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SHORT REPORT

Follow the liar: the effects of adult lies on children's honesty

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Abstract

Recent research shows that most adults admit they lie to children. We also know that children learn through modeling and imitation. To date there are no published studies that examine whether lying to children has an effect on children's honesty. We aimed to bridge the gap in this literature by examining the effects of adults' lies on elementary and preschool-aged children's behavior using a modified temptation resistance paradigm, in which children are tempted to peek at a toy they have been told not to look at, and later given a chance to either admit peeking, or try to conceal their transgression by lying. Prior to being tested, half of the children were told a lie and half were not. We then measured both cheating (peeking) and lie-telling behaviors. We hypothesized that lying to a child would increase the likelihood that they would both peek at the toy and lie about having done so. Results showed that school-age children were more likely to peek if they had been lied to, and were also more likely to lie about peeking. In contrast with the school-age children, there was no difference in peeking or lying for preschoolers who were and were not lied to. These results have important implications for parenting and educational settings.

Research highlights

- Preschool and school-aged children were randomly assigned to a lie or no lie condition, in which adults did or did not lie to them before temptation resistance testing.
- School-age children who were lied to were more likely to both lie and peek in the temptation resistance paradigm than children who were not lied to.
- Preschoolers' behavior was unaffected by whether an adult lied to them or not.

Introduction

Much research has been devoted to the topic of lying. Researchers have long been fascinated with determining who lies, who they lie to, and why or why not one might choose to lie (Depaulo, Jordan, Irvine & Laser, 1982; Depaulo, Kirkendol, Kashy & Wyler, 1996; Lewis, Stanger & Sullivan, 1989; Polak & Harris, 1999; Talwar & Lee, 2002a, 2008; Talwar, Lee, Bala & Lindsay, 2002;

2004). Lying refers to deliberately making a false verbal statement with the intent of instilling false beliefs into the mind of the statement's recipient (Lee, 2000, 2013). The current body of knowledge has shown that both children and adults engage in lie-telling behaviors (Depaulo *et al.*, 1996; Talwar & Lee, 2002a). Most research in this field has focused on the lies that children tell adults, leaving the lies that adults tell children largely ignored (Polak & Harris, 1999; Talwar & Lee 2002a; Talwar *et al.*, 2002, 2004; Wilson, Smith & Ross, 2003). The small amount of research that has been devoted to this topic has established that most parents do lie to their children (Heyman, Hsu, Fu & Lee, 2013; Heyman, Luu & Lee, 2009), yet there has been no attempt to examine the effects that these lies may have on the honesty of the children being lied to.

Lie-telling behaviors begin to appear in children around 3 years of age, although there is evidence that children as young as 2 are capable of lying (Chandler, Fritz & Hala, 1989; Evans & Lee, 2013; Polak & Harris, 1999; Talwar & Lee, 2002a). Although young children lie for a variety of reasons, some of the most common lies

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are aimed at concealing transgressions and avoiding punishment (Depaulo *et al.*, 1982; Wilson *et al.*, 2003). In order to elicit these types of lies in a laboratory setting many experimenters have used a temptation resistance paradigm (Lewis *et al.*, 1989; Polak & Harris, 1999; Talwar & Lee, 2008). In the paradigm children are told by an experimenter not to peek at a toy while left alone in a room. Because of the tempting nature of this situation, most children peek at the toy. When the experimenter re-enters the room and asks the child whether they peeked, children can then either confess or can try to conceal the transgression and lie. This paradigm has been used as the basis for learning much about the lies that children tell, making it possible for researchers to correlate lie-telling behaviors with a variety of measures. Age, theory of mind, and executive functioning ability have all been positively correlated with the lie-telling behaviors of children (Carlson, Moses & Hix, 1998; Talwar & Lee, 2008). More importantly, research has shown that a child's moral evaluation of lies is related to their lie-telling behavior, with children who value truthfulness being less likely to lie (Talwar & Lee, 2008).

Because lie-telling is a social behavior, it is important to note that observation, modeling and imitation are all thought to play a large role in a child's social learning (Bandura, 1977; Bandura, Ross & Ross, 1961; Meltzoff & Gopnik, 1993; Meltzoff, 2002). According to Bandura's Social Learning Theory, social behaviors are acquired through a process of direct experience and the observation of others via modeling (Bandura, 1963, 1977). A child is more likely to adopt, or imitate, a modeled behavior if the model is similar to the observer with an admired status, and also if the modeled behavior results in a valued outcome (Bandura, 1977), suggesting that a parent's dishonest actions may be highly susceptible to imitation. It is also believed that modeling and imitation are central to the development of moral values (Meltzoff & Gopnik, 1993; Meltzoff, 2002). This idea is supported by evidence showing that children's moral judgments can be altered by modeling (Bandura & McDonald 1963). Children may be able to do more than just imitate a dishonest adult; perhaps they are able to extract a value system from the model, learning to place less importance on honesty in general.

Given that parents lie to their children, that children's lie-telling behaviors are related to their moral understanding, and that they develop social behaviors and moral values through modeling, it is surprising that there are no published studies evaluating the effects of these lies on children's honesty. We aimed to bridge the gap in this literature by examining the effects of an adult's lie on children's behavior in a temptation resistance

paradigm. We hypothesized that lying to a child would increase the likelihood that the child would engage in dishonest behaviors. We expected that children who were lied to prior to being tested in a temptation resistance paradigm (Talwar & Lee, 2008) would be more likely to lie than children who were not lied to. Because cheating is generally dishonest, and we expected that our manipulation would decrease children's motivation for honest behavior, or their view of honesty as important in this context, we hypothesized that the children who were lied to would also be more likely to cheat (peek) in the paradigm. Older children have more sophisticated theory of mind abilities. For example, children do not pass tests designed to determine whether they understand that someone can hide their emotions until about 5 years of age (Wellman & Liu, 2004). Because older children are also better able to identify and categorize lies (e.g. as good, bad, intentional, unintentional, etc.; Bussey, 1999; Talwar *et al.*, 2002; Wellman, Cross & Watson, 2001), we expected them to be more affected by the lying manipulation than younger children who, based on previous research (Talwar *et al.*, 2002), might have difficulty understanding others' lies.

Method

Participants

There were 186 children between the ages of 3 and 7 included in this study. Ninety-three children were of preschool age, which we defined as under age 5 (the age at which formal schooling generally begins in the US; 41 boys; M age = 3.95 years, SD = .64, range = 3.05–4.99) and 93 were of school-age, between ages 5 and 7 (50 boys; M age = 6.43 years, SD = .93, range = 5.00–7.98). We tested a range of ages in order to assess developmental changes in the influence of adult lies on children. Children in each age group were randomly assigned to either the 'lie' or 'no lie' condition. Table 1 shows the number and ages of children in each group. Children were primarily White (N = 124). Other children were Hispanic (N = 18), Asian (N = 20), African American (N = 6), Native American (N = 3), multiple races reported (N = 6). Nine parents declined to report their child's ethnicity. Children were primarily from middle SES families. An additional 12 children were tested, and their data excluded for the following reasons: Data from five children (one school-age child and four preschoolers) were excluded from analysis because they admitted to peeking even though they had not peeked. Although these children could be classified as having lied, the number in this cell is too small to include in analysis. The

Table 1 Number and ages of girls and boys tested in each group. Age is given in months, and the age range is provided in parentheses

Age group	Lied to		Not Lied to		Total
	Girls	Boys	Girls	Boys	
Preschool	<i>N</i> = 25 50.7 months (39.1–59.9)	<i>N</i> = 21 45.4 months (37.8–59.1)	<i>N</i> = 27 47.4 months (36.6–58.6)	<i>N</i> = 20 47.7 months (36.9–58.9)	<i>N</i> = 93
School age	<i>N</i> = 21 81.5 months (60.1–95.7)	<i>N</i> = 27 76.5 months (60.9–92.1)	<i>N</i> = 22 77.4 months (60.8–95.8)	<i>N</i> = 23 76.5 months (60.9–92.1)	<i>N</i> = 93
Total	<i>N</i> = 46	<i>N</i> = 48	<i>N</i> = 49	<i>N</i> = 43	<i>N</i> = 186

four preschoolers who falsely confessed to peeking were young 3-year-olds ($M = 3.2$ years), suggesting that this may be due to a confirmation bias which has been shown to be robust in 2-year-olds and present in some 3-year-olds (Fritzley & Lee, 2003). Data from three preschoolers were excluded because of tape recording errors which prohibited coding of their behavior (e.g. missing tape or tape with no sound). Data from two children (one school-age child and one preschooler) were excluded because they refused to promise to tell the truth. One school-age child was excluded due to experimenter error and another was excluded due to the mother telling the child that she would be watching from the other room (parents were instructed not to tell their children that they would be able to see them).

Materials/procedures

Children were tested using a modified temptation resistance paradigm. Children were tested with three recognizable, commercially available toys (Elmo, Cookie Monster, Winnie the Pooh) that are associated with a familiar sound ('Tickle me' for Elmo, 'I love cookies' for Cookie Monster, 'There is a rumble in my tummy' for Winnie the Pooh). These sounds were prerecorded, and presented during the temptation resistance paradigm.

Participants were randomly assigned to one of two conditions. In the 'lie' condition, children were told a lie: 'There is a huge bowl of candy in the next room, want to go get some?' Once in the room, the experimenter confessed to the child saying, 'There's not really any candy in here; I just said that because I wanted you to come play a game with me.' Children randomly assigned to the 'no lie' condition were asked, 'There is a really fun game in the next room, want to go play?', with no mention of candy. Both groups of children were tested using a modified temptation resistance paradigm to measure lie-telling and cheating (peeking) behaviors. Children were seated with their back towards the experimenter while two commercially recognizable

character toys were brought out in succession. Each of these toys was accompanied by an associated audio clue. After hearing the clue, children were asked, 'Who do you think it is?' The third toy (target toy) was accompanied by an unassociated audio cue (Beethoven's Fur Elise). Toys were counterbalanced so that no toy served as the target toy more often than any other toy. As the target toy was brought out the experiment was interrupted under the guise of a phone call for the experimenter. The child was instructed not to peek at the toy and was left alone in the room for 90 seconds. When the experimenter returned, the toy was covered and the child was told they could turn around. The experimenter asked the child if he promised to tell the truth. This procedure was adapted from Talwar *et al.* (2002), which showed that asking children to promise to tell the truth before giving them a chance to admit or deny their transgression has been shown to significantly decrease lie-telling (Lyon & Dorado, 2008; Talwar *et al.*, 2002, 2004). Without this adaptation the majority of children lie in the paradigm (Lewis *et al.*, 1989; Polak & Harris, 1999; Talwar & Lee, 2002b; Talwar *et al.*, 2002), causing low variability and making it difficult to reveal the potential effects of our lying manipulation. After promising to tell the truth the child was asked: 'When I was gone did you turn around and peek to look at the toy?'

Data coding

Coders unfamiliar with the hypotheses being tested or group assignment coded the children's behavior. Children were coded as having peeked if they turned their head more than 90 degrees towards the toy with their eyes open. Lying and truth-telling scores were coded only for children who peeked. Children were coded as having lied if they claimed they had not peeked when coders indicated that they had. Children were coded as having told the truth if they peeked and subsequently admitted that they had. Two independent coders both coded 51 (27%) of participants for reliability. Reliability for

peeking behavior was perfect (Cohen's $k = 1.0$). Reliability for lying was near perfect ($k = .96$). Disagreement was resolved by consensus.

Results

We used logistic regression to predict children's lie-telling behavior. Predictor variables were group assignment (whether the child was lied to or not), binned age (preschool or school age), and the interaction between age and group. Dependent measures were whether the child peeked in the temptation resistance paradigm, and whether they lied.

Peeking

Table 2a shows the results of the logistic regression for peeking behavior. Group assignment did not significantly predict the likelihood of children peeking ($p = .481$), but age did ($p = .017$). Younger children were more likely to peek than older children. The interaction between age and group assignment was a marginally significant predictor of peeking behavior ($p = .083$). Because we predicted differences between age groups in the effect of the lying manipulation, we also conducted individual chi square analyses for each age group. Data from these analyses are summarized in Table 3. For preschool-age children, there was no evidence that the lying manipulation affected their peeking behavior

($p = .733$). School-age children were more likely to peek if they had been lied to, $\chi^2(1, N = 93) = 5.93$, $p = .015$, $\phi = .253$, than if they were not lied to (see Figure 1a).

Lying

Group assignment was a significant predictor of lying behavior ($p = .008$, see Table 2b). Children who were lied to were more likely to lie than children who were not. Age also significantly predicted lying ($p = .002$). Older children lied more often than younger children. Finally, the interaction of age and group assignment was a significant predictor of lying behavior ($p = .018$). As was the case with peeking, we conducted chi square analyses for each age group separately. These analyses (see Table 3) showed that preschoolers were just as likely to lie if they were previously lied to as if they were not ($p = .996$). School-age children who had been lied to were more likely to lie about peeking, $\chi^2(1, N = 63) = 4.552$, $p = .033$, $\phi = .269$ (see Figure 1b).

Discussion

Adults often lie to children as a way to control their behavior, to get them to cooperate, to control their emotions, or even because it seems easier than providing an accurate, but difficult explanation for a question the child may ask (Heyman *et al.*, 2009). Although we know that this phenomenon exists, there is little research about

Table 2 Results of logistic regression analyses

Predictor	β	Pseudo R^2	Wald X^2	df	p	Odds Ratio
(a) peeking behavior predicted by age, group assignment, and age by group interaction						
Age	.383		.497	1	.481	1.467
Group	-1.112		5.715	1	.017	.329
Age x Group interaction	1.316	.112	3.007	1	.083	3.729
Predictor	β	Pseudo R^2	Wald X^2	df	p	Odds Ratio
(b) Lying behavior predicted by age, group assignment, and age by group interaction						
Age	-1.140		6.961	1	.008	.320
Group	-1.383		9.864	1	.002	.251
Age x Group interaction	1.434	.088	5.551	1	.018	4.197

Table 3 Results of chi square analyses for each age group

	Peeking				Lying			
	R^2	X^2	Log likelihood	P	R^2	X^2	Log likelihood	p
Preschoolers	.001	.12	.06	.733	0.00	0.00	0.00	.996
School age	.05	5.93	3.001	.015	.067	5.52	2.24	.033

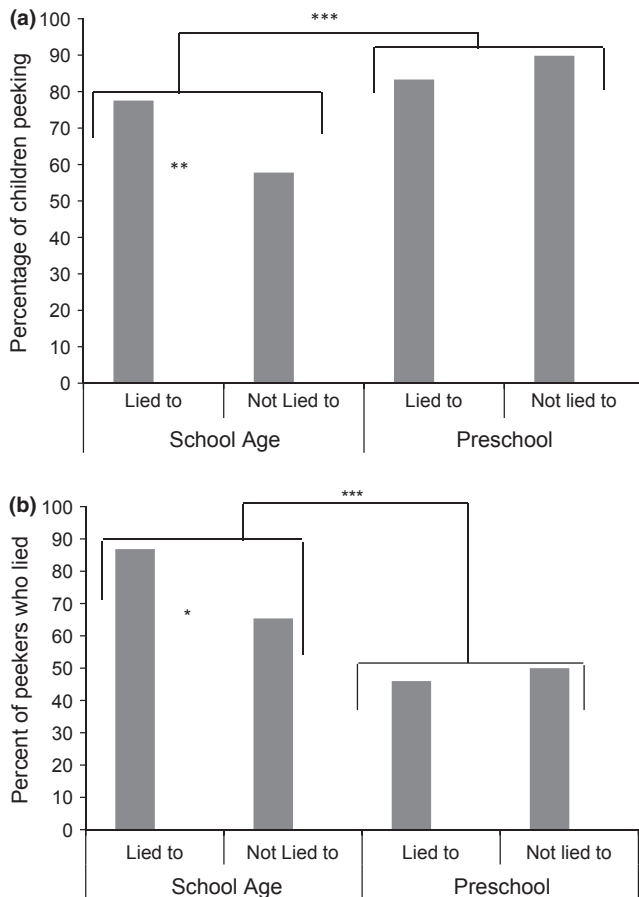


Figure 1 (a) Peeking behavior for school-age children (left) and preschool children (right) who were lied to and not lied to. (b) Lying behavior for school-age peekers (left) and preschool peekers (right) who were lied to and not lied to. *** $p < .005$; ** $p < .01$; * $p < .05$.

the implications of adult lies for children's behavior. We manipulated whether an adult lied to a child or not, and measured their peeking and lie-telling behaviors in a temptation resistance paradigm. The results of the present experiment support our hypothesis that children who were lied to would be more likely to both cheat (peek) and lie in a temptation resistance paradigm, although this effect was only found in the older children. These results suggest that when an adult lies to a school-age child, it increases the likelihood that they will, given the opportunity, cheat on a relatively innocuous task, and lie about having done so.

Although this study has answered what happens when an adult lies to a child, it has not answered why it happens. There are several possible reasons why our manipulation may have caused the children to engage in more dishonest behavior. First, it is possible that the children were imitating the lie-telling behavior that they

observed. However, given that the children not only lied more if they had been lied to but also peeked more, it is likely that the children were doing more than simply imitating the modeled behavior. Perhaps these children made assumptions about the importance of honesty to the model. This would explain why the children who were lied to were more dishonest in general, and would be consistent with data suggesting that children's social imitation can influence their moral judgments (Bandura & McDonald, 1963). Another possibility is that rather than imitating, the children were extracting information about the adult who lied to them, and then using that information to decide how to respond. Perhaps the children did not feel the need to uphold their commitment to tell the truth to someone whom they perceived as a liar. This is particularly relevant because the children were asked to promise to tell the truth, highlighting a commitment between the child and the adult. This would be in line with research that shows that a trustee's characteristics, such as honesty, influence whether a child will trust them (Koenig & Harris, 2005, Vanderbilt, Liu & Heyman, 2011).

It is important to note that we did not find the same effect of lying or cheating with the preschool-age children. Perhaps younger children were unable to recognize that they had been lied to, due to less sophisticated theory of mind abilities (Wellman *et al.*, 2001) and subsequent difficulty understanding others' thoughts and false beliefs. Although 3-year-olds can sometimes pass standard false-belief tests, the ability to understand that people can hide their knowledge and emotions is more sophisticated, and can emerge as late as 5 years of age (Wellman & Liu, 2004). Given that younger children also have more difficulty identifying lies and understanding the motivations behind them (Bussey, 1999; Lee & Cameron, 2002; Lee, Cameron, Doucette & Talwar, 2002; Talwar *et al.*, 2002), it is possible that they were inclined to think that the experimenter just made a mistake, rather than intentionally telling them a lie. Furthermore, it is possible that since the experimenter justifies his lie ('I just wanted you to come play a game with me!'), the child did not classify this as a 'bad' lie. Another explanation is that preschoolers were unable to generalize the lie-telling model to the test situation, as the experimenter lied about candy and the child was questioned in a guessing game setting.

This study has important implications for our understanding about how children learn about honesty via imitation. The results suggest that, at least for children who are elementary school age, the behavior of adults who are around them may influence their own honesty. Children may either learn to lie by copying adults around them, or they may learn that it is sometimes acceptable to lie from watching adults.

In the current study, children were lied to in one context, and about one topic (the presence of candy in the next room), and were given the opportunity to lie in a different context (the character guessing game). The results of this study suggest that even when an adult lies about a topic that is different from the one they ask a child about, they may still be providing an important 'dishonesty model' for them. However, future research might benefit by asking whether context matters, and whether being told a lie about the same or a similar topic might provide an even stronger lying cue to children. Results of studies that manipulate whether the context of adult lies matches situations in which children are asked questions might have important implications for interviews of children in forensic situations. For example, if a child is being interviewed regarding a possible misbehavior, and they 'catch' the adult in a lie, the present results suggest that they might be more likely to lie in response to the questions that they are being asked than children who have not been lied to. Although we do not know how our results would extend to older children, who might be more likely to find themselves in a forensic situation, it seems likely that they would be at least as affected by adult lies as elementary aged children, if not more so.

A limitation of this study was that it was conducted with a single adult model, not with a parent or an adult with whom the child was acquainted. Research suggests that we are more likely to lie to strangers than to those we are close to (Depaulo & Kashy, 1998). If a parent had produced the adult lie, children might have been less likely to lie in return. However, given the literature on how frequently parents lie to their children, it would be interesting to empirically test this idea. Despite this limitation, we feel that our results are still relevant to lies in the context of the parent-child or caregiver relationship as a first step in understanding the effects of adult lies on children's lying behavior. Although children have an established relationship with their caregiver that is likely characterized by trust, it may be that violations of that trust lead children to even more dishonest behavior. On the other hand, the existing parent-child relationship may make children immune to effects of lie-telling by their parents. Future research could replicate this study using a parent as the experimenter to confirm whether this generalization is valid. Another limitation of our experiment is that it only tested a situation where the adult admitted to the child that they had told them a lie. Perhaps discovering the lie on their own, or just suspecting a lie, rather than receiving an admission of guilt, may produce different effects. It is also possible that learning of a lie in real time may have different effects from learning of a lie in the past. Both of these questions should be assessed in future research. We also did not include a manipulation check to see if the children recognized that they had been

lied to and if they thought the lie was a 'bad' lie. This could have helped us understand why the preschoolers were impervious to our manipulation. In future research, we plan to test children's theory of mind as well as their ability to classify lies, in order to determine whether either of these may play a role in children's susceptibility to others' lies. Another important question that remains unanswered is whether children's honesty is generally affected, or if it is specific to the person who lied to them (i.e. do children lie more in general, or do they only lie more to the person who originally lied to them). One way to test this would be to use separate experimenters for the lie-telling manipulation and the guessing game.

These results, coupled with previous research showing that most parents lie to their children, suggests that children may very well be 'following the liar'. The actions of parents suggest that they do not believe that the lies they tell their children will impact the child's own honesty. The current study casts doubt on that belief. This study suggests, rather, that children may use the actions of adults, as a model, to determine whether they will engage in honest or dishonest behaviors. It also suggests that children can use the model as a way to extract information about the value of honest and dishonest behaviors. The lack of evidence for this effect in the younger group of children may suggest that lying to a child before the age of 5 is largely inconsequential, although future research is needed to confirm this. Overall these findings answer a fundamental question about the impact of adults' dishonesty on children. Now that we have clear evidence to suggest the negative effects of lying to children, perhaps adults need to re-evaluate the way that they interact and talk with children. These results have very important implications for parenting as well as education and legal settings. Parents and teachers sometimes use lying as a way of controlling children's behavior or emotions, and the present results suggest that this strategy may have deleterious effects on children's own honesty.

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