of the appearance-reality discrepancy ("This is soap"). Children who heard the more factually formatted testimony were more likely to agree with the counterperceptual claim than children who heard a simple explanation of the object, demonstrating one facet of the role of testimony format in children's acceptance of novel information.

Similarly, another study revealed that children were more likely to accept testimony when informants used a statement that emphasized their knowledge when explaining why the label for

an object conflicted with children's initial perception. When children were shown an ambiguous cat-like animal with some dog-like qualities and were told that it was in fact a dog, they were more likely to believe their informants' testimony when it was put in a strongly emphasizing statement ("You're not going to believe this, but this is actually a dog") versus a less emphasizing statement ("This is a dog"; Jaswal, 2004).

Thus, prior studies have shown that children are more likely to accept testimony that conveys detailed or accurate knowledge. Furthermore, some studies have shown that children's endorsement of accurate knowledge testimony is linked with their awareness of which informants have expertise in the given area (e.g., Boseovski & Thurman, 2014). For example, Boseovski & Thurman (2014) found that young children relied on a zookeeper rather than their mother when deciding which informant had correct information about a novel animal. These findings illustrate children's sensitivity to the accuracy of their informants' knowledge and highlight how, in some contexts, knowledge is perceived to be tied to expertise.

Previous studies, however, have commonly introduced two conflicting testimonies *at the same time*. For instance, previous work has presented two or more informants with opposing opinions and asked children to choose between them (Chen, Corriveau, & Harris, 2013; Fusaro & Harris, 2008; Jaswal, 2004; Koenig et al., 2004; Lane et al., 2014). This approach does not allow for direct tests of whether one type of testimony could be used to override children's previous decision based on another type of testimony. Furthermore, previous studies have mostly focused on children's judgments about naming an object or an animal; thus, the role of testimony format in other social contexts, including peer encounters with morally relevant concerns, is not yet known.

In order to address these gaps in the literature, the central goals of the current study were to determine whether children would (a) rely on opinion testimony at all when making decisions about whom to blame for a potential moral transgression; and (b) take knowledge-based testimony (a more accurate or verified form of testimony) into account in the same context in order to override their initial judgment, which was made after hearing opinion-based testimony.

Opinion Testimony: Authority Versus Peer Consensus

Many social cues can be used to infer whose testimony is likely to be more accurate in addition to past evidence attesting to that fact. For example, young children have been shown to perceive adults to be more reliable sources of information than children in some contexts (e.g., learning the meaning of new words), and thus adults are often preferred over children as sources for learning new information (Jaswal & Neely, 2006; Taylor, Cartwright, & Bowden, 1991). Such inferences about accuracy fail, however, when children accept the opinion of several peers who form a social consensus over the opinion of a dissenter, even when the opinion testimony coming from the consensus is clearly misleading (Haun & Tomasello, 2011; Walker & Andrade, 1996).

Thus, preference for testimony provided by a group over an individual and preference for testimony provided by an adult over a child are both established components of children's selective learning from others' testimony. But whose testimony do children trust when these two sources of information are in conflict? The current study contrasted the opinion of a peer group and the opinion of an adult in order to examine which would be more relevant to children's decisions when children made judgments in morally relevant situations. In addition to measuring children's agreement with one source (adult vs. children) over the other, we measured children's reasoning for their decisions in order to investigate why children chose to agree with one opinion over the other and whether they explicitly acknowledged receiving testimony at all when explaining how they arrived at their decision.

The Present Study

In order to investigate the roles of opinion testimony and knowledge testimony from adults and peers in a morally relevant peer interaction context, we examined 3- to 9-year-old children's inferences about events depicted in a morally salient peer encounter. In these events, the intentions of a potential transgressor were ambiguous and could be interpreted as either negative (i.e., person A pushed person B) or neutral (i.e., person B fell down). Children first heard opinion-based testimony regarding the peer encounter ("I *think* ...") and were asked to make an interpretation about the ambiguous encounter. Next children heard a new knowledge-based form of testimony ("I *saw* ...") that conflicted with their initial appraisal and were asked whether they would like to change their answer.

Our research questions focused on (a) whether children would agree with opinion-based testimony from an individual adult or a group of children and (b) whether children would change their initial answer (established after hearing opinion-based testimony) on hearing knowledge-based testimony in support of the alternative interpretation. We expected that when given new testimony based on an informant's knowledge (e.g., "the individual *saw* it") rather than on his or her opinion (e.g., "the individual *thinks* so"), children would be more likely to endorse the new knowledge-based testimony, and thus the new testimony would change children's initial perception, which was based on opinion testimony.

Previous studies have revealed that children as young as 3 years of age are able to recognize that looking leads to knowing (Pratt & Bryant, 1990; Whitcombe & Robinson, 2000). That is, children expect someone who looked at an object to know what it is, as opposed to someone who had not observed the object, implying that visual access is related to accurate knowledge (Pillow, 1989). Drawing on these prior studies, our study aimed to examine whether claims based on eyewitness (or knowledge-based) testimony are more readily accepted than other claims based on opinions. Given the ambiguous nature of the social interaction, we formulated several hypotheses for this study. Our first hypothesis predicted that testimony that emphasized the informants' knowledge of the interaction would be powerful enough to lead children to change their initial response.

When children were introduced to opinion testimony in the initial phase of the interview, it was an open question as to whether children would agree with the peer group or with the adult. Previous studies have supported both informant numbers (consensus) and informant age (adult vs. child) as salient factors for children's use of others' testimony. Thus, for the second hypothesis, we proposed two competing possibilities: (a) Children may give priority to the number of informants sharing the same opinion and agree with the majority group (composed of children) over the adult, because studies have shown that children are sensitive to consensus among their informants (Clément, Koenig, & Harris, 2004); or (b) children may trust an adult more than several peers, as they may infer that adults are more knowledgeable than children about what transpired in ambiguous situations (VanderBorght & Jaswal, 2009).

Similarly, for our third hypothesis, we had two different possible predictions for children's reasoning. When asked for the reasons for their judgments made after hearing opinion testimony ("Why do you think so?"), (a) children might refer directly to the testimony of the informants (e.g., "The adult's opinion is always right") given that children have been found to be highly sensitive to informants' testimony in an appraisal of the encounter (Clément et al., 2004; VanderBorght & Jaswal, 2009); or (b) children might refer to their own interpretations as the basis of their initial judgments (e.g., "I think he is being mean to her") given that for moral contexts, children have been found to formulate their own viewpoints about the moral consequences of actions (Smetana et al., 2014).



Figure 1. Image of ambiguous peer interaction. This figure depicts two children outside with one child on the ground and the other child standing nearby. There were two versions: one with male children and one with female children depicted in the peer encounter. © 2013 Joan Tycko, Illustrator.

Method

Participants

The sample included a total of 227 children (M age = 6.82 years, age range = 3.01–9.53 years; 113 females). The participants were recruited from schools serving a middle-low-income to middle-high-income population in an urban city in Korea. Korea is a very homogenous country in which the majority of residents have the same ethnicity. All 227 children who participated in this study identified themselves as Korean.

Design

Participants were shown (a) a picture card with an ambiguous social interaction scenario drafted by an illustrator (see Figure 1) and (b) a photo image of four people (three children and one adult) who were pointing to one of two small comment boxes that indicated their opinions (i.e., push vs. fall)

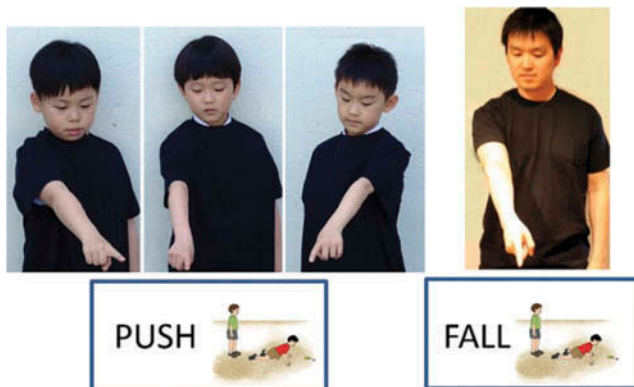


Figure 2. Photo image of a three-peer consensus and a single adult dissenter proposing different opinions. There were two versions: one with male individuals and one with female individuals. The opinions of push and fall were counterbalanced between the three-peer consensus and the single adult dissenter.

about the ambiguous scenario (see Figure 2). The photo images of informants were gender matched to the participants and depicted Korean children and adults. Three trained experimenters conducted interviews: the first author, the fourth author, and one research assistant. All experimenters were fluent in Korean and conducted interviews in Korean, which was the participants' first language. All responses were written down by the interviewer as children responded verbally to the study questions. Upon completion of the interviews, all responses were translated into English by the first author, who is bilingual.

Procedure

Ambiguous Peer Encounters

Participants viewed a digital image of an ambiguous peer interaction. The image depicted two children outside, with one child who had fallen on the ground with a spilled juice box and the other child standing nearby (see Figure 1). The ambiguity lies with whether the onlooker pushed the actor down or merely witnessed an accident. Thus, one interpretation of this picture could be "One child *pushed* the other child down" (negative intention); another interpretation could be "One child *accidentally fell down*" (neutral intention). After showing this picture to children, the experimenters explicitly acknowledged that they themselves did not know what happened in the picture by saying, "I don't know what happened here. But let's ask what these people think." This was done to eliminate speculation as to whether the experimenter actually knew what had really occurred in the situation. This picture was based on McGlothlin and Killen's (2006) Ambiguous Pictures task with one minor change. The child who had fallen down was next to a spilled juice box, and the onlooker was standing behind him or her (in contrast to the children being next to a swing, as was used by McGlothlin & Killen, 2006; see Figure 1).

Informant Testimony: Opinion Based

After children viewed the ambiguous peer encounter picture, a photo image of a three-peer consensus and a single dissenter adult proposing different opinions was presented (see Figure 2). The experimenter explained that the children were "kids your age" and the adult was "a grownup like your mom" (similar to Jaswal & Neely, 2006). One informant side expressed an opinion that attributed a negative intention (i.e., the experimenter read out loud, "These children *think* that she pushed her"), whereas the other informant side expressed an opinion that attributed a neutral intention (i.e., the experimenter read out loud, "This adult *thinks* that she fell down").

Evaluation (negative, neutral) was counterbalanced between subjects: In 50% of experimental sessions, the judgment of push was expressed by the three-child consensus and the judgment of fall was expressed by the single adult (first condition). The other 50% of experimental sessions were the opposite pattern (the judgment of push was expressed by the single adult and the judgment of fall was expressed by the three-child consensus (second condition). After hearing differing opinion-based testimony from one adult versus three children, participants were asked to decide what happened here (push or fall). That is, they were asked whether they agreed with the one adult or the three children.

Informant Testimony: Knowledge Based

After children made their initial interpretation of the ambiguous peer encounter, a new piece of testimony based on knowledge was introduced in support of the opposite interpretation. The new testimony used the verb *see* (e.g., "Actually, these three peers *saw* that it was a push"). This knowledge testimony was different from the previous opinion testimony in that it delivered knowledge information that the informant(s) witnessed. This knowledge testimony was always provided in

a counterprobe that supported the opposite of what children originally chose. The type of informant whose opinion-based testimony the child did not agree with was the type of informant to give the knowledge-based testimony. For example, if a child agreed with an adult who said that it was a fall in the first phase, the child heard three peers say that they saw that it was a push (i.e., “Actually, these three peers *saw* that it was a push”). If a child agreed with the three peers who said that it was a fall in the first phase, the child heard an adult say that he saw that it was a push (i.e., “Actually, this adult *saw* that it was a push”). Then the experimenter again asked children to determine what happened here (push or fall) by asking them if they wanted to change their initial response.

Measurement Items

Children responded to three dependent measures: (a) *agreement decision after hearing opinion testimony from peers versus an adult* (children were asked “What do you think happened here?”; 0 = agreement with adult, 1 = agreement with peer group), (b) *justification for agreement* (children were asked “Why do you think so?” in an open-ended format), and (c) *decision change after hearing counterprobed knowledge-based testimony* (children were asked “Can you tell me once more what happened here?”; 0 = original answer not changed, 1 = original answer changed).

Coding and Reliability

Participants’ justifications for their agreement decisions were collected only after children heard opinion testimony, not after the knowledge testimony counterprobe. Participants’ justifications were content coded for quantitative analysis into one of two conceptual categories: (a) *reference to testimony* (e.g., “Because this adult told me that it is a push,” “They told me that she fell down”) or (b) *own interpretation* (e.g., “Because I think that she wanted to push her,” “Because I figured it out myself that he just fell down by looking at the picture”). All children’s responses fell into one of the two categories; no responses were categorized as both. Three coders conducted the coding. Prior to coding, 30% of the interviews ($n = 68$) were coded for reliability (Cohen’s $\kappa = .87$).

Analysis Plan

Given the absence of any gender differences and age differences for the dependent variables, analyses were collapsed across gender and age. In order to test our hypotheses, we conducted a series of binomial tests to test whether responses were different from the probability of responding at chance (50%). In addition, a series of chi-square tests of association were conducted to determine whether there was a relation between the agreement decision and the condition a child received.

Results

Children’s Use of Opinion-Based Testimony: Peer Consensus Versus One Adult

Agreement Decision

To examine whether children would agree with the peer group or the adult when they interpreted an ambiguous social encounter, we conducted a binomial test. Combining both conditions (i.e., the first condition in which three peers said “push” and the second condition in which an adult said “push”), we tested participants’ judgments against the probability of responding at chance (50%). It is surprising that approximately half of the children agreed with the peer group (49%, $n = 111$), whereas the other half agreed with the adult (51%, $n = 116$), a result that did not differ significantly from chance ($p = .79$, binomial test).

In addition, a chi-square test of association was conducted to determine whether there was a relation between the condition that a child received and his or her agreement decision. The result

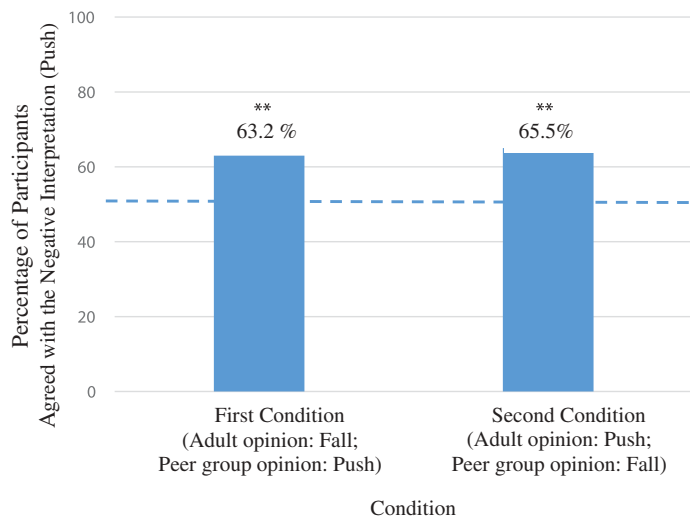


Figure 3. Percentage of participants who agreed with the negative interpretation (push); all other participants agreed with the neutral interpretation (fall). Asterisks indicate cases in which more children agreed with push than would be expected by chance. $^{**}p < .01$.

showed that the tendency to agree with the peer group or the adult differed significantly in the two conditions, $\chi^2(1, N = 227) = 18.63, p < .001$.

To further probe how children’s agreement decisions differed in the two conditions, we examined children’s judgments separately for each condition (see Figure 3). Participants’ judgments were tested against the probability of responding at chance (50%) using binomial tests. In the first condition, in which the peer group voiced the negative interpretation (“It is a push”) and the adult voiced a neutral interpretation (“It is a fall”), the majority of children (63.2%, $n = 72$) agreed with the peer group, a pattern that differed significantly from chance ($p = .006$, binomial test). That is, more children agreed with the peer group who advocated negative intentions than the adult who advocated neutral intentions. In the second condition, in which one adult voiced the negative interpretation (“It is a push”) and the peer group voiced the neutral interpretation (“It is a fall”), the majority of children (65.5%, $n = 74$) agreed with the adult, a pattern that differed significantly from chance ($p = .001$, binomial test). That is, more children agreed with the adult who advocated negative intentions than the peer group who advocated neutral intentions.

Children’s agreement with the negative interpretation (“It is a push”) did not differ significantly by condition, $\chi^2(1, N = 227) = 0.134, p = .714$, indicating that overall children were likely to agree with the informant(s) who proposed the negative interpretation of the ambiguous encounter, regardless of whether this opinion came from a peer group or from an adult.

Justification for Decision

When reasoning about their agreement decision, 214 children (94.3%) referenced own interpretation and three children (1.3%) used reference to testimony; 10 children’s responses were either uncodable or missing. Thus, the second hypothesis was confirmed for reasoning. Overwhelmingly children referred to their own interpretation of the scenario. Participants’ content-coded reasoning was tested against the probability of responding at chance (50%) using a binomial test. Overall, most children (94%, $n = 214$) based their judgment on their own interpretation of the ambiguous peer encounter, a pattern that differed significantly from chance ($p < .001$). Children’s justification responses did not differ significantly by condition, $\chi^2(1, N = 217) = 0.39, p = .53$, indicating that children were likely to reference their own interpretation regardless of which condition they received.

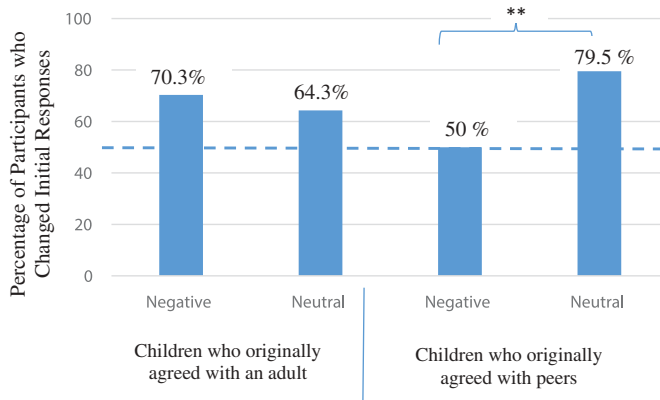


Figure 4. Percentage of participants who changed their initial responses on hearing the new knowledge-based testimony, by children's initial agreement with adult or peer claims and by negative (push) or neutral (fall) interpretation. All other participants did not change their responses. * $p < .05$. ** $p < .01$. *** $p < .001$.

Children's Use of Knowledge-Based Testimony

Next analyses were conducted to determine whether participants changed their initial judgments after hearing a new counterprobed form of knowledge-based testimony. Combining both conditions, we tested participants' responses against the probability of responding at chance (50%) using binomial tests. The majority of children (64%, $n = 146$) changed their initial answer to the opposite interpretation of the ambiguous interaction on hearing knowledge-based testimony, a pattern that differed significantly from chance ($p < .001$).

To further probe children's change of judgment, we examined their initial responses separately in terms of whose opinion (peer group or adult) they agreed with in their original response (see Figure 4). First children who originally agreed with the adult were examined. The majority of these children (68%, $n = 79$) changed their initial response to the opposite interpretation on hearing knowledge-based testimony from the peer group, a pattern that differed significantly from chance ($p < .001$, binomial test). The tendency to change response did not differ significantly by condition, $\chi^2(1, N = 115) = 0.44$, $p = .51$, indicating that children who initially agreed with an adult opinion were likely to change their initial response regardless of whether the adult's opinion endorsed a negative or a neutral interpretation (i.e., push or fall).

Next children who originally agreed with the peer group were examined. The majority of these children (60%, $n = 67$) changed their response to the opposite response on hearing the knowledge-based testimony of the adult, a pattern that differed significantly from chance ($p = .04$, binomial test). However, the tendency to change the initial response was associated with the condition that children received, $\chi^2(1, N = 111) = 9.19$, $p = .002$. Among children who initially agreed with the peer group advocating a neutral interpretation ("It is a fall"), the majority (79.5%, $n = 31$) also changed their response to the opposite response ($p < .001$, binomial test). However, children who initially agreed with the peer group advocating a negative interpretation ("It is a push") were the only group of children who did not significantly change their initial response to the opposite response. Only 50% ($n = 36$) of these children changed their initial response to the opposite interpretation on hearing knowledge-based testimony, a pattern that did not differ significantly from chance ($p = 1.00$, binomial test).

In sum, the current study revealed several important findings. On hearing opinion-based testimony, the majority of children agreed with the informant(s) who proposed the negative

interpretation (push), regardless of whether this interpretation was given by a peer group or by an adult. Children's justifications for their decisions revealed that most children (94%) referred to their own interpretation of the peer encounter rather than referencing their informants' testimony. On hearing knowledge-based testimony, most children changed their initial interpretation to align with the new information that they received. That is, children who initially agreed with an adult opinion advocating a positive interpretation, an adult opinion advocating a negative interpretation, and a peer group advocating a positive interpretation were all likely to change their initial response after hearing knowledge-based testimony. However, children who initially agreed with a peer group advocating a negative interpretation did not change their initial response.

Discussion

In this study, children's judgments about peer encounters were investigated when a consensus group composed of peers and an adult authority provided conflicting interpretations of the same social interaction in the form of opinion-based testimony, followed by counterinformation in the form of knowledge-based testimony. Children's interpretations were influenced by testimony format: Children were more likely to accept knowledge-based testimony than opinion-based testimony when making decisions about the intentions of a potential transgressor in a morally relevant social interaction. Neither peer consensus nor adult authority was an influential factor in children's decisions when testimony was delivered in an opinion format. Rather, children agreed with the opinion testimony that proposed a negative interpretation and justified this decision with reference to their own interpretations of the social encounter.

Our first hypothesis related to the potential influence of knowledge-based testimony. We expected that testimony that emphasized the informants' knowledge of the interaction would be powerful enough to lead children to change their initial interpretation of the peer encounter. The findings supported this prediction. That is, knowledge-based testimony allowed children to override their previous perception of an ambiguous peer encounter, which was arrived at after hearing opinion-based testimony about the interaction. To our knowledge, this study is the first to reveal that children are influenced by the way in which testimony is presented when evaluating peer encounters, particularly encounters involving a potential moral transgression.

Specifically, most children changed their previous judgments about the intentions of a potential transgressor on hearing a new form of testimony that was knowledge based. That is, children's judgments after hearing opinion-based testimony (e.g., "He *thinks* this is a push") were overridden when children heard new testimony that was based in knowledge (e.g., "These three children *saw* that it is a fall"). Regardless of whether the opinion of an adult indicated push or fall in interpreting the ambiguous social encounter, children who initially agreed with that adult were swayed by the new knowledge testimony and thus changed their responses to the opposite judgment. Similarly, children who initially agreed with the peer group whose opinion testimony indicated fall were also swayed by the new knowledge testimony and thus changed their answer to the opposite judgment.

The only group of children who were not influenced by the new knowledge-based testimony were those who initially agreed with a peer group who interpreted a negative intent (stated that a push had occurred). These findings indicate that children were least influenced by knowledge testimony when their original judgments were based on the opinion of a peer group with negative interpretation of a potential transgression. As the stimuli depicted interactions among children, one interpretation of these findings is that participants may have judged that the peer group's interpretation of the situation was more accurate than the adult's interpretation, thereby viewing other peers as experts in the given situation. Similar to findings by VanderBorght and Jaswal (2009) that preschoolers directed questions about a toy to a child rather than to an adult, children in this study may also have perceived this ambiguous situation on peer interaction to be a child-related, rather than adult-related, context. Thus, children may have been less likely to change their answer, even in light of

knowledge-based testimony, because they associated other children with expertise in the peer interaction context.

Our second hypothesis pertained to children's decisions on hearing opinion-based testimony. This was initially composed of two competing predictions: Either children would prioritize the number of informants sharing the same opinion over the age status of the informant(s), or children would agree with the adult authority figure over the three peers. However, the current findings showed that children were likely to agree with the informant(s) who made a *negative attribution* for the actor's intention regardless of whether it was the adult or peers, rather than agreeing with a specific informant side. In addition, our third hypothesis included two possible predictions for justifications: Either children would justify their judgments with reference to their informant's testimony, or children would refer to their own interpretations of the moral situation. Our findings revealed that the majority of children (94%) stated that their decision was based on their own interpretation of the encounter, supporting their agreement decision with the informant(s) who made a *negative attribution*, regardless of informant status or number.

Unlike previous studies demonstrating the impact of consensus when children learn the names of novel objects (Chen et al., 2013; Fusaro & Harris, 2008), children who made decisions about this morally relevant social interaction did not always agree with others in consensus. Rather, they rejected testimony from a consensus group if it was in conflict with their own perceptions of the social interaction. This was also the case with children's use of testimony from authority figures. Previous research has shown that testimony from authority figures is generally considered to be central for obtaining conventional knowledge (e.g., Jaswal et al., 2006). However, when evaluating a potential moral transgression in this study, children were likely to disregard authority testimony if it was not consistent with their firsthand interpretation.

These findings suggest that children's own evaluation of the acts, rather than testimony from an authority or a peer group, was a stronger influence on their decisions in this morally salient context. Children's reasoning for their decisions corroborates this conclusion, as the majority of children reported that they made their judgment based on their own interpretation. Such results indicate that when children made judgments in this morally relevant context, they based them on the nature of the act, not on external factors such as adult authority or social consensus. Related research on children's judgments of more straightforward transgressions, such as explicitly excluding a peer from a play group based on the peer's race, has revealed that young children similarly reject consensus opinion condoning these actions, reasoning about the importance of fairness and referencing their empathy for the excluded child (Guerrero, Elenbaas, Enesco, & Killen, *in press*). These findings highlight children's active role in making moral judgments in everyday settings. Rather than passively accepting all information from others, children in the current study sought to form their own inferences about the ambiguous interaction, largely disregarding consensus opinion and adult authority in order to draw their own initial conclusions about what happened in the picture.

We cannot rule out the possibility, however, that children in the current study were also partially influenced by the *negatively interpreted* opinion testimony. Children indeed stated the reason for their judgment as their own interpretation. However, it is possible that negative opinion testimony from others may have served to corroborate their own evaluation of the act. That is, negative opinion testimony that was in line with their own evaluation of the act could have played a role of confirming children's own interpretation. Future research should pursue this interpretation more closely; below we provide several examples of ways to extend this research question in future studies.

These findings on children's negatively biased perceptions (after hearing opinion-based testimony) can be interpreted in light of related work indicating that young children often mistakenly assume that actions with negative consequences are intentional, whereas actions with positive consequences are neutrally motivated (Leslie, Knobe, & Cohen, 2006). Related research indicates that even older children who made accurate judgments about actors' intentions in ambiguous contexts had difficulty disentangling an actor's goals from the outcome of his or her actions when those outcomes had negative consequences for others (Fu, Xiao, Killen, & Lee, 2014; Killen, Mulvey,

Richardson, Jampol, & Woodward, 2011). In the current study, children may have made judgments about actors' intentions based on the seemingly negative outcome of the actions (i.e., one child is on the ground) and thus inferred that the actor had a negative intention of harming the victim. The novel finding is that children's negative attributions in an ambiguous situation persisted even when informant(s) with a neutral opinion were present. Thus, children's own interpretations of the harmful outcome drove their evaluations of this morally relevant social interaction, rather than the opinions of others.

Furthermore, children's tendency to overattribute negative intentions in light of negative consequences may have been amplified when combined with whom they perceived to have expertise in the task (i.e., other young peers). Children have been shown to be highly sensitive to testimony provided from experts in a field (Boseovski, 2012). When children's sensitivity to expertise was combined with their negative interpretation bias (Fu et al., 2014), the introduction of a more accurate format of testimony was not influential enough to override their initial perception. That is, children who initially agreed with the *peer group* advocating negative interpretations did not change their initial response based on the opposing knowledge testimony. It is interesting that children who initially agreed with the *adult* advocating a negative interpretation did change their initial response based on the opposing knowledge testimony. This implies that children's tendency to overattribute negative intentions was not amplified in the nonexpert (adult) condition. It is possible that adults were not seen as experts with regard to the interpretation of peer interactions. Overall, these findings reveal that testimony format plays a critical role in influencing children's negative perceptions of morally salient social contexts and interactions.

Future Directions and Conclusions

There are several ways in which the current findings could be extended in future research. First, the importance of testimony format in children's decision making needs to be investigated in other cultures for generalization of these findings. The current study makes a novel contribution to the ongoing large body of research on children's use of testimony by revealing that the *format* of testimony was a critical factor that impacted children's decisions. However, as the sample for the current study included only children residing in Asia, future research should assess children in Western cultures to examine whether children also trust knowledge-based testimony even when this may contradict their own opinion.

A second direction for future research could explore the role of testimony format in diverse social contexts, including social situations that are not ambiguous. In the present study, children were asked to make decisions about a potential transgression that could be interpreted in several ways, with an option to use different testimony types. However, less is known about whether testimony format would influence children's decisions when children are completely certain about their own interpretation of a given situation. For example, would children accept knowledge-based testimony from others proposing alternative names of a toy that the child likes or procedures for a game that the child enjoys? Previous studies have found that children consider expertise in a given area to be very important when accepting testimony (Birch, Vauthier, & Bloom, 2009; Einav, 2014; Koenig & Harris, 2005; Pasquini et al., 2007). Thus, children may not accept testimony—even when presented in a clear and informative format—if they think that they themselves are experts in a given situation. Thus, additional research on testimony format in other contexts is required in order to fully assess the extent to which testimony format is relevant to children's social decisions in their everyday lives.

Lastly, it would be an interesting and novel extension to further tease apart the influence of expertise versus negativity biases in evaluating morally ambiguous situations. The current study found that once both expertise and negativity bias are present, children are less likely to change their own judgments, even in light of knowledge testimony. In other words, the only time that children in the current study were not significantly influenced by knowledge testimony was when they agreed

with a peer group that expressed a negative interpretation of the scenario. However, whether expertise trumps negativity bias, or vice versa, has not yet been fully investigated, and it would be a novel area to further expand the current study. Likewise, future research could investigate children's reasoning for their decisions following knowledge-based testimony, as this may shed light on how children balance considerations of expertise and credible knowledge in light of a situation that may initially be interpreted negatively.

In addition, there are some important implications of our current work for practice and policy. First, the most straightforward of our findings highlight the importance of how statements are delivered in classrooms. Children as young as 3 years of age are sensitive to the format of testimony, and our study has revealed that the use of knowledge-based testimony supported by visual evidence (e.g., using the verbs *see*, *know*) can influence children's acceptance of new information. Therefore, statement format is one critical factor to be considered for effective communication of new information in school settings.

Second, expanding on the previous point, the importance of presentation format extends to information about moral values and norms. Our findings reveal that fact-based statements that have meaning to children are not restricted to content relevant to academics (e.g., " $1 + 5 = 6$ "). We found that children attend to whether morally relevant statements are presented as opinion based or knowledge/fact based. It is important to note that knowledge-based testimony was found to be more influential in guiding children's perceptions than opinion-based testimony. With regard to educational settings, rather than saying "We think that it is wrong to take others' toys," a statement like "We know that it is wrong to take others' toys" may be more readily accepted by young children. This subtle difference in testimony format may have broad-ranging effects on children's learning in morally salient social interactions.

Lastly, our study provides insights for teachers and school counselors into children's judgments in everyday settings. Specifically, our study highlights that children are likely to draw negative conclusions based on other peers' negative interpretations and that it is difficult to change young children's minds with alternative opinion-based testimony in this context. Consistent with prior studies that have highlighted the influence of peer pressure (Cohen & Prinstein, 2006; Shi & Xie, 2012), this study reveals that when a peer group's opinion is negative (i.e., when a peer group infers that an individual had negative intentions), children's decisions are quite fixed. Even when opposing knowledge-based evidence is revealed, children tend to adhere to their initial negative interpretation, formed with corroborating opinion-based testimony from their peers. Findings like these may help explain why many children and adolescents agree with peer groups' decisions to pick on a specific peer or exclude someone from the group (Wójcik & Kozak, 2015). In educational settings, teachers can use these findings to better understand that children may be more firm in their convictions when a peer group also adheres to their negative interpretation of an ambiguous social interaction. Furthermore, our findings could help educators become more aware of children's everyday inferences and remain alert to situations in which a group of students may start to form negative interpretations about another individual's intentions.

The current study makes a number of novel contributions to early education by revealing when and how children start to learn from others and what factors promote such learning. It is interesting that overattribution of negative intentions was found to be strong when a peer group opinion advocated negative interpretations. Most important, this study has implications for understanding moral development in early childhood, as findings highlight how hearing knowledge-based testimony can play a critical role in children's decisions about whom to blame for a moral transgression. These findings further provide insights into what external factors might help reduce children's overattribution of negative intentions. Eyewitness knowledge from both peers and adults can lead children to override their initial negative interpretations to endorse a neutral interpretation in some situations.

Thus, testimony from others is a powerful source of children's own attributions in everyday settings when it is framed as knowledge based and explicit. Taken together, findings from this study suggest that children actively construct knowledge about the world by using both their own

interpretation of events and knowledge-based testimony from others. It is important to note that children use knowledge gained from their own observations and from others' testimony as valuable sources of information when drawing inferences and making judgments in morally salient social contexts.

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