

February 28, 2022


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Child Maltreatment
2023, Vol. 28(1) 55–65
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sagepub.com/journals-permissions
DOI: 10.1177/10775595211067208
journals.sagepub.com/home/cmj


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Abstract

Forensic interviewers are taught to pair yes–no questions with open-ended requests for recall in order to reduce the likelihood that they will be misled by false “yes” responses. However, yes–no questions may elicit false “no” responses. Questioning 112 6- to 11-year-old maltreated children about three innocuous events (outside activities, yesterday, last birthday), this study compared the productivity of paired yes–no questions about perceptions, conversations, and actions involving the hands and mouth (e.g., “Did you say anything?”) with wh-questions (e.g., “What did you say?”). The wh-questions presupposed that children had content to provide, but did not specify that content. Children were twice as likely to deny content and half as likely to provide novel information when interviewers asked them yes–no questions. Younger children were more inclined than older children to deny content and give unelaborated “yes” responses. The results support further research into the potential for suppositional wh-questions to increase child witnesses’ productivity.

Keywords

child maltreatment, forensic interviews, interviewing children, interview techniques, child sexual abuse

Although forensic interviewers strive to maximize their use of open-ended questions, guidelines typically acknowledge that interviewers may need to ask more direct questions about information that a child omits, either because the child fails to recall the information, fails to appreciate its importance, or is reluctant to disclose it ([American Professional Society on the Abuse of Children \[APSAC\], 2012; Newlin et al., 2015](#)). When interviewers feel compelled to ask yes–no questions probing for such content, they are advised to pair their yes–no questions with invitations requesting elaboration if the child answers affirmatively (e.g., “Did he say anything?”/“Yes”/“Tell me more about that”; [Lamb et al., 2018](#)). Pairing yes–no questions with invitations is designed to reduce the dangers of false “yes” responses and to maintain the emphasis on eliciting as much information as possible using open-ended questions ([Lamb et al., 2018](#)).

An unexplored potential problem with pairing is that children may provide false “no” responses, leading interviewers to move on to other content. An alternative is to ask wh-questions that directly ask for content, but do not specify what that content might be (e.g., “What did he say?”). Although these questions are often called suppositional (i.e.,

“What did he say?” presupposes that he said something), their lack of specific content, the ease with which children can respond “nothing,” and their potential for eliciting innocuous content suggests that they should not be considered unduly suggestive. This study explored whether suppositional wh-questions about perceptions, conversations, and actions are more effective in eliciting novel details from children than paired yes–no questions. We compared the productivity of wh-questions and yes–no questions as part of narrative practice rapport building with 6 to 11-year-old maltreated children. In what follows, we will first describe the pros and cons of pairing, highlighting the dangers of false negative responses to yes–no questions, and then discuss how some yes–no questions might safely be replaced with suppositional wh-questions.

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The Pros and Cons of Pairing Yes–No Questions with Invitations

Forensic interviewing protocols and guidelines universally emphasize that interviewers should maximize their use of open-ended questions, including invitations, which include questions about “what happened” and questions that ask children to “tell more” about mentioned details (APSAC 2012; Lamb et al., 2018; Lyon, 2014; Newlin et al., 2015). In turn, wh-questions (what, how, where, when, why), which probe for recall memory, are preferred to yes–no questions, which probe for recognition memory. Recognition questions increase the likelihood of false positives, and on a question-by-question basis elicit fewer details than recall questions (Lamb et al., 2018). On the other hand, recognition questions are often more sensitive to memory than recall questions because they serve as a cue to memory (Schneider, 2015).

In the Revised NICHD protocol, interviewers are advised to prioritize invitations over other question types and to move to yes–no questions “only if you have already tried other approaches,” including invitations and wh-questions (Lamb et al., 2018, p. 249). When interviewers ask yes–no questions, they are instructed to pair those questions with invitations “whenever possible” (Lamb et al., 2018, p. 249). The interviewer should remind the child of an “activity, object, feeling [or] thought” mentioned by the child and ask a yes–no question about a “detail for [the] child to confirm or deny” (Lamb et al., 2018, p. 250). If the child responds affirmatively, the interviewer follows up with an invitation (e.g., “Tell me more about that”). Advice that interviewers pair yes–no questions with invitations can also be found in other protocols and practice guides (APSAC, 2012; Home Office, 2011 [Achieving Best Evidence]). Reviewing seven studies examining adoption of the NICHD protocol, Lamb et al. (2018) found that 12–35% of the questions asked were option-posing, which includes yes–no questions.

Pairing May Reduce False Positives

Pairing is thought to ameliorate some of the limitations of recognition questions. Younger children’s “yes” responses to recognition questions tend to be unelaborated (Lyon et al., 2019), even when the questions implicitly request additional information, such as when interviewers ask “do you know wh-” questions (Evans, et al., 2014; 2017). Asking children to “tell me more” can assist them in elaborating. Furthermore, research suggests that young children may give false “yes” responses. Incomprehensible yes–no questions elicit “yes” responses among children under three-and-a-half-years of age (Fritzley & Lee, 2003; Fritzley et al., 2013), and young children are prone to give false “yes” responses to plausible content (Ornstein et al., 1992; Rocha et al., 2013). Pairing can reduce the likelihood that false “yes” responses will be misconstrued. Stolzenberg and colleagues (2017) examined 4 to 9-year-old’s responses to yes–no questions directly

inquiring whether “something bad” had happened; children who truthfully responded “yes” were able to elaborate on their responses 85% of the time, compared to only 8% of the false “yes” responders.

Pairing May Increase False Negatives

However, a largely overlooked potential problem with pairing is that children may give false “no” responses to the initial yes–no question, undermining the interviewer’s opportunity to elicit additional information through follow-up invitations. Furthermore, pairing forces the child to utter an explicit denial regarding content that would otherwise remain unmentioned (Lyon & Henderson, 2021), which means that any subsequent disclosure of the content will contradict the child’s original statements.

Children are particularly likely to provide false “no” responses to questions about undesirable or incriminating conduct (Talwar & Crossman, 2012). In Stolzenberg et al. (2017), asking a series of six yes–no questions directly inquiring into wrongdoing elicited true disclosures from approximately half of children who had failed to disclose when asked recall questions, but elicited persistent false “no” responses from the other half. Indeed, a common finding in research examining children’s disclosures of transgressions is that recognition questions will elicit disclosures from some children who fail to disclose in response to recall questions, but at the same time elicit a high percentage of false negatives Ahern et al., 2016 [51%]; Quas et al., 2018 [54%]; Stolzenberg et al., 2017 [53%]).

Furthermore, yes–no questions are often worded in ways that pull for “no” responses. For example, when interviewers ask children “do you know wh-” questions, children will frequently answer “no,” even though they would give accurate information in response to the wh-question (Evans et al., 2014; 2017; Lyon & Saywitz, 1999). In forensic interviews, “Do you know why you came to talk to me?” has been shown to be less effective in eliciting abuse disclosures than the wh-question, “Tell me why you came to talk to me” (Hughes-Scholes & Powell, 2013).

Questions With Polarity Items (some, any, ever)

Yes–no questions that contain “polarity items” may be particularly likely to pull for false “no” responses. Examining trial transcripts of 5- to 12-year-old children testifying in child sexual abuse cases, Sullivan and colleagues (2021) identified miscommunications between the attorney and child regarding the body mechanics of abuse. In one-third of the miscommunications, attorneys initially failed to elicit abuse information using vague terms such as “some,” “any,” and “ever” (e.g., “Did *something* happen to you in the bathroom?”), also known as “polarity items.”

Polarity items can be positive or negative. “Some” is a positive polarity item because it occurs most often in a positive

context. For example, “I called somebody” is sensible (what linguists refer to as “felicitous”), but “I didn’t call somebody” is infelicitous. Negative polarity items (*any*, *ever*) are most often restricted to negative contexts. For example, “Nicholas didn’t say anything” is felicitous, but “Nicholas said anything” is not, and “Nicholas hasn’t ever spoken” is felicitous but “Nicholas has ever spoken” is not (Giannakidou, 2017).

Negative polarity items may lead to higher rates of false “no” responding than positive polarity items. Heritage and colleagues (2007) found that adult patients at a health clinic who previously identified more than one health concern provided affirmative responses 90% of the time when their doctor asked “Is there *something* else you want to address in this visit today?” but only 53% of the time when asked “Is there *anything* else you want to address in this visit today?” Others have anecdotally observed the unproductivity of “anything” questions when questioning children (Brubacher et al., 2019; Childs & Walsh, 2018; Walker, 2013).

Suppositional Wh-Questions

Because wh-questions tend to elicit more productive and accurate responses than yes–no questions, it would appear advantageous to substitute pairing yes–no questions with wh-questions. The problem is that unless a child has already mentioned a topic, wh-questions about that topic are often considered suggestive, and protocols and guidelines universally recommend that interviewers avoid suggestive questions (Newlin et al., 2015; Lamb et al., 2018). However, in practice, it is difficult to identify with precision what sort of questions should be called “suggestive” (Peterson et al., 1999).

In their definition of “suggestive,” Lamb and colleagues (2018) identified a “suppositional” subcategory, which they defined as “assuming or implying an undisclosed allegation-specific content” (p. 61; see also Stevens et al., 2021). The “suppositional” label may include a large number of questions that are technically suggestive, but do not increase error. In a lab study examining the accuracy and productivity of different question types, Brown and colleagues (2013) found that children answered suggestive questions as accurately as cued invitations, in which interviewers ask children to “tell more” about previously mentioned content. Lamb and colleagues (2018) speculated that this may have been because the questions were only mildly suggestive. Significantly, Brown and colleagues (2013) taught their interviewers to avoid option-posing questions and emphasized that their interviewers never used tag questions; therefore the “suggestive” questions would have been predominantly wh-questions. For example, Brown and colleagues (2013) coded the question “What other things did you wear?” as suggestive, because the question presupposed that the child wore something else.

Universally accepted invitations such as “What happened next?” and “Tell me more about [child-generated content]” presuppose that a child has more to offer but fail to suggest content and are readily rejected by children. Researchers have

shown that children’s responses to wh-questions about perceptions, conversations, and actions are often as accurate as their responses to invitations (Brown & Pipe, 2003; Canning & Peterson, 2020; Kulkofsky, 2010; Stolzenberg et al., 2018). Therefore, questions that presuppose children have something to offer regarding perceptions, conversations, and actions may also be productive, and more to the point, more productive than paired yes–no questions.

The Current Study

This study examined the productivity of asking 6- to 11-year-old maltreated children suppositional wh-questions about perceptions, conversations, and actions with the hands and mouth, comparing them to yes–no questions paired with follow-up invitations. Children were first asked free recall questions about each of three topics often used in narrative practice (i.e., outside activities, yesterday, and last birthday), followed by paired yes–no questions or suppositional wh-questions. If children in the paired yes–no question condition (hereinafter the yes–no condition) gave an unelaborated “yes” response, they were asked to “tell more,” and if they answered “no,” the interviewer accepted the response and moved on. Children in the suppositional wh-questions condition (hereinafter the wh-condition) were asked the wh-questions without any follow-up question. The questions asked about perceptions (e.g., “What did you see/hear?”), conversations (e.g., “What did you say?”), and actions (e.g., “What did you do with your hands/mouth?”). We hypothesized that compared to the yes–no questions, the wh-questions would (1) elicit fewer denials of content, (2) elicit fewer responses lacking substantive details (which included denials plus don’t know responses and other responses lacking content), and (3) elicit a higher percentage of answers with novel content. We also predicted age differences, whereby younger children would be more likely than older children to deny content and to provide unelaborated “yes” responses to the yes–no questions.

Method

Participants

The final sample consisted of 112 6- to 11-year-old ($M_{\text{age}} = 8.4$ years old, $SD = 1.7$, 47% males) victims of maltreatment. Children were evenly distributed across age groups: 20 6-year-olds; 20 7-year-olds; 19 8-year-olds; 18 9-year-olds; 18 10-year-olds; 17 11-year-olds. We excluded 29 children who originally assented ($M_{\text{age}} = 7.8$ years old, $SD = 1.8$, 63% males), either because of a script error ($n = 4$), the child withdrew assent ($n = 7$), or court business, such as an attorney interview, a family visit, or a court appearance ($n = 18$). Children were primarily from ethnic/racial minority backgrounds: 63% Latinx, 28% African American, 8% Caucasian, and 2% Asian. The children were recruited from the Los Angeles County Dependency Court and had been removed

from the custody of their parents or guardians because of substantiated abuse or neglect. Because children had been removed from parental care, the Presiding Judge of Juvenile Court granted consent for all children to participate in the study. Children were ineligible if they were awaiting an adjudication or contested disposition hearing on the date of testing because they might be asked to testify in court.

Procedure

All sessions were videotaped and began with the child providing assent. Children were randomly assigned to either the yes–no or wh-condition, stratified by age, gender, and ethnicity. After assenting, the interviewer began a scripted narrative practice with the child in which three topics were discussed: things the child liked to do outside, what happened yesterday, and what happened on the child's last birthday. The order in which children were asked about the three topics was counterbalanced. The interviewer began the first narrative by saying, "So [child's name], today I'm going to ask you about three different things. This is the very first time we have ever met, and I want to know more about you." For the "outside" narrative, the interviewer first asked, "First, tell me about things you like to do outside." Following the child's response, the interviewer would select the activity most likely to involve others (e.g., soccer rather than drawing) and follow up with, "All right, [child's name], you said you like to [X]. Tell me everything that happened the last time you [X]." For the "yesterday" and "birthday" narratives, the interviewer asked, "Tell me about everything you did yesterday from the time you woke up" or "Tell me about your last birthday. Tell me everything that happened." If the child initially failed to provide a sequence, the interviewer would follow up with, "What is the first thing that happened?" The interviewer then continued to ask "what happened next" questions until the child stopped providing information, or until 5 minutes elapsed. If the child stopped providing information before 5 minutes had elapsed, interviewers spent the rest of the time following up on main events by asking, "You said [X]. Tell me more about that."

At the end of each narrative practice topic, the interviewer asked the scripted yes–no or wh-questions, which included content from the child's narrative as cues. In the wh-condition, the interviewer asked the wh-questions without any requests for elaboration. In the yes–no condition, if the child answered with an unelaborated yes, then the interviewer followed up with, "Tell me more about that." (See Online [Supplemental Appendix 1](#) for a complete list of questions.) Unelaborated "yes" responses consisted solely of a "yes" response (including "mm-hmm" and head nods) with no additional information. If the child answered "no," the interviewer moved to the next question. Because three of the scripted questions were dependent upon the presence of another individual, if the child had not mentioned another person when finishing narrative practice, the interviewer asked, "Tell me who was there." If the child mentioned a collective group of individuals (e.g., "my friends"), then the questions were adapted to refer to the group (e.g., "What did your friends do with their hands?"). If the child said that no one was there, then the three questions about

another individual(s) were excluded (this occurred only six times across all children and topics).

Coding

Children's responses included any verbal utterance or non-verbal communication (e.g., head nods, shrugs). We coded for denials, non-substantive responses, novel responses, and non-novel responses. Denials of content included unelaborated "no" responses in response to yes–no questions and "nothing" responses to wh-questions. Non-substantive responses included denials and additional types of responses that failed to provide substantive information, including non-responsive responses (i.e., silence, off-topic); "I don't know/remember (IDK)" or uncertain (e.g., "I'm not sure") responses without elaboration; clarification-seeking responses without elaboration; boundary markers without elaboration (which signal that the child had reported everything, e.g., "That's all"); and underinformative responses without elaboration (in which the child provided a responsive but vague answer, such as "stuff"). A response was considered novel if it contained relevant information that was not mentioned during the free recall portion of narrative practice. Coders were instructed not to make any inferences, and thus coded liberally for novelty. For example, if the child said that she played with her brother and later said that she played football, but did not specify who she played with, the coder would not infer that the child played football with her brother (e.g., because there might have been multiple people there, the child could have played alone, etc.). Non-novel responses repeated detail(s) produced during free recall. (Response codes with definitions are in Online [Supplemental Appendix 2](#)).

If interviewers sought clarification or elicited additional information by going off-script (e.g., using echoes or facilitators during the scripted yes–no or wh-questions), children's additional responses were excluded in order to maintain consistency in the sample. A small number of responses were inaudible, and these were also excluded. A reliability coder coded 20% of the sample and inter-rater agreement for all response types was high (i.e., for all variables, $\kappa > 0.87$ and percent agreement $>96\%$).

Analysis Plan

We calculated descriptives examining the prevalence of different responses in the yes–no and wh-conditions. We also calculated descriptives examining children's responses to the specific prompt topics (see, hear, say, hands, mouth). Next, generalized linear mixed models (GLMMs) examined whether condition (yes–no, wh-), child's age, and an interaction affected children's responses (i.e., denials of content, non-substantive responses, and novel responses). Last, a GLMM examined whether age significantly affected children's "yes" responses to yes–no questions (elaborated, unelaborated). Random effects for 'child' and 'interviewer' were included due

Table 1. Response types by condition.

	Paired Yes–no		Suppositional Wh–		OR	95% CI
	N	%	N	%		
Denial	389	28	152	11	0.32	0.26, 0.39
Non-substantive	442	32	249	18	0.47	0.39, 0.56
Non-responsive	7	1	4	<1	0.58	0.15, 1.98
IDK/Uncertain	10	1	50	4	5.11	2.69, 10.78
Clarification	31	2	28	2	0.91	0.54, 1.52
Underinformative	2	<1	10	1	10.11	1.29, 79.09
Boundary marker	3	<1	5	<1	1.64	0.39, 8.53
Novel	818	60	1007	73	1.9	1.62, 2.24
Non-novel	110	8	108	8	0.98	0.75, 1.3

Note. The reported numbers are unadjusted means; adjusted means are noted in the text. Non-substantive responses are the sum of denials and non-responsive, idk/uncertain, clarification, underinformative, and boundary marker responses.

to the repeated nature of questioning in order to account for any individual variation within the child or interviewer. Exploratory analyses examining narrative practice topic (outside, yesterday, birthday) revealed that narrative practice topic interacted with condition (yes–no vs. wh–) when examining denials and non-substantive responses (but not novel details); because the interactions never reversed the direction of the condition differences, narrative practice topic was not included in the models below (see Online Supplemental Appendix 3).

Analyses were performed using the *glmer* function in the R package *lme4* with the bobyqa optimizer (Bates et al., 2015). GLMMs combine the properties of linear mixed models (which incorporate random effects) and generalized linear models (which handle non-normal data) and are preferable to traditional analysis of variance (ANOVA) models because they have fewer assumptions, handle response variables from different distributions (e.g., binary), and maximize power while simultaneously estimating between-subject variance (Bates et al., 2015). Models were cross-validated in order to identify the best fit model, which was determined by the Akaike Information Criteria (AIC), an estimator of the relative quality of a model for a given set of data (Vrieze, 2012). The best fit models are reported below accompanied by the unstandardized fixed effect estimates (β), standard errors of the estimates (*SE*), and estimates of significance (*Z* and *p* values).

Results

The percentage of children's responses that were denials of content, non-substantive, novel, or non-novel is in Table 1. Table 2 breaks these percentages down by the different question topics (see, hear, say, hands, mouth). The odds ratios reveal that wh-questions were consistently less likely than yes–no questions to elicit denials and non-substantive responses, and consistently more likely to elicit novel information.

Did Wh-Questions Elicit Fewer Denials of Content Than Yes–no Questions?

Consistent with the first hypothesis, wh-questions ($M = 8\%$, $SE = 0.02$) elicited fewer denials than yes–no questions ($M = 24\%$, $SE = 0.04$, $B = 1.20$, $SE = 0.31$, $Z = 3.88$, $p < .001$) regardless of children's age. Also consistent with our first hypothesis regarding age effects, younger children were more likely to deny content than older children ($B = -0.19$, $SE = 0.09$, $Z = -2.08$, $p = .04$). A breakdown of the percentage of children's denials at different ages in the two conditions is in Online Supplemental Appendix 4.

Did Wh-Questions Elicit Fewer Non-substantive Responses Than Yes–no Questions?

Children might deny content less often in response to the wh-questions but still give a non-substantive response, rendering the wh-question ineffective. Children could, for example, answer "I don't know," since wh-questions are known to elicit higher rates of don't know responding than yes–no questions among young children (Waterman et al., 2001). Indeed, whereas only 1% of children's responses to yes–no questions were "I don't know," 4% of children's responses to wh-questions were "I don't know" (Table 1).

Therefore, we examined how often children in the two groups gave a non-substantive response, which included denials of content, don't know responses, and some other rare response types. Consistent with our second hypothesis, wh-questions ($M = 16\%$, $SE = 0.03$) elicited fewer non-substantive responses than yes–no questions ($M = 29\%$, $SE = 0.04$, $B = 0.77$, $SE = 0.27$, $Z = 2.84$, $p = .005$) regardless of child's age. Children's age was not significantly associated with whether children gave a non-substantive response ($p = .12$).

Did Wh-Questions Elicit More Novel Details Than Yes–no Questions?

Children might be more responsive to the wh-questions but simply repeat details from their free recall responses.

Table 2. Response types by prompt and condition.

Response Type	Question	Paired yes-no		Suppositional wh-		OR	95% CI
		N	%	N	%		
Denial	See	54	29	8	4	0.11	0.05, 0.23
	Hear	39	23	13	8	0.28	0.14, 0.54
	Say	97	28	45	13	0.39	0.26, 0.58
	Hands	83	25	32	9	0.31	0.19, 0.48
	Mouth	45	35	55	17	0.37	0.26, 0.54
Non-substantive	See	72	40	34	19	0.36	0.22, 0.57
	Hear	46	27	26	15	0.49	0.29, 0.84
	Say	112	33	66	20	0.50	0.35, 0.71
	Hands	89	27	51	15	0.49	0.33, 0.72
	Mouth	123	37	72	22	0.47	0.34, 0.67
Novel	See	86	47	126	69	2.4	1.63, 3.83
	Hear	117	68	136	79	1.8	1.11, 2.95
	Say	213	62	245	73	1.62	1.18, 2.50
	Hands	217	65	262	78	1.87	1.33, 2.64
	Mouth	185	55	238	71	2.01	1.46, 2.78
Non-novel	See	27	15	24	13	0.88	0.48, 1.59
	Hear	10	6	10	6	1.01	0.40, 2.54
	Say	18	5	26	8	1.50	0.81, 2.85
	Hands	29	9	25	7	0.63	0.37, 1.06
	Mouth	26	8	23	7	0.88	0.49, 1.58

Therefore, we examined how often children in the two groups gave responses that included novel details, which were details that had not been previously mentioned. Consistent with our third hypothesis, wh-questions were more likely to elicit novel details ($M = 77\%$, $SE = 0.03$) than paired questions ($M = 62\%$, $SE = 0.04$, $B = -0.69$, $SE = 0.24$, $Z = -2.83$, $p = .005$) regardless of child's age. Children's age was not significantly associated with whether children provided novel details ($p = .09$).

Were Younger Children More Likely Than Older Children to Give Unelaborated "Yes" Responses to Yes-No Questions?

Consistent with our second age hypothesis, younger children were more likely to answer yes-no questions with unelaborated "yes" responses than older children ($B = -0.45$, $SE = 0.19$, $Z = -2.39$, $p = .02$). The mean age of unelaborated yes responses was 7.72 years old ($SD = 1.62$), while the mean age of elaborated yes responses was 8.64 years old ($SD = 1.58$). Whereas 38% of 6-year-olds' yes responses were unelaborated, only 11% of the 11-year-olds' were unelaborated.

Did Children Respond Differently to Questions about Actions with the Hands and Mouth?

Because wh-questions specifically asking about the hands and mouth have not been explored in prior research, we conducted exploratory analyses in which we tested whether the question topic (i.e., hands/mouth vs. see/hear/say) affected children's

rates of denials, non-substantive responses, and novel responses. We found that the condition effects (yes-no, wh-) were unchanged and that the question topic (hands/mouth vs. see/hear/say) did not significantly interact with question type (yes-no, wh-). However, we did find that hands/mouth questions elicited more denials ($M = 17\%$, $SE = 0.03$) than see/hear/say questions ($M = 13\%$, $SE = 0.02$) across condition ($B = 0.33$, $SE = 0.11$, $Z = 2.87$, $p = .004$). Hands/mouth questions did not significantly differ from see/hear/say questions in the rate of non-substantive or novel responses.

We developed a qualitative coding scheme to examine the type of content that children produced when asked the hands and mouth questions, including whether the questions elicited negatively valenced content. Two independent coders examined the responses to the hand/mouth questions ($N = 980$) and inter-rater reliability was high for topic of children's responses to mouth questions ($n = 463$, $\kappa > .85$, percent agreement $>96\%$), and the topic of children's responses to hand questions ($n = 517$, $\kappa > .80$, percent agreement $>97\%$), and negatively valenced responses ($n = 12$, Prevalence Adjusted Bias Adjusted Kappa >0.98 , percent agreement $>99\%$). All disagreements were discussed and resolved with 100% agreement.

Response topics were not mutually exclusive, and a child could describe multiple hand or mouth actions within a single response (e.g., playing a ball game and playing video games). Thirty-two percent of children's responses to hand questions were coded as hands' specific actions ($n = 166$; e.g., writing/drawing, holding/grabbing things, clapping/waving). Twenty-five percent of children's hand responses included references to physical or outdoor activities ($n = 131$; e.g., playing ball

games, climbing trees, riding a bike). 18% of children's hand responses included references to pretend or fantasy play ($n = 95$, e.g., playing with dolls or playing video games). Fifteen percent of children's hand responses included references to interpersonal touch ($n = 75$) and included actions such as hugging or playing tag. Five percent of children's hand responses were about refraining from using the hands ($n = 25$; e.g., "I kept them by my side"), and three percent ($n = 18$) referred to completing chores. Finally, three percent ($n = 18$) of children's hand responses were classified as 'other'.

Seventy percent of children's mouth responses included references to talking ($n = 325$), while 28% included references to eating ($n = 129$), and five percent were about refraining from using the mouth ($n = 24$; e.g., "I kept [my mouth] closed"). Seven percent of responses to the mouth question were coded as other ($n = 34$), and included topics such as brushing teeth, blowing out birthday candles, and using the mouth for laughing and smiling. Of all children's responses to questions regarding the use of hands and mouth, less than 1% ($n = 12$) were negatively valenced.

Discussion

This study analyzed the productivity of questions about perceptions, conversations, and actions (with the hands and mouth) with 6- to 11-year-old maltreated children, comparing paired yes-no questions to suppositional wh-questions: wh-questions that presupposed that children had content to provide but did not specify what that content might be. We asked children to provide three practice narratives: their last birthday, what happened yesterday, and a recent activity they had nominated as something they liked to do outside. We then asked children questions about what they saw, what they heard, what was said, and what was done with hands and mouths. In the yes-no condition, we asked if the children had information to provide, using a negative polarity item (e.g., "Did you see anything?"), and if they gave an unelaborated "yes," we asked for elaboration ("Tell me more about that"). In the wh-condition, we presupposed that children had information to provide by asking a wh-question (e.g., "What did you see?"), without any request for elaboration.

We predicted that children's responses to the yes-no questions would be less productive than their responses to the wh-questions. We also anticipated that younger children would be particularly inclined to deny content and to give unelaborated "yes" responses to the yes-no questions. Each hypothesis was supported. Children in the wh-condition (1) less often denied content, (2) less often gave nonsubstantive responses, and (3) more often provided novel information. Younger children were more likely than older children to give unelaborated responses to the yes-no questions; indeed, 84% of 6-year-olds' responses to the yes-no questions were unelaborated. In what follows, we discuss the implications of the results for assessing the productivity of yes-no questions and suppositional wh-questions.

Yes-No Questions

The results highlight three problems with yes-no questions. First, children tend to give unelaborated responses, a tendency noted in observational work examining forensic interviews with children (Korkman et al., 2006). This largely explains why yes-no questions are found to be less productive than wh-questions and invitations (Lamb et al., 2018). Second, children's unelaborated "yes" responses overlook implied requests for elaboration. The yes-no questions in this study imply the associated wh-question: for example, "Did you say anything?" implies "What did you say?" Nevertheless, children's "yes" responses were often unelaborated, and this was particularly true among the 6-year-olds. A similar problem has been observed in experimental and observational work examining how children respond to "do you remember" and "do you know" questions that implicitly ask a wh-question (e.g., "Do you remember where it happened?"; Evans et al., 2014, 2017). Younger children are particularly likely to simply answer "yes," whereas older children will answer the implied wh-question. Children's tendency to give unelaborated responses to yes-no questions has been referred to as formal reticence, which refers to children's tendency to provide the most easily retrievable and minimally sufficient responses to questions, based on their form (Lyon et al., 2019). Simply put, if a young child can simply answer a question "yes" or "no," they will do so.

Formal reticence may also explain a third and often overlooked problem with yes-no questions observed here. Yes-no questions broadly asking about "any" perceptions, conversations, and actions are asked in order to uncover content children initially fail to produce in response to recall questions, and thus to reduce omissions. However, they often lead to false "no" responses, in which information is not merely omitted but overtly denied. 40% of children gave a non-substantive answer (usually a "no") when asked "Did you see anything?" despite the fact that they surely saw *something*. Research with young children has shown that they answer yes-no questions more quickly than wh-questions (Williams et al., 2019). The ease with which children can answer yes-no questions may limit the time and effort they expend in memory search, and thus may predispose them to deny content. Conversely, the innocuous presupposition in suppositional questions that the child saw and heard things, that people spoke, and that people did things with their hands and mouth, may increase memory search and thus encourage more thoughtful and productive responses.

Generic Suppositional Wh- Questions

The results suggest a promising avenue for further research into suppositional wh-questions that may increase children's productivity without increasing error, which could be called generic suppositional wh-questions. Questions could be classified as generic suppositional wh-questions, and

distinguished from suggestive questions, if they fulfill several criteria. First, they must be easily answerable without acceptance of the presupposition. For example, children can easily answer “nothing” to “What did you do with your mouth?” just as they can answer “nothing” to “What happened next?” This helps to distinguish generic suppositional wh-questions from highly suggestive suppositional wh-questions (such as the classic “When did you stop beating your wife?” Williams, 1909).

Second, wh-questions should not be considered generic if a “yes” response to the corresponding yes–no question would constitute endorsement of a substantive detail. For example, unelaborated “yes” responses to sexual abuse questions such as “Did something come out of his penis?” or “Did he say what would happen if you told?” would constitute substantive details, such that their wh-counterparts (e.g., “What came out of his penis?” and “What did he say would happen if you told?”) are not generic. Conversely, because people routinely perceive innocuous details, say innocuous things, and use their hands and mouths in innocuous ways, questions about perceptions, conversations, and actions need not be considered inherently suggestive.

Third, in order for a type of wh-question to be a generic suppositional question, there should be research demonstrating that children’s responses are comparably accurate to their responses to other types of questions commonly recognized as non-suggestive, including invitations and cued invitations. With respect to perception questions, Poole and Lindsay (1995) found that “Tell me how everything looked” and “Tell me about all of the things that you heard” elicited large amounts of additional information from 3- to 6-year-olds who had witnessed a series of science demonstrations, and accuracy rates were as high as responses to free recall questions. Similarly, Elischberger and Roebbers (2001) found that asking kindergartners and second graders to report everything they remembered seeing and everything they remembered hearing in a film increased productivity without compromising accuracy.

With respect to conversation questions and action questions, Saywitz and colleagues demonstrated the efficacy of the Narrative Elaboration procedure in a series of studies in which children were trained to provide additional information in recall when reminded by cards depicting different aspects of the events, including conversations (cards depicting people with talk bubbles) and specific actions (cards depicting a broken window or a person in motion; Saywitz & Camparo, 2014). Subsequent research showed equal increases in productivity with comparable accuracy when children were simply asked the corresponding wh-questions about what “people said” and “people did” (Brown & Pipe, 2003; Canning & Peterson, 2020; Kulkofsky, 2010), with the exception of one study examining preschool children with serious delays in verbal ability (Chae et al., 2014). Furthermore, with respect to conversation questions about specific people, Stolzenberg et al. (2018) found that 4- to 9-year-old’s

responses to a series of questions about what the child, a confederate, and an interviewer had said were as accurate as free recall responses to questions about what had happened.

Limitations and Future Directions

An obvious limitation is that we were unable to assess accuracy. Although it seems clear that children who totally denied perceptions, conversations, and actions must have been falsely denying content, we cannot say that the content that children generated in response to the wh-questions was accurate. It is therefore possible that children asked the wh-questions provided less accurate reports than children asked the paired yes–no questions, and that the paired yes–no questions enabled children to screen out inaccurate information. Furthermore, although prior research has found that children’s responses to recall questions about actions in general are comparable in accuracy to their responses to invitations and cued invitations, the action questions asked in this study were specific to the hands and mouth, and this might raise concerns about suggestiveness. Our qualitative analyses of these questions showed that children had little difficulty in recalling innocuous content, recognizing that the hands and mouth are involved in a wide variety of activities. Nevertheless, before broader use of suppositional wh-questions is recommended to practitioners, experimental laboratory research is needed examining their potential to elicit errors, particularly the previously unexamined questions about actions with the hands and mouth.

Although laboratory research is needed, it is important to note that our naturalistic examination of maltreated children’s reports is nevertheless valuable. Inclusion of maltreated children is valuable for the obvious reason that they are the subject of investigations and thus are questioned about their experiences. Asking about naturalistic experiences rather than experiences in the lab enabled us to question children about events especially rich in detail and extended over time. These experiences are particularly valuable when assessing the productivity of children’s reports because of the potential for children to provide an almost unlimited number of details.

Future research should also further examine the factors that influence accuracy and productivity in response to paired yes–no questions. Several aspects of the questions are likely important. First, as noted in the introduction, yes–no questions often elicit high rates of false “no” responses when children find the content undesirable or incriminating (Talwar & Crossman, 2012). We deliberately questioned children about neutral or pleasant acts in order to specifically examine the effect of the form of questions on children’s productivity. This may underestimate the false “no” problem when children are questioned about maltreatment. Second, we combined the negative polarity item “any” with the vague term “thing” in the paired yes–no questions (e.g., “Did you see anything?”), and this likely increased children’s rejection rate (Heritage et al., 2007; Sullivan et al., 2021). Future work can tease apart the

various aspects of yes–no questions that pull for “no” responses. Will children reject other details if “any” is paired with more specific words, such as “anyone” or “anywhere”? Are children less likely to reject content if asked “Did you see something?” instead of “Did you see anything?”

Finally, future work should explore how well interviewers pair yes–no and direct questions with invitations in the field. It may be that we underestimated the productivity of paired yes–no questions because interviewers will ask follow-up invitations even when children elaborate their “yes” responses (we only paired the unelaborated “yes” responses). Conversely, we may have underestimated the benefits of wh-questions because of interviewers’ difficulty, documented in some observational research (Wolfman et al., 2016), in following up yes–no questions with anything other than additional yes–no questions.

Conclusion

This study has demonstrated the productivity of wh-questions that directly ask for content regarding perceptions, conversations, or actions, but do not specify what that content is. We questioned 6- to 11-year-old maltreated children about three narrative practice topics and, at the end of free recall, either asked paired yes–no questions (e.g., “Did you do anything with your hands?”/“Tell me more about that”) or comparable wh-questions (“What did you do with your hands?”). Children were twice as likely to deny content when asked the paired yes–no questions, and twice as likely to provide novel information when asked the wh-questions. The results suggest that carefully crafted suppositional wh-questions using generic language may be preferable to yes–no questions when questioning children about previously unmentioned content.

Acknowledgments

The authors would like to thank Aga Nogalska and Owen Friend for their significant contributions. Additionally, the authors are grateful to Jina Hur, Hannah Fondacaro, Hannah Siepmann, Samantha Hardy, Rayna Enriquez, Hailey Kononov, Tianyu Wang, and Scarlet Cho for their assistance.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This study was supported in part by the National Institute of Child Health and Development (Grant HD087685).

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Supplemental Material

Supplemental material for this article is available online.

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