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DOI

[10.1111/cdev.13087](https://doi.org/10.1111/cdev.13087)

Publication date

2018

Document Version

Final published version

Published in

Child Development

[Link to publication](#)

Citation for published version (APA):

van Dijk, A., Poorthuis, A. M. G., Thomaes, S. C. E., & Orobio De Castro, B. (2018). Does parent-child discussion of peer provocations reduce young children's hostile attribution bias? *Child Development, 89*(5), 1908-1920. <https://doi.org/10.1111/cdev.13087>

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Does Parent–Child Discussion of Peer Provocations Reduce Young Children’s Hostile Attributional Bias?

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Two studies investigated whether parent–child discussion of peer provocations reduces young children’s hostile attributional bias. Study 1 ($N = 109$, age 4–7)—an observational study—showed that parent–child discussion of nonhostile attributions (when reading a picture book) predicted reductions in children’s hostile attributional bias from pre- to postdiscussion. Study 2 ($N = 160$, age 4–6)—an experimental study—showed that stimulating parents to discuss either nonhostile attributions or normative beliefs (vs. a control condition) reduced children’s hostile attributional bias in response to hypothetical vignettes, but not in response to a staged peer provocation. These findings suggest that by framing social situations, parents may help their children perceive less hostility in their social worlds.

Young children frequently experience provocation from their peers: They may be physically hurt, left out of play, or frustrated in their attempts to get hold of a desirable toy. The exact intentions that drive others’ provocations are often unclear; peers rarely spell out how they intend their actions. Most children tend to interpret such ambiguous provocations as accidental, but some are biased to attribute hostile intent (Dodge, Bates, & Pettit, 1990; Katsurada & Sugawara, 1998). Hostile attributional biases put young children at risk for the development of aggressive behavior problems (De Castro, Veerman, Koops, Bosch, & Monshouwer, 2002; Dodge et al., 1990, 2003). It is, therefore, important to understand the origins and malleability of these biases in early childhood.

Hostile Attributional Biases in Early Childhood

Children attend to others’ intentions from the first stages of life. For example, infants 9 months of age already discriminate between intentional and nonintentional actions of others (Behne, Carpenter, Call, & Tomasello, 2005). Such rudimentary understanding of the motivations underlying others’ behavior helps children navigate their social worlds. From the time children enter their first structured peer context (i.e., typically in preschool or Kindergarten), peer relations become an increasingly important aspect of their social lives. It is from this time that hostile

attributional biases start to influence children’s peer adjustment. Early-acquired hostile attributional biases may be relatively persistent, because they tend to self-reinforce over time (Crick & Dodge, 1994). For example, research has shown that hostile attributional biases may result from peer rejection, but may also evoke peer rejection as they predispose children to behave aggressively (Lansford, Malone, Dodge, Pettit, & Bates, 2010). Research on hostile attributional biases in early childhood is, therefore, vital to help develop and optimize early intervention efforts (Dodge & Pettit, 2003).

One key origin of young children’s hostile attributional bias may lie in how parents discuss peer provocations with them. Young children primarily rely on their parents to help them make sense of their social worlds. Indeed, they are often engaged by their parents in conversations about peer interactions—a practice also referred to as social coaching, modeling, or reminiscing (Flannagan & Hardee, 1994; Laird, Pettit, Mize, Brown, & Lindsey, 1994). Research suggests that the content of such conversations influences children’s social development. For example, parents who endorse the use of prosocial strategies, make frequent reference to mental states, and frame peer interactions and provocations in a positive way tend to have preschool children

This research was supported by a grant from The Netherlands Organization for Scientific Research (grant number 022.003.021).

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Child Development published by Wiley Periodicals, Inc. on behalf of Society for Research in Child Development.

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0009-3920/2018/8905-0032

DOI: 10.1111/cdev.13087

who are socially competent (Laird et al., 1994; Mize & Pettit, 1997; Ruffman, Slade, & Crowe, 2002). Surprisingly, though, no research has tested how parent–child discussion of peer provocations may influence young children’s hostile attributional bias. Such research is needed to inform early intervention to help prevent children from developing potentially persistent hostile attributional biases.

Parent–Child Discussion of Intent Attributions

As do children, parents differ in the extent to which they attribute hostile intent to others (e.g., Halligan, Cooper, Healy, & Murray, 2007; MacBrayer, Milich, & Hundley, 2003). It is, thus, possible that parents transmit their hostile attributions to their children through their discussion of peer provocations. Consider a young girl who seeks support from her parents after being refused by peers to join a game. Her parents may respond by saying that there were too many players in the game (i.e., a nonhostile attribution), but they may also say that the peers were being mean (i.e., a hostile attribution). We posit that parents who express hostile attributions about peer provocations may (inadvertently) cultivate a hostile attributional bias in their children; and vice versa, that parents who express nonhostile attributions may reduce their children’s hostile attributional bias.

Indirect support for this hypothesis stems from studies showing that hostile attributional biases in parents and their children are positively associated (Healy, Murray, Cooper, Hughes, & Halligan, 2015; MacBrayer et al., 2003; Nelson, Mitchell, & Yang, 2008; Werner, 2012; but see: Halligan et al., 2007; Mackinnon-Lewis, Lamb, Arbuckle, Baradaran, & Volling, 1992). These studies, however, lacked direct observations of parent–child discussion, and so the parent–child similarities in attributional style found in these studies may be accounted for by other factors. The present research is the first to directly address, using both observational and experimental methods, whether parent–child discussion of peer provocations may contribute to children’s hostile attributional bias.

Parent–Child Discussion of Normative Beliefs

Rather than interpreting peer provocations as (non)hostile, parents may also affect their children’s interpretations of peer provocations by expressing that these acts qualify as inappropriate social behavior (i.e., discussion of normative beliefs; Huesmann & Guerra, 1997; Werner, Eaton, Lyle, Tseng, & Holst, 2014). Consider the example of the young

girl who was refused to join a game. Her parents may respond by expressing the normative belief that excluding others is not acceptable (i.e., norm violation), or that children should always allow each other to join in play (i.e., norm prescription). What might children take from such messages? We consider two opposing perspectives.

The first perspective, which we label the norm perspective, emphasizes that parent–child discussion of normative beliefs should decrease young children’s hostile attributional bias. Research has shown that children who believe that aggression is normative behavior tend to interpret ambiguous peer provocations as acts of aggression (Zelli, Dodge, Lochman, Laird, & Conduct Problems Prevention Research Group, 1999). Hence, when children are influenced to believe that aggression is *not* normative, they may be less likely to interpret ambiguous peer provocations as acts of aggression, and may display lower levels of hostile attributional bias. The norm perspective is indirectly supported by studies showing that children’s normative beliefs regarding aggression are positively correlated with those of their parents (Farrell, Henry, Schoeny, Bettencourt, & Tolan, 2010; Werner & Grant, 2009), and predict their own hostile attributional bias 1 year later (Zelli et al., 1999). However, research investigating parent–child discussion as a mechanism by which parents may transmit their normative beliefs is lacking.

The second perspective, which we label the blame perspective, emphasizes instead that parent–child discussion of normative beliefs may increase children’s hostile attributional bias. Note that the intentions that underlie peer provocations are often ambiguous: It is often unclear whether or not peers causing a harmful outcome had malevolent intentions. Parents who disapprove of ambiguous peer provocations implicitly convey the notion that these peers had malevolent intentions (indeed, there is no point in disapproving of peer provocations that were benevolently intended), and may thus foster children’s hostile attributional bias. In the example of the girl who was refused to join a game, when her parents would say that it is wrong to exclude others, they would implicitly communicate that the peers were intentionally rejecting her. There is a lack of research on the consequences of parents’ expression of normative beliefs in response to ambiguous peer provocations, and the present research sought to fill this gap.

The Present Research

Two studies investigated the effects of parent–child discussion of intent attributions and

normative beliefs on young children's hostile attributional bias. In Study 1, an observational study, we asked parents to discuss freely ambiguous peer provocations in picture book stories with their child. We coded the discussions and tested how the discussions influenced pre- to postdiscussion change in children's hostile attributions. Study 1 extends the literature by directly investigating parent-child discussion as a mechanism by which hostile intent attributions may be transmitted. In Study 2, an experimental study, we manipulated the content of parent-child discussions about the same picture book (asking parents to express either nonhostile attributions, normative beliefs, or trivial story aspects), and we assessed children's consequent hostile attributional bias. Study 2, thus, adds to Study 1 by testing causality.

We predicted that children's hostile attributional bias would increase if parents expressed hostile attributions and would decrease if parents expressed nonhostile attributions (Study 1). We predicted that experimentally induced expressions of nonhostile attributions would also reduce children's hostile attributional bias (Study 2). We tested competing hypotheses regarding the effects of parental normative beliefs: The norm perspective predicts that children's hostile attributional bias will decrease following parents' expression of normative beliefs, whereas the blame perspective predicts the opposite pattern (Studies 1 and 2). The raw data, analysis code, and relevant study materials are available at the Open Science Framework (Van Dijk, Poorthuis, Thomaes, & De Castro, 2018).

Study 1

Method

Participants

Participants were 109 Dutch 4- to 7-year-old children (47.7% girls; $M_{\text{age}} = 5.31$, $SD = 0.77$) and one of their parents (83.5% mothers; $M_{\text{age}} = 37.35$, $SD = 4.49$). Families were typically Dutch (92.5% of parents were both born in The Netherlands), well-educated (56.1% of parents had at least a bachelor's degree), and intact (99.1% of parents lived together). We recruited parents at schoolyards of public schools in (sub)urban communities in The Netherlands. The schools served almost exclusively middle-class communities (note that income inequality in The Netherlands is relatively low; CIA World Factbook, U.S. Central Intelligence Agency, 2016). Parents were asked to participate in a study

about picture books; interested parents were contacted by telephone or e-mail to schedule a home visit. Data were collected in March, April, and May of 2015.

Procedure

Home visits lasted approximately 45 min and were conducted by one of four trained research assistants. The experimenter informed parents and children about the study procedure. Parents signed a consent form, children verbally agreed to participate.

Hostile attributional bias (preassessment). First, the experimenter assessed children's hostile attributional bias while parents waited in another room, using a picture book containing four stories of ambiguous peer provocations. Each story was visualized in two colorful A3-sized drawings depicting both the setting (Drawing 1) and the provocation (Drawing 2; Figure 1). Story themes were (a) physical harm; (b) not sharing candy; (c) knocking over a block tower; and (d) blocking a seat. Each story introduced new story characters. Provocateurs and victims were matched with the gender of the participating child and had neutral facial expressions.

For each story, the experimenter described the provocation (e.g., "Look, these children are drawing. This boy comes in. Now this boy blocks the chair."), and asked: "Why would he/she do that?" If children did not spontaneously provide an attribution, experimenters repeated the question once (21.6% of responses). Two trained research assistants coded children's responses into one of three categories: (a) *hostile* attributions (39.5%; e.g., "because he doesn't want to sit next to him"); (b) *non-hostile* attributions (46.8%; e.g., "because the seat was already taken by someone else"); and (c) *unclear* (13.7%; e.g., "he wants to sit there," "I don't know"). Inter-coder reliability was good ($\kappa = .76$). Coding disagreements were resolved. We scored child *hostile* attributions as 1, and averaged across the four stories to create a hostile attributional bias score. Mean inter-story correlation was $r = .22$, which is considered "sufficient" according to conventional criteria (i.e., $r \geq .15$; Clark & Watson, 1995). Supplemental analyses including story-level descriptive statistics for all assessments can be found online (Van Dijk et al., 2018).

Parent-child discussion of peer provocations. Next, parents rejoined to discuss the same peer provocation picture book described earlier. The experimenter explained to parents: "This picture book contains four short stories. The stories are unrelated; each story involves different children. Please discuss the

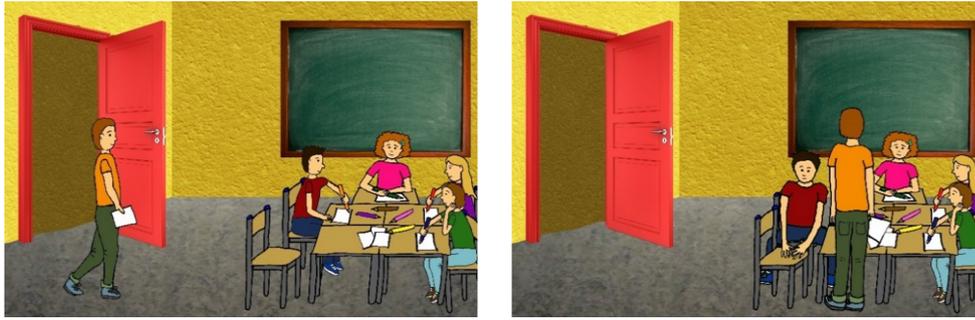


Figure 1. Picture book (boys). Ambiguous peer provocation story (presented on separate pages). [Color figure can be viewed at wileyonlinelibrary.com]

stories with your child as you normally would." Discussing picture books was familiar to parents: All indicated that they did so at least once a week. The experimenter turned on the camera and left the room.

Coding of parents' expressed intent attributions. Video recordings were coded by two trained research assistants. We used a coding procedure based on the Therapy Process Observational Coding System (McLeod, 2001; McLeod & Weisz, 2005), which was developed to assess adult-child conversation in therapy context. After coders proved reliable for 20% of the sample, they coded the remaining recordings separately, partaking in three intermediate training sessions to prevent observer drift. For each story, we coded to what extent parents emphasized (a) *hostile attributions*, indicating that provocateurs were being mean (e.g., "he doesn't like that boy"), and (b) *nonhostile attributions*, indicating that provocateurs were not being mean (e.g., "he can't sit here, someone just went to the restroom"). Parents' emphasis was coded in terms of remark counts and level of inflection—that is, "emotional tone," such as parents' use of affect or higher volume—on a 6-point Likert scale (0 = *no remarks*; 5 = *several remarks, strong inflection*). Intercoder reliability was good for expressed hostile attributions ($\rho = .85$) and expressed nonhostile attributions ($\rho = .83$). We averaged scores across the four stories to create single scores for expressed hostile attributions and expressed nonhostile attributions. Internal consistency for both was sufficient (i.e., $r_{\text{mean inter-item}} = .15$ and $r_{\text{mean inter-item}} = .21$, respectively).

Coding of parents' expressed normative beliefs. We coded parents' expressed normative beliefs using the same procedure we used to code parents' expressed intent attributions. For each story, we coded on a 6-point Likert scale to what extent parents emphasized (a) *norm violation*, indicating that the provocateur's behavior is unacceptable (e.g., "it's

not nice of those children to exclude him"), and (b) *norm prescription*, indicating how the provocateur should have behaved instead (e.g., "that boy should be allowed to sit there!"). Inter-coder reliability was good for expressed norm violation ($\rho = .84$) and expressed norm prescription ($\rho = .85$). We averaged scores for expressed norm violation and expressed norm prescription across the four stories to create a score for expressed normative beliefs. Internal consistency was again sufficient ($r_{\text{mean inter-item}} = .33$).

In some instances, parents failed to identify the provocation at all (e.g., "all children got candy, that's nice!"). We coded scores for such stories as missing and calculated average scores only for parents who had identified provocation in at least three stories ($n = 104$).

Hostile attributional bias (postassessment). Last, the experimenter again assessed children's attributions for the picture book conform the preassessment procedure (this time, experimenters needed to repeat the attribution question for 10.8% of children's responses). Two research assistants coded children's responses as *hostile attribution* (37.6%), *nonhostile attribution* (51.2%), or *unclear* (11.2%; $\kappa = .79$). We scored *hostile attributions* as 1 and averaged across stories to create a hostile attributional bias score. Internal consistency was sufficient ($r_{\text{mean inter-item}} = .17$).

By the end of the home visit, the experimenter informed parents and children about the research aims, and gave children stickers to thank them for their voluntary participation.

Results

Analytical Approach

We tested whether parent-child discussion led to changes in children's hostile attributional bias. First, we used a mixed analysis of variance (ANOVA)

including time (pre/post) as the within-subjects factor and parents' expressed hostile attributions as a continuous between-subjects factor. Next, we used two similar analyses of variance to test for the effects of expressed nonhostile attributions and expressed normative beliefs.

Preliminary Analyses

Table 1 presents descriptive statistics for the Study 1 variables.

Data preparation. We handled missing values (2.8%) using pairwise deletion. We retained outliers ($z > 3.29$) in the analyses (results were similar when we excluded them). We report parametric analyses even though most variables were skewed; we also used bias-corrected accelerated (BCa) bootstrap 95% confidence intervals (5,000 samples) to estimate effects, but these did not produce different results.

Correlations. Correlations between the Study 1 variables are presented in Table 1. Children's hostile attributional bias at preassessment was not correlated with any of the parent-child discussion variables. Parents who emphasized hostile attributions also tended to emphasize normative beliefs. Parents' expressed hostile attributions and nonhostile attributions were uncorrelated. Cross-tabulation found that most parents expressed both hostile and nonhostile attributions (58.7%), whereas fewer parents expressed only hostile attributions (14.4%) or only nonhostile attributions (21.1%; and some parents expressed no attributions at all: 5.8%).

Gender and age differences. Boys made more hostile attributions ($M = 0.44$, $SD = 0.28$) than girls ($M = 0.30$, $SD = 0.28$) at postassessment ($p = .011$, $\eta_p^2 = .06$), but not at preassessment. Parents placed more emphasis on nonhostile attributions if they discussed peer provocations with girls ($M = 1.23$, $SD = 0.93$) than with boys ($M = 0.86$, $SD = 0.87$), $p = .035$, $\eta_p^2 = .04$. There were no gender differences for other Study 1 variables (all $ps > .05$). We

compared same-gender with other-gender parent-child pairs and found no differences for the Study 1 variables. Children's age was not correlated with any of the Study 1 variables (all $ps > .05$). Neither child age, child gender, nor parent-child gender (same/different) moderated the primary findings.

Primary Analyses

We tested whether parent-child discussion predicted changes in children's hostile attributional bias from pre- to postassessment, using a Time (Pre/Post) \times Parent-Child Discussion (Scale: 0-5) mixed ANOVA for each discussion variable. As predicted, children's hostile attributional bias decreased the more their parents emphasized nonhostile attributions, $F(1, 102) = 10.01$, $p = .002$, $\eta_p^2 = .09$ (Figure 2). Children's hostile attributional bias did not change if their parents expressed hostile attributions, $F(1, 102) = 1.91$, $p = .170$, $\eta_p^2 = .02$, or normative beliefs, $F(1, 102) = 0.01$, $p = .928$, $\eta_p^2 < .01$. To test for potential unique effects of the parent-child discussion variables, we entered the three variables simultaneously into a regression analysis predicting changes in children's hostile attributional bias. The only significant predictor was expressed nonhostile attributions, $\beta = -.29$, $t = -3.08$, $p = .003$.

Discussion

Study 1 showed that parent-child discussion of nonhostile attributions reduced children's hostile attributional bias. Parent-child discussion of normative beliefs, however, did not; neither the norm perspective nor the blame perspective was supported by the data. That said, parents' expressions of normative beliefs often co-occurred with those of hostile attributions, so we were not able to isolate potential unique effects of parents' expressed normative beliefs. Moreover, in Study 1, we were not able to establish causal effects of parent-child

Table 1

Range, Means (M), Standard Deviations (SD), and Correlations of Parent-Child Discussion Variables ($n = 104$) and Hostile Attributional Bias (HAB) at Pre- and Postassessment ($N = 109$)

	M	SD	Range	1	2	3	4
1. Expressed hostile attributions	0.92	0.89	0-4	—			
2. Expressed nonhostile attributions	1.04	0.91	0-4	-.07	—		
3. Expressed normative beliefs	0.60	0.65	0-3.2	.55***	-.07	—	
4. Child HAB preassessment	0.39	0.30	0-1	.15	.05	.04	—
5. Child HAB postassessment	0.38	0.29	0-1	.28**	-.22*	.05	.58***

* $p < .05$. ** $p < .01$. *** $p < .001$.

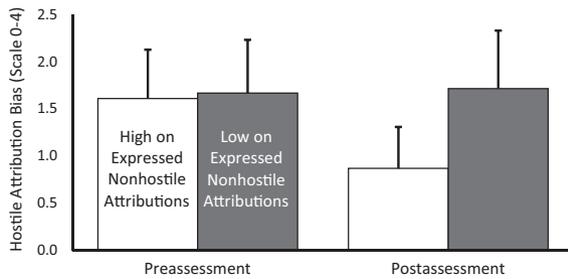


Figure 2. Average pre- and postassessment hostile attributional bias scores of children whose parents scored high ($n = 21$) versus low ($n = 23$) on expressed nonhostile attributions (we created this split for graphical display using $M \pm 1 SD$). Error bars represent 95% confidence intervals.

discussion on children's hostile attributions. We conducted Study 2 to address these limitations.

Study 2

Intervention research has shown that parents can be taught to change the way they talk with their children, for instance, by encouraging them to use elaborative, emotion-rich language (Wareham & Salmon, 2006). Accordingly, in Study 2, we sought to experimentally manipulate the content of parent-child discussions by providing parents with instructions how to discuss the picture book; we asked them to discuss either nonhostile attributions, normative beliefs, or trivial story aspects (i.e., control condition). We also used Study 2 to extend the breadth of our outcome measures. Theoretical models emphasize the importance of emotional processes in children's social information processing; emotions such as anger may influence the way children perceive and interpret their social experiences (Anderson & Bushman, 2002; Lemerise & Arsenio, 2000). Peer provocations are often emotionally involving, which underscores the relevance of extending our measures beyond the cognitive realm. Moreover, meta-analytical evidence suggests that, compared to vignette-based assessment procedures of hostile attributional bias, in vivo assessment procedures may be more powerful predictors of children's aggressive behavior (De Castro et al., 2002). Accordingly, Study 2 assessed not only children's hostile attributional bias using vignettes, but also (a) their reported anger and aggression in response to these vignettes, and (b) their in vivo hostile attributional bias and aggression in response to a staged peer provocation.

We predicted that parent-child discussion of nonhostile attributions (vs. control) would decrease

children's hostile attributional bias, anger, and aggression. We again pitted competing hypotheses about parent-child discussion of normative beliefs (vs. control) against each other. The norm perspective predicts that such discussion will lead to decreases in children's hostile attributional bias, anger, and aggression; the blame perspective predicts increases in these outcomes.

Method

Participants

Participants were 160 Dutch 4- to 6-year-old children (48.8% girls; $M_{\text{age}} = 5.38$, $SD = 0.79$) and one of their parents (82.5% mothers; $M_{\text{age}} = 38.13$, $SD = 4.97$). Families were typically Dutch (98.7% of parents were both born in The Netherlands), highly educated (71.9% of parents had at least a bachelor's degree), and intact (97.5% of parents lived together). We used the same recruitment procedure as in Study 1. Data were collected in March and April 2016.

A priori power was sufficient (.80 for $n = 104$) to detect effect sizes of similar magnitude as the Study 1 effect of parent-child discussion of nonhostile attributions on children's hostile attributional bias ($f = .31$; this time using a between-subjects experiment with three conditions). Parents were randomly assigned to the nonhostile attribution condition ($n = 56$), normative belief condition ($n = 53$), or control condition ($n = 51$).

Procedure

Home visits lasted approximately 45 min and were conducted by one of six trained research assistants who were blind for condition. Parents and children were informed about the study procedure and agreed to participate.

Parent-child discussion of peer provocations. The experimenter handed parents the same peer provocation picture book we used in Study 1 and invited children to briefly play in another room. Parents received online instructions, so that experimenters were blind for condition. The instructions for the nonhostile attribution condition were as follows:

Children are sometimes hurt by other children. They may better deal with such situations, if they understand that other children often do such things by accident (normative belief condition: that such behavior is not acceptable and know how these children should have behaved instead; control condition: how to focus their attention on other things).

We have developed a picture book to teach this message to children. The book contains four stories. Please tell each story to your child, and then discuss [repetition of previous instruction]. Please begin your discussion of each story using this prompt question: *Why would this have happened?* (normative belief condition: *Is that OK?*; control condition: *What else do we see?*).

Next, for standardization purposes, parents received specific cues on how to discuss each story. The cues were based on the remarks made by parents in Study 1. For example, for the story depicted in Figure 1, we told parents:

The first drawing depicts one child who wants to sit down; the second depicts another child who blocks the seat. You could discuss, for instance, *that the child was asked to save the seat for someone else, or that the seat may have had wet paint on it* (normative belief condition: *that it is not acceptable to exclude children, or that children should always play together*; control condition: *the colors of the pencils, or the number of paper sheets*).

Last, parents read a summary of the instructions and were asked to join their children in the other room. The experimenter then asked parents to start, turned on the camera, and left the room.

Coding of nonhostile, normative, and trivial remarks (manipulation check). Six trained research assistants coded the recordings for the number of parental remarks fitting with each condition. The first author also coded 20% of the sample, and coders proved reliable (nonhostile attributions: $.74 < r < .96$; normative beliefs $.83 < r < .98$; trivial remarks: $.78 < r < 1.00$). We averaged across stories to create single scores for nonhostile attributions, normative beliefs, and trivial remarks (all α s $> .90$).

After discussing the stories with their children, parents left the room to complete an online questionnaire on background variables. The experimenter stayed with children to conduct the postassessments.

Parents' endorsement of assigned message. To test whether parents in each condition equally endorsed the message they were assigned to discuss, we asked parents to complete four items (e.g., "to what extent did you agree with what you just said?") on a 6-point Likert scale (1 = *not at all*, 6 = *completely*). We averaged across items to create an endorsement score ($\alpha = .85$).

Hostile attributional bias (vignettes). We assessed children's hostile attributional bias using four

vignettes that describe ambiguous provocations by a same-gender peer (Dodge, McClaskey, & Feldman, 1985; Feshbach, 1989; Van Dijk, Poorthuis, & Malti, 2017). Story themes were (a) being hurt; (b) one's drawing being ruined; (c) being refused to join a board game; (d) one's toy being taken. The experimenter read the stories aloud while pointing at three accompanying 8×8 cm black-and-white line drawings (Figure 3).

Two questions assessed children's intent attributions following each vignette. First, the experimenter asked: "Why did the boy/girl [cause the provocation]?" The experimenter directly coded children's responses into one of three categories: (a) *hostile* attributions (11.7%; e.g., "he did it on purpose"); (b) *non-hostile* attributions (41.1%; e.g., "he just tried to draw himself"); and (c) *unclear* (47.2%; e.g., "he touched me," "just because"). Inter-coder reliability was good ($.78 < \kappa < 1.00$ between the first author and the six experimenters). Following an unclear response, the experimenter probed children with a hostile and a benign option (53.5% of responses were probed; e.g., "did the boy try to ruin your drawing, or did he not notice your arm?"). These probed responses also served to help resolve coding disagreements. Second, the experimenter asked: "Was the boy/girl trying to be *mean* or *not mean*?" (we counterbalanced order across vignettes). We scored *hostile* and *mean* responses as 1 and averaged across the four stories to create a hostile attributional bias score. Internal consistency was sufficient ($\alpha = .68$).

Anger (vignettes). Next, we assessed children's feelings of anger following each vignette. The experimenter asked: "If this had really happened to you, how would you feel?" If children did not mention an emotion, the experimenter asked: "Would you feel, for example, happy, angry, sad, or scared?" Next, the experimenter pointed to three squares of increasing size on a 7×15 cm paper sheet, and asked "Would you feel a little, quite, or very [emotion]?" Children responded orally or by picking a square. Anger responses ranged from 0 (when children did not mention feeling angry) to 3 (when children mentioned feeling angry, and selected the highest intensity response). We averaged across the four stories to calculate an anger score ($\alpha = .68$).

Aggression (vignettes). Last, we assessed children's behavioral responses following each vignette: "If this had really happened to you, what would you do? . . . And what else?" Children were prompted to generate two responses for each vignette. Experimenters later coded these responses as *aggression* if children indicated that they would harm the other

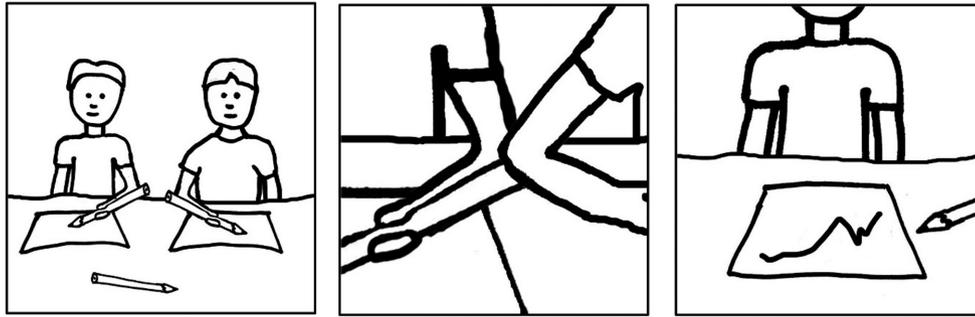


Figure 3. Sample vignette (boys). "Imagine that you're making a drawing. Suddenly, the boy next to you bumps into your arm. There's a large strike through your drawing. Now it's ruined."

child (10.3%; e.g., "ruin his drawing as well," "hit him"). The first author also coded all responses. Inter-coder reliability was good ($.64 < \kappa < .80$ between the first author and the six experimenters). Coding disagreements were resolved. We scored *aggressive* responses as 1 and averaged across the eight responses (i.e., two for each story) to create an aggression score ($\alpha = .80$).

Hostile attributional bias (in vivo). We also staged an ambiguous peer provocation to assess children's in vivo hostile attributional bias. The experimenter told children that they would receive 10 stickers, selected by the boy or girl who participated before them. Children received an envelope containing these stickers and a colorful cardboard card depicting 10 spots to glue their stickers on. As children started gluing, they discovered they only had eight stickers. Then, the experimenter asked: "Why do you think the boy/girl put only eight stickers in the envelope?" Again, we coded children's responses in one of three categories: (a) *hostile* attributions (6.3%); (b) *nonhostile* attributions (18.1%), or *unclear* (75.6%; $.71 < \kappa < .93$). If children's responses were *unclear*, the experimenter prompted them: "Did he/she make a mistake counting, or did he/she just take those stickers?" (due to experimenter mistake, $n = 13$ children were not prompted; they had missing scores for this variable). Next, the experimenter asked: "Do you think he/she was being *unkind* or *not*?" We scored *hostile* and *unkind* responses as 1 and averaged across the two questions to create a hostile attributional bias score ($r = .39, p < .001$).

Aggression (in vivo). Next, children were given the opportunity to aggress: it was their turn to select stickers for the alleged peer provocateur. The experimenter showed children a box containing 40 stickers, half of them torn, and said: "You can select 10 stickers. Look, some of them are torn, but you may as well pick those." After children had selected 10 stickers, the provocation scenario was resolved:

The experimenter retrieved two stickers, explaining that those stickers must have slipped out of the envelope. To end the session positively, children could then change their selected stickers. The proportion of initially selected torn stickers constituted children's score on in vivo aggression ($n = 2$ children did not complete this task; they had missing scores for this variable).

Results

Analytical Approach

We tested whether the experimental manipulation of parent-child discussion affected how children responded to peer provocation vignettes. We used a multivariate ANOVA (MANOVA) that included condition (i.e., nonhostile attributions, normative beliefs, control) as between-subjects factor and hostile attributional bias, anger, and aggression as dependent variables, followed by univariate analyses. We used ordinal regression to analyze the effects of condition on in vivo hostile attributional bias (i.e., an ordinal dependent variable) and ANOVA to analyze effects on in vivo aggression (i.e., an interval-level dependent variable).

Preliminary Analyses

Table 2 presents descriptive statistics for the Study 2 variables.

Data preparation. We handled missing values (1.0%) using pairwise deletion. Outliers (i.e., $z > 3.29$ within condition) were retained in the analyses. We report where outliers affected the results. Most variables had a skewed distribution. Hence, we reran the primary analyses using BCa bootstrap 95% confidence intervals (5,000 samples). Because results were similar, we report the parametric analyses.

Table 2

Range, Means (M), and Standard Deviations (SD) for the Nonhostile Attribution Condition (n = 56), Normative Belief Condition (n = 53), and Control Condition (n = 51), and Correlations of Study 2 Variables

	Range	Nonhostile M (SD)	Normative M (SD)	Control M (SD)	Correlations								
					1	2	3	4	5	6	7	8	
1. HAB (vignettes)	0-1	0.31 (0.22) ^a	0.31 (0.26) ^a	0.45 (0.27) ^b	—								
2. Anger (vignettes)	0-3	0.67 (0.75)	0.53 (0.66)	0.82 (0.89)	.36***	—							
3. Aggression (vignettes)	0-1	0.10 (0.21)	0.06 (0.13) ^a	0.14 (0.23) ^b	.36***	.28***	—						
4. HAB (in vivo)	0-1	0.26 (0.37)	0.22 (0.36)	0.23 (0.36)	.41***	.09	.39***	—					
5. Aggression (in vivo)	0-1	0.28 (0.25)	0.28 (0.26)	0.28 (0.26)	.18*	.24**	.10	.21*	—				
6. Nonhostile remarks	0-12	4.11 (1.99) ^a	0.48 (0.59) ^b	0.37 (0.62) ^b	-.10	.04	-.01	.07	.07	—			
7. Normative remarks	0-8	0.34 (0.88) ^a	3.82 (1.80) ^b	0.31 (0.44) ^a	-.08	-.10	-.12	-.03	-.03	-.39***	—		
8. Trivial remarks	0-10	0.02 (0.14) ^a	0.02 (0.08) ^a	3.48 (2.31) ^b	.21**	.22**	-.10	-.10	-.04	-.37***	-.33***	—	
9. Message endorsement	2.5-6	5.45 (0.53) ^a	5.45 (0.59) ^a	5.02 (0.94) ^b	.01	-.07	-.06	-.03	.05	.18*	.12	-.30***	—

Note. Means with different superscripts differ significantly from each other at $p < .05$. HAB = hostile attributional bias.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Equivalence of experimental conditions. Conditions were equivalent with respect to gender and age of parents and children, number of siblings, ethnicity, level of education, and frequency of spontaneous discussion of peer provocations at home (all $ps > .05$). Parents in the control condition endorsed the assigned message less than parents in the experimental conditions, $F(2, 157) = 6.59$, $p = .002$, $\eta_p^2 = .08$ (Table 2).

Manipulation check. The manipulation was effective. Parents expressed significantly more nonhostile attributions, $F(2, 157) = 151.85$, $p < .001$, $\eta_p^2 = .66$, normative beliefs, $F(2, 157) = 153.53$, $p < .001$, $\eta_p^2 = .66$, and trivial remarks, $F(2, 157) = 122.22$, $p < .001$, $\eta_p^2 = .61$, in the relevant conditions than they did in the other conditions (Table 2).

Gender and age differences. Boys scored higher than girls on hostile attributional bias ($M_{\text{boys}} = 0.40$, $SD = 0.26$; $M_{\text{girls}} = 0.30$, $SD = 0.24$; $p = .013$, $\eta_p^2 = .04$), anger ($M_{\text{boys}} = 0.87$, $SD = 0.79$; $M_{\text{girls}} = 0.47$, $SD = 0.71$; $p = .001$, $\eta_p^2 = .07$), and aggression ($M_{\text{boys}} = 0.15$, $SD = 0.24$; $M_{\text{girls}} = 0.06$, $SD = 0.12$; $p = .004$, $\eta_p^2 = .05$). Younger children reported more anger ($r = -.18$, $p = .020$) and higher levels of hostile attributional bias, both in response to the vignettes ($r = -.27$, $p = .001$) and the in vivo

provocation scenario ($r = -.28$, $p = .001$). We found no gender or age differences for the other Study 2 variables. Neither child age, child gender, nor parent-child gender (same/different) moderated the primary analyses.

Primary Analyses

The MANOVA that included the vignette-based measures of hostile attributional bias, anger, and aggression yielded a significant effect of condition, $F(7, 312) = 2.29$, $p = .036$. We subsequently examined differences between conditions for each of the dependent variables separately.

Hostile attributional bias (vignettes). Children's hostile attributional bias differed significantly between conditions, $F(2, 157) = 5.63$, $p = .004$, $\eta_p^2 = .07$. As predicted, children attributed less hostile intent if their parents expressed nonhostile attributions (vs. trivial aspects, $p = .003$, $\eta_p^2 = .08$). Moreover, supporting the norm perspective, children also attributed less hostile intent if their parents expressed normative beliefs (vs. trivial aspects, $p = .005$, $\eta_p^2 = .07$; Table 2).

Anger (vignettes). Children's anger did not differ significantly between conditions, $F(2, 157) = 1.78$, $p = .172$, $\eta_p^2 = .02$.

Aggression (vignettes). Children's aggression differed significantly between conditions, but only if we excluded the three outliers on this variable, $F(2, 154) = 4.19, p = .017, \eta_p^2 = .05$; the effect was not significant if we retained outliers ($p = .120$). Importantly, however, results of the planned contrasts did not depend on outliers. Supporting the norm perspective, children reported less aggression in response to peer provocations if their parents expressed normative beliefs (vs. trivial aspects, $p = .004, \eta_p^2 = .08$ excluding outliers; $p = .040$ including outliers). Parents' expressed nonhostile attributions did not affect children's aggression ($p = .110, \eta_p^2 = .02$ excluding outliers; $p = .321$ including outliers; Table 2).

Hostile attributional bias (in vivo). Children's in vivo hostile attributional bias did not differ significantly between conditions, as evinced by ordinal regression analysis, $\chi^2(2) = 0.21, p = .787, R^2 < .01$.

Aggression (in vivo). Children's in vivo aggression did not differ significantly between conditions, $F(2, 155) = 0.02, p = .984, \eta_p^2 < .01$.

Parents' endorsement of assigned message. We reran all primary analyses and found that parents' message endorsement did not moderate the findings (all $ps > .05$), nor change the (non)significance of the findings when included as a covariate.

General Discussion

We used a multimethod approach to investigate the effects of parent–child discussion of peer provocations on young children's hostile attributional bias. Parents are young children's primary source of input on how to interpret peer interaction, and so parent–child discussion may be one particularly important process shaping the social knowledge structures that guide children's social adjustment throughout development (Crick & Dodge, 1994). We focused on parents' verbalizations of intent attributions and normative beliefs; both types of framing peer provocation may affect children's attributions of intent. We used an observational design (Study 1) to test whether naturally unfolding parent–child discussions affect children's hostile attributional bias. We used an experimental design (Study 2) to establish causality and investigate whether parents can be stimulated to discuss nonhostile attributions and normative beliefs with their children. Overall, our findings suggest that parent–child discussion of nonhostile attributions and normative beliefs lead to moderate reductions in young children's hostile attributional bias.

Results for parent–child discussion of intent attributions converged across studies: Both parents' natural (Study 1) and experimentally stimulated (Study 2) expressions of nonhostile attributions led children to attribute less hostile intent in hypothetical peer provocation situations. These findings illustrate how parent–child discussion may be one mechanism by which parents transmit their nonhostile attributions to their children—as such, the present findings extend previous work that found that hostile attributional biases in parents and their children are positively associated (Healy et al., 2015; MacBrayer et al., 2003; Nelson et al., 2008).

Study 1 further found that parents' naturally expressed hostile (rather than nonhostile) attributions did not predict increases in children's hostile attributional bias from pre- to postdiscussion. This unexpected finding may be due to the strong co-occurrence of parents' expressed hostile attributions and normative beliefs in Study 1. Study 2 showed that stimulating parents to discuss normative beliefs caused children to attribute less hostile intent. Thus, the potential beneficial effects of expressing normative beliefs may have obscured the potential harmful effects of expressing hostile attributions, leading to the Study 1 observational findings that expression of neither hostile attributions nor normative beliefs affected children's hostile attributional bias.

The experimental design of Study 2 allowed us to isolate the effects of parents' expressed normative beliefs and found that this practice reduced children's hostile attributional bias, as well as their aggression in response to hypothetical peer provocations. These results support the norm perspective: Parents who convey the message that aggression is not normative may reduce the likelihood that their children interpret peer provocations as acts of aggression. Conversely, these results contradict the blame perspective, which suggests that parents who disapprove of ambiguous peer provocations may imply that provocateurs were at fault, and thereby increase children's hostile attributional bias. This finding suggests that children do not translate their parents' disapproval of other children's actions into perceiving them as blameworthy. Future research may explore conditions under which the blame effect does occur, such as when parents express their disapproval in an angry manner.

Children's aggression in response to hypothetical peer provocation was lower if parents discussed normative beliefs (vs. trivial aspects), but not if they discussed nonhostile attributions. This may be due to differences in whether or not parents directly

addressed the topic of aggression. Indeed, the direct route of parents disapproving of peer aggression may more readily generalize to children's own aggression than the indirect route of parents discussing nonhostile attributions (which may only impact children's aggression via its impact on their attributional style).

Study 2 also included a staged peer provocation to assess children's *in vivo* attributions and aggression, but we found no effects of parent-child discussion on these measures. The *in vivo* measures were, however, associated with the vignette-based measures of hostile attributional bias, anger, and aggression, which supports convergent validity. Possibly, our manipulation of parent-child discussion was too brief to impact children's cognitions and behavior in an emotionally engaging context. Emotions are strong motivational forces (Lerner & Arsenio, 2000) known to increase children's hostile intent attributions (De Castro, Slot, Bosch, Koops, & Veerman, 2003)—a phenomenon that may also explain why we found no effects of parent-child discussion on children's anger. Alternatively, the lack of *in vivo* effects might indicate that parent-child discussion of hypothetical peer provocation stories—despite addressing social situations that children encounter in the real world—may not readily generalize to children's actual peer interactions. Possibly, an element of emotional involvement is needed to potently influence children's hostile attributional bias (De Castro et al., 2002). Future research may extend our findings by investigating parent-child discussion of peer provocations as experienced by children themselves (Song & Wang, 2013), or parental social coaching in the context of real-world peer interaction (Pettit, Brown, Mize, & Lindsey, 1998).

This research has several strengths. First, we directly investigated parent-child discussion of peer provocations, both by observing these discussions as they naturally unfold and by systematically manipulating them. As such, we extend previous correlational evidence by demonstrating that parents may actually transmit their intent attributions and normative beliefs to their children through discussion (Farrell et al., 2010; Healy et al., 2015; MacBrayer et al., 2003; Nelson et al., 2008; Werner & Grant, 2009). Second, the Study 2 experimental design allowed us to establish causality and provides the groundwork needed to develop techniques to counter children's early emerging hostile attributional biases. The fact that the experiment used an active control condition also allowed us to rule out the alternative explanation that obtained

differences in children's hostile attributional bias resulted from mere exposure to peer provocation scenarios. Third, we studied effects of parent-child discussion in the critical stage of early childhood—a developmental phase in which children's interpretational style is still relatively flexible (Crick & Dodge, 1994). Future research may include older age groups to investigate the developmental generalizability of our findings.

Our research also had limitations. First, we assessed children's hostile attributional bias directly after parents and children had discussed peer provocations, so our conclusions are limited to the short-term effects of parent-child discussion. Although it seems plausible that repeated short-term discussions build up to shape children's attributional style across development, longitudinal research is needed to test this possibility. Second, also due to the single-session nature of our research design, we cannot rule out the possibility that demand effects have influenced children's self-reports. We have sought to abate this concern by using different provocation stories for the experimental manipulation and postassessment in Study 2. Still, our findings warrant future research that adopts a longer time frame between parental discussion of peer provocation and children's reports. Third, our samples were relatively homogeneous (i.e., highly educated, intact families). Although such homogeneity is unlikely to explain our main findings (e.g., the effect of the experimental manipulation in Study 2), it does leave open the question of how well our findings generalize to other populations, which will need to be established in future work. Fourth, our vignette-based assessment procedures did not allow us to distinguish between specific forms of aggression (e.g., physical vs. relational), while our *in vivo* assessment procedures did not allow us to distinguish between mild (e.g., selecting torn stickers) and more severe forms of aggression (e.g., doing physical harm). Extending the scope of aggression measures is another valuable direction for future work.

Young children rely on their parents to help them make sense of their social world. This research illustrates that the way parents discuss peer provocations with their children may influence the development of their children's hostile attributional bias. Moreover, this research illustrates how parents can be stimulated to engage their children in constructive conversations about peer provocations, thus helping them to make less negative interpretations of their interactions with peers. Our findings inform early intervention efforts targeting

children's hostile attributional biases before they become more ingrained (Dodge & Pettit, 2003).

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Supporting Information

Additional supporting information may be found online in the Supporting Information section at the end of the article:

Appendix S1. Supplemental Analyses