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The Effects of Secret Instructions and Yes/No
Questions on Maltreated and Nonmaltreated
Children's Reports of a Minor Transgression

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Abstract

This study examined the effects of secret instructions (distinguishing between good/bad secrets and encouraging disclosure of bad secrets) and yes/no questions (DID: "Did the toy break?" versus DYR: "Do you remember if the toy broke?") on 262 4- to 9- year old maltreated and nonmaltreated children's reports of a minor transgression. Over two-thirds of children failed to disclose the transgression in response to free recall (invitations and cued invitations). The secret instruction increased disclosures early in free recall, but was not superior to no instruction when combined with cued invitations. Yes/no questions specifically asking about the transgression elicited disclosures from almost half of the children who had not previously disclosed, and false alarms were rare. DYR questions led to ambiguous responding among a substantial percentage of children, particularly younger children. The findings highlight the difficulties of eliciting transgression disclosures without direct questions.

The Effects of Secret Instructions and Yes/no Questions on Maltreated and Non-maltreated Children's Reports of a Minor Transgression

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This study examined the effects of secret instructions (distinguishing between good/bad secrets and encouraging disclosure of bad secrets) and yes/no questions (DID: “Did the toy break?” versus DYR: “Do you remember if the toy broke?”) on 262 maltreated and non-maltreated children’s (age range 4–9 years) reports of a minor transgression. Over two-thirds of children failed to disclose the transgression in response to free recall (invitations and cued invitations). The secret instruction increased disclosures early in free recall, but was not superior to no instruction when combined with cued invitations. Yes/no questions specifically asking about the transgression elicited disclosures from almost half of the children who had not previously disclosed, and false alarms were rare. DYR questions led to ambiguous responding among a substantial percentage of children, particularly younger children. The findings highlight the difficulties of eliciting transgression disclosures without direct questions. Copyright © 2017 John Wiley & Sons, Ltd.

Child abuse victims often do not disclose maltreatment when interviewed by the authorities, particularly if they have never disclosed before. For example, Hershkowitz, Lamb, and Katz (2014), utilizing the National Institute of Child Health and Development (NICHD) protocol, found that among children with corroborative evidence of abuse, about half failed to disclose if they had never disclosed before, and even among children who had previously disclosed, 39% failed to disclose again. Research has assessed the efficacy of various truth induction techniques (e.g., discussion of the morality of truth-telling, a promise to tell the truth, a putative confession, and reassurance) designed to elicit disclosures from children who have engaged in or witnessed minor transgressions (Evans & Lee, 2010; Lee et al., 2014; Lyon & Dorado, 2008; Lyon et al., 2014; Rush, Stolzenberg, Quas, & Lyon, 2017; Stolzenberg, McWilliams, & Lyon, in press; Talwar, Arruda, & Yachison, 2015; Talwar, Yachison, & Leduc, 2016; Talwar, Lee, Bala, & Lindsay, 2002). In the field, researchers have shown that increased interviewer supportiveness can increase disclosure of abuse (Hershkowitz

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et al., 2014). No study has examined the effects of discussing good and bad secrets on children's transgression disclosures.

There is also some evidence that yes/no questions are more likely to elicit disclosures about minor transgressions from children than are open-ended questions (Lyon et al., 2014; Pipe & Wilson, 1994; Stolzenberg et al., in press). However, yes/no questions increase the risk of both false allegations and false denials, in large part because of children's response biases (Fritzley & Lee, 2003; Fritzley, Lindsay, & Lee, 2013; Rocha, Marche, & Briere, 2013). Furthermore, yes/no questions typically elicit unelaborated yes or no responses, and these responses may be ambiguous (Evans, Stolzenberg, Lee, & Lyon, 2014). This study examined the use of secret instructions and yes/no questions in eliciting true disclosures from maltreated and non-maltreated 4- to 9-year-olds.

SECRECY

In observational research, children as young as 2 years of age lie (Wilson, Smith, & Ross, 2003), and their early falsehoods often deny personal transgressions (Talwar & Crossman, 2012). Laboratory research has also found that lying about minor transgressions emerges by 2 years of age, and increases during the preschool years (Evans & Lee, 2013; Talwar et al., 2002). Moreover, young children readily accede to requests to conceal transgressions in which they are jointly implicated (Lyon, Malloy, Quas, & Talwar, 2008) as well as parental transgressions (Gordon, Lyon, & Lee, 2014).

With respect to children suspected of being abused, studies converge in showing high rates of secrecy and delayed reporting against adult offenders (Anderson, Martin, Mullen, Romans, & Herbison, 1993; Hershkowitz et al., 2014). Maltreated children are often instructed to keep abuse a secret (Bussey & Grimbeek, 1995; Lyon, 2002), which may cement their non-disclosure (Bussey, Lee, & Grimbeek, 1993; Pipe & Goodman, 1991). Children report being deterred from reporting because of fears they will be blamed (Anderson et al., 1993; Hershkowitz, Lanes, & Lamb, 2007), and frequently blame themselves (Ney, Moore, McPhee, & Trought, 1986; Quas, Goodman, & Jones, 2003).

TRUTH INDUCTION

One method for increasing children's disclosures involves interview instructions that encourage children to provide truthful information without suggesting suspected information. Eliciting a promise to "tell the truth" from children increases transgression disclosures (Evans & Lee, 2010; Talwar et al., 2002) without increasing false reports (Lyon & Dorado, 2008; Lyon et al., 2008); the "truth" implies a transgression only to children who actually experienced a transgression. Similarly, discussing the positive virtues of telling the truth has been found to increase children's honesty (Lee et al., 2014; Talwar et al., 2015; Talwar et al., 2016). Reassurance that disclosing information that the child feels "sad or bad about" will not lead to punishment increases true reports without increasing errors (Lyon et al., 2008), but only when a suspected transgression is not mentioned (Lyon & Dorado, 2008). Another promising technique is the putative confession, in which the interviewer tells the child that the suspect disclosed

“everything that happened,” and wanted the child to “tell the truth,” without specifying what “everything” or the “truth” was. The putative confession technique substantially increased the likelihood of transgression disclosures among 4- to 9-year-old maltreated and non-maltreated children without increasing false reports (Lyon *et al.*, 2014; see also Rush *et al.*, 2017, Stolzenberg *et al.*, *in press*). Given the benefits of interview instructions that encourage children to be forthcoming without suggesting suspected information, we examined another truth induction technique based on this principle.

GOOD AND BAD SECRETS

Some practitioners have hoped to encourage children to disclose abuse by teaching them the difference between good secrets and bad secrets (Conte, 1986; Topping & Barron, 2009). Children are taught that good secrets concern positive events and bad secrets concern negative events, and although it is acceptable to keep good secrets, bad secrets about negative events should be disclosed (Knappert & Krahe, 2009; Topping & Barron, 2009). It may not be necessary to specify the contents of bad secrets in order to encourage disclosure. Analogously to references to “something bad,” “everything that happened,” and “the truth,” references to a bad secret may imply the suspected transgression to children who have experienced the transgression without eliciting false reports in children who have not experienced the transgression. This may be particularly effective with younger children, who are unlikely to fully understand the distinction between disclosing that one has a secret and disclosing the contents of that secret (Peskin & Ardino, 2003). Moreover, children who acknowledge that they have a secret may be more likely to disclose the contents with follow-up questioning. Talwar and Lee (2002) found that many children up to 7 years of age, having falsely denied peeking at a forbidden toy, then exhibited knowledge of the toy’s identity, thus inadvertently revealing their transgression.

The timing of a secret instruction might be important; it is possible that children who are inclined to disclose might actually be deterred by a secret instruction, because they will be reminded of admonitions to keep the transgression a secret. On the other hand, introducing the secret instruction later in the interview might be counterproductive, because children may feel as if they are locked into a report that omitted any transgression.

FREE RECALL: INVITATIONS AND CUED INVITATIONS

Disclosures in response to free recall questions at the beginning of the interview are ideal because there is minimal risk of contamination (Ahern & Lamb, 2013). A productive means of increasing children’s recall is to ask cued invitations, in which the interviewer specifies aspects of the child’s recall and asks the child to elaborate (Brown *et al.*, 2013). However, cued invitations are rare in the experimental literature: research assessing the productivity of children’s free recall has often provided only non-specific requests for additional information (such as “What else happened?”; *e.g.*, Goodman, Hirschman, Hepps, & Rudy, 1991; Kulkofsky, Wang, & Ceci, 2008; Melnyk & Bruck, 2004; Quas & Schaaf, 2002; Salmon & Pipe, 2000). Similarly, studies examining truth induction have failed to exhaust children’s recall through cued invitations, because they

used a limited number (Lyon et al., 2008), asked only non-specific “What else happened” questions (Talwar et al., 2016) or failed to ask any recall questions whatsoever, moving immediately to yes/no questions about the target transgression (Evans & Lee, 2010; Lee et al., 2014; Lyon & Dorado, 2008; Talwar et al., 2002, 2015).

Research seeking to inform practice should include cued invitations, because practitioners are advised to elicit as much information from child witnesses as possible with open-ended questions (Lamb, Hershkowitz, Orbach, & Esplin, 2008). Doing so may affect the apparent efficacy of different truth induction methods. For example, Talwar et al. (2016) and Lyon et al. (2008) found that truth induction had clearer effects when combined with yes/no questions than when combined with recall questions, but as noted earlier, those studies may not have fully exhausted children's recall.

YES/NO QUESTIONS

Even when interviewers spent time building rapport and attempt to exhaust children's recall, substantial percentages of children fail to disclose transgressions (Lyon et al., 2014; Rush et al., 2017; Stolzenberg et al., in press). Yes/no questions about suspected transgressions elicit disclosures from children who would otherwise fail to disclose (Lyon et al., 2014; Pipe & Wilson, 1994). For example, Stolzenberg et al. (in press) examined children's disclosures that toys had broken while playing with a confederate. They found that among the children who failed to disclose breakage during free recall, 45% disclosed in response to yes/no questions that directly asked whether each toy had broken.

However, the disadvantage of yes/no questions is that they may increase the likelihood of false allegations. For example, the yes/no questions in Stolzenberg et al. (in press) led 5% of children who had not experienced breakage to claim falsely that they had. Children coached to make false allegations are also more likely to do so in response to yes/no questions than in free recall (Quas, Davis, Goodman, & Myers, 2007). Furthermore, an overlooked difficulty with yes/no questions is that they may increase the likelihood that children explicitly deny transgressions that occurred. In Lyon et al.'s (2014) study, 36% of children who had disclosed breakage in free or cued recall denied that “anything bad happened” to the toys when directly asked. If children deny transgressions that in fact occurred when asked yes/no questions, subsequent acknowledgement may be viewed as unreliable because of the inconsistency of the child's report (Szojka, Andrews, Lamb, Stolzenberg, & Lyon, in press).

“DO YOU KNOW/REMEMBER” (DYK/R) QUESTIONS

Interviewers may preface their yes/no questions with “Do you know” or “Do you remember” to make them seem more polite and less suggestive, and to emphasize that an inability to recall is acceptable (e.g., “Do you remember what happened?”). For example, interviewers questioning children about sexual abuse often rephrase “Tell me why you are here” as “Do you know why you are here?” (Hughes-Scholes & Powell, 2012). These questions, also known as indirect speech acts (Clark, 1979), explicitly ask if the child knows a piece of information and implicitly (or indirectly) ask the child to provide that information.

One problem with DYK/R questions is that children may miss their implicit meaning and simply answer yes (Evans *et al.*, 2014; Hughes-Scholes & Powell, 2012). When children provide unelaborated yes responses to DYK/R questions that implicitly ask a *wh-* question (e.g., “Do you know why you are here?”), the interviewer can simply follow-up with the *wh-* question (“Why are you here?”). A more serious problem arises if the implicit question can itself be answered with a “yes” or a “no.” In those cases, an unelaborated yes or no in response to a DYK/R question is referentially ambiguous. For example, in response to the question “Do you remember if you told your brother?”, a yes response may indicate, “Yes, I remember” (explicit) or “Yes, I told my brother” (implicit). Similarly, a no response may indicate: “No, I don’t remember” (explicit) or “No, I did not tell him” (implicit). Although children’s difficulty with referential ambiguity has long been the subject of study (Glucksberg, Krauss, & Weisberg, 1966; Matthews, Lieven, & Tomasello, 2010), this potential difficulty has largely been overlooked. Evans, Stolzenberg, and Lyon (*in press*) found that when testifying about child sexual abuse in court, 5- to 9-year-old children frequently gave unelaborated yes and no responses to DYK/DYR questions containing an implicit yes/no question, and that attorneys typically failed to attempt to disambiguate children’s answers.

MALTREATMENT DIFFERENCES

Maltreated children may respond differently to requests by some adults to keep secrets and by other adults to divulge those secrets. Maltreated children are more likely to expect that others, including caretakers, will behave in unsupportive, rejecting, or punitive ways (Shields, Ryan, & Cicchetti, 2001; Shipman & Zeman, 2001; Toth *et al.*, 2000). Research asking maltreated children about their attitudes toward disclosing adult transgressions has shown that among 4- to 9-year-old children, younger maltreated children are less likely to endorse disclosure than are non-maltreated children, whereas older maltreated children are more likely to do so (Lyon, Ahern, Malloy, & Quas, 2010). However, in a direct test of maltreated and non-maltreated children’s willingness to disclose a minor transgression, Lyon *et al.* (2014) found few differences between maltreated and non-maltreated children, positing that although maltreated children’s lack of trust might lead them to feel less protective of the adult transgressor, it might also make them less likely to trust the interviewer, leading to a lack of difference between maltreated and non-maltreated children.

CURRENT STUDY

We examined the effects of secret instructions on 4- to 9-year-old maltreated and non-maltreated children’s disclosure of a minor transgression. Each child interacted with a confederate, during which they played with several toys. While playing, two toys appeared to break in the child’s hands. The confederate told the child that they should not have played with the “breakable” toys and asked the child to keep breakage a secret, noting that they “might get in trouble” if their play was discovered. An interviewer then developed rapport with children following the NICHD structured protocol. Children were randomly assigned into one of three interview conditions: secret-first (before free recall), secret-last (after free recall), or no-secret (no instructions). At the end of the

interview, all children were asked a series of yes/no questions directly enquiring if breakage had occurred; half of these questions were DYR questions.

The study was novel in several respects. It is the first examination of the potential effects of a “bad secret” instruction on children’s transgression disclosures. It is also the first study to examine the extent to which children give unelaborated and therefore referentially ambiguous answers to DYK/DYR questions. Because it enlisted both maltreated and non-maltreated children, tested a scenario in which children are strongly motivated to keep a secret, and included rapport-building and recall questions from the NICHD structured protocol, it provided an ecologically rich opportunity to assess the effects of instructions and types of question on children’s disclosures of wrongdoing.

First, we predicted that instructions about the importance of disclosing “bad secrets” would increase children’s willingness to disclose the transgression. We based this prediction on research demonstrating the efficacy of interview instructions that encourage disclosure without explicitly mentioning the suspected transgression, including a promise to tell the truth, reassurance, and the putative confession (e.g., Lyon et al., 2014; Talwar, Lee, Bala, & Lindsay, 2004). We did not make any prediction with respect to whether the secret instruction would be more effective before or after recall. Second, we anticipated that yes/no questions about breakage would elicit a large number of disclosures but with an increase in false reports (although we were unsure how many false reports would be elicited), based on research finding that yes/no questions increase both true and false reports (e.g., Stolzenberg et al., in press). Third, we hypothesized that DYR questions would elicit a substantial number of unelaborated, and therefore ambiguous, yes and no responses, based on research finding this pattern of responding among children testifying in court (Evans et al., in press).

METHOD

Participants

The sample included 262 maltreated ($n = 126$) and non-maltreated children ($n = 136$) aged 4–9 years ($M = 6$ years 6 months, $SD = 1.69$; 51% girls). The sample was 61% Latino, 29% African American, 6% Biracial, and 5% Caucasian. The maltreated sample consisted of children substantiated as suffering from neglect and/or physical or sexual abuse who had been removed from the custody of their parents or guardians. Children gave their assent, and consent was obtained from the Presiding Judge of Juvenile Court and the children’s attorneys. Maltreated children were not eligible if they were awaiting a hearing at which they might testify or if they were not English-speaking. Children in the non-maltreated sample were recruited from schools serving predominantly ethnic minority families in neighborhoods comparable to those from which most maltreated children were removed. Consent for non-maltreated children was given by their parents. Maltreated children were interviewed in a dedicated interviewing room near the court waiting area, and non-maltreated children were interviewed in a comparably equipped interviewing room inside a research van parked on the school grounds.

Materials and Procedure

One of two women served as the interviewer (equally distributed across age and condition). The interviewer first obtained assent from the child. The assent stressed that the interviewer was not from the court. The interviewer told the child that the researchers were interested in “what kids will say about what’s true and not true,” and that she and the child would look at stories and play games “that will help us find out what you think.” The transgression was not mentioned because it was necessary that children believe the breakage actually occurred.

After administering preliminary tasks (measuring executive functioning, which are not discussed further), the interviewer told the child that she forgot some papers and needed to retrieve them from her office. A confederate (one of two men or a woman, equally distributed across age and condition) entered the room shortly thereafter and expressed interest in playing with toys on shelves facing the child. There were eight boxes of toys on two sets of shelves. Each box contained two of the same type of toy. For four of the eight toys (a plane, a Slinky, a lobster, and a skateboard) the confederate retrieved a box, removed a toy, described it, and demonstrated how to play with it. He then removed the other toy and gave it to the child so that the child could play. The confederate then placed the toys back in the box and returned the box to the shelf, turning the box to reveal a picture of the toy (thus facilitating the child’s subsequent recall of play). For another two toys (a football and a Rubik’s Cube), the confederate did not remove the toy, but turned the box during the course of play so that their pictures were also visible. Finally, two of the toys appeared to break while the child was playing with the toy (a monkey and a dog). Hence, there were six unbroken toys and two broken toys. For each broken toy, the confederate described what occurred (e.g. “When you put the monkey down and turned it on, it broke”), expressed concern (“This is not good”), and made an attempt to conceal the breakage (“We better put the monkey back so nobody knows it’s broken”). The confederate noted that the toys from the shelf containing the broken toys were “breakable.” Upon leaving the room, the confederate admonished the child that it was permissible to acknowledge that they had played with the toys from the OK shelf but asked the child not disclose that they had played with toys from the breakable shelf because they could get in “trouble if [the interviewer] finds out.” The entire interaction with the confederate lasted approximately 6 minutes.

The interviewer re-entered shortly thereafter and thanked the child for waiting. Every child participated in structured rapport-building for 5 minutes that was modeled after the NICHD protocol for interviewing children about suspected abuse (Sternberg *et al.*, 1997). The interviewer first asked the child about things she liked to do, and followed up on one of the activities with a “tell me more about [action]” question. The interviewer then asked the child about things she didn’t like to do, and similarly followed up. The interviewer then asked the child to “Tell me about your last birthday. Tell me everything that happened from the very beginning to the very end,” followed by two “What happened next” questions and two “Tell me more about” action questions. The birthday questions were followed by identically structured questions about “yesterday.”

 *Secret Instruction* Legal Repository

In the secret instruction, the interviewer said to the child: “I want to tell you something about me. I have a secret, and I’m not supposed to tell anybody. Now, some secrets are

fun. The problem is that my secret is about a bad thing. And keeping a bad secret makes me feel bad. So I've decided to tell you that I have this secret. [Brief pause] You know what? I feel much better telling you. I wasn't here when the man came in. Tell me about a secret you have." If the child revealed a secret, the interviewer asked, "You said [content of secret]; tell me more about that." If the child revealed that he or she had a secret, but did not reveal the content, the interviewer asked "What is the secret?" Children were randomly assigned into one of three secret conditions: secret-first ($n = 87$), secret-last ($n = 87$), and no-secret ($n = 88$). In the secret-first condition, the interviewer provided the secret instruction before free recall. In the secret-last condition, the interviewer provided the secret instruction after free recall. In the no-secret condition, the interviewer did not provide secret instructions.

Free Recall: Invitations and Cued Invitations

At the beginning of free recall, the interviewer said "Tell me everything that happened when the man [woman] came in while I was gone." If the child was unresponsive, the interviewer said "It's really important that I know what happened when the man [woman] came in. Tell me everything that happened." The interviewer kept track of each of the toys mentioned by the child, and, if the child only generally referred to toy play, asked "You said you played with the toys. Tell me everything you played with."

During cued invitations, the interviewer began with the last event mentioned by the child and asked "What happened next?" questions until the child finished the narrative (either by saying something like "That's it" or by mentioning that the confederate left the room). For each toy mentioned, the interviewer followed up with, "You said you played with the [toy]. Tell me everything you did with the [toy]." If at any point the child mentioned breakage, the interviewer asked a "Tell me more about [breakage]" question.

Yes/no Questions: DID and DYR

After completing free recall, the interviewer asked the child a block of DID yes/no questions ("Did [toy] break?"), asking about each toy, and a block of DYR yes/no questions ("Do you remember if [toy] broke?"), again asking about each toy. Half of the children received the eight DID questions first and the other half of children received the eight DYR questions first. Half of children were asked about the broken toys within the first four questions and half were asked about the broken toys within the last four questions.

Debriefing

The confederate re-entered the room, and the interviewer explained the purpose of the study to the child, including that she knew the confederate would come in and play with the child. The interviewer emphasized the importance of always telling the truth about what happened and reassured the child that no one was in trouble for the broken toys. Additionally, the confederate took responsibility for the toy breakage and explained that the broken toys could be fixed. After the confederate left the room, the interviewer

asked the child about her thoughts and feelings during the toy play interaction, the subsequent interview, and about participating in the study.

Coding

All sessions were videotaped and transcribed. For free recall responses, children's responses were coded for whether they disclosed breakage. For the yes/no questions, whether children answered yes or no and whether and how they elaborated on their responses were coded. Finally, children's responses to the secret instruction were coded. Their responses were classified as disclosed breakage (e.g., "A secret I have is that we broke the toys"), disclosed play or the confederate entering the room but not breakage (e.g., "My secret is that we played with those toys right there. The spring thing and the other things"), disclosed a secret but no explanation of the secret (e.g., "I have a secret. Really bad"), disclosed a secret unrelated to the study (e.g., "I have a secret but I never tell anybody... I like to collect rocks"), denied having a secret (e.g., "I have no secrets"), or were non-responsive (e.g., "I don't know").

For all coding schemes, two coders independently coded 20% of the transcripts and reached either kappa >0.80 or 90% agreement.

RESULTS

Preliminary Analyses

Preliminary analyses revealed that 5% of children ($n = 12$) disclosed during rapport-building. These children were more likely to be 4- to 5-year-olds (15%), $p < 0.001$, than 6- to 7-year-olds (0%) or 8- to 9-year-olds (1%) [$\chi^2(2, N = 262) = 19.88$]. The early disclosers did not differ with respect to gender, race/ethnicity, or maltreatment.

To test for potential confounds across maltreatment groups, a series of chi-square tests was conducted for children's race/ethnicity and gender. The groups were comparable with respect to the number of African Americans [$\chi^2(2, 262) = 3.19, p = 0.07$], Latinos [$\chi^2(2, 262) = 0.01, p = 0.91$], and boys/girls [$\chi^2(2, 262) = 0.37, p = 0.55$]. However, the maltreated group contained more Caucasian ($n = 12$) children than did the non-maltreated group ($n = 1$) [$\chi^2(2, 262) = 10.71, p = 0.001$]. Preliminary analyses also tested for potential confounding influences on children's interview responses. The following were unrelated to children's interview responses: child gender, child ethnicity, confederate identity, interviewer identity, interviewer–confederate pairing, and DYR/DID question order.

Children's responses to debrief questions were examined as a manipulation check. When children were asked how they felt when the toys broke ($n = 262$), 70% reported negative emotions (e.g., "bad") and 9% reported anticipating consequences of the breakage (e.g., "I thought that no one would let me play with them no more"). Ten percent expressed a neutral reaction (e.g., "I didn't feel anything"), 8% gave positive responses (e.g., "I felt good"), and 3% responded "I don't know" or were off-task. Hence, children reported predominantly negative reactions to breakage. On the other hand, when asked how they felt about being in the study, 78% reported positive feelings (e.g., "I felt happy"), 8% expressed a neutral reaction (e.g., "Fine"), and 3% reported

negative emotions (e.g. "Sad."). Additionally, 11% answered "I don't know" or were off-task.

Disclosures of Breakage before Yes/no Questions

Responses to the Secret Instruction

The distribution of response types to the secret instruction (whether given before or after recall) by age are shown in Table 1. Twelve percent of children disclosed breakage in response to the secret instruction, and another 22% mentioned toy play or the confederate without disclosing breakage. Hence, about a third of children (34%) mentioned a study-related secret. Another third (33%) disclosed a secret unrelated to the study. The final third (33%) denied having a secret (22%), were unresponsive (7%), or simply stated that they had a secret without providing any content (3%). To determine whether children's response type was related to age, maltreatment status, or secret condition, a multinomial logistic regression was conducted with the categorical variable for response type (i.e., study-related response, irrelevant secret response, and no secret response) entered as the dependent variable, and age group (4–5, 6–7, 8–9 years), maltreatment status, and secret condition (secret-first, secret-after, and no-secret) entered as predictors. The model for study-related secret responses was significant [$\chi^2(8) = 16.11, p = 0.04$]. Age emerged as a significant predictor: 8- to 9-year-olds were more likely to provide a study-related response to the secret instruction (49%) than were 4- to 5-year-olds (26%, Wald = 8.57, $p = 0.003$) and 6- to 7-year-olds (27%, Wald = 4.84, $p = 0.03$).

Although they were a relatively small group (18%, $n = 31$), children who gave a study-relevant response to the secret instruction but did not mention breakage in response to the instruction or during recall are of particular interest, because their responses provided hints that additional follow-up questions might have turned into disclosures of breakage. Therefore, we examined these children more closely, and found that although 19 of the 31 mentioned generic aspects of their interaction with the confederate that might not have evolved into disclosures of breakage with further questioning, the other 12 gave hints of the breakage, including mentioning play with the toys that the confederate had described as "breakable" (seven children), or one of the broken toys in particular (one child), or mentioning keeping a secret with the confederate (four children; e.g., "He told me something and I want to tell you but he told me not to").

Disclosure by the End of Recall

Of primary interest was whether the secret instruction influenced children's disclosures of breakage prior to yes/no questions. This included children's responses to the secret instruction and free recall questions (invitations and cued invitations). To determine if

Table 1. Percentage (n) of each response type to the secret instruction by age group

Age group	Study-related secret	Irrelevant secret	No secret
4–5 years ($n = 58$)	26% (15)	48% (28)	26% (15)
6–7 years ($n = 59$)	27% (16)	37% (22)	36% (21)
8–9 years ($n = 57$)	49% (28)	25% (14)	26% (15)

age, maltreatment status and/or the secret instructions had an effect on children's disclosures prior to yes/no questions, a dichotomous score for disclosure of breakage prior to yes/no questioning was entered into a logistic regression, with age group, maltreatment status, and secret instruction entered as predictors; previous disclosure (i.e., rapport disclosure) was included as a covariate. The model was significant [$\chi^2(4) = 30.48$, $p < 0.001$]; however, only previous disclosure emerged as a significant predictor (Wald = 7.66, $p = 0.006$), indicating that children who disclosed during rapport were likely to disclose again during free and/or cued recall. Thirty percent of children disclosed breakage in the secret-first condition, 37% in the secret-last condition, and 30% in the no-secret condition.

We were surprised by the lack of significant findings, and conducted exploratory analyses of the invitations and cued invitations separately to determine whether giving the secret instruction before free recall might affect the timing of children's disclosure even though it did not affect whether or not they disclosed. This was of particular interest because, as noted in the introduction, experimental work examining children's free recall has generally ignored the potential for cued invitations to increase productivity. For these analyses, the secret-last and the no-secret condition were combined because they did not differ during the invitations and cued invitations (neither group had received a secret instruction).

Exploratory Analyses of Invitations Alone

The invitations included children's response to the "Tell me everything" question about what happened while the interviewer was gone and the "Tell me everything you played with" question if the child only generally mentioned play. For children in the secret-first condition, it also included their response to the secret instruction. Disclosure of breakage was entered into a logistic regression with age group, maltreatment status, and secret condition (secret-first vs. secret-last/no-secret) entered as predictors, and prior disclosure (during rapport) included as a covariate. The model was significant [$\chi^2(5) = 29.72$, $p < 0.001$]. Prior disclosure was a significant covariate; children who disclosed before were likely to disclose again (Wald = 13.27, $p < 0.001$). Secret condition emerged as a significant predictor (Wald = 4.36, $p = 0.04$), such that children in the secret-first condition disclosed at a higher rate (28%) than those in the secret-last/no-secret condition (16%). Two percent ($n = 4$) falsely disclosed breakage; all were in the secret-last/no-secret condition. The results thus suggested that had we only asked invitations, the secret-first condition would have appeared effective.

Exploratory Analysis of Cued Invitations Alone

Next we examined children's disclosures to cued invitations, which included a series of "You said [event]; what happened next?" questions and "You said you played with the [toy]. Tell me everything you did with the [toy]." A dichotomous variable of disclosure during cued invitations was entered into a logistic regression, with age group, maltreatment status, and secret condition entered as predictors. Prior disclosure (i.e., rapport and/or free recall) was entered as a covariate. The model was significant [$\chi^2(5) = 68.59$, $p < 0.001$]. Prior disclosure increased the likelihood of disclosure (Wald = 48.78, $p < 0.001$). Maltreatment was marginally significant (Wald = 3.83, $p = 0.05$), and maltreated children were slightly less likely to disclose breakage (19%)

than were non-maltreated children (24%). The rate of disclosure was nonsignificantly lower for children in the secret-first condition (16%) compared with the secret-last/no-secret (20%) conditions. There were no false reports of breakage during cued invitations.

Disclosures of Breakage to Yes/no Questions

We next examined children's disclosures to the yes/no questions that directly asked whether breakage had occurred. A dichotomous variable of disclosure (a yes response to either of the two questions about the broken toys) was entered into a logistic regression, with age group, maltreatment status, and secret condition entered as predictors. The model was significant [$\chi^2(6) = 95.25, p < 0.001$]. Prior disclosure was a significant covariate (Wald = 20.06, $p < 0.001$). Maltreatment was marginally nonsignificant (Wald = 3.61, $p = 0.057$); maltreated children were less likely to disclose toy breakage (27%) than were non-maltreated children (37%). The rate of disclosure was not significantly different across secret conditions, as follows: secret-first (54%), secret-last (53%), and no-secret (61%). False reports of breakage were rare. Four percent of children ($n = 10$) gave a yes response to one or more of the six yes/no questions about toys that did not break. This number was too small for statistical analysis. Because children were asked two yes/no questions that referred to broken toys and six that referred to unbroken toys, they had more opportunities to false alarm; calculation of the true-positive and false-positive rates revealed that children responded yes to 50% of questions about broken toys and 1% of questions about unbroken toys.

New Disclosures of Breakage across Interview Phases

Because extensive questioning risks eliciting false allegations, particularly when one moves to yes/no questions, it is important to consider whether the different question phases elicited new disclosures of breakage rather than reiteration that breakage occurred. Children's rates of new disclosures are presented in Table 2. Notably, cued invitations elicited a fair number of new disclosures in the secret-last and no-secret conditions (8–14%), but not among children in the secret-first condition, who had already received the secret instruction when asked cued invitations (3%). This is consistent with the results of the exploratory analyses, which suggested that had we stopped at invitations, the secret-first condition would have appeared effective. Across all groups, the yes/no questions elicited new disclosures among about half of the children who had not previously disclosed (49%).

Table 2. Percentage (fraction) of children disclosing breakage (among those who had not previously disclosed) at each interview stage by secret condition

Secret condition	Rapport	Secret-first	Invitations	Cued invitations	Secret-last	Yes/no
Secret-first	6% (5/87)	12% (10/82)	13% (9/72)	3% (2/63)	–	46% (28/61)
Secret-last	5% (4/87)	–	12% (10/83)	8% (6/73)	18% (12/67)	40% (22/55)
Control	3% (3/88)	–	15% (13/85)	14% (10/72)	–	56% (35/62)

DYR Responses

Ambiguity

When children provided unelaborated yes and no responses to DYR questions that contain an implicit yes/no question, their answers were ambiguous, because one cannot tell whether they were answering the explicit question (whether they remember) or the implicit question (whether the toys broke). Children gave unelaborated answers to 72% of the DYR questions about broken toys, and 61% of the unbroken toys. To examine the potential influence of age, maltreatment and secret condition, a series of 3 (age group) \times 2 (maltreatment) \times 3 (secret) ANOVAs were conducted on the number of elaborated responses children gave to DYR questions about broken ($n = 2$) and unbroken ($n = 6$) toys. No significant effects emerged for DYR questions about broken toys. For DYR questions about unbroken toys there was a significant main effect of age [$F(2, 260) = 6.88, p = 0.001, \eta_p = 0.06$], as well as a significant interaction of age \times maltreatment [$F(2, 260) = 3.84, p = 0.02, \eta_p = 0.03$]. The interaction reflected the fact that the tendency to provide unelaborated responses decreased with age among the non-maltreated children [$F(2, 131) = 10.39, p < 0.001$]; 4- to 5-year-olds (80%; $M = 4.80, SD = 0.32, p = 0.002$) provided more unelaborated responses than both 6- to 7-year-olds (57%; $M = 3.42, SD = 0.30, p = 0.002$) and 8- to 9-year-olds (47%; $M = 2.80, SD = 0.31, p < 0.001$). No significant age effect emerged for maltreated children [$F(2, 131) = 1.02, p = 0.36$].

Inconsistency

A particularly worrisome response to the DYR questions would be an unelaborated yes that led the interviewer to think that the child was acknowledging breakage when in fact the child was simply responding that he or she remembered whether breakage occurred. In this situation the child would answer yes to the DYR question and no to the DID question. A series of 3 (age group) \times 2 (maltreatment) \times 3 (secret condition) ANOVAs were conducted on the rate at which children were inconsistent across yes/no questions about broken ($n = 2$) and unbroken ($n = 6$) toys. For broken toys there was a main effect of age [$F(2, 261) = 4.59, p = 0.01, \eta_p = 0.04$], indicating that 4- to 5-year-olds (6%, $M = 0.12, SD = 0.03$) answered more questions with this inconsistent pattern than did 6- to 7-year-olds (0%, $M = 0.00, SD = 0.03$) and 8- to 9-year-olds (2%, $M = 0.03, SD = 0.03$). For unbroken toys, no significant effects emerged, but there was a nonsignificant trend for the youngest children (9%, $M = 0.52, SD = 0.13$) to be more likely to respond yes to DYR questions and no to DID questions than 6- to 7-year-olds (5%, $M = 0.27, SD = 0.12$) or 8- to 9-year-olds (5%, $M = 0.30, SD = 0.13$). Across questions, 1% of children provided at least one inconsistent response to the questions about the broken toys and 14% to the questions about unbroken toys.

DISCUSSION

This study examined the potential for secret instructions and yes/no questions to elicit disclosures of a minor transgression from 4- to 9-year-old maltreated and non-maltreated children. Consistent with previous research (e.g., Lyon et al., 2014), over

two-thirds of children failed to disclose the transgression even after an interviewer built a rapport with narrative practice and asked both invitations and cued invitations about the child's interaction. Free recall elicited false allegations from 2% of children. The secret instruction failed to increase the disclosure rate, although it elicited disclosures of breakage earlier in the questioning.

Yes/no questions specifically asking about the transgression elicited disclosures from almost half of the children who had not previously disclosed, but by the same token elicited clear false denials from the other half. Yes/no questions elicited false allegations of toy breakage (regarding toys that did not break) from 1% of children; and 4% across six yes/no questions. Asking the yes/no questions as DYR questions led to a substantial number of unelaborated and therefore ambiguous responses, with some evidence of improvement with age. Younger children were also most likely to answer DYR questions so as to suggest falsely that a transgression had occurred, although this was rather rare.

Secret Instruction and Cued Invitations

The secret instruction led 12% of children to disclose breakage, but when supplemented with cued invitations did not elicit a higher number of disclosures than no instructions. Hence, the instruction led some children to disclose earlier in the interaction with the interviewer. The results highlight the importance of attempting to exhaust the child's recall in order to determine if a transgression has occurred.

From a practical standpoint, the results support the use of interviewing protocols, including the NICHD structured protocol, that routinely recommend that interviewers attempt to exhaust children's free recall through cued invitations, in which the interviewer mentions a piece of information provided by the child and asks the child for elaboration (e.g., "Tell me more about the [detail]") (Hughes-Scholes & Powell, 2012; Lamb et al., 2008).

From a research perspective, the results suggest that research on children's recall abilities and truth induction methods should incorporate cued invitations into their methods, lest they underestimate children's recall abilities and overstate the need for truth induction methods to overcome children's reluctance to disclose. Although research examining the effects of the putative confession (in which the interviewer tells the child that the suspect revealed "everything that happened" and wanted the child to tell the truth) has incorporated cued invitations (Lyon et al., 2014; Rush et al., 2017; Stolzenberg et al., in press), research examining the efficacy of a promise to tell the truth and reassurance has failed to do so. Hence, the extent to which promises and reassurance have incremental value in encouraging disclosure needs to be determined.

In this study, the cued invitations focused children's attention on each toy that they mentioned when asked generally about their interactions with the confederate, asking children to disclose everything that happened when they played with that toy. Hence, children who merely mentioned a toy without disclosing that it broke were asked to elaborate. This may have made it more challenging for children to omit mentioning breakage. The effect may be analogous to the efficacy of yes/no questions directly asking about breakage, but without the disadvantage of suggestion.

It is possible that we underestimated the potential benefits of secret instructions. They may need to be more specific to be effective. A large percentage of children disclosed a non-study secret in response to the instruction; indeed, almost half of the

youngest children did so. Although we mentioned the confederate immediately before asking the child, “Tell me a secret that you have,” we did not explicitly ask about a secret *with the confederate*. The putative confession, which has been found to elicit disclosures from a large percentage of children (Lyon et al., 2014; Rush et al., 2017), more clearly refers to the confederate’s actions (“[The confederate] told me everything that happened”). An alternative approach would be to ask the child yes/no questions about secrets with different people, including the suspect, and follow up any affirmative answers with questions encouraging the child to disclose. Mentioning different people rather than just the suspect would reduce concerns that mentioning the suspect before disclosure is suggestive.

Similarly, the fact that the interviewers described having a bad secret but did not divulge its contents may have rendered their disclosure too vague (or insincere) to warrant reciprocity. The vagueness was deliberate; first, we worried that elaborating on contents would be suggestive. Research on interviewer reassurance that disclosure will not be harmful has found that it can lead to false disclosures if the suspected transgression is explicitly mentioned (Lyon & Dorado, 2008). For similar reasons, practitioners have been warned against disclosing their abuse histories to children to encourage them to disclose (Haney, Vieth, & Campos, 2010). The trick for future work is therefore how to be sufficiently specific without being excessively suggestive.

The secret instruction might also be made more effective with better follow-up questions. Although we asked children to elaborate on their responses to the secret instructions (either asking a “Tell me more about” question if they revealed content, or a “What is the secret?” question if they did not), a non-trivial percentage (22%) of the children given the secret instruction mentioned something study-relevant without disclosing breakage, and most of those children (79%) did not explicitly disclose breakage during free recall. Additional follow-up questions about the secret, including reassurance that it was OK to tell the secret, might have elicited more acknowledgements of breakage. However, any approach should also test a group of children who have not experienced a transgression, in order to ensure that extensive questioning about bad secrets is not suggestive.

Future work should also look more closely at a speculative but worrisome possibility: the interviewer’s secret instruction may have reminded some children of their pact with the confederate, and thereby silenced them. Although the differences were not statistically significant, an interesting pattern in the results was the likelihood of new disclosures in response to the yes/no questions across the three secret instructions groups. The disclosures in response to the yes/no questions were lowest when children had just received the secret instruction (secret-last, 40%), intermediate when they had received the instruction before free recall (secret-first, 46%), and highest when they had received no secret instruction (no-secret, 56%).

Yes/no Questions

The finding that yes/no questions elicit truthful disclosures of transgressions that free recall fails to elicit is consistent with prior research (Lyon et al., 2014; Pipe & Wilson, 1994; Talwar et al., 2015). However, prior research examining children’s disclosure of transgressions has largely overlooked the trade-offs in moving to direct questions. Here, yes/no questions that directly asked about breakage (and which would probably be viewed as excessively suggestive to many) elicited new disclosures among about half

of the children who had not previously disclosed. On the other hand, children false-alarmed 1% of the time. Furthermore, an important and overlooked problem with yes/no questions is that children who maintained the secret in the face of direct questions were now on record as explicitly denying that breakage had occurred. From a practical perspective, this would present problems for children's credibility were they to disclose at a later time, because inconsistencies in children's reports lead to arguments that their disclosures were due to interviewer pressures or other outside influence (Szojka et al., in press).

As with the secret instruction, and indeed all forms of truth induction, the trick is to identify questions that are sufficiently specific to elicit true allegations without creating false allegations, and, with respect to yes/no questions, explicit false denials. For example, a recent study found that yes/no questions about "something bad" happening were as effective as questions that directly asked about the suspected transgression, and that following up yes responses with cued invitations helped to distinguish true disclosures from false alarms (Stolzenberg et al., in press).

Do you Remember (DYR) Questions

As noted in the introduction, interviewers who worry that yes/no questions are potentially coercive might preface their questions with "Do you remember..." but doing so can lead to miscommunication. As we predicted, most of children's responses to the yes/no DYR questions were unelaborated, and thus ambiguous, because they could be responding to the explicit question (whether they remembered) or the implicit question (whether the toy broke). Furthermore, a small percentage of children responded in a way that could be misconstrued as a disclosure, as revealed by their pattern of responding across the DYR and DID questions: they answered yes to the DYR question but denied that the toy had broken. These findings supplement recommendations that interviewers avoid DYK/R questions (Hughes-Scholes & Powell, 2012), particularly when the implicit question can be answered yes or no.

Effects of Age and Maltreatment

We found few age or maltreatment differences. The younger children were more likely to disclose during rapport, possibly due to their greater difficulty in maintaining a secret. On the other hand, they were less likely to disclose a study-related secret when given the secret instruction, possibly due to their failure to recognize the connection between the secret instruction and their secret with the confederate. They showed some signs of greater tendency to provide unelaborated or inconsistent answers to the DYR questions, consistent with prior research on younger children's greater difficulty with these questions (Evans et al., 2014). Maltreated and non-maltreated children never differed significantly, although maltreated children exhibited some nonsignificant tendencies toward less disclosure.

Limitations and Conclusion

An obvious limitation of the study is that disclosing toy breakage after an encounter with a stranger is quite unlike disclosing abuse after an encounter with an adult, particularly when child maltreatment so often occurs at the hands of familial (or at least

familiar) adults. Motivations to disclose and to conceal are likely to be much stronger in the case of child abuse. The true test of any intervention designed to encourage disclosure is in the field. However, because it is so difficult to establish ground truth in the field, it is important to assess the possible negative effects of truth induction methods in the laboratory.

There was no delay between the transgression and the interview, and we designed the study to ensure that children's failure to disclose the transgression reflected reluctance rather than memory failure. However, in actual abuse cases, children are often asked about events that occurred in the distant past, and the effects of secret instructions and yes/no questions may be different when the target event is remote: in addition to forgetting, there is the problem that references to bad secrets or transgressions may be ambiguous when intervening events have occurred. Future research should assess how children respond to the interview manipulations when there has been a delay.

In summary, instructing children on the importance of disclosing bad secrets had only transitory effects on disclosure; future research should always assess truth induction methods when combined with an effort to exhaust recall. Yes/no questions elicited additional disclosures, but at a price: there were a small number of false reports, and a large number of children vigilantly kept the transgression a secret. "Do you remember" questions led to ambiguous and potentially misleading responses. Much remains to be learned about how to encourage children to disclose wrongdoing that they are motivated to keep secret.

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