Children Tell More Prosocial Lies in Favor of In-Group Than Out-Group Peers

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Abstract

Children tell prosocial lies from the age of three years onwards, but little is known about for *whom* they are inclined to lie. This pre-registered study examined children's (N = 138, 9-12 years) prosocial lying behavior towards minimal in-group and out-group peers. Additionally, children evaluated vignettes in which an in-group peer told a prosocial lie to an in-group or out-group peer. Results show that only older children told more prosocial lies for the benefit of in-group compared to out-group peers. Further, in the vignettes children of all ages were more accepting of prosocial lying in favor of in-group members compared to out-group members. These findings underscore the importance of considering intergroup relations in children's prosocial lying behavior and advocate for broadening the scope of research on children's intergroup prosociality.

Keywords: prosocial lying, intergroup behavior, prosocial behavior

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Children learn early in life to be helpful and prosocial (e.g., Paulus & Moore, 2012; Warneken, 2018) and are socialized to be honest and refrain from lying (e.g., Heyman, Luu, & Lee, 2009; Lavoie, Leduc, Crossman, & Talwar, 2016). However, these lessons – to be kind and to be honest – sometimes conflict when lying to someone is the kindest course of action. This type of behavior is often described as 'prosocial lying'. Consider, for example, the case where a child receives a present that he or she dislikes. Will the child tell the truth and say they dislike their gift, or will they smile and express that they like the gift?

Research shows that children as young as age three will choose to tell a lie in the type of situation described above (Talwar & Lee, 2002; Talwar, Murphy, & Lee, 2007) and that this tendency increases with age (e.g., Fu, Evans, Wang, & Lee, 2008). Adults and older children often seem to tell prosocial lies for the benefit of others and to spare someone's feelings (DePaulo, Kashy, Kirkendol, Wyer, & Epstein, 1996; Xu, Bao, Fu, Talwar, & Lee, 2010). Therefore, prosocial lies are thought to be important for the maintenance of positive relationships (DePaulo & Kashy, 1998; Duck, 1994; Fu, Xu, Cameron, Heyman, & Lee, 2007). However, previous research has predominantly studied children's prosocial lying in favor of unfamiliar adults (but see Fu & Lee, 2007; Williams, Kirmayer, Simon, & Talwar, 2013). While this research has resulted in an interesting set of findings, it overlooks a crucial component of prosocial lying; namely, that these lies are often told in favor of the people we are motivated to maintain positive relations with, rather than strangers.

A wealth of developmental intergroup research shows that children's social cognition and behavior are often selective (for overviews see Bennett & Sani, 2004; Levy & Killen, 2008; Killen & Rutland, 2011): Children prefer their ethnic in-group by age four (Raabe & Beelmann, 2011), and when 5-year old children are randomly assigned to arbitrary groups (i.e., minimal groups), this elicits strong in-group favoritism (Dunham, Baron, & Carey,

2011). Given the harmful consequences of discrimination and prejudice, it is important to understand when and how group-based biases emerge in children's positive intergroup behavior. In the long run, such understanding will be useful to researchers interested in designing interventions to stimulate positive intergroup relations early in life. The current research examines how the intergroup context influences children's (9-12 years old) prosocial lying behavior and their evaluation of prosocial lying in others.

Children's (Evaluation of) Prosocial Lying

Studies that focused on children's evaluations of prosocial lying show that by the age of four, children evaluate prosocial lies as more positive than antisocial lies (e.g., Bussey, 1999; Heyman, Sweet, & Lee, 2009; Keltikangas-Järvinen & Lindeman, 1997; Talwar & Crossman, 2011; Walper & Valtin, 1992; Xu et al., 2010). As children get older, they gradually understand the prosocial motivations for telling such lies. For example, when seven to 11-year-old children are interviewed about the permissibility of various prosocial lies, older children focus more on the implication for others in their reasoning than younger children do (Heyman et al., 2009). In addition, 9-year-olds, but not younger children, say one should lie when receiving a disappointing gift (Broomfield, Robinson, & Robinson, 2002) and eight to 10-year-old children predict that protagonists provided with the opportunity to tell a prosocial lie in various hypothetical scenarios will lie rather than tell the truth (e.g., Gnepp & Hess, 1986; Popliger, Talwar, & Crossman, 2011). These findings suggest that children can distinguish prosocial lies from antisocial lies from a young age onwards and that, with age, they increasingly understand the other-oriented reasons for telling prosocial lies.

In addition to being able to identify and predict prosocial lies in others, children also tell such lies themselves**.** For example, when 3-year-old children are asked whether an experimenter looks okay while having an unintentional visible mark on their face (i.e., reverse rouge task), the majority of children lie (Talwar & Lee, 2002). When children are asked how

much they like an undesirable gift they have received, they will tell the experimenter that they like the gift (Popliger et al., 2011; Talwar et al., 2007). Moreover, 7-year-olds spontaneously tell prosocial lies when asked for their opinion on someone's bad artwork (Warneken & Orlins, 2015) and children lie to conceal their group cheating in a chess contest (i.e., blue lie; Fu et al., 2008). In sum, across a variety of situations, children have been found to engage in and condone prosocial lying.

Albeit children tell prosocial lies from a young age onwards, there are age-related changes in whether and why they tell such lies. Specifically, Talwar and colleagues (2007) found that school-aged children (9–11 years old) are more likely to tell prosocial lies than preschoolers (3–5 years old). Xu and colleagues (2010) showed that while 40% of 7-year-old Chinese children claimed that they liked an undesirable gift, this number increased to 50% in 9-year-olds and 60% in 11-year-olds. A similar age-related increase has been found for seven to 11-year-olds' prosocial lying about their group's cheating (Fu et al., 2008). One important explanation for why children tell more prosocial lies with age is that older children better understand the prosocial functions of telling such lies and thus increasingly seem to tell these lies, like adults, for other-benefitting reasons. In contrast, younger children seem more inclined to tell prosocial lies for self-serving motives (see Talwar & Crossman, 2011).

The notion that children's motivation for telling prosocial lies changes with age, is for example supported by a study in which prosocial lying and children's evaluation of prosocial lying about a disappointing gift was assessed in seven-, nine-, and 11-year-olds (Xu et al., 2010). Results showed that older children (11 years old) were more likely to state that they lied about liking the gift for prosocial reasons (e.g., ''It would not be nice''), whereas younger children more often stated that they wanted to avoid negative consequences for themselves (e.g., the gift-giver being angry with them). In addition, the older children in this study more often referred to other-oriented concerns for condoning prosocial lying in peers. These

findings align with another study (Popliger et al., 2011) that showed that younger children (4-9 years old) lie less compared to older children (10-12 years old) when the costs increase for telling a prosocial lie (e.g., if children lose a desirable gift when they choose to lie). Younger children thus seemed to lie for self-oriented reasons, whereas older children were willing to incur a cost to make someone feel good. In addition, older children have been found to take into account how the recipient of a lie feels when deciding whether or not to tell a prosocial lie (Warneken & Orlins, 2015). These findings indicate that, with age, children seem to shift from egoistic, self-serving motives to altruistic, other-serving motives in their prosocial lying behavior (Lavoie, Yachison, Crossman, & Talwar, 2017; Talwar & Crossman, 2011; Xu et al., 2010).

Whether children are inclined, however, to spare another person's feelings is likely to also depend on *whose* feelings are at stake. One study (Fu & Lee, 2007) suggests that children's social relations influence behavior that is similar to prosocial lying, namely children's willingness to flatter other people. Specifically, in this study, 6-year-old children were asked to rate drawings of familiar (their teacher and classmates) or unfamiliar adults and peers when they were either present or absent. They showed that children flattered their teacher and classmates more when they were present than peers or adults they did not know. The tendency to flatter close others more is in line with the behavior of adults, who tend to tell more prosocial lies to friends than to acquaintances and strangers (DePaulo & Kashy, 1998). However, in another study, children were found to tell more prosocial lies to unfamiliar research assistants than to their parents (Williams et al., 2013), suggesting that closeness does not always lead to increases in prosocial lying. Going beyond flattery behavior and prosocial lying to parents, no studies have yet examined how intergroup relations influence children's prosocial lying.

Intergroup Prosocial Behavior

Children are members of various groups, such as groups based on ethnicity and gender, or groups based on sports or their school. Social Identity Theory (Tajfel & Turner, 1979) postulates that people are motivated to enhance and maintain a positive social identity, which can be achieved by positively differentiating one's own group ('in-group') from another relevant group ('out-group'). Children as young as two years old have been shown to express a preference for their own gender (Yee & Brown, 1994), and around age four, children show in-group favoritism in the ethnic or racial domain (Raabe & Beelmann, 2011). Moreover, when 5-year-old children are assigned to minimal groups based on t-shirt color, this leads them to explicitly and implicitly prefer their in-group to their out-group (e.g., Bigler, Jones, & Lobliner, 1997; Dunham et al., 2011; Richter, Over, & Dunham, 2016). Such group-based biases can guide children's intergroup behavior and reasoning. For example, children are more likely to favor the exclusion of out-group compared to in-group peers in middle childhood (for an overview see Killen & Rutland, 2011), and children tend to feel more responsible for transgressions by in-group than by out-group peers (5-year-olds; Over, Vaish, & Tomasello, 2016).

While children's intergroup behavior and reasoning about intergroup behavior has predominantly been studied in relation to negative behavior (e.g., prejudice, exclusion; for overviews see Bennett & Sani, 2004; Levy & Killen, 2008), scholars have recently also started to examine the implications of group membership for children's prosocial tendencies. The great majority of these studies have focused on children's sharing behavior, revealing that children share more with in-group peers than out-group peers when groups are defined by ethnicity or gender (3- to 5-year-olds, Renno & Shutts, 2015; preschool to fifth grade, Zinser, Rich, & Bailey, 1981), school (3- to 8-year-olds, Fehr, Bernhard, & Rockenbach, 2008), or novel criteria ("minimal groups"; e.g., 5-year-olds, Dunham et al., 2011). In addition, young children also selectively share with kin and friends over strangers (3- to 6-year-olds, Lu &

Chang, 2016; 4- to 6-year-olds, Moore, 2009; 3-year-olds, Olson & Spelke, 2008) and liked peers over disliked peers (3- to 5-year-olds, Paulus & Moore, 2014).

Other studies have examined children's intergroup helping. For example, Katz, Katz, and Cohen (1976) found that White children put more time and effort into helping a White experimenter than a Black experimenter when asked to set up materials for the next participant (5- to 6- and 9- to 10-year-olds). Additionally, children evaluate prosocial behavior as more obligatory in intragroup compared to intergroup contexts (5- to 6-year-olds, Rhodes & Brickman, 2011; 8- to 13-year-olds, Sierksma, Thijs, & Verkuyten, 2014). Five- to 13-year-old children believe peers will feel better about helping ethnic in-group than ethnic out-group peers (Weller & Lagattuta, 2014), and children are more inclined to help in-group than out-group peers (8- to 13-year-olds, Sierksma, Thijs, & Verkuyten, 2015). Thus, overall, children tend to behave more prosocially to in-group compared to out-group members, and they believe other people should do so as well (but see for exceptions Bigler et al., 1997; Sierksma, Lansu, Karremans, & Bijlstra, 2018).

There is very little work on other types of prosocial intergroup behavior aside from children's helping and sharing (see also Over, 2018). Although previous research shows an in-group bias in children's straightforward prosocial decisions from the age of 5 years (i.e., who do I help? Who do I share with?), prosocial lying might be more complex for children because it can involve considerations about prosociality as well as moral considerations about honesty. Studying children's prosocial lying in an intergroup context therefore provides a unique window into children's prosocial concern for in-group over out-group peers and allows us to examine whether the in-group biases we often see in helping and sharing generalize to more complex prosocial behaviors.

As with prosocial lying, children develop a more sophisticated understanding of intergroup relations with age (e.g., Killen & Rutland, 2011). For example, 13-year-olds are

able to simultaneously weigh various considerations (i.e., social conventional norms, moral norms, in-group identification) while reasoning about intergroup exclusion, whereas younger children (9-year-olds) tend to focus on only a single issue at a time (Hitti, Mulvey, Rutland, Abrams, & Killen, 2014; Mulvey, Hitti, Rutland, Abrams, & Killen, 2014). Moreover, 13-year-olds emphasize group norms in their moral and social conventional decisions more so than 9-year-olds do (Killen, Rutland, Abrams, Mulvey, & Hitti, 2013). In addition, with increasing age, children better understand and value in-group loyalty (e.g., Abrams, Rutland, & Cameron, 2003; Abrams, Rutland, Cameron, & Ferrell, 2007). This tendency to put more emphasis on group membership considerations with age might mean that the intergroup context influences children's prosocial lying differently with age. Below, we further elaborate on our developmental hypothesis.

Overview of the Present Research

The current study examines children's prosocial lying behavior in a minimal intergroup context. The primary aim of this study is to understand how group distinctions influence children's prosocial lying. We therefore chose to study arbitrary minimal groups, as real-life groups (e.g., gender, ethnicity) are complicated, and children differ in their evaluations of and identification with such groups. Building on previous research examining children's prosocial lying when they receive a disappointing gift from an unfamiliar target (e.g., Popliger et al., 2011; Talwar et al., 2007), the current study used the same paradigm, but children received the disappointing gift from an in-group or out-group peer (i.e., disappointing gift task). In addition, we designed a new prosocial lying task in which we measured children's tendency to lie about a peer's quiz outcome in order to grant him or her a prize (i.e., quiz outcome task). Both of these tasks provide opportunities to tell prosocial lies that resemble situations children might encounter in everyday life. However, these two lying tasks also differ in several ways. First, in the disappointing gift task, children lie to a peer, whereas

in the quiz outcome task they lie to a third-party for the benefit of a peer. Second, in the disappointing gift task they can lie about their own feelings, whereas in the quiz outcome task they can lie about another person's behavior. Third, the disappointing gift task assesses lying about an issue that *can* change (e.g., children's own feelings), while the quiz outcome task assesses lying about something that has happened in the past (and thus cannot change). As such, we aimed to understand whether children's intergroup prosocial lying tendencies would generalize across different types of prosocial lying situations. Moreover, we examined children's evaluations of vignettes that portrayed an in-group peer telling a prosocial lie in situations similar to the two behavioral tasks to understand whether comparable findings would emerge for children's cognition about prosocial lying in a third-person context.

We studied children ages 9 to 12 years, and we selected this age range for two important reasons. First, because we were primarily interested in how children's prosocial lying is influenced by the intergroup context, we chose an age range in which children have consistently been shown to tell prosocial lies (e.g., Fu et al., 2008; Xu et al., 2010) and in which they often show in-group bias and are able to reason about intergroup relations in sophisticated ways (for an overview see Killen & Rutland, 2011; Levy & Killen, 2008). As such, our results could not be attributed to a lack of telling prosocial lies in general or a limited understanding of intergroup relations. Second, previous research has documented that during these years there are age-related changes in how children evaluate prosocial lies (Fu, Luo, Heyman, Wang, Cameron, & Lee, 2016; Fu et al., 2007; Talwar, Williams, Renaud, Arruda, & Saykaly, 2016) and that children around the age of 11 and 12 years old tell prosocial lies for prosocial reasons, whereas younger children are predominantly motivated by self-interest (Popliger et al., 2011; Xu et al., 2010; for an overview see Lee, 2013). Thus, the selected age range allowed us to test our developmental hypothesis (see below).

Two preregistered hypotheses are tested. First, we expect that children will more often tell prosocial lies in favor of an in-group member compared to an out-group member. Second, we expect that older children (11- and 12-years-olds) in particular will show in-group bias in their prosocial lying and evaluations of prosocial lying. Specifically, given that older children more often tell prosocial lies for other-oriented reasons (e.g., Xu et al., 2010) and more strongly emphasize group functioning and in-group norms (Killen & Rutland, 2011), they might have a better understanding of the implications of telling prosocial lies in an intergroup context. As a consequence, they might be more likely to tell or condone prosocial lies to in-group compared to out-group peers in order to remain loyal. On the other hand, younger children (9- and 10-year-olds) might put less emphasis on group norms (Killen & Rutland, 2011) and give priority to self-focused reasons for telling a prosocial lie (Xu et al., 2010; Popliger et al., 2011). As a result, they may not consider group membership of the peers they tell such lies for, and thus will not distinguish between in-group and out-group recipients in their prosocial lying behavior and evaluation.

Two possible processes can support the second hypothesis, as it is debated whether in-group favoritism or out-group derogation motivates intergroup behavior (e.g., see Aboud, 2003; Brewer, 1999; Martin & Ruble, 2010). On the one hand, children's prosocial lying for in-group peers might increase with age, suggesting that intergroup prosocial lying is guided by in-group favoritism. On the other hand, children's prosocial lying for out-group peers might decrease with age, which would mean that as children get older, their intergroup prosocial lying is guided by out-group derogation. Finally, we expect these hypotheses to play out similarly for children's evaluation and behavior, and for both types of prosocial lies (i.e., disappointing gift task, quiz outcome task).

Method

Participants

Based on an a priori power analysis (effect size of $f^2 = 0.15$ based on Cohen's guidelines for medium effect sizes with a power of 0.80 and error probability of 0.05) we needed at least 64 children per between-subjects cell. Therefore, we aimed to collect data for at least 128 children, and recruited three primary schools in the Netherlands in order to reach this goal. We stopped data collection after all three schools participated, so that all children within a school who wished to participate were able to do so, resulting in a total sample size of 138 children ranging in age from 9 to 12 years (M= 10.29, SD= 0.86, 9 years old: n = 24, 10 years old: n = 63; 11 years old: n = 38, 12 years old: n = 13; grades 4: n = 41, 5: n = 69, and 6: n = 28). Our sample included 71 girls, and gender was distributed equally across the different ages. Due to computer issues, data could not be recorded for five children's answers to the vignettes. Therefore, children's evaluations of prosocial lying were analyzed for a total of 133 children (M_{Age} = 10.32, SD_{Age} = 0.86). Schools were located in neighborhoods characterized by moderate to high socioeconomic status (Dutch Social Cultural Bureau, 2017). Legal guardians were asked for active consent approximately two weeks before data-collection started. Only the children with signed consent participated. Children received a small toy as reimbursement. To prevent the study's cover story from failing, plenary debriefing took place in the classrooms after data collection at the respective school had been completed. This study was approved by the Ethics Review Board at the Faculty of Social Sciences of the Radboud University Nijmegen (ECSW2016-1710-428, 'The influence of intergroup dynamics on prosocial lying behavior in children') and was pre-registered at the Open Science Framework (https://bit.ly/2DCKe9a).

Design. We used a 2 (in-group recipient, out-group recipient; between-subjects) by 2 (disappointing gift task, quiz outcome task; within-subjects) design to investigate children's prosocial lying behavior, and the order of the two prosocial lying tasks was counterbalanced across participants. For the vignettes, we used a 2 (in-group recipient, out-group recipient;

within-subjects) by 2 (situation of prosocial lying resembles disappointing gift task, quiz outcome task) within-subjects design. The order of the two types of lying behavior presented in the vignettes was counterbalanced across participants. In addition, the order of presentation of the in-group peer lying to an in-group or out-group peer was counterbalanced across vignettes and participants.

Procedure and Materials

All children were tested by the same female experimenter. Upon arrival, children were seated in front of a laptop computer in a quiet and private room within the school building. They were provided with verbal instructions about the set-up, and assent was obtained. The experiment consisted of five computer-based components and lasted approximately 20 minutes. To minimize the influence of social desirability, the experimenter wore headphones and sat faced away from the participant when (evaluation of) prosocial lying was assessed. Children received a small gift (see below) after they completed the study.

Evaluation of gifts. First, we assessed children's evaluation of six different items, so we could later determine whether children would change their evaluation of the gift they received during the disappointing gift task. Hence, rather than letting children reveal to another experimenter that they told a prosocial lie (e.g., Popliger et al., 2011; Talwar & Lee, 2002), we examined whether children changed their evaluation of a received gift by comparing their initial rating of the gift to their rating after they received the gift. Participants rated these six items on a Likert scale of 1 (*do not like at all*) to 5 (*like very much*). The presented items included a set of marbles, a deck of playing cards, an eraser in the shape of a smartphone, a pen in the shape of a syringe, colored chalk, and a necklace. Photographs of these items were presented one by one in a randomized order on a computer screen.

Ranking gifts. Next, children ranked the same items, which was done to select the item that would serve as the 'disappointing gift' (i.e., for the disappointing gift task). In

addition, we used this ranking to select the most liked gift, which children received as reimbursement for their participation. Children saw photographs of the same six items simultaneously on a computer screen and were asked to click on the item they liked the most. This photograph then disappeared, and the same question was asked with regard to the remaining photographs. This process repeated itself until there was only one item left and this last item served as the disappointing gift.

Minimal group context. After ranking the gifts, children were assigned to a minimal group and 'connected' to an in-group or out-group peer. Children were shown their (randomly) assigned group on the computer screen, which was either a red or a blue team. Subsequently, children wore a t-shirt representing the color of their team (see Dunham et al., 2011). We then told children: "Soon you will be connected online to a child who also participates in this study, somewhere else. You will take a quiz together. You will also get to see each other's pictures, which is why I would like to take a photo of you now". The experimenter then took a photo of the participant. Next, participants received a message from the peer they were connected to ("Hi (name participant)! It's nice that we get to do this together. Good luck!"), and participants were given the opportunity to respond.

The peer children were 'connected' to was fictional and depicted using a full-color head and shoulders photograph of a gender-matched Dutch child (Radboud Faces Database; Langner et al., 2010). Group membership was manipulated using T-shirt color (red or blue) and determined at random. The T-shirt colors in the photographs were altered from the original black color using the image editing software GIMP (GNU Image Manipulation Program, version 2.8.18, The GIMP Development Team, 2016). To ensure that the cover story remained a secret throughout the data-collection phase at a particular school, the photograph was accompanied by a name picked at random out of 20 popular Dutch first names (e.g., Sanne, Julia, Roel, Sander). A pilot study showed that the cover story was

convincing for children between 9 and 12 years old, and that the minimal group context successfully elicited in-group preference (see "Results of Pilot Study" in the Supplemental Information).

Prosocial lying. In the next phase of the experiment, children either took a quiz themselves (i.e., disappointing gift task) or watched the peer they were connected to take the quiz (i.e., quiz outcome task), the order of which was counterbalanced across participants.

Disappointing gift task. This round consisted of a computerized adaptation of the disappointing gift paradigm (Saarni, 1984; 1992). Participants took a quiz and believed that the peer they were connected to was watching them. Children answered six multiple-choice questions, and answer options consisted of pictographs and drawings to account for the varying literacy levels across participants. Participants were told they would receive a prize if they answered a minimum of three questions correctly and that the peer they were connected to would pick this prize. The experiment was programmed in such a way that participants would always receive feedback that they had answered enough questions correctly and would receive a prize, irrespective of their performance. When children finished the quiz, they were shown a photograph of their gift. The gift was the item that was ranked as "least liked" in the ranking task. The pilot study demonstrated that the gift was indeed experienced as disappointing. To assess prosocial lying, children then told the peer they were connected to how much they liked the gift on a scale – identical to that of the evaluation task – of 1 (*do not like at all*) to 5 (*like very much*).

To analyze whether children changed their evaluation of the gift and thus told a prosocial lie, we computed a continuous and a categorical variable. The continuous score was constructed by computing a difference score (evaluation at posttest - evaluation at pretest). The categorical measure was constructed by recoding all positive values of this difference

score as "prosocial lie" (coded '1') and all zero and negative values as "no prosocial lie" (coded '0').

Quiz outcome task. In this round, children were told that the peer they were connected to would take a quiz and that they would get to select a prize for the peer if he or she answered at least three questions correctly. Participants were shown a pre-recorded video of a computer screen and were told that this was a live broadcast of the other child taking the quiz. The video showed that the fictional other child only answered two out of the six questions correctly. However, just as this score was being saved, the experiment looked as if it had crashed: "You have been disconnected. Please call the experimenter". The experimenter then pretended to reset the program. While doing so, she would tell the participant: "Unfortunately the program crashed. But if all went well, the computer saved all the necessary information. However, it will ask you some questions just to make sure." Then, as the participant continued with the experiment, the following message appeared on the screen: "The computer suggests that (name fictional other child) scored three points and thus earns a prize! Is that correct?". Clicking "yes" (versus "no") constituted prosocial lying behavior. The pilot study indicated that participants were well aware that the score of the peer they were connected to was insufficient to earn a prize.

Vignettes. After the behavioral tasks, we assessed children's evaluation of intergroup prosocial lying. Children read four stories (see "Vignettes" in the Supplemental Information). Two stories assessed prosocial lying in situations resembling the disappointing gift task (i.e., lying to a peer about something the protagonist was feeling him or herself) and two stories assessed prosocial lying in situations similar to the quiz outcome task (i.e., lying to a third party about something a peer did). An example of a vignette that assessed the first type of prosocial lying is: 'Anne got a new pair of pants. She is excited about them. Lisa does not like them. Still, Lisa says: "Those are nice pants!'. An example of a vignette that assessed the

second type of prosocial lying is: 'Niels accidentally knocks over a bike. The bike is broken. Koen saw it happen. Another child asks: "What happened?". Koen feels bad for Niels. Koen says: "The wind blew the bike over!'. After each vignette, children were asked "Do you think that what (name prosocial liar) did was okay?", and they answered on a 4-point scale ranging from 1 (*not at all okay*) to 4 (*very okay*). For exploratory purposes, some additional questions were asked (see "Exploratory Measures and Analyses" in the Supplemental Information).

Each story was presented with a cartoon showing the prosocial liar and recipient of the lie. Group membership of the protagonists was manipulated by T-shirt color and a border of that same color around the cartoon. The prosocial liar was always a gender-matched in-group member of the participant, whereas the lie-recipient could be an in-group or an out-group member (counterbalanced within type of prosocial lie across stories).

A principal component analysis showed that children's evaluation of the two stories assessing prosocial lying resembling the disappointing gift task loaded on one factor (.68 and .71) and those assessing prosocial lying situations similar to the quiz outcome task loaded on a second factor (.68 and .73). Together, the two factors explained 67% of the total variance.

Data Analysis

All analyses were performed using R (version 3.4.0; R Core Team, 2017). Children's prosocial lying was assessed with a logistic mixed effects model, using the lme4 package (version 1.1.-10; Bates, Maechler, Bolker, & Walker, 2015). This model included fixed effects for the intergroup context (centered contrast), children's age and order of tasks (centered contrast). In addition, type of lie (disappointing gift task, quiz outcome task; centered contrast) was included with a random slope[1]. For children's prosocial lying about the disappointing gift, we also obtained a difference score, which was analyzed using linear regression including children's age and the intergroup context (centered contrast).

Children's evaluation of prosocial lying was assessed using a linear mixed-effects model, also using the lme4 package. This model included fixed effects for the intergroup context (centered contrast), children's age (standardized continuous score), and type of lie (centered contrast, random slope). In addition, a random intercept was included to account for the nesting of stories within participants. In all models, we included main and interaction effects for all independent variables.

To maximize statistical power, we treated age as a continuous independent variable rather than grouping age into categories (see MacCallum, Zhang, Preacher, & Rucker, 2002) and centered it around its mean (see Aiken & West, 1991). Instead of performing a Multivariate Analysis of Variance (MANOVA), we used an LMEM approach because it handles the dependencies at hand, generally has more power and is therefore the recommended method for repeated measures data (e.g., Brauer & Curtin, 2018; Pinheiro & Bates, 2000). We report pseudo R^2 values to represent the variance explained, as they are the best approximation of R^2 for linear mixed-effects models (Nakagawa & Schielzeth, 2012).

Results

Preliminary Analyses

Children indeed disliked the gift they received in the disappointing gift task, with a mean initial rating of 1.87 (SD = 0.70) on a scale ranging from 1 to 5. Overall, 33% of all children told a prosocial lie to a peer when receiving a disappointing gift and 46% of all children told a prosocial lie to a third party about whether a peer deserved to win a prize. Moreover, in the vignettes, children evaluated both types of prosocial lying positively and significantly above the mid-point (i.e., 2.5) of the scale (situations that resemble the disappointing gift task: M = 2.70, SD = 0.83, $t(265) = 3.98$, $p < .001$; situations that resemble the quiz outcome task, M = 2.96, SD = 0.92, $t(265) = 8.16$, $p < .001$).

Preliminary analyses showed no order effects for the continuous measure of disappointing gift task, and order was thus not included in the model estimating the effects on this measure. Gender also did not affect any of the analyses, and therefore data were collapsed across this variable. Assumptions of independence, collinearity, influential cases and linearity were checked with no significant anomalies found, unless otherwise specified. Figure 1 shows the percentage of prosocial lies told for in-group and out-group peers according to children's age.

Prosocial Lying

A logistic mixed effects model for children's prosocial lying behavior (yes versus no) showed a significant main effect for the group context ($p < .001$), which was further qualified by an interaction with the order in which the two types of lying were administered ($p = .01$). Follow-up analyses showed that for the first order (disappointing gift task, then quiz outcome task) children lied more often when it concerned an in-group compared to an out-group peer ($b = 0.83$, $p < .001$), but for the second order (quiz outcome task, then disappointing gift task), there was no effect of the group context ($b = 0.22$, $p = .22$).

In addition, we found a main effect of children's age ($p = .01$) and an interaction between age and the group context ($p = .01$). Simple slope analysis was conducted, and results showed that older children (1 *SD* above the mean) lied more often for in-group peers than out-group peers ($b = 0.93$, $p < .001$). Younger children (1 *SD* below the mean), however, were equally likely to lie for in-group and out-group peers ($b = 0.12$, $p = .54$). Moreover, age was positively related to children's tendency to lie for in-group peers ($b = 0.79$, $p < .001$) but not related to telling a prosocial lie for out-group peers ($b = -0.03$, $p = .88$). Importantly, the interaction for age and the group context was not influenced by the order in which the two types of prosocial lying tasks were administered ($p = .84$).

In addition, we found a main effect of type of lie (p = .03), which suggested that children were more likely to lie about a quiz outcome than about a disappointing gift. No significant interactions with type of lie were found and no other significant effects emerged for any of the other variables. Table 1 shows all regression coefficients. The model correctly classified 27% of cases (R^2 = 0.27).

Difference score disappointing gift task. Next, multiple linear regression analysis was conducted on the difference score in the disappointing gift task to examine to what extent children changed their evaluation of the gift from pre- to post-test. One outlier (outlier labeling rule; Hoaglin & Iglewicz, 1987) was removed in order to adhere to the assumptions of the analysis (see "Additional Analyses" in the Supplemental Information for results including this case). The model predicted a significant proportion of the total variance, $F(3,133) = 6.62$, $p < .001$, $R^2_{\text{Adjusted}} = 0.11$. The results showed a main effect of the group context (b = .19, p = .02), suggesting that children became more positive about the gift when they received it from an in-group peer compared to an out-group peer. In addition, a main effect was found for age (b = .23, p = .01), and there was a significant interaction for age and the group context (b = .18, p = .03). Simple slope analysis showed that older children (1 *SD* above the mean) changed their evaluation more when they received the gift from an in-group peer compared to an out-group peer (b = .37, p = .002), whereas younger children (1 *SD* below the mean) did not differentiate (b = .01, p = .96). In addition, children's age was significantly related to whether they changed their evaluation when receiving a gift from an in-group peer (b = .41, $p < .001$), but age was not related to a change in evaluation when they received a gift from an out-group peer (b = .05, p = .69).

Finally, for a total of 28 participants a negative difference score was found, indicating they evaluated the gift more negatively at post- compared to pre-test. These children were equally distributed across age, gender and conditions and when we excluded these cases from

the analyses, the results did not change (see "Additional Analyses" in the Supplemental Information).

Evaluation of Prosocial Lying

A linear mixed effects model (conditional $R^2 = 0.89$) for children's evaluation of prosocial lying in the vignettes showed a main effect of the group context ($p < .001$): Children evaluated prosocial lying to an in-group peer more positively than lying to an out-group peer. No main effect was found for children's age ($p = .54$), and there was no interaction for age and the group context ($p = .31$). There was no main effect for type of lie ($p = .20$). However, there was a significant interaction for type of lie and the group context ($p < .001$). Follow-up analyses showed that for both types of lying, children were more positive about prosocial lying in the in-group context compared to the out-group context but that this effect was stronger for children's evaluation of prosocial lying situations that resembled the quiz outcome task (in-group: $M = 2.44$, $SD = 0.67$; out-group: $M = 1.47$, $SD = 0.88$, $b = 0.53$, $p < .001$) than for prosocial lying situations resembling the disappointing gift task (in-group: $M = 1.92$, $SD = 0.78$; out-group: $M = 1.48$, $SD = 0.83$, $b = 0.29$, $p < .001$). Moreover, children evaluated prosocial lying for the out-group similarly across the two types of lying contexts ($b = -.03$, $p = .75$), whereas children's approval of prosocial lying for in-group peers was stronger for the situation resembling the quiz outcome task than the disappointing gift task ($b = -0.29$, $p < .001$). Table 2 shows the regression coefficients.

The Relation Between Children's Behavior and Evaluation

We also explored the relation between children's prosocial lying behavior and their evaluation of prosocial lying. First, the correlation between whether children told a prosocial lie in the disappointing gift task and how they evaluated similar situations of prosocial lying was not significant ($r = .08$, $p = .37$). Likewise, prosocial lying in the quiz outcome task and evaluation of similar prosocial lies was also not significantly correlated ($r = .13$, $p = .14$). In

addition, we examined whether children's lying behavior predicted their evaluation of intergroup prosocial lying for each type of lie separately using linear mixed models. For the evaluation of prosocial lying in situations similar to the disappointing gift task, there was no main effect of whether children told a prosocial lie about the disappointing gift (b = .07, p = .37) and no interaction for children's lying behavior and the group context (b = -.00, p = .90). For prosocial lying resembling the quiz outcome task, there was no main effect of whether children decided to lie about the quiz outcome (b = -.11, p = .10) and also no interaction for children's own prosocial lying and the group context (b = .03, p = .51). Children's age did not have an effect in any of the analyses. These results suggest that for both types of lies, whether children lied or not in the behavioral task was unrelated to their evaluation of the same type of intergroup prosocial lying in others.

Discussion

The current research aimed to uncover to what extent the intergroup context influences children's prosocial lying behavior and their evaluation of prosocial lying in others. Importantly, previous research shows that children are willing to tell prosocial lies beginning at a young age (Talwar & Lee, 2002; Talwar et al., 2007), but this research does not take into account *whom* they tell such lies for. Here, we found that in an overwhelming majority (over 80%) of the cases, older children in our sample lied when the lie benefited an in-group peer, whereas only in a small minority (30%) of the cases, children told a prosocial lie when the lie concerned an out-group peer. This in-group bias consistently emerged for both types of prosocial lies for older children, as well as in evaluations of intergroup prosocial lying behavior for children of all ages. This study therefore provides robust and convincing evidence that children are much more willing to engage in, and more positively evaluate, prosocial lying when it concerns in-group compared to out-group peers.

Adults and older children often tell prosocial lies to benefit others, spare someone's feelings, and maintain positive relations with people (DePaulo & Kashy, 1998; Duck, 1994; Xu et al., 2010). Moreover, children are motivated to maintain a positive social identity and prefer their in-group to their out-group (Dunham et al., 2011; Tajfel & Turner, 1979). Bridging these lines of research, this study suggests that social identity concerns also play a role in children's prosocial lying. Specifically, for older children in our sample, the intergroup context had a strong influence on whether they told a prosocial lie, whereas younger children were not concerned with whom they were lying for. It thus seems that older children have a better understanding of the prosocial functions of telling a prosocial lie. Their sophisticated understanding of intergroup relations and loyalty (e.g., Killen & Rutland, 2011) might have prompted them to lie more for in-group than out-group peers. In contrast, it is likely that younger children were more concerned with avoiding the negative consequences of telling a lie (e.g., Xu et al., 2010) and therefore focused on themselves rather than the group membership of the peer they lied for. Correspondingly, no group-based bias emerged in younger children's prosocial lying behavior.

Importantly, with age, children increasingly told lies to benefit in-group peers, whereas the tendency to tell prosocial lies for out-group peers did not change. This pattern of prosocial lying across development suggests that older children's group-based bias in prosocial lying is driven by in-group favoritism rather than out-group derogation. This tendency for stronger in-group favoritism aligns with Social Identity Theory (Tajfel & Turner, 1979) and previous research suggesting that the emergence of in-group bias in children is often not a result of out-group dislike (e.g., Buttelmann & Böhm, 2014; Nesdale, 2004; Over, Eggleston, Bell, & Dunham, 2018). Knowledge about whether in-group favoritism or out-group derogation underlies prosocial lying is vital for our understanding about what changes across development that can lead to intergroup bias in children's care for out-group and in-

group peers. Our results suggest that children become increasingly concerned with their in-group rather than less concerned with their out-group.

These findings have important implications for research on children's intergroup prosociality as well. The sparse existing research on the influence of the group context on children's prosocial behavior has predominantly focused on simple sharing or helping decisions and suggests that children share with and help in-group peers more than out-group peers from the age of five onward (e.g., Dunham et al., 2011; Fehr et al., 2008; Renno & Shutts, 2015; Zinser et al., 1981). However, decisions about helping others are often very complex in real life. When young children are faced with complex decisions such as whether to tell a prosocial lie, in-group bias seems to be overpowered by other considerations. Thus, for a more in-depth understanding of when and how group-based biases influence children's prosocial behavior, research should move beyond studying these simplified decisions. Moreover, previous research has predominantly studied intergroup prosociality in very young children (i.e., 5 to 8 years old). However, our results show that intergroup bias in behavior might emerge much later for more complex prosocial behaviors, underscoring the need to include broader age ranges in the study of intergroup prosociality.

In the current study, we found an order effect for children's tendency to tell a prosocial lie. When children were first given the opportunity to lie about a disappointing gift followed by lying about a quiz outcome, they lied more often for in-group than out-group peers. However, when this order was reversed (i.e., quiz outcome task, then disappointing gift task), children lied equally in favor of in-group and out-group peers. This order effect suggests that children's motivation to maintain positive relationships with in-group peers by telling a prosocial lie can depend on their previous efforts to maintain that relationship. It is likely that when a child has invested in the relationship by lying to a third party for a peer, but then the other child does not 'return the favor' by selecting a disappointing instead of a nice gift, the

child's expectations of mutual investment may be violated. As a consequence, the motivation to keep investing in the relationship (even if it is an in-group member) may diminish. In order to fully capture the dynamics of prosocial lying behavior, future research should therefore not only focus on isolated prosocial intergroup behaviors but should also take into account how previous prosocial exchanges influence children's subsequent prosocial decisions.

The importance of the intergroup context in prosocial lying is further supported by our findings for children's evaluation of prosocial lying. Children read stories in which an in-group peer lied about his or her own feelings to an in-group or out-group peer (similar to the disappointing gift task). In addition, they reported their evaluation of an in-group peer who lied to a third party about something an in-group or out-group peer did (similar to the quiz outcome task). Overall, children were positive about an in-group peer telling a prosocial lie. Moreover, children evaluated an in-group peer's prosocial lying especially positively when the recipient of the lie was an in-group compared to an out-group peer. This in-group bias was found for both types of prosocial lying. Therefore, in addition to a more frequent display of prosocial lying behavior when it concerned in-group peers, children also condoned other people's prosocial lying for in-group peers more than prosocial lying for out-group peers.

Interestingly, and in contrast to our behavioral findings and our hypotheses, children of all ages showed an in-group bias in their evaluations of other people's prosocial lying. One explanation for the absence of age differences in evaluating prosocial lying behavior is related to younger children's tendency to focus more on the self (e.g., Lavoie et al., 2017; Xu et al., 2010). Although younger children were likely concerned with the potential negative consequences of (not) displaying prosocial lying behavior themselves in the behavioral task, such a concern may have been absent when children were faced with a hypothetical situation in which they were not lying themselves. Another possibility is that evaluating prosocial lies in others is a less complex task than actually telling a prosocial lie in an unfamiliar

experimental setting. If this reasoning holds true, it is not surprising that younger children were sensitive to the intergroup context when evaluating hypothetical prosocial lying, but not when given the opportunity to tell prosocial lies themselves.

The results further suggest that there was no relation between children's own prosocial lying behavior and their evaluations of an in-group peer's prosocial lying behavior, regardless of whether these lies were in favor of in-group or out-group peers. These results contrast those of previous studies showing that children's cognition was related to their own prosocial lying behavior (Fu et al., 2008; Xu et al., 2010). However, in our study, the behavioral and cognitive measures differed in several respects. First, the situations in the behavioral tasks were different from those portrayed in the vignettes. For example, in the quiz outcome task, the behavioral task was about protecting a peer from failure, whereas the vignettes were about protecting a peer from embarrassment. Moreover, whereas in the behavioral task participants themselves engaged in prosocial lying, the vignettes portrayed prosocial lying behavior displayed by peers. These differences between the behavioral task and the vignettes could explain why children's behavior in a particular prosocial lying context did not predict their evaluations of other children's prosocial lying behavior in a different context.

Another explanation is that cultural factors play a role in the extent to which prosocial lying behavior and evaluations are associated.. For example, research shows that for modesty behaviors there is a link between behavior and cognition in Chinese children but not in Canadian children (Fu, Heyman, Cameron, & Lee, 2016), suggesting that such an association between behavior and evaluation might be stronger when the child's culture values or emphasizes modesty behaviors. Perhaps children's prosocial lying behavior and evaluation are more in line in cultural contexts in which protecting others from embarrassment and failure is strongly emphasized as opposed to being direct and honest.

The current research also provides insight into children's prosocial lying more generally. Children overall were more inclined to tell a lie to grant a peer a prize than to lie about liking a disappointing gift. The finding that children lied more about a quiz outcome than a disappointing gift is somewhat surprising, given that the latter type of lie seems more socially acceptable than the former. One reason why children more readily lied about the quiz outcome might be that children told prosocial lies to a computer rather than directly to a peer. On the one hand, this might have made children believe that the experimenter would never find out. On the other hand, children might have found it easier to lie to a computer than to a person. Future work should test whether children are more hesitant to tell prosocial lies to a peer directly than lies told online or less directly (i.e., to a third party), and should also more closely consider the role of self-presentational and reputational concerns in children's decisions about whether to lie or not (e.g., Engelmann, Over, Herrmann, & Tomasello, 2013; Engelmann & Rapp, 2018). Another difference is that during the assessment of the quiz outcome task, the computer offered the lie as a default option, whereas for disappointing gift task children had to come up with the lie themselves. When children merely have to agree with a prosocial lie, rather than take the initiative to tell such a lie, they may be more inclined to tell prosocial lies.

Limitations and Suggestions for Future Research

The current research provides novel insight into children's prosocial lying by showing that the identity of the recipient of such a lie is critical. We focused specifically on a minimal group context to shed light on the general effect of group membership on children's decisions to (condone a) lie to benefit others. An important next step is to examine the influence of other group contexts on children's prosocial lying. Doing so can reveal whether older children will always take into account the group context when telling prosocial lies, and whether some group contexts are capable of influencing younger children's prosocial lying as well. It is

likely that the influence of group-based biases differs according to existing status differences or the malleability of a group's boundaries (Tajfel & Turner, 1979). Furthermore, cultural differences could lead to differences in how children weigh group membership considerations in telling prosocial lies. For example, cultural emphasis on other- and self-oriented concerns can influence how parents socialize their children (e.g. Miyamoto et al. 2018) and lead to differences in how group biases in prosocial lie-telling develop.

Moreover, existing groups might hold prosocial or antisocial norms that inform children's (thinking about) intergroup prosocial lying (e.g., Nesdale, Durkin, Maass, & Griffiths, 2005; Schmidt, Rakoczy, & Tomasello, 2012). There is also evidence that stereotypes about groups can strengthen or weaken children's concern for a peer's well-being (e.g., Elenbaas, Rizzo, Cooley, & Killen, 2016; Sierksma et al., 2018), which might influence their willingness to tell prosocial lies in an intergroup context. Future research should consider looking more closely at children's motivations for telling prosocial lies, as prosocial, egoistic or reputational considerations for telling these lies might differ depending on whom the lie is told for.

In addition, future work should more directly test why younger children did not show in-group bias when telling a prosocial lie but did show this bias when evaluating others' prosocial intergroup lying. We tentatively suggest that a focus on the self may be a key component; this possibility could be examined by varying the extent to which lying involves negative consequences for the self, or by using a within-subjects design to heighten the salience of the group context for young children. Such a design could then also include children from a younger age group, given that previous research shows that in-group bias is present from at least the age of five years onward (e.g., Dunham et al., 2011; Raabe & Beelmann, 2011; Yee & Brown, 1994) and should consider including out-group prosocial liars too. Moreover, in the current study, there were two confounds: type of lie and the content

of lies. Although the group context consistently influenced children's evaluation across all situations, it is important for future studies to use the same situations and solely vary toward whom the lie is told and what the lie is about (i.e., peer versus third party, own feelings versus peer's behavior).

Another suggestion for future work is to study how children perceive receiving a prosocial lie, and whether children's perceptions of prosocial lying behavior shift when they are the target of such lies. On the one hand, children may appreciate the prosocial intentions of a prosocial liar, which could especially be the case for older children or when the lie is told by an in-group liar. On the other hand, children might reject these lies because they have been socialized to value honesty, which is more likely for younger children or when the liar belongs to the out-group. Given that developmental research largely focuses on children as 'helpers' (e.g., see Paulus & Moore, 2012; Warneken & Tomasello, 2015), understanding the recipient's point of view could also further elucidate the role of prosocial behavior in intergroup relations.

Conclusion

The research presented here shows that to better understand the complexity of children's prosocial lying behavior, it is crucial to take into account whom children tell such lies for. With increasing age, children's social worlds expand, and the groups they belong to become exceedingly important (Killen & Rutland, 2011; Nesdale, 2004). Studying children's intergroup prosocial lying offers unique insight into how they maintain and enhance important social relationships. Moreover, including social relationships in the study of prosocial lying offers a more profound understanding of children's capability and motivation to deal with socializing messages about honesty and prosociality that sometimes may be at odds with one another. In addition, children grow up in increasingly diverse environments and group-based biases emerge early in life (e.g., Raabe & Beelmann, 2011). Therefore, understanding how

and when group membership influences positive intergroup behavior is important to prevent discrimination and prejudice, as well as to stimulate behavior that can foster social ties across group boundaries. Especially when children can assign distinct evaluations to behavior, as is the case with prosocial lying (morally wrong vs. socially right), group membership can easily be used as a proxy for (not) engaging in behavior that is important in building and strengthening social ties. Heightening children's awareness of group bias and encouraging children to prevent group membership from dictating their social behavior, will help foster an inclusive social atmosphere among children from all backgrounds.

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Footnote 1.

Note that the analyses reported slightly differ from our preregistered analyses plan, in line with suggestions of an anonymous reviewer.

Table 1

Logistic Mixed Effects Model for Children's Prosocial Lying Behavior

Explanatory variables	β	*SE*
Group context	0.58***	0.15
Age	0.44**	0.16
Type of lie	-0.35*	0.16
Order	0.02	0.14
Group context * Age	0.42**	0.16
Group context * Type of lie	-0.01	0.15
Group context * Order	-0.36*	0.15
Age * Type of lie	0.05	0.16
Age * Order	-0.25	0.15
Type of lie * Order	0.04	0.15
Group context * Age * Type of lie	0.03	0.16
Group context * Age * Order	0.03	0.15
Group * Type of lie * Order	-0.22	0.15
Age * Type of lie * Order	-0.07	0.16
Group* Age * Type of lie * Order	-0.07	0.15

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

Table 2

Linear Mixed Effects Models for Children's Evaluation of Prosocial Lying

Explanatory variables	β	*SE*
Group context	0.40***	0.03
Age	0.03	0.05
Type of lie	-0.15	0.09
Group context * Age	0.03	0.03
Group context * Type of lie	-0.10***	0.03
Age * Type of lie	0.07	0.05
Group context * Age * Type of lie	-0.04	0.24

Note. $N = 133$. *** $p < .001$

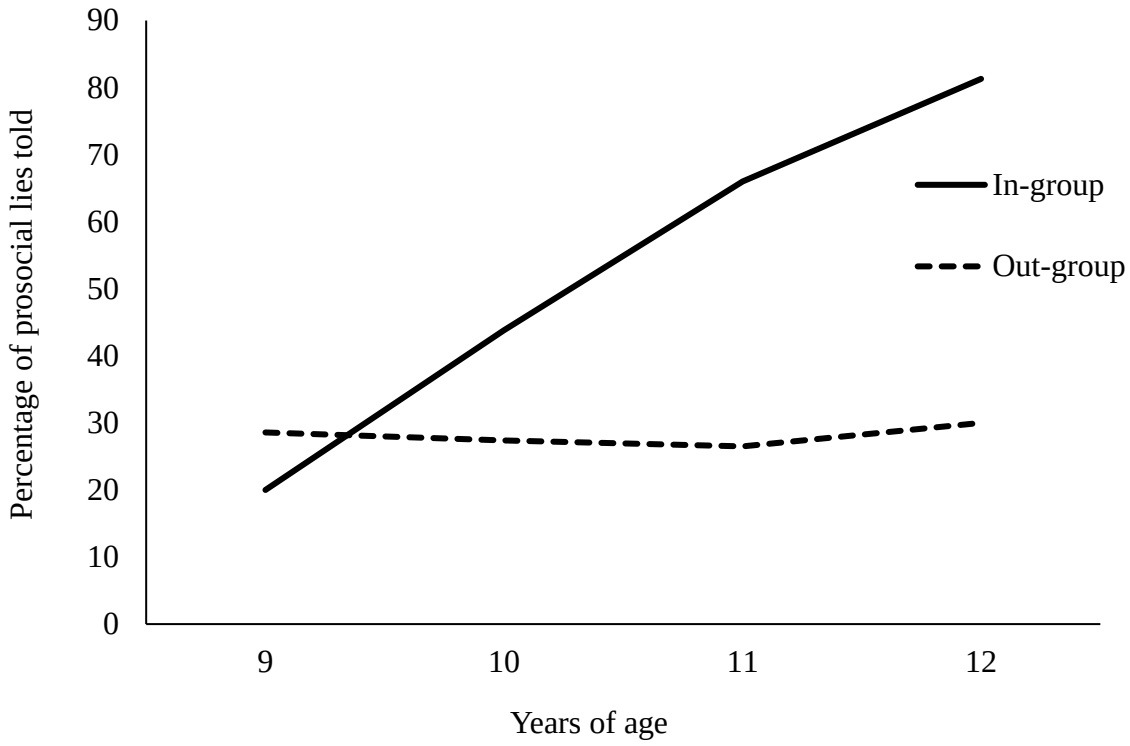

Figure 1. Percentages of prosocial lies told according to age and the group context.