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The communication of naïve theories of the social world in parent-child conversation

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### Abstract

Three studies examined the communication of naïve theories of social groups in conversations between parents and their 4-year-old children ( $N=48$ ). Parent-child dyads read and discussed a storybook in which they either explained why past social interactions had occurred (Study 1) or evaluated whether future social interactions should occur (Studies 2 and 3). In all three studies, the content of parents' and children's explanations reflected an intuitive theory of social groups as markers of intrinsic obligations, whereby individuals are obligated to avoid harm to and direct positive actions towards their in-group members. Furthermore, Studies 2 and 3 suggested that when discussing the normative obligations that guide behavior, parents covertly reinforce their children's developing beliefs about social categories. Implications for the development of social cognition are discussed.

**The communication of naïve theories of the social world in parent-child conversation**

In the first few years of life, children build intuitive or naïve theories about the psychological, biological, physical, and social worlds. Each of these theories specifies a distinct causal framework that can be used to understand and predict the relevant components of the environment (Gopnik, 2012; Wellman & Gelman, 1992; Wellman & Gelman, 1998). For example, children understand the movement of a ball rolling down a slanted surface (an event in the physical domain, explainable by gravity) through a different set of causal forces than the movement of a ball being picked up by a person (an event in the psychological domain, explainable by the person's intentions). These domain-specific theories begin to emerge early in infancy (Baillargeon, 2008; Smith, Carey, & Wiser, 1985; Woodward, 1998) and are then revised and elaborated across development (Gopnik & Wellman, 2012).

In the social domain, by the preschool years, children appeal to both naïve psychological theories (which reference nonobvious psychological states, such as goals, intentions, and beliefs; Wellman & Gelman, 1992; Wellman, Cross, & Watson, 2001; Woodward, 1998) and to naïve sociological theories (which reference causal mechanisms extending beyond the individual, such as social category memberships, social norms, and moral obligations; Diesendruck & haLevi, 2006; Gelman, Collman, & Maccoby, 1986; Hirschfeld, 1996; Rhodes, Leslie, & Tworek, 2012; Rothbart & Taylor, 1992; Waxman, 2010) to make sense of human behavior. In particular, by age three, children rely on an intuitive sociological theory that social categories mark patterns of social obligations (Rhodes, 2013). From the perspective of this intuitive theory, people are obligated to protect and avoid harm to other members of their own group—an obligation that does not extend across category boundaries.

By the early preschool years, children's intuitions that people will act to support and avoid harm to members of their own groups shape their predictions (Chalik & Rhodes, 2014; Rhodes, 2012), explanations (Rhodes, in press), and evaluations (Rhodes & Chalik, 2013) of social behavior. For example, children ages 3-10 predict that individuals will refrain from harming members of their own group—and instead will direct harm towards members of other groups—even when the groups are novel and children have very little information about them (Rhodes, 2012). Preschool-age children also use social groups to anticipate more complex social dynamics, such as which individuals will be friends with one another (Shutts, Roben, & Spelke, 2013). By age four, children use categories to explain specific patterns of social interactions—they reference individuals' category memberships to explain harm among members of different groups more than harm among members of the same group, but agents' mental states to explain harm among members of the same group more than among members of other groups (Rhodes, in press). Further, children ages 4-9 evaluate within-group harm (e.g., someone teasing a member of their own group) as consistently wrong regardless of the presence or absence of explicit rules prohibiting the harmful action, but evaluate the wrongness of between-group harm (e.g., someone teasing a member of another group) as dependent on the presence of explicit rules (Rhodes & Chalik, 2013). This pattern indicates that children view people as intrinsically obligated to members of their own groups, but that they do not view these obligations as extending beyond group boundaries.

Children's theories of social groups hold important social and behavioral consequences across development. Children and adults exhibit in-group favoritism across a range of experimental contexts (Brewer, 2007; Dunham, Baron, & Banaji, 2008; Kinzler, Shutts, DeJesus, & Spelke, 2009; Patterson & Bigler, 2006). Furthermore, older children expect loyalty norms to

shape how much individuals are liked by their in-group members (Abrams & Rutland, 2008; Abrams, Rutland, & Cameron, 2003; Abrams, Rutland, Ferrell, & Pelletier, 2008; Abrams, Rutland, Ferrell, & Pelletier, 2009), and group memberships influence which individuals help one another in cases of natural disaster (Levine & Thompson, 2004) and physical violence (Levine, Cassidy, Brazier, & Reicher, 2002). In addition, philosophical and social psychological theories have long held that social categories play an important role in moral frameworks across human cultures (Cohen, Montoya, & Insko, 2006; Greene, 2003; Haidt & Joseph, 2008; Rai & Fiske, 2011; Shweder, Mahapatra, & Miller, 1990)—it appears that universally, the moral codes instituted by human societies have required unity with and loyalty to ingroup members (Haidt & Joseph, 2008; Rai & Fiske, 2011; Shweder et al., 1990).

How does the intuitive theory that social categories mark patterns of social obligations develop by the preschool years? Across domains, children build conceptual knowledge via the integration of input they receive with their own prior expectations (Astuti, Solomon, & Carey, 2004; Gopnik & Wellman, 2012; Rhodes et al., 2012). Understanding conceptual development, then, requires examination of the intuitive biases present in infancy, the input available to children, the processes by which that input is transmitted, and the ways in which children respond to that input. Fortunately, there has recently been a surge of research into the early-emerging cognitive biases that shape children's social understanding (Baillargeon, Scott, & He, 2010; Bar-Haim, Ziv, Lamy, & Hodes, 2006; Hamlin, Mahajan, Liberman, & Wynn, 2013; Hamlin, Wynn, & Bloom, 2007; Liberman, Kinzler, & Woodward, 2014; Powell & Spelke, 2013; Quinn, Yahr, Kuhn, Slater, & Pascalis, 2002; Sloan, Baillargeon, & Premack, 2012; Spelke & Kinzler, 2007). For example, in the first year of life, infants categorize others into social groups based on familiar characteristics such as gender and race (Bar-Haim et al., 2006; Waxman & Grace, 2012) and

use observed similarities and differences between people to predict their social interactions (Lieberman et al., 2014). Yet these early emerging biases do not fully account for the developmental course of social cognition, which undergoes important changes across development (Wellman et al., 2001; Rhodes & Gelman, 2009) and also varies across cultures. For example, whereas social categorization is a universal phenomenon (Atran, 1998; Gil-White, 2001; Hirschfeld, 1996), which social categories people attend to and how social categories influence social cognition vary across cultures (Astuti et al., 2004; Diesendruck, 2003; Rhodes & Gelman, 2009; Rhodes et al., 2012)—thus social categorization depends on the interplay between universal biases and cultural input.

Children receive cultural input from a variety of sources during the preschool years, including from siblings, peers, teachers, and media (Canfield & Ganea, 2014). The present work examines one source of cultural input that is especially influential during early childhood: parent-child conversation. Parents communicate a wealth of information to their children through the course of everyday conversation (Beals, 1997; Bohannon & Stanowicz, 1988; Callanan & Sabbagh, 2004; Clark, 2010; LaBounty, Wellman, Olson, Lagattuta, & Liu, 2008; Lagattuta & Wellman, 2002; Luce & Callanan, 2010; Rigney & Callanan, 2011; Sabbagh & Callanan, 1998; Salmon, Mewton, Pipe, & McDonald, 2011; Turnbull, Carpendale, & Racine, 2008). These conversations can influence children's developing theories in several ways. One possibility is that parents explicitly communicate their abstract understandings of the world to their children. For example, parents might explicitly tell their children that it is particularly important to act pro-socially towards members of one's own group. Another possibility is that parents, perhaps unintentionally, communicate these ideas through more subtle features of their language (Gelman, Taylor, & Nguyen, 2004). For example, parents could more subtly communicate this idea by dis-

cussing the importance of prosocial behaviors when talking about interactions that involve members of the same group, but not doing so when interactions involve members of different groups, even if they do not explicitly mention the group memberships themselves.

Examining parent-child conversation is an effective way to test both what ideas are present in a child's environment and how those ideas are communicated to children. The present work uses parent-child conversation to study the input that is available to children at the time when they build their intuitive theories about how groups shape social interactions. Storybook-reading tasks have been successful in creating a naturalistic setting where parents and children can discuss topics casually, but the actual topics being discussed can be controlled (Clark, 2010; Gelman et al., 2004; Turnbull et al., 2008). Therefore, in these studies, we investigated the properties and content of parent-child conversations as they emerge from reading a storybook containing content that is likely to elicit parents' and children's intuitive theories of social groups. By studying these conversations, we can gain an understanding of what ideas are present in children's cultural context as they build their intuitive theories.

The belief that members of a social category have special social and interpersonal obligations to one another could shape several components of parents' and children's explanatory frameworks of human action. First, such theories point to social categories as relevant entities in the environment, supporting predictions of and explanations for social interactions—in particular, that individuals avoid harming members of their own group (and perhaps direct harm towards members of other groups), and conversely provide help to their own group (and not to others), *because* of their category memberships. Secondly, such theories point to social and moral obligations as the causal mechanism driving these processes—in particular, that these types of social interactions occur because avoiding harm and providing help for one's own group

members fulfills normative obligations. The present studies examine each of these components: Study 1 examines parent-child conversation about *why* people engage in particular actions, and Studies 2 and 3 examine their conversations about why people *should* or *should not* engage in these actions.

### Study 1

Our goal in Study 1 was to examine whether parents and children discuss social categories as relevant entities in explaining different types of social interactions. If parents explicitly communicate their naive theories of the social world to their children, they should systematically refer to social categories to explain why people help (and not harm) members of their own groups, but harm (and not help) members of other groups. However, if parents communicate these ideas in more subtle ways, they might systematically explain intra-group and inter-group interactions in different ways, but without explicitly mentioning the category memberships. Furthermore, we also examine how children respond to the communication that they receive from their parents: If children, like their parents, see social categories as relevant entities for explaining social interactions, they should show similar patterns to those observed in adults.

### Participants

Participants included 16 parent-child dyads (5 father-daughter, 7 mother-daughter, 3 father-son, 1 mother-son; Child ethnicity: 56% White, 6% Asian, 11% Hispanic, 27% Other/Unreported) made up of parents and their 4-year-old children ( $M_{\text{age}}=4;5$ , range=3;11-4;11). Two additional dyads were recruited but excluded from analysis because they did not complete the storybook-reading task. Dyads were recruited from the Children's Museum of Manhattan, where families visiting the museum were approached by experimenters and invited to participate in research studies. Participants then participated in a quiet classroom at the museum.



## Procedures

**Book Reading.** Parents, sitting with their children, were handed a picture book and were told that this was a study of parent-child interactions, so they could read the story with their child in the same way that they would read any storybook at home. No further instructions were provided so as to create as naturalistic a setting as possible and not to bias parents towards any particular type of discussion.

**Introduction and Warm-up.** The picture book first introduced a child named “Annie” who would serve as the story’s narrator throughout. Two warm-up items were then presented in order to familiarize parents and children with the style of the story and encourage them to discuss the story’s events, each consisting of a picture and an open-ended question (e.g. “Why do giraffes have long necks?”). After the warm-up items, “Annie” introduced two novel groups of children—a blue team (four children wearing blue shirts) called the Flurps, and a red team (four children wearing red shirts) called the Zazzes—and told a story in which the teams were engaged in a competitive tower-building activity. Inter-group competition was included to ensure that children would treat the novel groups as meaningful, as children attribute meaning to novel social groups especially when they are engaged in competition (Rhodes & Brickman, 2011; Spielman, 2000). This competition involved each group’s own collaborated activity toward a shared goal (building the tallest tower)—in this part of the story, there were no direct negative interactions between the two groups. Following the story, the test phase of the study began.

**Test Phase.** For the test phase, parents and children saw pictures of a series of social interactions, each on a different page of the book. The interaction was explained at the top of each page (e.g. “Look! A Flurp was playing on the playground. When a Zaz walked over, the Flurp

hit him!”), followed by the picture. At the bottom of each page was an open-ended question asking for an explanation of the interaction (e.g. “Why did the Flurp hit the Zaz?”).

There were four types of scenarios presented in the test items, which were created following a 2 (behavior: harmful, helpful) X 2 (group: within-group, between-group) factorial design. We used six possible social interactions for each scenario-type, and the agent (Flurp or Zaz) of each interaction was counterbalanced across scenarios, resulting in 48 total possible scenarios. These scenarios were divided into four versions of the picture book with 12 scenarios each—using more than 12 scenarios for each version may have made the story too long. Each version therefore consisted of three scenarios for each type, with the presentation order of the scenarios randomized within each version. Participants were randomly assigned to book version and all sessions were recorded by a video camera. A sample storybook page and a list of the scenarios used can be found in Appendix A.

**Transcription.** Entire parent-child conversations were transcribed from videos. Each video was transcribed by two independent coders—the first coder transcribed the video verbatim using word processing software, and the second coder checked the first coder’s work to ensure accuracy. The unit of analysis for transcription and coding was the utterance, defined as a single continuous unit of conversation as determined by content and intonational changes. Utterances were free of long pauses, full stops, and interruptions.

**Coding.** The test phase of each conversation was coded by two independent coders. Conversations were first coded for *on-task* utterances, to eliminate utterances that did not pertain to the story. Next, all on-task utterances were coded to examine *explanation content*: Utterances were first coded to identify whether or not each utterance was an *explanation* and only utterances coded as explanations were coded further for content. The coding category of interest here,

*group membership*, included any references to the groups in the story. For explanation content, every utterance could receive up to two codes. Percentage of agreement for all codes combined was 86.9% (Cohen's Kappa = .82), and in cases of discrepancies, coder 1's responses were used. The full coding scheme is given in Table 1.

—————-INSERT TABLE 1 HERE—————

## Results

All parent-child dyads discussed every page of the story during the test phase. Average conversation length for the entire story was 8.5 minutes, and the average number of on-task utterances for the test phase was 56.0 (32.1 parent, 23.9 child; 77% of all utterances). The average number of explanations given for behaviors during the test phase was 34.6 (16.9 parent, 17.7 child). The marginal means for the percentages of explanations given for each coding category are presented in Appendix B.

Our goal in analysis was to determine how parents' and children's use of each coding category varied across the four types of items (within-group harm, within-group helping, between-group harm, between-group helping) within each conversation. Therefore, we were interested in the proportion of the time that dyads used specific types of explanations for each condition. Thus, to analyze explanation content, we first converted the frequency with which each coding category occurred to a proportion; for example, the proportion of group membership explanations given by parents for within-group harm was calculated by dividing the number of group membership explanations given by parents for within-group harm by the total number of explanations given by parents for within-group harm. We then analyzed these proportions for each coding category using a series of 2 (speaker: parent, child) X 2 (group: within-group, between-group) X 2 (behavior: harmful, helpful) repeated measures analyses of variance with

speaker, group, and behavior as within-subjects variables. This method of analysis—using proportions, rather than raw counts of utterances—allowed us to test the amount of time that parents and children devoted to each type of explanation for the different conditions in a way that was comparable across participants (and thus avoid any bias that could have been introduced by individual variation in talkativeness, which would have placed more weight on dyads who spoke more overall).

Because we sought to test the importance of social groups in children's naïve causal-explanatory theories, the group membership coding category was the main category of interest for analysis. As shown in Figure 1, for harm, participants referred to group membership as an explanation more for between-group interactions, but for helping, they referred to group membership as an explanation more for within-group interactions; the two-way interaction between group and behavior was reliable,  $F(1,15) = 4.65, p < .05, \eta^2 = .067$ . Follow-up tests of simple main effects confirmed that for helping, participants referred to groups significantly more often for within-group than between-group interactions,  $F(1,15) = 5.84, p < .05, \eta^2 = .28$ . For the group membership code, there were no main or interactive effects of speaker and indeed, as shown in Figure 1, parents and children demonstrated similar patterns.

—————INSERT FIGURE 1 HERE—————

We also examined the other types of explanations that parents and children used to explain the behaviors in the story. There were no significant interactions between groups and behavior for any of the other explanation codes or any main or interactive effects of speaker. There were several main effects of behavior, however. Participants referred to social relationships more for helpful than harmful behaviors,  $F(1,15) = 37.26, p < .001, \eta^2 = .316$ . In contrast, they referred to a number of the explanation types more for harmful than helpful behaviors: personal

feelings/character traits ( $F(1,15) = 5.72, p < .05, \eta^2 = .077$ ), social rule following ( $F(1,15) = 7.09, p < .05, \eta^2 = .101$ ), general evaluation ( $F(1,15) = 6.87, p < .05, \eta^2 = .051$ ), and other ( $F(1,15) = 6.03, p < .05, \eta^2 = .074$ ).

## **Discussion**

In Study 1, participants systematically and explicitly referenced social categories to explain particular types of social interactions. For helping, they used group membership as an explanation significantly more for within-group interactions (e.g., “The Flurp shared a cookie with the other Flurp because they’re on the same team”). Additionally, participants generated group membership explanations more for within-group helping than for any of the other three types of items. Thus, the key content communicated in parent-child conversation appears to center on how people in the same category relate to one another, more than beliefs about interactions among members of different groups, consistent with the proposal that intuitive theories of the social world center on beliefs that social groups mark people who are obligated to one another.

One of the basic features of intuitive theories is that they identify relevant entities in the environment. Therefore, by showing that parents and children discuss social categories as relevant entities for explaining human action, these findings show how explicit content relevant to children’s intuitive theories is communicated in parent-child conversation. More specifically, referencing the group memberships particularly for within-group helping can communicate to children, or reinforce their already developing beliefs, that categories shape these types of social interactions. By age four, both parents and children contribute this content to these conversations.

## **Study 2**

Study 1 showed that parents and children see social categories as relevant for explaining specific types of social interactions. Yet, Study 1 did not examine content relevant to the causal mechanism by which social categories shape these behaviors. We have proposed that social obligations are such a mechanism—by marking individuals who are obligated to one another, social categories establish normative standards that govern whether certain behaviors should or should not occur. Thus, to directly investigate this process, Study 2 examined parent-child conversation about why the behaviors shown in Study 1 should or should not be performed. This approach allowed us to test whether parents and children communicate content indicating that different normative standards constrain within-category and between-category interactions. If parents and children explicitly communicate this type of content, they should systematically use social groups to explain why certain behaviors should and should not be performed—for example, they should say that a Flurp should share with another Flurp *because* they are in the same group.

However, as explained above, there are also more subtle features of language that might allow individuals to communicate abstract ideas through the course of conversation. Parent-child conversation is a context in which parents can communicate the fundamental, abstract obligations that govern behavior. Various theories about the development of moral cognition have proposed that these fundamental obligations are structured around whether an act poses a threat to the victim's welfare or is unfair (Helwig, 2006; Smetana, 1985; Smetana & Killen, 2008; Wainryb, 2006; Yau & Smetana, 2003). For example, four-year-old children use welfare and fairness concerns to justify the wrongness of moral—and not conventional—transgressions, such as hitting and stealing (Yau & Smetana, 2003). Furthermore, concerns regarding fairness, especially in terms of equal distribution of resources, can be seen quite early in infancy and are strongly related to infants' social evaluations and behaviors (Schmidt & Sommerville, 2011;

Sloane et al., 2012; Sommerville, Schmidt, Yun, & Burns, 2013). Thus, young children are very sensitive to concerns about fairness. Whether they hear fairness-related explanations, then, in reference to certain types of social interactions can influence whether children come to see these interactions as violating or supporting intrinsic, moral obligations. For example, if a parent says that a behavior is wrong because it is unfair to the victim, the child might understand that the action violated an intrinsic obligation that the agent had to treat that victim justly. Alternatively, the parent could use non-moral language to explain the behavior, such as stating that the action violated school rules, in which case the child might assume that the action was a violation not of an intrinsic obligation, but rather of a conventional rule imposed by the immediate social context. Thus, if parents are more likely to use fairness-based explanations for within-group interactions, this could communicate to children that intrinsic moral obligations apply only within group boundaries.

### **Participants**

Participants included 16 parent-child dyads (3 father-daughter, 3 mother-daughter, 4 father-son, 6 mother-son; Child ethnicity: 37% White, 5% African American, 10% Hispanic, 16% Mixed, 32% Other/Unreported) made up of parents and their 4-year-old children ( $M_{age}=4;6$ , range=4;0-5;0). Three additional dyads were recruited but excluded from analysis because they did not complete the storybook-reading task or they read the text in the story incorrectly. Dyads were recruited from the Children's Museum of Manhattan in the same manner as in Study 1.

### **Procedures**

The storybook reading task was the same as in Study 1, with the exception that during the test phase, instead of explaining an interaction that had already occurred and asking why it had happened, each page now contained a potential social interaction and asked both whether or not

the action should occur and why or why not (e.g. “Look! A Flurp was playing on the playground. A Zaz came over and asked if she could play! Should the Flurp say the Zaz can’t play? How come?”). We used yes-or-no questions in this study, as opposed to the completely open-ended questions from Study 1, so that we could control the number of positive and negative behaviors that participants discussed (and thus, whether they were talking about obligations to perform behaviors or prohibitions against behaviors). However, we also included open-ended “How come?” questions to encourage participants to have explanatory conversations, rather than just answering the yes-or-no questions. Procedures for transcription and coding were identical to Study 1. Because the questions in Study 2 asked why an action *should* happen, instead of why the action *did* happen (as in Study 1), a new coding scheme was used for explanation content (see Table 2). Percentage of agreement for all codes combined was 89.9% (Cohen’s Kappa = 0.83).

—————INSERT TABLE 2 HERE—————

## Results

All parent-child dyads discussed every page of the story during the test phase. Average conversation length for the entire story was 8.3 minutes, and the average number of on-task utterances for the test phase was 84.9 (45.0 parent, 39.8 child; 74% of all utterances). The average number of explanations given for behaviors during the test phase was 30.1 (13.9 parent, 16.3 child). The marginal means for the percentages of explanations given for each coding category are presented in Appendix B.

In this study, in contrast to Study 1, each page of the story included two questions: a yes-or-no question about whether the agent should perform the given behavior, and an open-ended prompt for an explanation. In response to the yes-or-no questions, parents and children gave the



expected response 96% of the time, stating that the characters should perform the helpful behaviors and avoid the harmful behaviors. Yet, our primary aim was not to determine how participants would respond to these questions; the subject of our main analyses was the content of the open-ended explanations that participants gave for their initial responses. To analyze explanation content, we converted the frequency with which each coding category occurred to a proportion in the same manner as in Study 1. We again analyzed the proportions for explanation content for each coding category using a series of 2 (speaker: parent, child) X 2 (group: within-group, between-group) X 2 (behavior: harmful, helpful) repeated measures analyses of variance with speaker, group, and behavior as within-subjects variables.

To test whether parents and children explicitly referred to social groups to explain the normative obligations guiding social interactions, we began by examining participants' explicit use of groups in their explanations, as in Study 1. For the group membership category, there was a significant interaction between speaker and group (see Figure 2;  $F(1,15) = 5.14, p < .05, \eta^2 = .028$ ). Follow-up tests of simple main effects, however, failed to reveal that either parents or children generated these explanations differentially by group context.

—————INSERT FIGURE 2 HERE—————

Next, we sought to examine subtler features of speech. Because fairness is a basic moral concern, as described above, we examined whether parents and children used this explanation type differentially for the various types of social interactions. As shown in Figure 3a, parents used fairness as an explanation for within-group helping more than for any other type of interaction ( $F(3,45) = 6.18, p < .05, \eta^2 = .292$ ), all  $ps < .05$ , whereas children's use of fairness explanations did not differ by item-type,  $F < 1$ ; the three-way interaction between speaker, group, and behavior was reliable,  $F(1,15) = 8.24, p < .05, \eta^2 = .066$ .

—————INSERT FIGURE 3 HERE—————

For the other coding categories, participants referred to social relationships more to explain helpful than harmful interactions ( $F(1,15) = 8.21, p < .05, \eta^2 = .081$ ), and gave general evaluations more often for harmful than helpful interactions ( $F(1,15) = 4.70, p < .05, \eta^2 = .043$ ). There were no other main or interactive effects of speaker, behavior-type, or groups.

### **Discussion**

In Study 2, parents—but not children—used fairness as an explanation more for within-group helping than for any other type of interaction. These findings, like those in Study 1, demonstrate that parents communicate a naïve theory of social groups as markers of intrinsic obligations-- by emphasizing the importance of fairness (an important social obligation) towards in-group members in particular.

An interesting implication of these data lies in the subtlety of the process being demonstrated by parents. In this study, parents did not state that people should harm members of other groups (e.g., "the Flurps should hit the Zazzes"), and did not even state that it is important for individuals to be fair to one another *because* of group membership (e.g., "the Flurp should be fair to the other Flurp because they are in the same group"). Rather, they primarily stated that it is important to be fair (e.g., "that kid should be fair to that other kid") when the interaction occurred between fellow group members, and rarely when it occurred between members of different groups. Thus, by talking about fairness, a basic moral obligation, only in the context of within-group interactions, parents may subtly and unintentionally communicate that such obligations only hold within category boundaries. An unintended consequence of these explanations might then be the communication or reinforcement of beliefs that these obligations do not hold for members of other groups.

Together, the results from Studies 1 and 2 suggest that, at least by age 4, children view social categories as constraining why certain kinds of social interactions should and do occur, but perhaps lack explicit, detailed beliefs about the causal mechanisms linking social categories to these behaviors. Such content appears to be--perhaps unintentionally--provided by parents; in particular, their use of morally-relevant explanations more often to explain within-group interactions could communicate to children that within-group, but not between-group, interactions are constrained by fundamental moral obligations. This content may thus support the intuitive sociological theories that children use in their explicit evaluations of moral behaviors (Rhodes & Chalik, 2013), by which they see within-group harm, but not between-group harm, as a serious intrinsic violation.

### **Study 3**

Studies 1 and 2 illustrated that parents and children discuss social categories as relevant entities for understanding social interactions, constraining what types of behaviors are intrinsically obligated. Yet, these studies leave open the question of whether the present findings are generalizable to scenarios that occur outside of competitive contexts. We used between-group competition in these studies to ensure that parents and children saw the groups as meaningful (Rhodes & Brickman, 2011; Spielman, 2000), but most of the social interactions that children encounter in their lives occur outside of competitive team contexts, so it is important to explore whether our findings can be generalized to situations that do not rely on between-group competition. Furthermore, by using completely novel groups in these studies, we could be sure that the beliefs expressed by children and parents here reflected abstract, conceptual knowledge—as opposed to prior knowledge about specific group histories or characteristics. However, children’s beliefs about social groups based on familiar distinctions have been the subject of much work on

social category-based reasoning in early childhood (Berndt & Heller, 1986; Biernat, 1991; Kinzler et al., 2009; Shutts et al., 2013; Taylor, 1996; Taylor, Rhodes, & Gelman, 2009), and it is thus critical to determine whether the present findings can be generalized to these types of groups. We sought to answer these questions in Study 3 by using social categories that were not defined in a context of between-group competition and that parents and children were likely to view as meaningful based on their own prior knowledge—namely, language-based groups. Pre-school-age children treat language as marking meaningful social differences (Kinzler, DuPoux, & Spelke, 2007; Kinzler et al., 2009). Thus, if the findings from Studies 1 and 2 can be generalized to non-competitive, familiar social categories, similar patterns should be found in Study 3 as were found in those studies.

### **Participants**

Participants included 16 parent-child dyads (2 father-daughter, 4 mother-daughter, 2 father-son, 8 mother-son; Child ethnicity: 50% White, 12.5% Asian, 12.5% Hispanic, 12.5% Mixed, 12.5% Unreported) made up of parents and their 4-year-old children ( $M_{\text{age}}=4;4$ , range=3;11-5;0). Ten additional dyads were tested but excluded from analysis: three because of experimenter error, two because the parent did not want to be videotaped, and five because they did not complete the storybook-reading task. Dyads were recruited from the Children's Museum of Manhattan in the same manner as in Studies 1 and 2.

### **Procedures**

The storybook reading task was the same as in Study 2, with two exceptions: First, instead of being printed in book format, the storybook was displayed on an iPad (parents and children were still able to flip through the pages freely). Second, instead of being told that the Flurps and Zazzes were engaged in a tower-building competition, participants heard audio recordings

(Kinzler et al., 2009) of individual group members speaking different languages (e.g. “Here is the blue group. They are called the Flurps. I want to show you what the Flurps sound like. Let’s listen to some things they say! Tap this Flurp to see what he says!”). The members of one of the groups spoke French, and the members of the other group spoke English. The content of the audio recordings was neutral and identical across languages (e.g. “Hide and seek is a very popular game.”), and whether the Flurps spoke English or French was counterbalanced across book versions. Procedures for transcription and coding were identical to Studies 1 and 2, and the coding scheme used was the same as for Study 2. Percentage of agreement for all codes combined was 89.8% (Cohen’s Kappa = 0.83).

### **Results and Discussion**

As in Studies 1 and 2, all parent-child dyads discussed every page of the story during the test phase. Average conversation length for the entire story was 9.3 minutes, and the average number of on-task utterances for the test phase was 69.1 (33.5 parent, 34.9 child; 70% of all utterances). The average number of explanations given for behaviors during the test phase was 24.1 (9.3 parent, 14.8 child). The marginal means for the percentages of explanations given for each coding category are presented in Appendix B.

Parents and children responded to the yes-or-no questions 94% of the time by stating that the characters should perform helpful behaviors and avoid harmful behaviors. In terms of the content of their explanation, as shown in Figure 3b, participants generated more fairness explanations for helpful than for harmful behaviors,  $F(1,15) = 4.84, p < .05, \eta^2 = .040$ , and parents used fairness as an explanation for within-group helping more than for any other condition ( $F(3,45) = 4.00, p < .05, \eta^2 = .210$ ), all  $ps \leq .05$ . Children’s use of fairness explanations, again, did not differ by item-type,  $F < 1$ . Also as in Study 2, participants referred to social relationships

more to explain helpful than harmful interactions ( $F(1,15) = 19.1, p = .001, \eta^2 = .179$ ), and gave general evaluations more often for harmful than helpful interactions ( $F(1,15) = 17.14, p = .001, \eta^2 = .137$ ). There were no other significant main or interactive effects of speaker, behavior, or group for any of the other coding categories.

Thus, Study 3 replicated the findings of Study 2, showing that those findings can be generalized to familiar social categories that are not defined by between-group competition. After being exposed to language-based social groups, parents—but not children—used fairness as an explanation for within-group helping more than for any other type of interaction.

One interesting difference between Study 3 and Studies 1 and 2 is that in Study 3 only, there were no significant effects for the group membership coding category. This is likely because in their explanations in Study 3, parents and children hardly generated responses referring to group membership at all: Group membership responses accounted for only 1.6% of all explanations given, as opposed to 4.6% in Study 2. Thus, when discussing real-world social groups, participants were even less likely than they had been before to mention those groups explicitly; however, parents still showed the same pattern of systematically referring to intrinsic obligations to explain only certain types of social interactions.

### **General Discussion**

The present studies examined parents' and children's communication of naïve theories of the social world through their conversations. Intuitive theories serve several key roles: (1) they identify relevant entities in the environment, (2) they point to underlying causal mechanisms that operate on those entities, and (3) they enable a specific set of predictions that follow from those causal mechanisms (for review, see Gelman & Noles, 2011). The present studies show that input relevant to each of these components is present in preschool-age children's conversations with

their parents. In Study 1, parents and children discussed social categories as relevant entities for understanding specific types of social interactions (within-category helping and between-category harm). In Studies 2 and 3, parents reinforced the belief that different obligations constrain within-category and between-category behaviors, thus providing a plausible causal mechanism for why people interact differently with members of their own and other groups.

In all three studies, much of the relevant content focused on within-group interactions. Both parents and children most often talked about within-category helping as explainable by group memberships in Study 1, and in Studies 2 and 3, parents most often gave fairness explanations when discussing why people should help members of their own groups. Thus, the content in parent-child conversation emphasized how people relate to members of their own groups more than how people relate to members of other groups.

The role of group membership in parents' explanations was quite subtle. In Study 1, parents explicitly referred to groups to explain why people had performed certain actions, particularly for why people had helped members of their own group. Yet, in Studies 2 and 3, they did not systematically refer to group memberships for discussing why people *should* or *should not* do these actions. This may reflect that parents are trying to avoid directly teaching their children that group memberships shape moral obligations. Nevertheless, as described above, parents differentially gave moral explanations for explaining why people should help members of their groups more than for explaining why people should help members of other groups. Thus, parents may be subtly—and unintentionally—communicating that different moral standards govern how people should treat members of their own and other groups.

Furthermore, in Study 3, even though the specific groups in the story were mentioned by parents and children a very small percentage of the time, parents continued to show the same pat-

tern of discussing fairness primarily in relation to within-group positive behaviors. The fact that the groups were mentioned less frequently than in the other two studies may mean that parents and children speak differentially about different types of social groups—perhaps when they are speaking about familiar groups, such as those in Study 3, they attempt to avoid making statements that could be considered socially undesirable, such as stereotype-like generalizations about entire groups, and consequently explicitly mention the groups less frequently overall. By this account, Studies 1 and 2 can be interpreted as reflecting the purely abstract expectations and beliefs that individuals use to organize the social world—that social categories are relevant entities that causally influence social behavior—whereas Study 3 shows that even when parents do not have conscious access to those beliefs (or, even more strikingly, when they directly attempt *not* to express those beliefs), these naive theories still continue to guide their understanding of intergroup social behaviors and, consequently, the way in which they communicate that understanding to their children.

An important point is that parents often gave general evaluations of behaviors, stating that positive behaviors were good (and that negative behaviors were bad) without giving a specific reason as to why. These types of explanations were common, and did not vary by the characters' group memberships. These responses are somewhat ambiguous—it is possible that by calling a positive behavior good (e.g., “The Flurp should give a hug to the Zazz because that’s nice”), parents intended to communicate moral content (e.g., that people are morally obligated to be nice). Yet, parents could also have been communicating less morally-relevant content; for example, that it is nice to follow rules, or that something is “nice” but not obligatory. For these reasons, explanations that included such general evaluations have been considered as “undifferentiated” in prior work on moral explanations (Smetana, 1985; Yau & Smetana, 2003). In contrast,



multiple theories of moral psychology define fairness as an explicitly moral concern (Helwig, 2006; Smetana, 1985; Smetana & Killen, 2008; Wainryb, 2006; Yau & Smetana, 2003). For these reasons, we focused on fairness explanations--instead of general evaluations--in the present work.

These studies are the first to document the types of input that parents provide regarding their children's developing intuitive sociological theories. Yet, the precise role that parental input plays in shaping the development of children's theories of the social world cannot be determined from the present work—examining the direct consequences of parents' input is an important direction for future research. In the present studies, we found some important similarities and differences between children's and parents' explanations. In Study 1, both parents and children differentially referred to category memberships to explain why people would help members of their own groups. We suggest that such explanations point to categories as relevant explanatory entities in the environment. Because parents and children used these explanations similarly, viewing categories as relevant entities in understanding social interactions may be a feature of social cognition that children develop on their own, with parental input serving to reinforce these already developing beliefs. The findings from Study 1, however, do not shed light on the causal mechanisms that parents and children view as responsible for linking category memberships to these behaviors.

To directly address this question, in Studies 2 and 3, we found that parents provided content indicating that people treat members of their own group differently because they are intrinsically obligated to do so. This content was only generated by parents, and not by children, suggesting that parental input plays a more active role in shaping this component of children's theories. These findings do not preclude the possibility that parents and children also view other

causal mechanisms, such as emotional states, beliefs, or reciprocity, as also playing roles in linking social categories to these patterns of social interactions. Examining these additional mechanisms is another important area for future work.

The present studies focused on four-year-old children with their parents. By age four, children are beginning to show a range of social category-based reasoning processes that guide their own feelings and predictions in the social world (Dunham, Baron, & Carey, 2011; Rhodes, 2012; Shutts et al., 2013), so by focusing on this age group, we examined whether and how abstract explanatory theories emerge through parent-child conversation at the same time as when children are beginning to use such theories in a range of different experimental contexts. An important question for future work will be to examine how parent-child conversation changes as children develop more complex theories of the social world (for examples, see Abrams & Rutland, 2008; Abrams et al., 2008; Abrams et al., 2009). It will also be important to investigate what ideas are present in children's conversations with other individuals, such as siblings, peers, and teachers, as well as whether the present findings can be extended to families from different socioeconomic statuses and cultural contexts.

Despite these open questions, the present studies shed light on how children build systematic causal-explanatory frameworks to understand the world. Our findings are consistent with prior work showing that children endorse a naïve theory of social groups as markers of intrinsic obligations, whereby they believe that individuals are obligated to avoid harm to and direct positive behaviors towards members of their own groups, and that these obligations do not extend across category boundaries. Furthermore, we have extended this prior work by showing that in everyday conversation, parents create an environment that supports the development of these theories by differentially directing their children's attention to social groups when discuss-

ing interactions that they see as involving intrinsic interpersonal obligations. Thus, intuitive theories are an integral part of how children construct their understanding of the world around them, and parent-child conversation is an important piece in understanding how these causal-explanatory theories develop.

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Table 1  
*Coding Scheme, Study 1*

Coding Category	Definition	Example
Group Membership	Refers to the groups.	"Because they're on different teams." "Because he's a red one and he's a blue one."
Personal Feelings/Character Traits	Indicates that the agent has the right to do whatever he wants, explains the action based on the agent's own feelings, or refers to a specific character trait of the agent.	"Because he was hungry."
Social Relationships	Refers to some social relationship aside from the two teams.	"Because they are best friends."
Social Rule Following	Refers to school rules or other conventional rules.	"Because you're not allowed to hit."
General Evaluation	Gives a general evaluation of the action.	"That's nice."
Fairness	Refers to fairness or treating everyone equally.	"It's not fair to take."
Other Situational Inferences	Makes something up about the situation or about one of the characters that was not a part of the story.	"Because it was her birthday."
Other	Says "I don't know" or any other response that does not fit into one of the other coding categories.	"I don't know."

Table 2

*Coding Scheme, Studies 2 and 3*

Coding Category	Definition	Example
Group Membership	Refers to the groups.	"Because they're on different teams." "Because he's a red one and he's a blue one."
Social Relationships	Refers to some social relationship aside from the two teams.	"Because they are best friends."
Welfare	Refers to concerns about physical or psychological welfare.	"Because it will hurt his feelings."
Conventional Rules	Refers to authority, school rules, punishment, or other conventional rules.	"Because you'll get in trouble if you hit."
Fairness/Sharing	Refers to fairness and/or sharing.	"Because you are supposed to share."
Personal Feelings	Refers to the agent's feelings or implies that the agent has the right to do whatever he/she wants.	"Because he can take it if he wants."
General Evaluation	Gives a general evaluation of the action stating that it is or is not acceptable, but does not explain why.	"Because it's nice."
Other	Says "I don't know" or any other response that does not fit into one of the other coding categories.	"I don't know."

\*References to fairness and sharing were considered a single category because both types of responses generally focused on the importance of ensuring equal resource distribution across the two characters, and such concerns are typically defined as fairness concerns (Sloane et al., 2012).

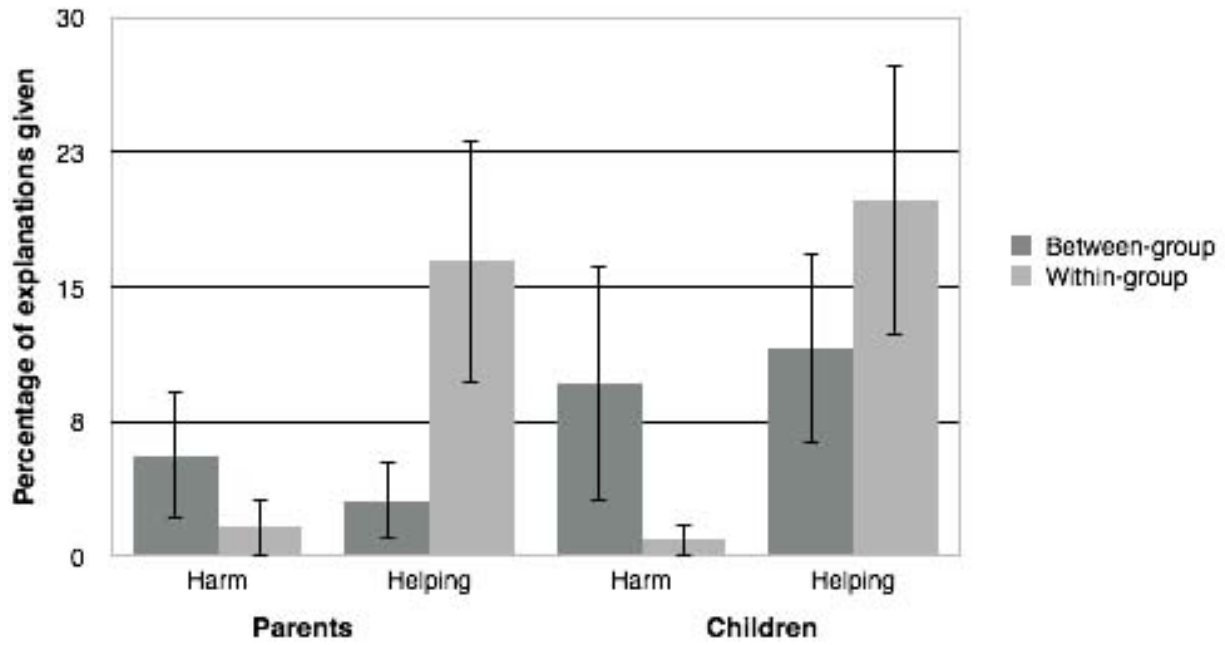


Figure 1. Percentage of parent and child explanations referring to group membership for between-group and within-group harm and helping (Study 1). Error bars represent standard error.

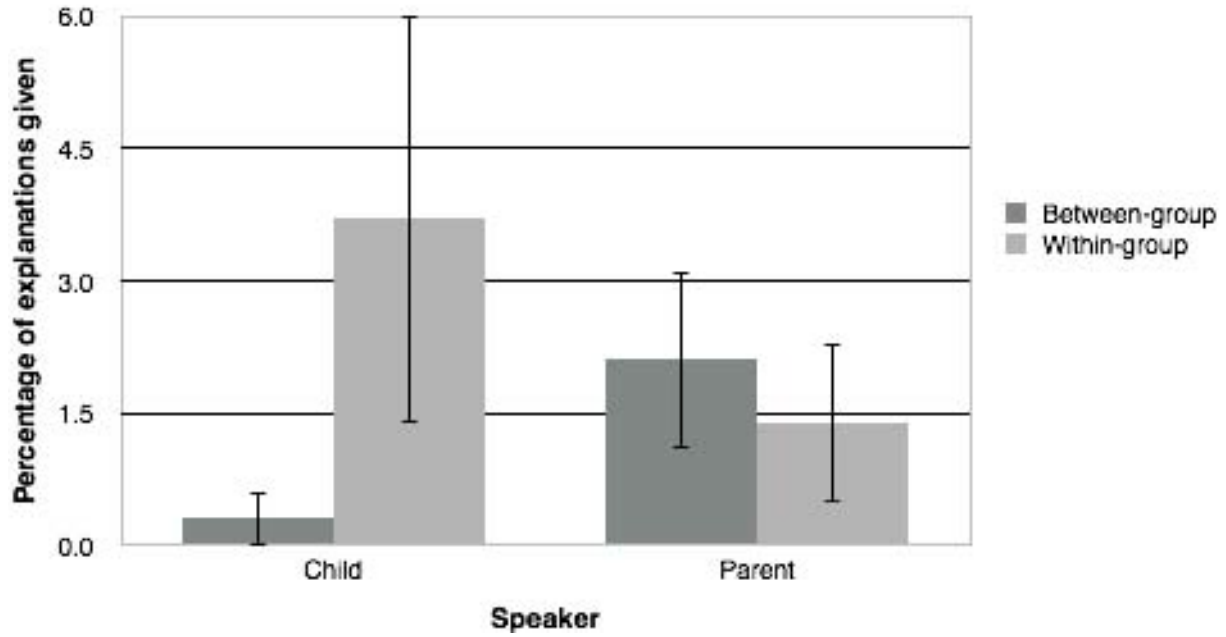


Figure 2. Percentage of child and parent explanations referring to group membership for within-group and between-group interactions (Study 2). Error bars represent standard error.

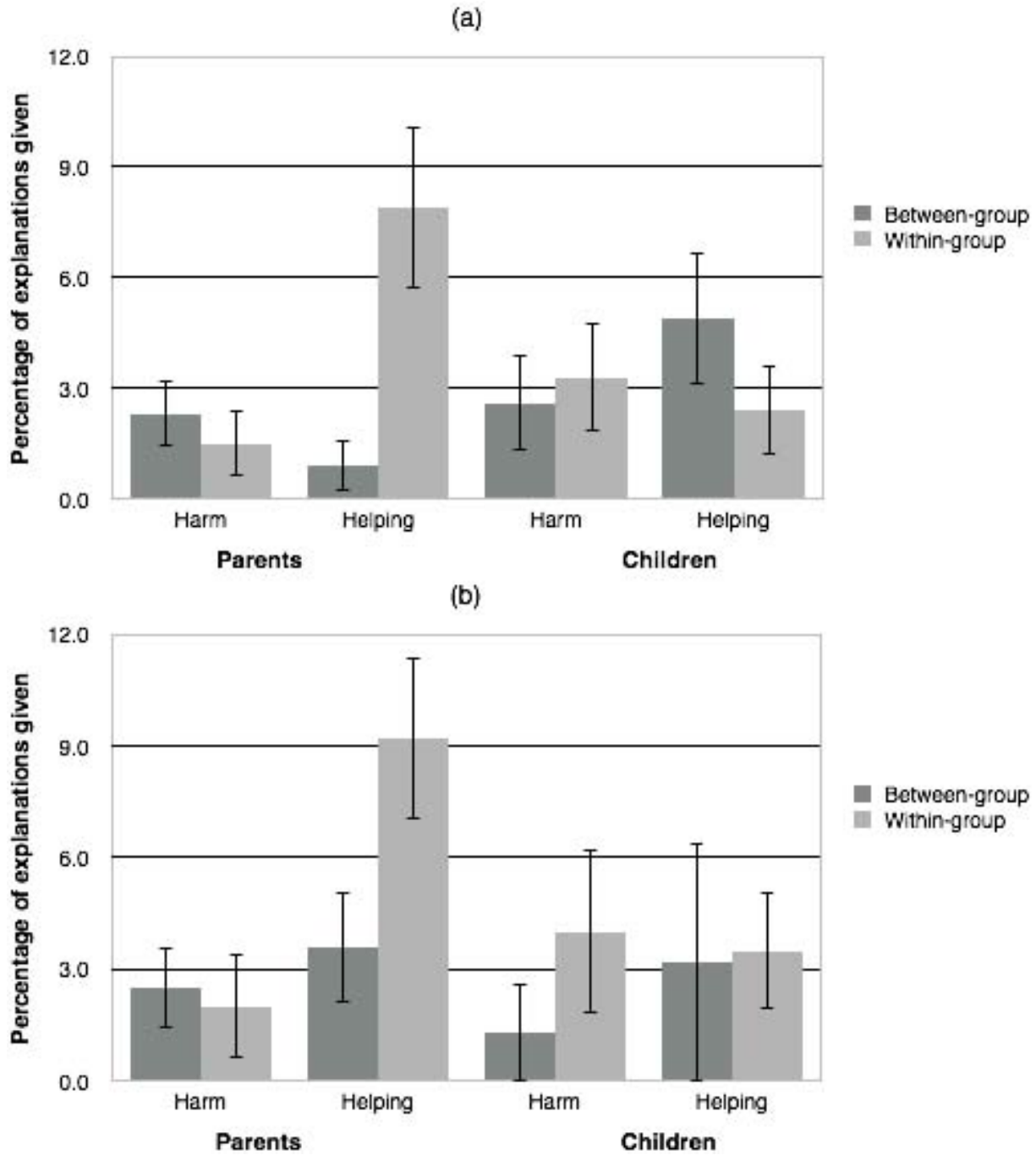


Figure 3. Percentage of parent and child explanations referring to fairness for between-group and within-group harm and helping in (a) Study 2 and (b) Study 3. Error bars represent standard error.