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Brief Report

Young children's willingness to deceive shows in-group bias only in specific social contexts

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ABSTRACT

The ability to deceive others is an early-emerging and socially complex skill, but relatively little is known about when and how a social partner's identity affects young children's willingness to lie. To understand how group membership affects children's lying, we used a minimal group paradigm to examine children's willingness to deceive in-group and out-group members across varied contexts that systematically varied in their costs and benefits. A total of 69 children aged 4 to 7 years played three versions of a sticker-hiding game: a Self-Benefit scenario (child could lie for personal gain), an Other-Benefit scenario (child could lie to help someone else), and a No-Benefit scenario (child could lie to spite someone else). Children lied the most in the Self-Benefit scenario, lying equally to in-group and out-group members in this context. When the potential for self-gain disappeared, however, in-group bias emerged. In the Other-Benefit scenario, children lied more to out-group members in order to help in-group members. Even when the potential to help another was removed (the No-Benefit scenario), children still engaged in more lie telling to out-group members. Results suggest that children's lying is sensitive to group membership, but only in certain social situations, as children's desire to benefit themselves may outweigh in-group bias. Future research should examine alternate contexts, such as lying to avoid punishment, to determine when group membership is most salient. Overall, results indicate that young children are able to flexibly apply a complex social cognitive skill based on group membership and contextual demands, with implications for social behavior and intergroup relations throughout development.

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Introduction

Humans show in-group bias beginning in early childhood, even for arbitrarily assigned groups (see Dunham, 2018, for a review). Although children's in-group bias is present in a variety of situations, it is not equally present in every social context (e.g., Jordan, McAuliffe, & Warneken, 2014; Moore, 2009; Olson & Spelke, 2008; Sierksma, Thijs, & Verkuyten, 2014). One theoretically and practically relevant context in which in-group bias may affect children's actions is deception (e.g., falsely blaming a classmate for breaking a rule or refusing to tell the truth about what a teammate did). Deception is a socially and cognitively complex ability (Lee, 2013; Sodian, 1991; Talwar & Crossman, 2011) but is socially discouraged (Mertz, 2004; Xu, Bao, Fu, Talwar, & Lee, 2010). Therefore, examining children's willingness to deceive in-group versus out-group members can provide insight both into the development of lying and into the influence of social groups on children's complex behavior. Little is known, however, about how young children's in-group favoritism affects their willingness to deceive.

Previous lab-based studies of in-group bias in young children have found effects when examining both socially encouraged behaviors such as making friends and sharing (Buttelmann & Boehm, 2014; Killen & Verkuyten, 2017; Shutts, Banaji, & Spelke, 2010; reviewed in Over, 2018) and socially discouraged behaviors such as exclusion and punishment (Jordan et al., 2014; Thijs, 2017). Young children are also more willing to keep secrets of in-group members than of out-group members, even when it comes at a personal cost (Misch, Over, & Carpenter, 2016). Lying, however, has its own developmental time course and particular social-cognitive demands (see Talwar & Lee, 2008, for a review). For example, in a competitive game, young children's rates of physical exclusion are much higher than their rates of deception, potentially due to the additional cognitive demands of lying (Peskin, 1992). There are also important real-world implications for understanding children's lying as lying has been linked to delinquency (Stouthamer-Loeber, 1986) and moral development (Talwar & Lee, 2008).

Previous research comparing children's rates of lying to different social partners is limited. Some studies have asked children to lie to competitors and to tell the truth to teammates (Peskin, 1992; Sodian, Taylor, Harris, & Perner, 1991), but such studies may capture explicit understanding of competition rather than broader in-group bias. To address such concerns, minimal group paradigms are especially informative because they ensure that children are not relying on previously formed impressions (Dunham, Baron, & Carey, 2011). One study did find that children were sensitive to minimal group membership when telling and evaluating prosocial or "white" lies (Sierksma, Spaltman, & Lansu, 2019), but because prosocial lies are often a societally endorsed behavior (DePaulo & Bell, 1996; DePaulo & Kashy, 1998; Sweetser, 1987), it is not clear whether in-group bias would be sufficient to cause differences in children's willingness to engage in more socially discouraged antisocial lies. In addition, this previous study examined children aged 9 to 12 years, which does not address whether in-group sensitivity emerges earlier in development.

Lying is also a promising research target because it naturally manifests across a variety of contexts, allowing for systematic comparison of social contexts in order to identify the factors that promote, or discourage, in-group bias, which can improve mechanistic understanding of children's real-world behaviors. We highlight three relevant contexts in which children may deceive: (a) situations where they can lie to help themselves and hurt someone else (e.g., blaming another child for a toy they broke; Frye & Moore, 1991), (b) situations where they can lie to help one person and hurt another person without directly benefiting themselves (e.g., blaming their brother instead of their sister even though she broke a toy; Talwar, Lee, Bala, & Lindsay, 2004), and (c) situations where they can lie to hurt someone without anyone directly benefiting (e.g., telling their parents that their brother broke a toy even if he did not; cf. Erat & Gneezy, 2012). Comparing across these scenarios allows for more precise titration of how children weigh harms and benefits when deciding whether to lie. Understanding the interplay between group membership and willingness to deceive across contexts also has practical implications. For example, a child may lie about whether an in-group member was responsible for damaging an object in the classroom, but that would not necessarily entail that the child would lie and falsely blame an out-group member.

We designed a within-participants study systematically examining young children's in-group biases across three scenarios involving antisocial lying. In one scenario, the child's lying benefited the child directly; in the second scenario, the child's lying could secure a prize for one social partner over another; and in the third scenario, the child's lying meant that no one received a prize. This approach was similar to past developmental work examining how sharing varies across different game types (e.g., envy-inducing vs. prosocial contexts; Fehr, Bernhard, & Rockenbach, 2008), and we used a minimal group paradigm to ensure that children's preexisting associations were not driving effects (Dunham et al., 2011). We hypothesized that children would lie more to out-group members overall but that children would be less sensitive to group membership in contexts where they could personally benefit, indicating an early-emerging sensitivity to situational effects when deciding to deceive.

Method

Participants

A total of 69 typically developing children (36 boys) aged 4 to 7 years ($M = 5.80$ years, $SD = 1.19$) participated. This sample size is consistent with many existing behavioral studies of children's in-group biases (e.g., Jordan et al., 2014; Over, Vaish, & Tomasello, 2016) and has more than 80% power to detect small to moderate ($d = .35$) differences between in-group and out-group lying. Children were native English speakers, were born full-term, had normal or corrected-to-normal hearing and vision, and had no first-degree relatives (e.g., a parent) with autism or schizophrenia (cf. Warnell & Redcay, 2019). Additional demographic information was collected for 63 children. Regarding race/ethnicity, 41 children were White and non-Hispanic/Latino, 14 were White and Hispanic/Latino, 3 were of more than one race and non-Hispanic/Latino, 2 were of more than one race and Hispanic/Latino, 1 was Black and Hispanic/Latino, 1 was Asian and non-Hispanic/Latino, and 1 parent did not disclose. Regarding mother's education, 14 children had a mother with less than a college degree, 27 had a mother whose terminal degree was a college degree, 20 had a mother with at least some postgraduate education, and 2 had paternal education reported, which in both cases was a college degree. All study procedures were approved by the local institutional review board, and informed consent was collected from the parent/guardian.

Procedure

Children were assigned to minimal groups using similar procedures to existing studies with young children (e.g., Dunham et al., 2011; McAuliffe & Dunham, 2017). Children were randomly assigned to either a yellow or green team and received a yellow or green scarf that they wore on their wrist throughout the session. After the experimenter explained to children which team they were on, children were shown two sets of three objects (e.g., three pieces of playground equipment) and, after indicating which object was their favorite, were told that in-group members shared their preferences and out-group members did not. As a manipulation check, children were asked which group they would rather play with, and all but 4 children said that they would rather play with their in-group. Excluding these 4 children did not change our results, and thus we included all children in analyses.

After group assignment, children completed three deception scenarios: (a) Self-Benefit, (b) Other-Benefit, and (c) No-Benefit. Each game was played with in-group and out-group puppets. All in-group and out-group members throughout the study were animal puppets, reducing the confounding influence of other sociocultural markers of group membership, a procedure consistent with similar developmental studies (e.g., Over et al., 2016; Wilks & Nielsen, 2018). Each puppet wore a scarf indicating their team. Before each specific game block (e.g., Self-Benefit with in-group) began, the experimenter explained the rules and ensured comprehension of the rules via verbal checks (i.e., explicitly asking children who received the prize based on different outcomes). If children failed these checks, the game was reexplained until the children passed. Before each game block, the experimenter also reexplained the team membership of the puppet and the child (see online [supplementary material](#) for full information about methods, including group allocation and comprehension checks).

In the Self-Benefit scenario (cf. Ding, Wellman, Wang, Fu, & Lee, 2015), the child was presented with two inverted cups and was told to hide a sticker under one of the cups. The cups had construction paper on one side and transparent plastic on the other side. When the cups were placed in a row between the child and the puppet, the puppet was unable to see the sticker but the child could see it, alleviating working memory demands. On each trial, the puppet asked the child "Which cup is the sticker in?" and would look only in the cup indicated by the child. Thus, a lie would result in the child keeping the sticker (because the puppet would look under the wrong cup), and the truth would result in the puppet keeping the sticker.

In the Other-Benefit scenario, the setup remained the same except that the child could no longer benefit and the child's actions affected both puppets simultaneously. For in-group trials, the child hid the sticker and the in-group puppet asked where the sticker was. Again, if the child told the truth about the sticker's location, that puppet (in-group) would get the sticker. If the child lied, the other puppet (out-group) would get the sticker. The same process was repeated for the out-group, such that a lie would result in the in-group puppet keeping the sticker and the truth would result in the out-group member keeping the sticker.

In the No-Benefit scenario, a lie resulted in no one keeping the sticker. The experimenter explained that if the puppet found the sticker, the puppet would get to keep the sticker, but if the puppet did not find the sticker, the sticker would go back in the box. Children played separately with in-group and out-group puppets.

Each child completed 5 trials of each scenario (Self-Benefit, Other-Benefit, and No-Benefit) with each puppet (in-group and out-group) for a total of 30 trials. The first 48 children completed the scenarios in the same order (Self-Benefit, Other-Benefit, and No-Benefit, with the in-group puppet followed by the out-group puppet within each scenario). To ensure that effects were not due to order, we then collected a separate sample of 21 children in which the order of the scenarios and the order of the partner were counterbalanced without duplication of the oversampled order. The original sample completed an additional social-cognitive battery, but because the second sample completed only the lying task, we report on just that task here. We found no main effect of order on children's lying, nor did we find any interaction between order and effects of scenario or group membership. We also repeated our analyses separately for both the initial sample of 48 children and the new sample of 21 children and found the same pattern of significant results in both groups (see [supplementary material](#) for full details on order analyses). Thus, we collapsed across stimuli presentation order in our main analyses.

Results

We analyzed our data using a linear mixed-effects model fit by restricted maximum likelihood in order to predict the number of lies, accounting for nonindependence of observations by including participant as a random intercept and random slopes by participant for group (in-group or out-group) and scenario (Self-Benefit, Other-Benefit, or No-Benefit). Because our main hypothesis was about the interaction of social context and social partner, we examined a model that included the fixed effects of scenario and group membership and their interaction. Using Satterthwaite's method to calculate significance (Kuznetsova, Brockhoff, & Christensen, 2015), this model revealed a significant main effect of scenario, $F(2, 68) = 38.52, p < .0001$, generalized $\eta^2 = .15$ (Lakens, 2013), and of group membership, $F(1, 68) = 51.42, p < .0001$, generalized $\eta^2 = .22$, as well as a significant interaction, $F(2, 136) = 28.86, p < .0001$, generalized $\eta^2 = .18$ (Fig. 1).

Post hoc analyses indicated that children lied equally to in-group and out-group members in the Self-Benefit scenario, $t(68) = 0.000, p > .999$, Cohen's $d = 0$, but engaged in more lie telling to out-group members in the Other-Benefit scenario, $t(68) = 8.57, p < .0001$, Cohen's $d = 1.03$, and in the No-Benefit scenario, $t(68) = 4.28, p < .001$, Cohen's $d = 0.60$. Lying to in-group members was unchanged between the Other-Benefit and No-Benefit scenarios, $t(68) = -0.487, p = .63$, Cohen's $d = 0.07$, but lying to out-group members decreased, $t(68) = -4.027, p < .001$, Cohen's $d = 0.55$. Because each child responded to a particular scenario-group combination five times (e.g., 5 trials of in-group No-Benefit), we conducted post hoc analyses to determine whether children's proportion of lies varied across trials

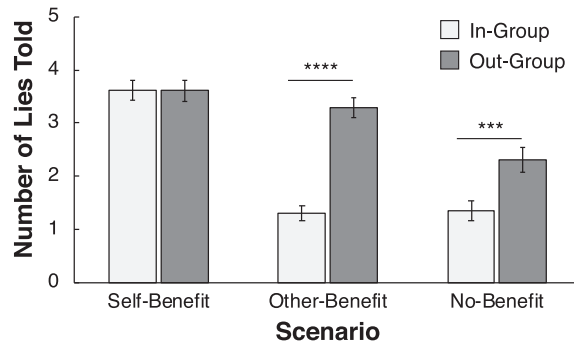


Fig. 1. Children's lying is affected by both social context and in-group bias. Both group membership and deception scenario had significant main effects on children's willingness to lie as well as a significant interaction ($ps < .0001$). *** $p < .001$ and **** $p < .0001$ in a post hoc comparison between the in-group and out-group.

within each game block. The only significant effect was for in-group Self-Benefit, Cochran's $Q(4) = 11.64$, $p = .02$, with post hoc tests indicating that that children became less likely to lie from Trial 1 to Trial 5 (see [supplementary material](#) for full trial analysis).

Given literature on potential age effects on lying and in-group bias (e.g., [Abrams, Rutland, Ferrell, & Pelletier, 2008](#); [Talwar & Lee, 2008](#)), we compared the fit of our more parsimonious model (i.e., a model that contained only group membership, scenario, and their interaction) to a series of more complex models that added age and associated interaction terms (see [supplementary material](#) for discussion of model selection). Across multiple indices of fit, the model excluding age was the best predictor of children's behavior. Supporting this finding, there was no significant main effect of age on the number of children's lies, nor were there significant interactions between age and scenario or group membership ($ps > .10$). Full tables of lying for age group binned by year are provided in the [supplementary material](#).

Discussion

This study expands our understanding of social cognition in young children aged 4 to 7 years by examining the interaction between deception and group membership. Children's deceptive behaviors showed in-group bias, but only in specific social situations. Specifically, we presented children with three different scenarios that systematically varied who benefited and who was harmed by children's lying in order to titrate specific factors influencing children's deception. We found that, in a minimal group paradigm, children lied more to out-group members both when the in-group member benefited (Other-Benefit scenario) and when the lie only harmed the social partner (No-Benefit scenario). Children did not show in-group bias when lying to earn prizes for themselves (Self-Benefit scenario). Our findings indicate that, by the preschool years, children weigh group membership and self- and other-benefit when deciding whether to lie.

We found that the strongest in-group bias emerged when children were able to help a group member and penalize an out-group member without a cost to themselves. Although our paradigm did not involve reciprocity, one possibility is that children's willingness to help in-group members is driven by the desire to obtain future benefits. Future iterations of the paradigm could involve a sequence of trials in which children have the opportunity to learn whether their behaviors are reciprocated (e.g., [Liu et al., 2016](#); [Warneken & Tomasello, 2013](#)) in order to address the effects of this potential mechanism.

Although spiteful lying (i.e., No-Benefit lying) was the least common type of lying, children were more willing to engage in this type of lying with out-group members. Rates of deceiving the out-group did decrease once the in-group member could no longer benefit, suggesting that children may weigh both who is helped and who is harmed when lying. Interestingly, we found that 78% of children engaged in at least one spiteful lie, which is higher than rates in other resource allocation

paradigms (Fehr et al., 2008). The mechanism explaining this spiteful behavior in the current paradigm is unknown, but because the puppet had a chance to win five stickers, children's willingness to lie to deprive the puppet of one or two stickers may reflect an interest in exploring all outcomes. Future research should continue to investigate specific contexts in which children will show such behaviors given that more high-stakes contexts (e.g., only one prize is available, lying results in punishment) may decrease spiteful lying.

The fact that children showed no in-group bias in the Self-Benefit scenario may indicate that selfishness can outweigh a desire to benefit in-group members, at least in certain contexts. Despite some studies finding increased levels of egalitarianism throughout early childhood (e.g., Yu, Zhu, & Leslie, 2016), we found that about two-thirds of children in the current sample kept all or all but one of the stickers for themselves regardless of their age or the identity of their game partner. One possible explanation is that children did not know how many opportunities they would have to win stickers and were presented with a new opportunity to lie on each trial, as opposed to paradigms where children are given a preset number of items to allocate or where they choose between multiple allocation scenarios (e.g., Fehr et al., 2008; Moore, 2009). Thus, a promising future direction involves exploring whether the opportunity to deceive or the general sharing context more strongly influences children's willingness to allocate to others.

Across scenarios, we did not find evidence for age-related changes in children's lying. One possibility is that our sample was old enough to have reached ceiling on age-related changes in this particular antisocial lying game (Ding et al., 2015) and that remaining individual differences are due to other factors such as empathy and aggression. Although research has found that in-group bias increases during the preschool years, it is possible that this increase is moderated by context and is larger in paradigms that involve friendship preferences or direct sharing. Larger samples with more complex deception tasks should be used to longitudinally examine developmental trajectories in children's lying (Talwar & Crossman, 2011). Such research should also extend our findings to real-world contexts in order to determine whether children are sensitive to group markers such as language, race, and sex when deciding whether to deceive.

Overall, our findings indicate that children's lying behavior is sensitive to group membership, but only in certain social situations. When children are able to lie to benefit themselves, they do not show in-group bias and lie at high rates. In-group bias emerges, however, in cases where children can preferentially help their in-group over the out-group or where children have the chance to spite an out-group member. The current study extends previous findings by demonstrating that children not only understand the differences between in- and out-groups but also incorporate this understanding when making the decision about whether to lie, with implications for intergroup relations starting during the preschool years.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jecp.2020.104906>.

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