

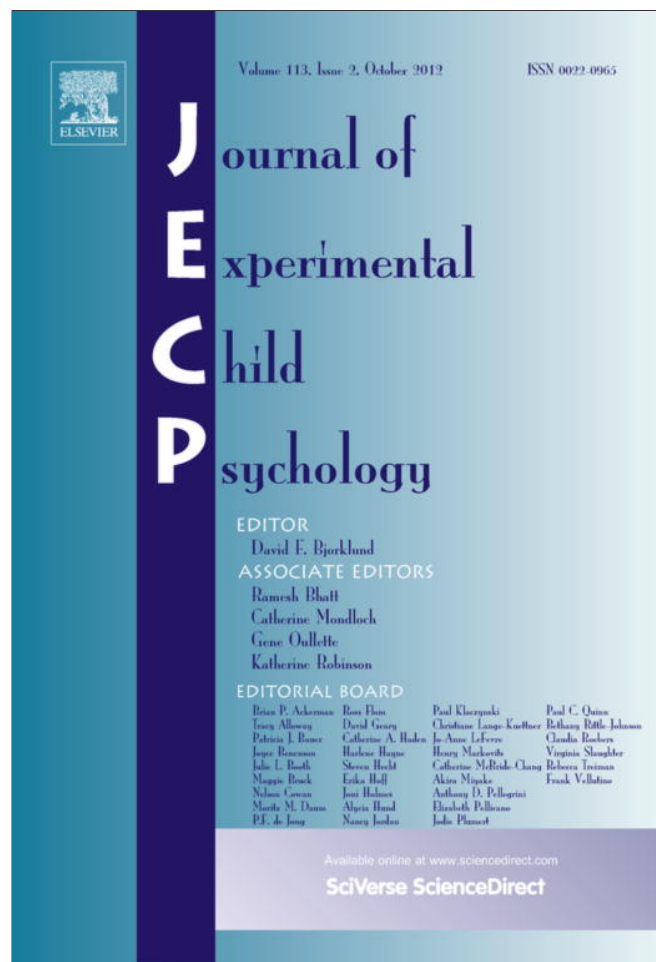
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27. Does valence matter? Effects of negativity on children's early understanding of truths and lies.

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Brief Report

Does valence matter? Effects of negativity on children's early understanding of the truth and lies

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ABSTRACT

Early deceptive behavior often involves acts of wrongdoings on the part of children. As a result, it has often been assumed, although not tested directly, that children are better at identifying lies about wrongdoing than lies about other activities. We tested this assumption in two studies. In Study 1, 67 3- to 5-year-olds viewed vignettes in which a character truthfully or falsely claimed to have committed a good or bad act. Children were biased to label claims that the character had committed a good act as the truth and claims that the character had committed a bad act as lies. In Study 2, 51 4- to 6-year-olds viewed vignettes in which characters either admitted or denied committing a good or bad act. Children were better at identifying truth-tellers and liars when the acts were good. Results suggest that young children initially overgeneralize the concept of lie to include all negative acts and the concept of the truth to include all good acts and only gradually make a distinction between act valence and honesty. As a result, including wrongdoing in scenarios to test children's early understanding of the meaning of lying is likely to underestimate children's abilities.

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Introduction

Scientific and practical interest in children's understanding of the truth and lies has burgeoned during the past few decades. Scientific interest was initially sparked by the writings of [Piaget \(1932/1965\)](#), who described children's understanding of truthful statements and lies as initially being based entirely on factuality and gradually taking into account intentionality. For several decades, psychologists tested

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Piaget's assumptions and refined his estimates of the developmental time course of children's emerging understanding of the truth and lies (Bussey, 1992; Peterson, Peterson, & Seeto, 1983; Strichartz & Burton, 1990; Wimmer, Gruber, & Perner, 1984). At the same time, practical interest was growing in a different context; concerns were being raised about children's competency in legal settings where children are often required to demonstrate an understanding of the truth and lies in order to qualify as testimonially competent (Lyon, 2011). Researchers began to test methods of assessing children's understanding of the truth and lies in legally relevant manners (Haugaard, Reppucci, Laird, & Nauful, 1991; Lyon, Carrick, & Quas, *in press*; Lyon & Saywitz, 1999; Lyon, Saywitz, Kaplan, & Dorado, 2001).

Although these two lines of research have yielded considerable insight into children's emerging understanding not only of the truth and lies but also of a broad range of related concepts, including inaccuracy, mistakes, jokes, and pretense (Hummer, Wimmer, & Antes, 1993; Koenig, Clement, & Harris, 2004; Siegal & Peterson, 1996, 1998; Sullivan, Winner, & Hopfield, 1995; Taylor, Lussier, & Maring, 2003), a basic question about children's conception of truthfulness and lying has gone unanswered—specifically, what role (if any) does the valence of the events about which children are questioned play in their early understanding?

Some research has suggested that children might be especially proficient at identifying statements as lies if they are in the context of wrongdoing. Naturalistic research, for instance, indicates that children's earliest lies concern wrongdoings—specifically, denials of transgressions (Newton, Reddy, & Bull, 2000; Wilson, Smith, & Ross, 2003). Indeed, Bussey (1999) argued that children should be particularly adept at identifying lies about transgressions because they tend to be quite familiar with denials of wrongdoing and also because parents tend not to reprimand children for other types of falsehoods. She found some evidence to support this proposition, with 4-year-olds being more likely to label transgression denials as lies than white or prosocial and trick lies. Similar arguments have been made in legal contexts, namely that truth–lie competency questions should focus on lies about wrongdoing because this will be more meaningful for children (Home Office, 2001; Hoyano & Keenan, 2007; McCarron, Ridgway, & Williams, 2004).

On the other hand, there are several reasons why the presence of wrongdoing may interfere with children's earliest ability to identify true and false statements as the truth and lies. Young children overextend the word “lie” to include bad words (Peterson et al., 1983; Piaget, 1932/1965). Also, children sometimes appear to understand the negative connotations of “lie” better than its denotation. Wimmer, Gruber, and Perner (1985), for example, found that children were more likely to label mistakes as immoral if they had first been asked to label them as “truth” or “lies”. Maltreated children have been found to understand that lies are bad earlier than they understand that lies are false (Lyon, Carrick, & Quas, 2010; Lyon & Dorado, 2008; Lyon & Saywitz, 1999), although this tendency has not been found among nonmaltreated children (Lyon et al., *in press*). Finally, Bussey (1992) found that, although 4- and 5-year-olds rated lies slightly more negatively (on a “badness” scale) than telling the truth about a wrongdoing, this same age group rated truthful statements about a wrongdoing and the wrongdoing itself as comparably bad. It was not until 7 years of age that children rated truthful statements about the wrongdoing less negatively. If children initially associate badness with lying, then situations involving badness, which could include wrongdoing or discussion of wrongdoing, may bias children toward labeling those situations as lies.

Bussey's (1992) finding that 4-year-olds were proficient at identifying denials of transgressions as lies is not inconsistent with the possibility that children's association of lying with negativity can at times impair their apparent understanding. The 4-year-olds' difficulty in correctly labeling prosocial lies as such may have stemmed from their tendency to label only negative statements lies. Because the prosocial lies did not explicitly reference a negative act, they were not considered lies. Moreover, whereas only approximately 10% of the 4-year-olds mislabeled false statements of wrongdoing as the truth, 25% mislabeled true admissions of wrongdoing as lies. As a final note, because Bussey's youngest participants were 4 years of age, the effects of valence on children's earliest understanding could not be determined. Recent research indicates that, when assessing the truthfulness of neutral statements (without any transgression involved), children are capable of differentiating the truth from lies by 3 1/2 years of age (Lyon et al., *in press*). Thus, the inclusion of a wrongdoing may well bias children in a manner that leads to heightened accuracy when lying about that wrongdoing but to reduced accuracy when telling the truth about it.

The purpose of the current research was to assess this possibility by directly examining the effect of valence of events on children's ability to label true and false statements as the truth or lies. We presented children with scenarios in which we systematically varied the valence of acts committed and statements made about those acts. We predicted that children's judgments would be influenced by valence, such that they would exhibit a bias toward labeling statements as lies when those statements referenced bad acts and toward labeling statements as the truth when those statements referenced good acts.

Study 1

In Study 1, 3- to 5-year-olds' understanding of the truth and lies about wrongdoings and positive acts was investigated. Children were exposed to vignettes that varied (a) the valence of an original act (wrongdoing vs. positive act) and (b) whether the character told the truth about the act or lied, with the lies further varying in whether they were the same or opposite valence as the original act. Children were then asked whether the character told the truth or lied. The study conformed to a 3 (Age) \times 6 (Condition) \times 2 (Question Type) design. In two conditions, the character told the truth (one about a wrongdoing and one about a positive act), and in four conditions, the character lied. For two of the lies the false statement matched the valence of the act committed (e.g., the character committed a wrongdoing and then lied by claiming another wrongdoing), and for the other two lies the false statements were opposite in valence to the act committed (e.g., the character committed a wrongdoing and then lied by claiming to have committed a positive act). The question type factor referred to whether children were asked whether the character told the truth or lied. Age was varied between participants, and act valence, statement type, and question type were varied within participants.

We expected developmental improvements to emerge in children's performance, consistent with prior work (Lyon & Saywitz, 1999; Strichartz & Burton, 1990). In addition, given young children's tendency to associate the term "lie" with badness (Peterson et al., 1983; Piaget, 1932/1965), we expected children, especially the 3- and 4-year-olds, to label any mention of wrongdoing as a lie regardless of whether the character was telling the truth. Finally, we predicted that younger children would be more accurate overall when asked about the truth rather than a lie, as reported in previous research (Lyon et al., 2010).

Method

Participants

The participants were 67 3- to 5-year-olds (38 girls and 29 boys): 20 3-year-olds ($M = 3.62$ years, $SD = 0.23$), 21 4-year-olds ($M = 4.60$ years, $SD = 0.27$), and 26 5-year-olds ($M = 5.49$ years, $SD = 0.31$). Gender was distributed approximately evenly across age. Children were recruited from preschools in Orange County, California, on the U.S. West Coast. The racial/ethnic composition of the sample was 49.3% Caucasian, 7.5% Hispanic, 22.4% Asian, 4.5% African American, and 16.3% mixed/other.

Materials and procedure

All procedures took place at children's preschools following written parental consent and child assent. An interviewer administered the study task to each child individually via computer while an assistant transcribed the child's answers. The task consisted of six conditions, with each condition containing four single-picture vignettes. The picture showed a character committing either a good act (e.g., giving a toy) or a bad act (e.g., hitting) and the character claiming to have committed either a good act or a bad act (with a talk bubble depicting the character's words). In two conditions the character told the truth, and in four conditions the character lied, as described below. The interviewer narrated the vignette and then asked, "Did the boy tell the truth?" or "Did the boy tell a lie?" in alternating order. Half of the children were first asked whether the character had lied, and half were first asked whether the character had told the truth. The order of the conditions' presentation was counterbalanced within age using a Latin square design. At the end of the task, children were given a small prize for their participation.

In three of six conditions, associating truth-telling with claims of badness and associating lying with claims of goodness (regardless of the valence of the act committed) should lead children to poor performance. In Condition A, the character committed a bad act and told the truth about that bad act. In Condition B, the character committed a bad act and falsely claimed to have committed a *good* act. In Condition C, the character committed a good act and falsely claimed to have committed a *different* good act. In the other three conditions, associating truth-telling with claims of goodness and associating lying with claims of badness (again, regardless of the valence of the act committed) should lead to enhanced performance: In Condition D, the character committed a good act and told the truth about that good act. In Condition E, the character committed a good act and falsely claimed to have committed a *bad* act. In Condition F, the character committed a bad act and falsely claimed to have committed a *different* bad act.

Together, the conditions enabled us to test the following. If the predicted bias was present, and if the character stated that he committed a bad act, then children would call the character a liar. This would impair performance on the A task (telling the truth about a bad act) but would inflate performance on the E and F tasks (lies that claimed a bad act). If the character stated that he committed a good act, then children would call the character a truth-teller. This would impair performance on the B and C tasks (lies that claimed a good act) but would inflate performance on the D task (telling the truth about a good act).

Results

Children's responses were scored as correct if they accurately identified whether the characters told the truth or a lie. "Don't know" responses ($n = 3$) were considered as incorrect. Correct responses were summed and divided by the number of questions asked to create percentage accuracies for each condition. Preliminary analyses showed that order, gender, and race/ethnicity were unrelated to children's performance. None of these is considered further.

We entered children's accuracy scores into a 3 (Age: 3, 4, or 5 years) \times 6 (Condition: A, B, C, D, E, or F) \times 2 (Question Type: truth or lie) mixed-model analysis of variance (ANOVA), with condition and question type varying within participants. The main effect of age was significant, $F(2,64) = 9.16$, $p < .001$, $\eta_p^2 = .22$; the 5-year-olds ($M = .69$, $SD = .22$) performed significantly better than the 3-year-olds ($M = .49$, $SD = .06$), $p < .001$, and the 4-year-olds ($M = .54$, $SD = .16$), $p = .01$, and the 4-year-olds did not differ significantly from the 3-year-olds. The main effect of condition was also significant, $F(5,60) = 3.05$, $p = .016$, $\eta_p^2 = .20$, as was the Condition \times Question Type interaction, $F(5,60) = 3.50$, $p = .008$, $\eta_p^2 = .23$.

A review of children's general performance across the conditions suggested that the condition effect was attributable to children's relatively poor performance on the A, B, and C tasks, suggesting that claims of badness and goodness were interfering with children's understanding of the truth and lies. Whereas children's performance did not exceed chance on the A, B, and C tasks, children did perform above chance on the D, E, and F tasks (Fig. 1). Finally, we examined the significant Condition \times Question Type interaction via a series of paired-samples t tests comparing truth versus lie questions within each condition. Only Condition D, in which the character told the truth about a good act, significantly differed by question type, $t(66) = 2.99$, $p = .004$; children performed better when asked whether the character told the truth ($M = .80$, $SD = .33$) than when asked whether the character told a lie ($M = .58$, $SD = .46$).

In a separate set of analyses, we examined more subtle age-related changes in children's understanding by comparing each age group's performance with chance (i.e., 50%) across the conditions. Whereas the 5-year-olds performed significantly above chance on all of the conditions, $ts(25) \geq 2.54$, $ps \leq .018$, with the exception of Condition C (which corresponded to the quite uncommon situation in which a character committed a good act and then lied by claiming to have committed a different good act), the 4-year-olds performed significantly above chance only on Condition D (in which the character told the truth about a good act), $t(20) = 3.35$, $p = .003$, and the 3-year-olds failed to do so on any of the conditions. Indeed, the 3-year-olds were significantly below chance on the Condition A stories, $t(19) = -2.18$, $p = .042$, in which the character honestly disclosed committing a

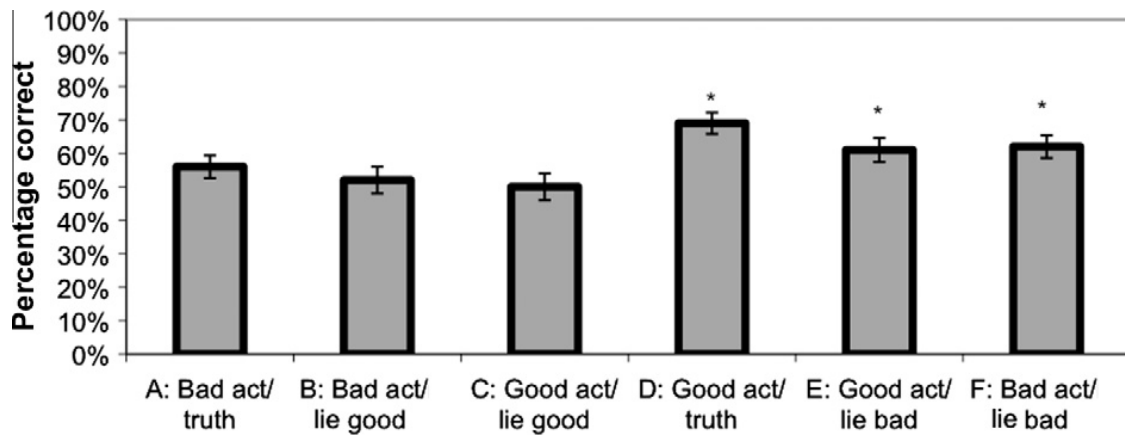


Fig. 1. Study 1 percentages correct by condition. Error bars reflect confidence intervals. Asterisks reflect above-chance performance at $p < .05$. The first row of the label under each bar refers to the act committed by the character. The second row refers to whether the character told the truth or lied about the act, and if a lie, whether the lie involved a good act or bad act.

bad act. In other words, the 3-year-olds showed a strong tendency to label honest disclosures of wrongdoing as lies.

Discussion

Study 1 revealed that young children were influenced by the goodness or badness of the reported act when determining whether characters had told the truth or lied. If a character claimed to have committed a good act, then children were more inclined to call his statement the truth. If a character claimed to have committed a bad act, then children were more inclined to call his statement a lie. As a result, children appeared either more or less competent at identifying the truth and lies depending on the valence of the story. Children exhibited heightened accuracy when assessing truth-telling about good acts and lies about wrongdoing, but reduced accuracy when assessing truth-telling about wrongdoing and lies about good acts. Our results are consistent with research indicating that children initially associate lying with “bad words” (Peterson et al., 1983; Piaget, 1932/1965). Concurrently, our results argue against an alternative bias, that children attended to the valence of the *act* and called good acts the truth and bad acts lies. If the latter bias were operating, then children should have performed better on the B task (lying about a bad act) and poorly on the E task (lying about a good act), and this did not occur.

The results, however, also raised several issues. First, wrongdoing bias might not affect children’s understanding of the truth and lies that involve simple admissions or denials. That is, the characters in Study 1 always explicitly claimed to have committed an act. Children, in turn, focused on the claimed act in deciding whether a statement was the truth or a lie. In contrast, a simple admission or denial might not focus children’s attention on the content of the character’s statement, thereby making it easier for children to assess the congruence or incongruence between the statement and the true state of affairs and facilitating correct identification of the truth and lies.

However, focusing children’s attention on the character’s actual actions (rather than statements) raises the potential for another type of wrongdoing bias to operate. As already mentioned, if children associate lying not just with bad words but also with badness in general, then they may be predisposed to call any character who commits a bad act a liar and to call any character who commits a good act a truth-teller. Presenting children with scenarios in which the characters utter simple affirmations and denials about good and bad acts can test for this possibility.

Examining simple affirmations and denials is worthwhile for a second reason as well. Children’s early lies tend to be simple denials (Newton et al., 2000; Wilson et al., 2003). Thus, children may be especially proficient in identifying lies of this type. Third, the nature of the tasks in Study 1 may have underestimated children’s understanding. The tasks necessarily included information about the valence of both the character’s action and the character’s statement about his action, potentially leading to some complication. Moreover, children might not have fully understood that the character’s

claims were responsive to questions about the character's actions; that is, when endorsing truth-telling, children may have believed that the character committed two acts: both the depicted act and the act the character claimed to have performed. Presenting scenarios in which characters simply affirmed or denied committing acts avoids this type of confusion. Fourth, and related, we did not ask control questions to confirm children's understanding of the vignettes. Perhaps the younger children's performance was influenced by confusion regarding the scenarios, although the fact that children did show systematic patterns of responding to some of the vignettes suggests that they had some comprehension. Fifth, some of the scenarios may have seemed anomalous to children (e.g., why would a character lie about committing a good act?), and this again could have influenced their responses to some vignettes.

Finally, children performed better when asked whether the character told the truth than when asked whether the character lied in one of the conditions, consistent with prior research (e.g., Lyon et al., 2010). This has been interpreted as a possible reluctance on children's part to apply the term "lie" to statements, consistent with a positivity bias among children that reduces their willingness to label negative acts or images as such (e.g., Carrick, Quas, & Lyon, 2010; Lyon, 2011). Because such a bias may have further underestimated children's understanding of "lie", in Study 2 we presented children with stories in which they chose which of two characters lied or told the truth, a forced-choice procedure that should help to overcome any reluctance to label characters as liars.

Study 2

In Study 2, 4- to 6-year-olds were presented with vignettes in which two characters committed either a good or a bad act. One character admitted performing the act, whereas the other character denied doing so. Children were then asked which character had told the truth or which character had lied. The study conformed to a 2 (Age) \times 2 (Condition) \times 2 (Question Type) mixed-model design.

We again expected developmental improvements in performance (Lyon & Saywitz, 1999; Strichartz & Burton, 1990) and that children would be more accurate when asked which character told the truth than when asked which character lied (Lyon et al., 2010). In addition, we anticipated that children, especially the younger children, would be more accurate when asked about good acts than when asked about bad acts. Because of 3-year-olds' generally poor performance in Study 1, our youngest participants were 4 years old.

Method

Participants

The participants were 51 4- to 6-year-olds (30 girls and 21 boys), none of whom was included in Study 1. Using a median age split, children were divided into two groups: 26 4 1/2 – to 5 1/2 – year – olds ($M = 4.58$ years, $SD = 0.50$) and 25 5 1/2 – to 6-year-olds ($M = 5.68$ years, $SD = 0.48$). Gender was distributed equally within each age. Children were recruited from preschools or after-school programs. Their race/ethnicity varied as follows: 28% Caucasian, 4% Hispanic, 46% Asian, and 22% mixed/other.

Materials and procedure

Study 2 followed the same testing procedure as Study 1. Parents provided written consent, children provided verbal assent, and children were tested individually in their schools. The study stimuli consisted of 16 vignettes, each containing two pictures, presented via computer. In the first picture of each vignette, two characters were shown doing either the same good act (e.g., feeding a recipient) or the same bad act (e.g., kicking a recipient). In the second picture, one character admitted committing the act and the other character denied committing the act. The interviewer narrated what occurred while children viewed each picture. Thus, for example, the interviewer said, "These boys are good. These boys each gave a ball to their brother". Next, the interviewer said, "Their mother says, 'Did you give a ball to your brother?'" The interviewer showed the second picture and said, "This boy says, 'No, I did not give a ball to my brother'. This boy says, 'Yes, I gave a ball to my brother'". Next,

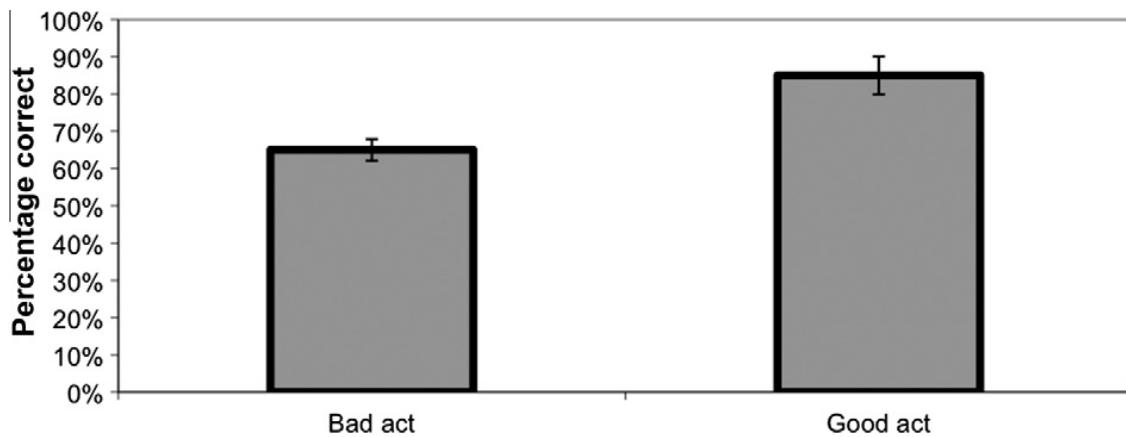


Fig. 2. Study 2 percentages correct by condition. Error bars reflect confidence intervals.

the interviewer said, “Which boy told the truth?” or “Which boy told a lie?” in alternating order. The vignettes systematically varied the recipients (dog, cat, little sister, or brother), the valence of the act, and the question asked, with the order of presentation counterbalanced.

Results

Children's responses were scored as correct or incorrect (there were no “don't know” responses). Percentage correct scores were created for each condition. Preliminary analyses revealed no significant racial/ethnic differences in performance. However, gender differences emerged. Boys outperformed girls ($M = .88$ vs. $M = .70$), $F(1,47) = 5.17$, $p = .028$, and gender was included in the main analyses.

Children's proportion scores were entered into a 2 (Age) \times 2 (Gender) \times 2 (Act Valence: good act or bad act) \times 2 (Question Type: truth or lie) mixed-model ANOVA. Significant main effects emerged for age, $F(1,47) = 16.54$, $p < .001$, $\eta_p^2 = .26$, and act valence, $F(1,47) = 8.92$, $p = .004$, $\eta_p^2 = .16$. Older children ($M = .86$, $SD = .19$) performed significantly better than younger children ($M = .65$, $SD = .19$). Children were more accurate when the committed act was good ($M = .85$, $SD = .21$) than when it was bad ($M = .65$, $SD = .37$) (see Fig. 2).

A significant Gender \times Act Valence interaction, $F(1,47) = 4.14$, $p = .048$, $\eta_p^2 = .08$, as well as a significant Age \times Question Type interaction, $F(1,47) = 5.73$, $p = .021$, $\eta_p^2 = .11$, also emerged. The Gender \times Act Valence interaction revealed that boys ($M = .79$, $SD = .32$) outperformed girls ($M = .56$, $SD = .39$) on the bad acts but that the two genders performed equally well on the good acts (boys: $M = .84$, $SD = .24$; girls: $M = .86$, $SD = .19$). The Age \times Question Type interaction reflected the fact that whereas the younger children performed somewhat better when asked which character told the truth ($M = .69$, $SD = .21$) than when asked which character lied ($M = .60$, $SD = .26$), $t(25) = 1.84$, $p = .08$, the older children did not differ ($M = .84$, $SD = .23$, and $M = .89$, $SD = .18$, respectively).

Discussion

Study 2 again sought to understand how the valence of acts about which the truth or a lie is told affects children's early understanding of the truth and lies. We modified procedures employed in Study 1 to reduce ambiguities and evaluate simple truthful admissions and lies of denials rather than lies involving false claims. The prediction that valence mattered was supported. Children were better at identifying both the truth and lies when the characters committed good acts than when they committed bad acts. The difference in performance between questions about the truth and questions about lies, noted in Study 1, did not reappear in Study 2, although the younger children exhibited a marginal tendency toward that direction. The move to forced-choice questions, which made it clear that one of the characters did in fact lie, may have overcome children's resistance to call a character a liar. Unexpectedly, boys performed better than girls, at least with respect to the bad acts. Because we

are unaware of any previous research finding gender differences in understanding of truth and lies, we do not attempt to interpret this finding.

General discussion

Understanding the difference between the truth and lies is a significant milestone in children's moral and cognitive development. It is related to their moral evaluations, concepts of right and wrong, and interpretations of their and others' behavior. A great deal of theorizing and empirical attention has been devoted to documenting the developmental time course of this milestone's occurrence (Piaget, 1932/1965; Strichartz & Burton, 1990; Wimmer et al., 1984). Legally, whether children can differentiate the truth and a lie has implications, both formally and informally, about their perceived competency, credibility, and ability to provide accurate testimony. Finally, parents and other adults regularly relay to children the importance of telling the truth about events that they have experienced. That young children's performance is significantly affected by the valence of the acts and statements involved has critical implications for how best to evaluate children's early understanding and determine at what age and how children come to understand the difference between the truth and a lie.

We found, in two separate studies, that wrongdoing can impair children's understanding of the truth and lies. In Study 1, young children were affected by the valence of the claims that speakers made about their actions. If a speaker claimed to have committed a good act, then children were biased to call the statement the truth; if a speaker claimed to have committed a bad act, then children were biased to call the statement a lie. In Study 2, when we removed the valence of the claims, the valence of the actions themselves then mattered. If speakers committed good acts, then children were capable of distinguishing between the truth and lies; if speakers committed bad acts, then children had difficulty in doing so. In other words, when the explicit claims about good and bad acts were removed, children still sought to find something negative with which to equate lies.

Overall, the results suggest that the valence of statements and actions interfere with children's initial understanding that the truth refers to factual statements about actions and that lies refer to untruthful statements about actions, independent of the rightness or wrongness of the actions themselves. The results are consistent with research finding that children overgeneralize the concept of lies to include bad words (Peterson et al., 1983; Piaget 1932/1965); our findings suggest that those bad words include wrongdoing and claims of wrongdoing. The results are similarly consistent with research in cognitive and linguistic development demonstrating that children often initially apply concepts broadly and only gradually acquire adult-like understanding (Flavell, Miller, & Miller, 1993).

The findings have important implications for children's early understanding of the truth and lies, particularly in relation to how best to ask about that early understanding. In legal contexts, child witnesses often must demonstrate an understanding of truth and lies in order to qualify as being competent. Some have recommended that competency questions about truth and lies should involve scenarios in which a character commits a wrongdoing (Home Office, 2001; Hoyano & Keenan, 2007; McCarron et al., 2004). Our results cast doubt on these recommendations insofar as they may lead to underestimation of children's understanding. That is, children do not appear to understand lies in the context of wrongdoing better than in other contexts. Instead, because of the strong moral connotations of both lying and wrongdoing, introducing wrongdoing into scenarios designed to test young children's understanding of the truth and lies potentially interferes with children's judgment. Indeed, research demonstrating understanding of truth and lies at younger ages than in previous research has used stimuli in which characters utter true and false labels rather than make true and false statements about misbehavior (Lyon, 2011). It is only once biases associated with valence are removed that children's earliest understanding can be clearly detected.

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