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Children's under-informative responding is associated with concealment of a transgression

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Summary

Concealment (i.e., omitting information without saying anything untrue) has received little empirical attention relative to falsification (i.e., false statements). This study examined free recall reports among a sample of 349 maltreated and nonmaltreated children ages four to nine, and found that concealment of a minor transgression was significantly associated with two types of responding: generic under-informative responding, wherein responses are relevant but imprecise, general, or vague; and specific under-informative responding, wherein responses selectively omit incriminating details. Under-informative responding failed to distinguish between children who would ultimately reveal the transgression when asked recognition questions and children who would answer falsely. The results suggest that children's initial recall reports may provide some insight into the likelihood that they are concealing information.

KEYWORDS

child credibility, concealment, deception detection, interviewing children

Concealment—the withholding of information without “saying anything untrue” (Ekman, 1985)—is a form of deception which is evident throughout childhood but infrequently studied. In contrast to concealment, falsification entails making an intentionally false statement, and has received most of the attention in the literature on children's deception (Talwar & Crossman, 2012). The present research examined whether maltreated and nonmaltreated children admonished to conceal a transgression in which they felt implicated concealed wrongdoing through two devices: generic under-informativeness, in which the child's free recall report is relevant and accurate but imprecise, general, or vague; and specific under-informativeness, in which the child's free recall report selectively omits incriminating information. We also tested whether either type of under-informativeness predicted whether children would disclose when asked recognition questions about the transgression. We first briefly review the research on concealment in children, including developmental changes and evidence for different types of concealment.

1 | DEVELOPMENT OF CONCEALMENT

Concealment is of interest for both theoretical and practical reasons. Concealment is likely easier than falsification (Ekman, 1985; Vrij, 2008), and researchers have speculated that it emerges earlier in development (Frank, 1992). Concealment may be viewed as less immoral than falsification (Coleman & Kay, 1981), and may be easier to subsequently excuse as mistaken rather than intentional (Ekman, 1985; Vrij, 2008). Indeed, in the law perjury requires falsification, and thus evasive responses which merely conceal information do not qualify as perjurious. Children's concealment is of obvious importance in understanding child abuse, because most adults victimized as children report that they failed to disclose abuse during childhood (London et al., 2008; Lyon & Ahern, 2011; Smith et al., 2000). Forensic interviewers have been warned that directly asking children whether they have suffered from abuse increases falsification: both false allegations (Lamb et al., 2018) and false denials (Lyon et al., 2019). Therefore, interviewers attempt to elicit disclosures through recall

questions, and children can fail to disclose through concealment rather than falsification.

Little research has examined children's use of concealment as a deceptive strategy, for several reasons. First, children's concealment is reliant on the adult investigator asking questions that the child can answer truthfully without explicitly denying a target event. Concealment includes a failure to disclose information in response to recall questions (e.g., "Tell me everything that happened"). However, most of the research on children's deception has asked yes/no questions about the target event (i.e., "Did you peek at the toy?"; Talwar & Crossman, 2012; Talwar & Lee, 2002), which requires children to choose between disclosure and falsification. Second, concealment is overlooked because terms that might strictly refer to concealment have instead been used very broadly to include falsification. Some have used the term "lies of omission" to refer to concealment (Ekman, 1985; Paley, 2002), or "secrecy" (Bok, 1983), whereas developmentalists have used "lies of omission" (Nysse-Carris et al., 2011; Tate et al., 1992), "secrecy" (Gordon et al., 2014), and "active concealment" (Lavoie & Talwar, 2020) to include falsification. Although it is undoubtedly correct to assert that children often give false information in order to keep information a secret or conceal the truth, greater precision in using the term "concealment" facilitates focusing on an important and understudied phenomenon.

Observational studies of children's deception development acknowledge concealment, but exclude it from their purview (Newton et al., 2000; Wilson et al., 2003). A few studies have examined concealment in the context of prosocial deception, and found increased ability with age. Peskin and Ardino (2003) studied 3- to 5-year-old children's ability to conceal a surprise birthday cake from a stranger who repeatedly expressed hunger. Older children were better able to refrain from mentioning the cake. Lavoie and Talwar (2020) examined 4- to 11-year-old children's concealment of a surprise gift made for their parents. Older children were better able to conceal the identity of the gift.

Williams et al. (2020) conducted a mega-analysis of four studies assessing 4- to 9-year-old maltreated and nonmaltreated children with the toy break paradigm, in which children were encouraged by a stranger to play with toys that appeared to break in their hands, and then admonished to keep the breakage a secret (Ahern et al., 2016; McWilliams et al., in press; Quas et al., 2018; Stolzenberg et al., 2017). The authors examined spontaneous disclosure, in which children disclosed the transgression during rapport building, before any questions were asked about their interaction with the stranger, as well as disclosure in response to recall questions. Younger children and maltreated children were more likely to disclose spontaneously, though this was quite rare, and was related to limited working memory. However, similar trends were not found for children's answers to recall questions about their interaction with the stranger, and maltreated children were less likely than nonmaltreated children to disclose breakage in response to recall questions. The results suggest that although younger children may inadvertently disclose information, concealment of transgressions in response to recall questions emerges early in development.

With respect to development during the grade school years, the few studies examining concealment of transgressions have found decreases with age. Pipe and Wilson (1994) asked 6- and 10-year-olds recall questions about a magician who had committed a mishap and requested secrecy; 10-year-olds were less likely than 6-year-olds to conceal the mishap in response to a free recall question about the magician. Williams et al.'s (2020) mega-analysis found that concealment was lower among the oldest children (8- to 9-year-olds). Notably, however, decreases in concealment during grade school may be exclusive to transgressions that do not implicate a parent, as there is evidence that children's concealment of wrongdoing committed by parents continues to increase during this age range (Gordon et al., 2014).

In sum, children become more adept at concealing information during the preschool years, and this is true both for prosocial concealment and concealment of transgressions. As children mature through grade school, they become less inclined to conceal information about transgressions. The developmental differences in concealment suggest that how children conceal information may also vary with age, and that immature forms of concealment might be easier to detect.

2 | CONCEALMENT STYLES WHEN ASKED RECALL QUESTIONS: WORD COUNT, GENERIC UNDER-INFORMATIVE RESPONSES AND SPECIFIC UNDER-INFORMATIVE RESPONSES

In order to avoid disclosing unwanted information when questioned, it seems sensible to assume that concealers will say less. Indeed, the most common deception strategy adults report is to "keep it simple" (Hartwig et al., 2007; Strömwall et al., 2006). At first glance, however, one finds little empirical support for the hypothesis that deceptive responses are comparatively shorter in length. For example, a meta-analysis on cues to deception in adults that combined 49 effect sizes from studies examining response length (word count) of truthful and deceptive responses revealed no significant differences (DePaulo et al., 2003). Similarly, studies on children's truthful and deceptive reports during free and cued recall have also found that the average length of their responses do not differ (e.g., Block et al., 2012; Landström et al., 2007; Saykaly et al., 2013; Vrij et al., 2006; Warren et al., 2015; Warren et al., 2012; Wyman et al., 2018).

These findings highlight the importance of distinguishing between falsification and concealment, because the research just cited focused on falsification. Because false disclosures involve fabricating details, whereas concealment involves omitting details, the research on the response length in true and false reports may not generalize to concealment (Vrij et al., 2014). For example, a common strategy for falsification is to substitute a familiar behavior for the incriminating behavior, which is likely to minimize differences in word counts between true and false reports. Therefore, in distinguishing between concealers and children who honestly fail to report a transgression

(hereinafter nontransgression truth-tellers), word count may play a role.

Furthermore, concealed responses may be less informative than truthful reports that a transgression did not occur. We postulated that children who conceal transgressions may exhibit two types of under-informative responding. *Generic under-informative responses* are accurate and relevant, but the language is imprecise, general, or vague. For example, Lavoie and Talwar (2020) engaged 4- to 11-year-olds in a craft activity where they made a gift for their parents. The children were instructed to keep the activity a secret so that the gift would be a surprise. Each parent asked their child three questions: How was it? What did you do? What was the surprise? About 15% of children gave responses that did not reveal any details, which the authors termed passive concealment, including responses such as “I don't know” or deflections like “you'll see.” A subset of these children (the authors did not report how many) used generic language to conceal their behavior (e.g., “We did stuff”).

Specific under-informative responses are accurate, relevant, and detailed, but selectively omit incriminating details. Clemens et al. (2010) examined reports from 12- to 14-year-olds, all of whom touched a briefcase and saw someone witness them touching it. However, some had experienced a mock crime involving the briefcase and concealed it, and some did not experience the crime. The concealers were more likely than the nontransgression truth-tellers to omit crime-related details from their report by failing to mention that they had touched the briefcase or that a witness had been present.

When examining children's response style, it is also important to consider the effects of age. Regardless of veracity, younger children's responses tend to be shorter compared to older children and adults (e.g., Connolly et al., 2008; Warren et al., 2018; Williams et al., 2014; Wyman et al., 2018). Hence, it will be important to consider age in assessing the relation between children's under-informativeness and honesty. At the same time, even if generic responding is more common among younger children, younger children who conceal transgressions may still be more likely to respond generically than younger children who honestly fail to disclose a transgression.

3 | PREDICTING FALSIFICATION IN RESPONSE TO RECOGNITION QUESTIONS: WOBBLY CONCEALERS AND ADAMANT CONCEALERS

Forensic interviewers are encouraged to attempt to elicit disclosures through recall questions (Lamb et al., 2018). However, it is often challenging to overcome reluctance and limited memory by relying only on children's recall memory (Hershkovitz et al., 2014). As a result, interviewers often resort to recognition questions, which can increase true disclosures but also increase false responses. Research utilizing the toy break paradigm has found that while about 70% of 4- to 9-year-olds conceal toy breakage during recall questions, about 50% of concealers will explicitly deny toy breakage when asked yes/no questions directly asking if a transgression occurred (Ahern

et al., 2016; McWilliams et al., in press; Quas et al., 2018; Stolzenberg et al., 2017). False denials can damage a child's perceived credibility should they later truthfully disclose, because they may be forced to acknowledge that their previous denial was a lie and explain their reasons for lying. Inconsistencies in children's abuse testimony cause skepticism among adult decision-makers and reduce the chances of successful case outcomes (e.g., Goodman et al., 1984; Molinaro & Malloy, 2016; Vrij et al., 2006).

In order to avoid false denials, it would be helpful to be able to identify during the recall phase of an interview which children are most likely to falsify if asked recognition questions. We will use the terms *wobbly concealers* to describe children who withhold information during recall but would truthfully disclose during yes/no questions and *adamant concealers* to describe children who both conceal during recall and falsify denials of transgressions in response to yes/no questions. We tested whether under-informative responding would distinguish between wobbly concealers and adamant concealers. If interviewers could identify adamant concealers, they could refrain from moving to recognition questions that would only elicit false denials.

4 | THE PRESENT STUDY

The present study sought to systematically examine 4- to 9-year-old maltreated and nonmaltreated children's concealment in response to the toy break paradigm, measuring generic under-informative responses, specific under-informative responses, and word count in transgression concealers and nontransgression truth-tellers. Among concealers, we distinguished between wobbly concealers (who failed to disclose breakage during recall but would disclose breakage if directly asked), and adamant concealers (who failed to disclose breakage during recall and would explicitly deny breakage if directly asked).

We first analyzed the relation between concealment and response style. We hypothesized that concealers would be more likely to provide generic under-informative and specific under-informative responses than nontransgression truth-tellers. We then analyzed differences between wobbly concealers and adamant concealers. These analyses were largely exploratory, as previous research has examined veracity as a binary construct (i.e., truthful versus deceptive) or by degree of honesty (e.g., deceptive statements divided by total statements). We tentatively predicted that adamant concealers would be more likely than wobbly concealers to give specific under-informative responses. Finally, we considered the importance of word count. We predicted that concealment would be associated with shorter responses, but that the relation would be mediated by the effect of concealment on response style.

With respect to age, we hypothesized that younger children would be more likely to give generic under-informative responses (and say less) than older children regardless of whether they were being honest or deceptive, but we did not anticipate that they would exhibit different patterns of concealment. We did not make any predictions with respect to maltreatment, but included maltreatment as a

factor because it is correlated with increased concealment (Williams et al., 2020).

5 | METHOD

5.1 | Participants

The sample consisted of 349 children (47% female) ages 4–9 years old ($M = 6.7$, $Median = 7$), drawn from a pair of studies using the broken toy paradigm conducted by the same lab ($n = 468$; Ahern et al., 2016; Stolzenberg et al., 2017). The sample was racially and ethnically diverse, but all of the children spoke English. Approximately half of the children ($n = 177$) were recruited in dependency court and had been removed from their parents or guardians as a result of substantiated maltreatment (neglect and/or physical or sexual abuse). The other half of the participants ($n = 172$) were recruited at elementary schools serving predominantly ethnic minority families in neighborhoods comparable to those from which most maltreated children were removed. Children who were not in custody of at least one of their parents at the time the study took place were excluded because of the possibility that they had been officially removed from their parents' custody because of maltreatment. The recruitment and study procedures were approved by the University's Institutional Review Board. Consent to recruit maltreated children was obtained from the Presiding Judge of the Los Angeles County Juvenile Court, and consent to recruit nonmaltreated children was obtained from children's parent(s). Children were asked for their assent.

5.2 | Materials and procedure

In the broken toy procedure (see Figure 1), the children first completed a series of general cognitive functioning tasks with the

interviewer. Then the interviewer asked the child to wait while she left to retrieve some missing papers. Shortly after the interviewer left the room, a stranger entered and initiated play with the child. There were shelves along the wall holding several boxes of matching toys. The stranger retrieved a box, took out a toy, and demonstrated how to play with the toy. The stranger then gave the other toy to the child and told the child to try. This procedure was repeated with a subset of six of the available toy pairs.

5.2.1 | Break condition

The children were randomly assigned to one of two play session conditions: break or no-break. In the break condition, two of the six toys broke in the child's hands while they were playing with them. For example, the ball on the seal's nose fell off. When each toy broke, the stranger responded with concern, saying that it was “not good” that the toy broke and encouraged the child to keep the breakage a secret. The stranger put the toy back so that “nobody knows that it's broken” and then, upon leaving, asked the child not to tell as “we might get in trouble” if anyone found out. In the no-break condition, the child and stranger played with the toys without incident.

5.2.2 | The interview

The interviewer returned shortly after the stranger left. She began with a rapport building session in which she asked recall questions about what the child liked to do, did not like to do, and what happened on the child's last birthday. Then the interviewer questioned the child about the play session. She began with a free recall question (i.e., “Tell me everything that happened while I was gone”). Children's response to this initial question provided the basis for response coding, described below. The interviewer followed up the child's response

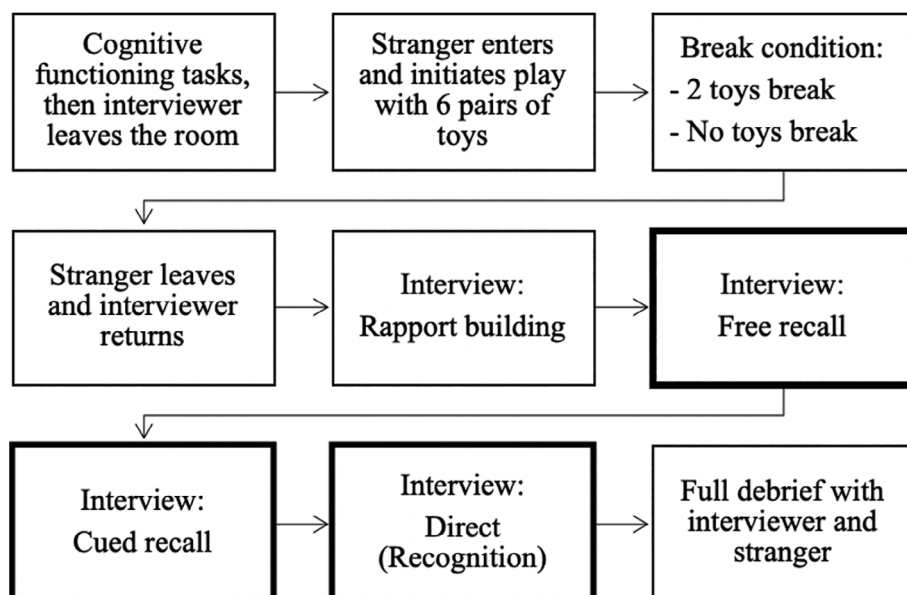


FIGURE 1 Flowchart showing the broken toy paradigm

either with a series of “what happened next” questions until the child described the stranger leaving, or, if the child failed to name any toys, by asking the child to name all of the toys with which they had played. She then asked cued recall questions about each toy mentioned by the child (e.g., “You said you played with the lobster. Tell me everything that you did with the lobster”). Last, she asked a set of yes/no recognition questions asking the child directly if anything bad happened to each toy. All of the children were fully debriefed after the interview by the interviewer and the stranger.

Children in the break condition who failed to disclose breakage during recall were concealers. These children could be either wobbly concealers or adamant concealers. Wobbly concealers concealed toy breakage during recall questions, but disclosed breakage during the yes/no questions. Adamant concealers never disclosed the breakage to the interviewer. That is, they concealed the breakage during recall and provided false denials when asked recognition questions specifically asking about breakage. Because our focus was on distinguishing between children who concealed a transgression and children who honestly failed to report a transgression, we excluded children in the break condition who disclosed breakage during rapport or during free or cued recall. During the interview, no children in the no-break condition disclosed breakage. Therefore, children in the no-break condition were all nontransgression truth-tellers.

5.3 | Response coding

Each child's responses to the first recall question (“Tell me everything that happened”) was given an informativeness code. Children were excluded if their responses could not be coded because the child described an unrelated event ($n = 10$), responded “I don't know,” “I don't remember,” or remained silent ($n = 9$), or spoke about a toy that could not be identified ($n = 3$; e.g., “It flipped and it flying”). We first coded responses for generic under-informative responding. Generic under-informativeness involved vague and imprecise language wherein the child only talked about toys generally without indicating specific toys or detailing how they played. The generic responses tended to refer to the toys in plural or with emotionally-distancing language (e.g., those, these, some). Descriptions of their activities included broad terms like play, fun, and games. For example, a response was coded as generic under-informative if the child said something along the lines of, “We played with the toys, and it was fun” or “He showed me how to play with those toys.” Responses that did not mention the toys or playing were also coded as generic (e.g., “We were just talking”); however, this response was extremely rare.

Second, we coded responses for specific under-informative responding. Specific under-informative responding mentioned playing with specific toys or provided details about how they played, and thus were not generic under-informative, but failed to mention either of the toys that broke. The remaining children specifically mentioned one or both of the broken toys, and were coded as informative.

Two independent raters who did not know which children were truthful and deceptive coded a random sample of 40% of the responses dichotomously as generic or specific under-informative/informative. Their interrater reliability was high, Kappa = 0.85. One of the raters and a second person (both blind to condition) coded a random sample of 40% of the latter category dichotomously as specific under-informative or informative, and their interrater reliability was also high, Kappa = 0.91. Finally, we calculated the total number of words uttered by each child in response to the free recall question.

6 | RESULTS

Of the original sample of 349 children, 327 gave a codable response to the first recall question. Children were either concealers ($n = 228$) or nontransgression truth-tellers ($n = 99$). Among the concealers, 110 children concealed breakage during recall, but acknowledged breakage when asked yes/no questions, and were classified as wobbly concealers. One hundred and eighteen children concealed breakage during recall and gave false answers to yes/no questions and were classified as adamant concealers. The nontransgression truth-tellers did not experience toy breakage, and never mentioned toys breaking during recall. Collapsing across veracity, approximately half of the children provided generic under-informative responses (52%, $n = 169$), 59 children (18%) failed to mention the target toys, and thus were classified as providing specific under-informative responses, and 99 children mentioned the target toys and thus were informative (30%).

7 | VERACITY AND RESPONSE STYLE

The first analysis tested the hypothesis that concealers were more likely than nontransgression truth-tellers to provide under-informative responses during free recall. Two forced-entry binary logistic regressions were conducted. In the first regression, we compared generic under-informative responses to all other responses, and in the second regression, we compared specific under-informative responses to all other responses. We first ran models that included gender and maltreatment status as covariates, but they did not reach statistical significance ($p > .067$ and $.57$, respectively); nor did an interaction term (age by veracity) (all p 's $> .25$), and these factors were excluded from the final models.

In the first regression, response style (generic under-informative vs. specific under-informative and informative combined) was entered as the dependent variable, and veracity (i.e., wobbly concealer, adamant concealer, nontransgression truth-tellers) and age (in years) were entered as the independent variables. The model was significant, $\chi^2(3) = 44.54$, $p < .001$, Nagelkerke $R^2 = 0.170$. Veracity was significantly associated with generic responding, Wald(2) = 36.58, $p < .001$. Compared to nontransgression truth-tellers (25%), wobbly concealers (65%) were 5.5 times more likely to give a generic under-informative response (Wald[1] = 30.80, $p < .001$, 95% CI [3.0, 10.1]), and adamant

concealers (62%) were 4.8 times more likely to give a generic under-informative response ($Wald[1] = 27.54, p < .001, 95\% CI [2.7, 8.7]$). Generic responding did not differ between wobbly concealers and adamant concealers ($Wald[1] = 0.21, p = .64, Exp[b] = 1.1$). Contrary to our prediction, age was not significantly associated with generic responding ($Wald[1] = 3.36, p = .067$). In sum, concealers were more likely to provide generic under-informative responses than non-transgression truth-tellers.

In the second regression, response style (specific under-informative vs. generic under-informative and informative combined) was entered as the dependent variable, and veracity (i.e., wobbly concealer, adamant concealer, nontransgression truth-tellers) and age (in years) were entered as the independent variables. The model was significant ($\chi^2[3] = 24.60, p < .001, Nagelkerke R^2 = 0.119$), and veracity was significant ($Wald[2] = 12.78, p = .002$). Compared to non-transgression truth-tellers (7%), wobbly concealers (19%) were 3.1 times more likely to provide a specific under-informative response ($Wald[1] = 6.00, p = .014, 95\% CI [1.3, 7.8]$), and adamant concealers (26%) were 5.0 times more likely to provide a specific under-informative response ($Wald[1] = 12.69, p < .001, 95\% CI [2.1, 12.0]$). However, specific under-informative responding did not differ between wobbly concealers and adamant concealers ($Wald[1] = 2.00, p = .16, Exp[b] = 0.2$). Age was also significantly associated with specific under-informative responses ($Wald[1] = 9.12, p = .003$). For each year, children were 1.4 times more likely to give a specific under-informative response ($95\% CI [1.1, 1.7]$). As with generic under-informative responses, concealers were significantly more likely than nontransgression truth-tellers to provide a specific under-informative response (Figure 2).

7.1 | Word count

In the next set of analyses, we first tested the hypothesis that concealers said less overall (i.e., word count) compared to non-transgression truth-tellers. We then tested whether the relation

between concealment and word count was mediated by under-informativeness. Under-informativeness (response style) can be said to mediate the relation between concealment (veracity) and word count if it accounts for the relation between the two. One analyzes whether the independent variable (here, veracity) is related to the potential mediator (response style). The analyses in the previous section found that this was so. One then analyses whether the dependent variable (word count) is related to the independent variable (veracity), controlling for the mediator (response style). If the dependent variable (word count) is no longer related to the independent variable (veracity), controlling for the potential mediator (response style), then one can conclude that perfect mediation holds (Baron & Kenny, 1986).

In order to test the hypothesized relation between veracity and word count, we conducted a forced-entry linear regression: the number of words in the free recall response (word count) was entered as the dependent measure and age (in years) and veracity (i.e., wobbly concealer, adamant concealer, nontransgression truth-teller) were added as independent variables. The model was significant, $F(3, 326) = 10.02, p < .001; R^2 = 0.085$. Age was significantly associated with word count ($t = 3.65, p = .001, r^2_{\text{partial}} = 0.199$). On average, children said 4.6 more words for each year increase in age. Veracity was also significant. Compared to nontransgression truth-tellers, wobbly concealers spoke 13.3 fewer words ($t = -2.83, p = .005, r^2_{\text{partial}} = -0.155$) and the adamant concealers spoke an average of 18.4 fewer words ($t = -4.00, p < .001, r^2_{\text{partial}} = -0.216$). Thus, non-transgression truth-tellers were more talkative compared to the concealers.

The analyses in the previous section established that veracity was related to response style. Therefore, in the next regression, we conducted a forced-entry linear regression in which word count was entered as the dependent measure and age, veracity, and response style were added as independent variables. The model was significant, $F(5, 326) = 21.46, p < .001, R^2 = 0.251$. However, controlling for response style and age, there was no significant relation between veracity and word count (all p 's $> .35$), which suggests that response style fully mediates the relation between veracity and word count.

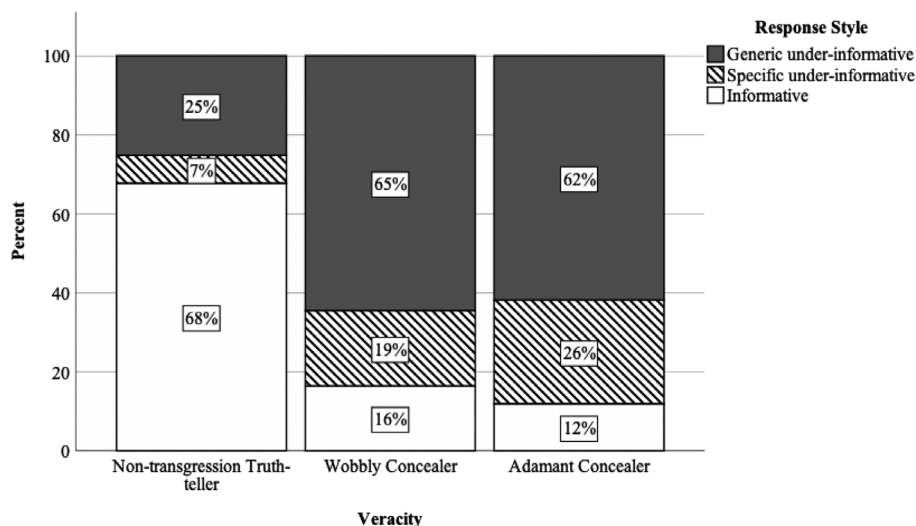


FIGURE 2 Percent of children providing each response style grouped by veracity

FIGURE 3 Length of free recall responses as a function of veracity and response style.

Note: Each box indicates the mean number of words for that group. The age covariate appearing in the model is evaluated at 6.8 years old. Error bars represent 95% confidence intervals

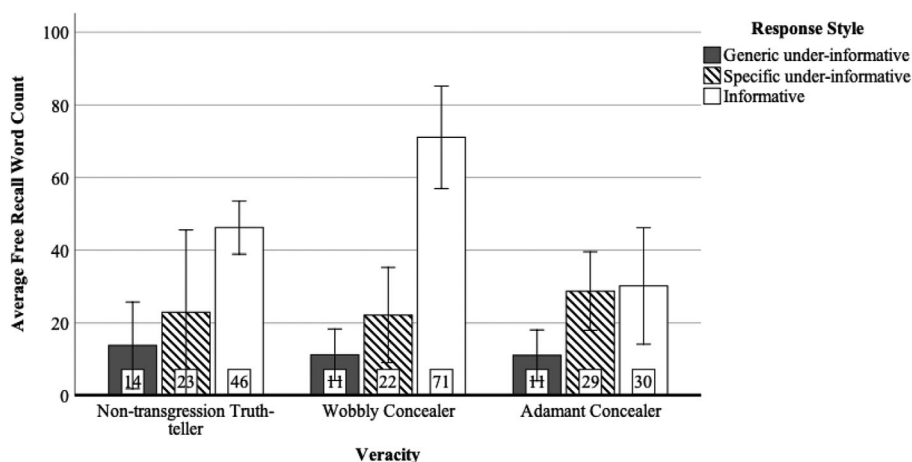


Figure 3 depicts this effect by graphing the average length of free recall responses as a function of veracity and response style.

7.2 | Transgression disclosers

As noted above, we excluded children in the break condition who disclosed the transgression before being asked any yes/no questions, because they neither concealed the transgression nor honestly failed to disclose a transgression. An anonymous reviewer pointed out that the response pattern among this group could be informative in determining whether under-informativeness might be a common response type among children who have experienced a transgression in general, rather than those children who conceal the transgression. Among these transgression truth-tellers ($n = 119$), 26% ($n = 31$) gave generic under-informative responses, and 9% ($n = 11$) gave specific under-informative responses. These numbers are comparable to the nontransgression truth-tellers, of whom 25% gave generic under-informative responses and 7% gave specific under-informative responses. This suggests that under-informativeness is related to concealment rather than experiencing a transgression.

8 | DISCUSSION

This study investigated two verbal response styles involving under-informativeness that children may use in free recall to conceal a transgression in which they feel implicated—in this case, keeping a secret about broken toys. The first response style is generic under-informative responding, in which the child does not provide details about specific toys or activities and instead provides a general summary of the play session (e.g., “We played with the toys, and it was fun”). The second style is specific under-informative responding, in which the child mentions specific toys and activities, but omits mentioning the target toys, that is, the toys that broke in the broken toy condition. We examined the prevalence of these response styles among two different groups of deceptive children: wobbly concealers, who maintained the secret during free and cued recall but eventually

disclosed to yes/no questions, and adamant concealers, who kept the secret even when asked yes/no questions. We also considered whether maltreatment status and age influenced children's response styles.

The results revealed some meaningful differences between concealers and nontransgression truth-tellers based on their responses to the initial free recall question (i.e., “Tell me everything that happened”). Both generic and specific under-informative responses were significantly associated with concealment. Generic under-informative responses were as common among younger children as older children, whereas specific under-informative responses were more common among older children. Furthermore, both maltreated and non-maltreated children exhibited this pattern.

Generic under-informative responding was not uncommon among nontransgression truth-tellers, appearing among about a fourth of children. Yet, generic under-informative responding was significantly more common among the deceptive children. Concealers were over four times as likely as nontransgression truth-tellers to give a generic under-informative response. Compared to generic under-informative responding, specific under-informative responding was uncommon. Specific under-informativeness was also a sign of deception: concealers were three to five times more likely to respond in this fashion than nontransgression truth-tellers. We had hoped to distinguish between wobbly and adamant concealers on the basis of their informativeness, but adamant concealers looked like wobbly concealers with respect to generic under-informative responding, and their greater tendency to give specific under-informative responses was not statistically significant.

In contrast to prior research on lie-telling in children, which has focused on falsification rather than concealment, deceptive children uttered fewer words than nontransgression truth-tellers (e.g., Wyman et al., 2018). This finding highlights the need to understand concealment as a qualitatively different form of deception than falsification. Concealment, by definition, entails omitting details rather than falsifying details, and thus it is not surprising that children who conceal information will say less.

Notably, the relation between concealment and word count was fully mediated by informativeness, such that knowing the child's

response style was as informative as calculating word count. This finding is of practical importance in the search to identify hints of concealment, because generic under-informativeness is surely easier to identify in real time than word count, and since the normative number of words will vary with the type of event. At the same time, because generic under-informativeness occurs among a substantial minority of children who are not concealing information, it is only weakly diagnostic of concealment, and will be of greatest practical value when there is additional evidence of concealment, or independent evidence that a suspected event occurred.

Specific under-informativeness is likely more difficult to identify in practice, because unless specific information is previously known to an interviewer, they are unlikely to know if a child is omitting information. In the real world, specific under-informativeness may manifest itself in various ways. For example, we suspect that children asked about their households may selectively omit mentioning members with whom they have had particularly negative experiences, and this is worthy of future study.

8.1 | Limitations and future directions

Given that the data are based on a laboratory experiment, the generalizability of the findings to real-world contexts such as child sexual abuse are obviously limited. Abuse is far more serious than breaking toys, as are the pressures on children to conceal or to disclose. Nevertheless, the broken toy paradigm presents an illustrative concealment scenario. The interaction with the stranger was engaging and positive, but then led to a transgression in which the child felt jointly implicated. Perpetrators of sexual abuse often seduce children through initially positive interactions and then admonish secrecy (Leclerc et al., 2009). Victims of sexual and physical abuse commonly refer to their fears of being blamed and their positive feelings for the perpetrator as barriers to disclosure (Anderson et al., 1993; Hershkowitz et al., 2007).

Furthermore, the interview mimicked the qualities of a good forensic interview; the interviewer first spent time building rapport through recall questions and then initiated the interview with a broad request for “everything that happened.” Of course, inclusion of both maltreated and nonmaltreated children also lent greater external validity to the results.

Because we were interested in understanding deliberate concealment, we assessed children's reports immediately after the transgression occurred, so that memory failure was not a realistic explanation for a failure to disclose. It is likely, however, that the base rate of under-informative responding will increase as the time between the target event and questioning increases, and this may reduce the diagnosticity of informativeness. Future work can assess this possibility. The current results are most applicable to questioning children about a salient and recent interaction.

Future work can examine developmental differences in children's concealment strategies. Because the focus of work on children's deception has been on falsification, rather than

concealment, little research has examined generic under-informativeness (Lavoie & Talwar, 2020) or specific under-informativeness in children (Clemens et al., 2010). Examining 4- to 11-year-olds, Lavoie & Talwar did not find age differences in the use of “passive concealment,” which included both generic under-informative responses and other uninformative responses (such as “I don't know”), though that group comprised only 15% of the sample, making age differences in generic under-informativeness difficult to detect. Clemens et al. (2010) tested 12- to 14-year-olds, obviously limiting their ability to identify the emergence of specific under-informativeness as a concealment strategy. We found that generic under-informativeness did not vary with age, whereas specific under-informativeness increased with age. Since specific under-informative responses are more productive than generic under-informative responses, this may simply reflect the classic finding that children's recall becomes more complete with age (Fivush, 1993). Nevertheless, it suggests that generic under-informativeness may be an early emerging concealment strategy.

8.2 | Conclusion

Justice system professionals as well as teachers, clinicians, and parents would benefit from diagnostic cues that help to distinguish between honest reports and concealment. This study uncovered two types of responding to an initial free recall question that increase the likelihood that children are concealing information: generic and specific under-informativeness. Further work can help to explore the practical utility of this and other clues to concealment.

CONFLICT OF INTEREST

The authors have no conflict of interest to declare. The data that support the findings in the present study are openly available in the Open Science Foundation repository, DOI: 10.17605/OSF.IO/6NJFB.

DATA AVAILABILITY STATEMENT

The data that support the findings in the present study are openly available in the Open Science Foundation repository, DOI: 10.17605/OSF.IO/6NJFB.

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