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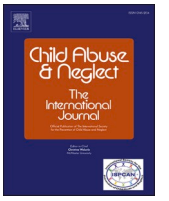

4- to 15-year-old children's misinterpretation of invitations asking "about the time" as requests for temporal information in forensic interviews

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ABSTRACT

Background: Forensic interviewers are taught to ask children invitations using the word "time" to refer to a specific episode (e.g., "Tell me about the last time he touched you."). However, children may interpret the word "time" as requesting conventional temporal information rather than narrative information.

Objective: We examined the rates at which children misinterpreted invitations containing the word "time," comparing invitations asking "about" an episode to invitations asking what "happened" during an episode.

Participants: This study examined 827 forensic interviews of children aged 4 to 15 (M_{age} = 8.1 years) in cases of suspected sexual abuse.

Methods: We identified 1405 invitations using the word "time," and coded them for whether they asked "about" or what "happened." Children's responses were coded for whether they gave exclusively conventional temporal information, expressed temporal ignorance or uncertainty, requested clarification, or gave a don't know response.

Results: Children responded to About invitations with higher rates of conventional temporal information (11%) than Happened invitations (6%, $p < .001$). Children were also more inclined to express uncertainty about temporal information when asked About invitations ($p = .04$). In a third of the cases where children exhibited misunderstanding, interviewers failed to clarify their intentions.

Conclusions: Forensic interviewers can reduce children's unresponsiveness to invitations by using Happened invitations that overcome the ambiguity associated with "time."

1. Introduction

Forensic interviewers are trained to ask children invitations: questions that are open-ended and non-specific, often beginning with the phrases "tell me about" or "tell me what happened" (Lamb, Brown, Hershkowitz, Orbach, & Esplin, 2018). Invitations are widely considered the most productive in forensic interviews (American Professional Society on the Abuse of Children, 2012; La Rooy et al., 2015). Forensic interviewers are additionally trained to elicit details about specific episodes of abuse whenever possible, because episodic information tends to be more detailed than script information (Brubacher, Powell, & Roberts, 2014). In attempting to

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encourage episodic recall, interviewers are trained to ask questions asking about specific "times" that abuse occurred, including "the first time," "the last time," and "another time" that abuse occurred (Lamb, Orbach, Hershkowitz, Esplin, & Horowitz, 2007). However, an overlooked problem is that invitations containing the word "time" may be referentially ambiguous. This study explored the potential for children in forensic interviews to misinterpret invitations containing the word "time" as requesting conventional temporal information instead of narrative information, that is, as asking *when* the event occurred rather than *what* occurred.

1.1. The pseudotemporal problem

When interviewers ask invitations using the word "time" (e.g., "tell me about the last time he touched you"), they are using the word "time" to refer a specific and discrete event, and they hope to elicit narrative information about that event. However, "time" can be used to refer to conventional temporal information, including references to clock time, the day, the year, etc. Hence, a child could incorrectly interpret an episodic invitation as a request for conventional temporal information.

McWilliams et al. (in press) referred to this phenomenon as the "pseudotemporal" problem, and classified children's responses that solely referred to conventional temporal information as pseudotemporal failures. They compared 6- to 9-year-old maltreated children's responsiveness to invitations about innocuous events (e.g., a trip to the park) beginning with "tell me about the time" or "tell me what happened the time," and found that children were more likely to solely provide conventional temporal information when asked "tell me about the time" invitations (30%) than when asked "tell me what happened the time" invitations (5%).

The pseudotemporal problem has been largely neglected in observational research. Examining a small sample of trial transcripts in which children testified about sexual abuse, Richardson (1990) discussed two cases in which attorneys, clearly intending to ask children what they remembered about an event, introduced the event by asking the child if they remembered "a time" or "the day" the event occurred. Children responded "no," but then added details (e.g., "my daddy took me there"). In both cases, children denied knowing *when* the event occurred, but demonstrated that they remembered *what happened* during the event. Probably because attorneys rarely ask open-ended questions (Andrews, Lamb, & Lyon, 2015), Richardson did not discuss the precise problem studied here and in the experimental work by McWilliams et al. (in press), which is the potential for "about the time" invitations to create the pseudotemporal problem.

1.2. Age and the pseudotemporal problem

Age might affect children's tendencies to exhibit pseudotemporal failures. Referential ambiguity occurs when a word or phrase in a question can be interpreted in different ways, and the pseudotemporal problem reflects the ambiguity of the word "time." Although even preschool children exhibit some sensitivity to referential ambiguity (Matthews, Lieven, & Tomasello, 2007), grade school children still struggle with recognizing that their initial interpretation of ambiguous phrases could be incorrect (Beal & Flavell, 1984). Among the 6- to 9-year-olds studied by McWilliams et al. (in press), there was no evidence for a decrease in pseudotemporal failures in older children. One factor that may militate against an age reduction in the pseudotemporal problem is older children's greater awareness of and ability to provide conventional temporal information (McWilliams et al., in press; Tartas, 2001).

1.3. This study

The present study examined a large sample of forensic interviews asking about child sexual abuse, and compared two types of invitations using the word "time": invitations asking children "about" a time and invitations asking children "what happened" a time. We hypothesized that invitations asking children to tell the interviewer "about the time" an event occurred would lead to more pseudotemporal failures than invitations that asked children to tell the interviewer everything that "happened the time" an event occurred. Clear pseudotemporal failures would occur when children either solely provided conventional temporal information or solely expressed uncertainty or ignorance regarding conventional temporal information. Potential pseudotemporal failures would occur when children gave unelaborated I don't know (IDK) or I don't remember (IDR) responses, or when children asked for clarification of the question. When clear pseudotemporal failures occurred, we examined how often interviewers followed up by rephrasing their invitations to clarify that they were requesting episodic information.

2. Methods

2.1. Sample

We examined 827 forensic interviews of children aged 4 to 15 ($M_{age} = 9.70$ years, SD = 2.72) in cases of suspected sexual abuse, and identified 1405 invitations that used the word "time" and asked either "about" the time or "what happened" the time. The forensic interviews were conducted between 2004 and 2020 at Child Advocacy Centers in Southern California. The interviews were transcribed and anonymized for training purposes with the consent of the parent or legal guardian. Because these transcripts were anonymized, use of the transcripts for research was approved as exempt by the Institutional Review Board (45 CFR Section 46.014(d)(4)(ii)). Most of the interviewers received the California Forensic Interview Training (CFIT), which utilizes the Ten-Step interview (Lyon, 2014), a revision of the NICHD Protocol. Although CFIT identifies invitations as preferable, the focus is as much on the need to avoid recognition questions, and CFIT does not provide ongoing supervision or refresher training, which research has suggested is needed to maintain performance (Lamb et al., 2018).

2.2. Coding

We identified all invitations in the sample that were worded either as "tell me about" the time (About invitations) or "tell me what happened" the time (Happened invitations). We further categorized the invitations as asking about "the time," "that time," "the last time," "the first time," and "another time." Questions were machine coded and thus do not require a reliability score.

Coders were blinded to interviewers' questions and evaluated children's responses for four categories that captured clear or potential pseudotemporal failures (Table 1). These categories included two response types providing clear evidence of pseudotemporal failures: exclusively temporal responses in which the child solely provided conventional temporal information in response to the invitation, and "temporal I don't know (IDK)/uncertain" responses, in which the child stated that they could not recall conventional temporal information. We also examined two response types that reflect potential pseudotemporal failures: unelaborated IDK/I don't remember (IDR) responses, and requests for clarification. If children explicitly asked whether the interviewer was asking for conventional temporal information, this was separately coded, because the child expressed awareness of the ambiguity of the invitation. Complete definitions and examples are provided in Table 1.

In order to determine if interviewers followed up pseudotemporal failures by clarifying that they were seeking episodic information, coders examined the next question asked by the interviewer following exclusively temporal responses and temporal IDK/uncertainty responses. Questions were coded as clarifying intent if the interviewer followed up with an invitation that used the word "happened" (e.g., "tell me what happened") or "everything" (e.g., "tell me everything that you remember"), or both. Questions were coded as failing to clarify intent if the interviewer failed to ask another invitation, but instead asked a more specific question (e.g., "where was his house?'), or if the interviewer asked about an entirely different episode or topic (e.g., "tell me about the time you went to school"). When the interviewer's question clarified intent, children's subsequent response was coded for whether the child provided additional narrative information. Inter-rater reliability coefficients for all variables were high, Kappa (K) > 0.80.

2.3. Analysis plan

We first generated descriptive statistics comparing children's clear or potential pseudotemporal responses to the About and Happened invitations, both overall and broken down by age group (4- to 9-year-olds and 10- to 15-year-olds). We then generated descriptive statistics comparing the rates of each question subtype in the sample. We noted that although substantial numbers of both About and Happened invitations used the phrases "the time," "that time," "the first time," and "the last time," interviewers virtually never asked Happened invitations using the term "another time" ($n = 3$) (e.g., "tell me what happened another time he touched you"). Because "another time" invitations might be particularly difficult, we assessed children's performance with and without the "another time" questions, so as not to confound the potential difficulty of About invitations with "another time" invitations.

We then assessed the rates of clear or potential pseudotemporal failures to each invitation type using generalized linear mixed-effects models (GLMMs). Fixed effects included child age (continuous) and question type (2 levels: happened, about; baseline = happened). Dependent response variables included exclusively temporal responses, temporal IDK/uncertain responses, unelaborated IDK/IDR responses, and requests for clarification. All GLMM models additionally included a by-subject random intercept in order to control for the differences in questions asked to different children as well as the children's own varying response tendencies.

Analyses were performed with the *glmer* function in the R package *lme4* using the bobyqa optimizer and Laplace approximations (Bates, Mächler, Bolker, & Walker, 2015). GLMMs are preferable to traditional analysis of variance models because they have fewer assumptions and maximize power while simultaneously estimating between-subject variance. GLMMs incorporate random effects and are able to handle non-normal data, combining the properties of linear mixed models with generalized linear models. Models are reported accompanied by the unstandardized fixed effect estimates (*B*), standard errors of the estimates (*SE*), and estimates of significance (*Z* and *p* values).

Table 1
Response variables indicating possible pseudotemporal failures.

Response type	Definition	Example
Exclusively temporal	Child responds exclusively with conventional temporal information and no narrative details.	Q: Tell me about the last time you drew something. A: Probably on January or February.
Temporal IDK/uncertain	Child explicitly indicates uncertainty related to temporal information without providing additional narrative information.	Q: So tell me everything that happened the last time your step father sexually abused you. A: It was, yeah I can't remember the month or the day, but.
Unelaborated IDK/IDR	Child's responds exclusively with "I don't know" or "I don't remember."	Q: Tell me about the last time you remember. A: I don't know.
Requests for clarification	Child asks interviewer for clarification.	Q: Tell me everything that happened the last time that your dad did something with you. A: What do you mean?

3. Results

3.1. Preliminary descriptive statistics

We identified 1405 invitations that used the word "time" and asked either "about" the time (About invitations: $n = 746$) or "what happened" the time (Happened invitations: $n = 659$). The rate at which children gave clear pseudotemporal responses (exclusively temporal or temporal IDK/uncertain) or potential pseudotemporal responses (requests for clarification or unelaborated IDK/IDR) responses is in Table 2. Notably, forensic interviewers asked comparatively more About invitations to younger children (63% About invitations) and more Happened invitations to older children (45% About invitations). The frequency of each question sub-type ("the time," "that time," "first time," "last time," or "another time") is reported in Table 3. As noted in the methods, substantial numbers of both About and Happened invitations asked about "the time," "that time," "the first time," and "the last time," but only three Happened invitations asked about "another time." Therefore, for each analysis, we considered whether the results differed if one excluded the "another time" invitations, because "another time" questions might be differentially difficult (for example, children might have greater difficulty recalling "another time").

3.2. Do about invitations elicit higher rates of exclusively temporal responses?

We examined the relation between invitation type (About, Happened) and children's tendency to provide exclusively temporal responses. Invitation type and age (in years) were included as fixed main effects. There was a significant main effect for invitation type. As predicted, About invitations were associated with more exclusively temporal responses than Happened invitations ($B = 0.84$, $SE = 0.25$, $Z = 3.39$, $p < .001$, 95% CI [0.366, 1.33]). Children gave exclusively temporal responses to 11% of the About invitations, compared to 6% of the Happened invitations (Table 2). There was no significant age effect. However, the descriptives suggest that the invitation type effect was driven by the older children. Among the 4- to 9-year-olds, children gave exclusively temporal responses to 8% of the About invitations and 7% of the Happened invitations, whereas the 10- to 15-year-olds gave exclusively temporal responses to 14% of the About invitations and 5% of the Happened invitations (Table 2).

The results were similar when the "another time" questions were excluded, showing that the results were not attributable to the larger number of "another time" About invitations. The main effect of invitation type remained significant as About invitations were still associated with more exclusively temporal responses than Happened invitations ($B = 0.99$, $SE = 0.25$, $Z = 3.91$, $p = .001$, 95% CI [0.50, 1.49]). Again, there was no significant effect of age.

3.3. Do about invitations elicit higher rates of temporal IDK's/uncertainty responses?

We examined the relation between invitation type (About, Happened) and children's tendency to indicate explicit temporal uncertainty in their responses, with invitation type and age as fixed effects. Invitation type was not significant. There was a significant main effect of age showing that older children were more likely to indicate temporal uncertainty ($B = 0.24$, $SE = 0.08$, $Z = 2.78$, $p = .005$, 95% CI [0.06, 0.40]). The mean age of children providing temporal IDK/uncertain responses was 11.1 years ($SD = 2.60$) compared to 9.7 years ($SD = 2.72$) for responses that did not indicate temporal IDK/uncertainty.

When the "another time" questions were excluded, however, invitation type was significant. About invitations were associated with more temporal IDK/uncertain responses than Happened invitations ($B = 0.89$, $SE = 0.43$, $Z = 2.08$, $p = .04$, 95% CI [−0.02, 1.67]). Age remained significant ($B = 0.23$, $SE = 0.09$, $Z = 2.74$, $p = .01$, 95% CI [0.06, 0.40]). Children asked the About invitations gave temporal IDK/uncertain responses 3% of the time whereas children asked the Happened invitations did so 2% of the time. The mean age of children responding with temporal IDK/uncertain responses was 11.1 years ($SD = 2.60$) whereas the mean age of children that did not respond with temporal IDK/uncertain responses was 9.7 years ($SD = 2.70$). When asked the About invitations, 4- to 9-year-olds gave temporal IDK/uncertain responses 1% of the time, compared to 10–15-year-olds, who did so 5% of the time.

3.4. Do About invitations elicit higher rates of requests for clarification?

We examined the relation between invitation type (About, Happened) and children's requests for clarification. There were no significant effects. In only five responses (of the 1405) did the child ask whether the interviewer was requesting temporal or episodic information, reflecting explicit identification of the pseudotemporal problem.

Table 2
Response types to About and Happened invitations.

	4–9 years				10–15 years				Overall			
	About ($N = 396$)		Happened ($N = 229$)		About ($N = 350$)		Happened ($N = 430$)		About (N = 746)		Happened (N = 659)	
	%	N	%	N	%	N	%	N	%	N	%	N
Exclusively temporal	8	32	7	15	14	49	5	22	11	81	6	37
Temporal IDK/uncertain	1	3	1	2	3	12	2	7	2	15	1	9
Request for clarification	9	36	13	29	6	20	9	40	8	56	11	69
Unelaborated IDK/IDR	14	54	8	19	7	25	4	17	11	79	6	36

Table 3
Frequency of invitation type and subtype.

About (N = 746)			Happened (N = 659)		
Subtype	%	N	Subtype	%	N
"About the time"	24	176	"Happened the time"	14	93
"About that time"	10	72	"Happened that time"	8	54
"About the first time"	9	66	"Happened the first time"	10	68
"About the last time"	40	295	"Happened the last time"	67	441
"About another time"	18	137	"Happened another time"	1	3

3.5. Do About invitations elicit higher rates of unelaborated IDK/IDR responses?

We examined the relation between invitation type (About, Happened) and children's unelaborated IDK/IDR responses. About invitations were associated with more unelaborated IDK/IDR responses than Happened invitations ($B = 0.60$, $SE = 0.26$, $Z = 2.30$, $p = .02$, 95% CI [0.03, 1.07]). Older children were less likely to give unelaborated IDK/IDR responses ($B = -0.19$, $SE = 0.05$, $Z = -3.76$, $p \leq 0.001$, 95% CI [−0.31, −0.10]) The mean age of children responding with unelaborated IDK/IDR responses was 8.39 years ($SD = 2.71$) whereas the mean age of children that did not respond with unelaborated IDK/IDR responses was 9.82 years ($SD = 2.49$).

However, when excluding "another time" invitations, the main effect of invitation type was no longer significant. This suggests that the higher proportion of unelaborated IDK/IDR responses among the About invitations could have been due to the difficulty of the "another time" invitations, which were disproportionately asked as About invitations. Age remained significant and was still negatively associated with unelaborated IDK/IDR responses ($B = -0.20$, $SE = 0.06$, $Z = -3.43$, $p \leq 0.001$, 95% CI [−0.34, −0.09]).

3.6. Do interviewers clarify their intent when children provide pseudotemporal responses?

We examined interviewers' questions immediately following children's exclusively temporal and temporal IDK/uncertain responses ($n = 149$). About two-thirds (66%; $n = 98$) of follow-up questions clarified that the interviewer was seeking episodic rather than temporal information; 60% ($n = 59$) used the word "happened," 45% ($n = 44$) used the word "everything," and 9% ($n = 9$) used a gerund (e.g., following "tell me about the last time you went outside" to "tell me more about *going* outside"). When interviewers clarified their intent, children responded with narrative information in response to 84% ($n = 82$) of the follow-up questions.

However, the other 34% ($n = 51$) of follow-up questions failed to clarify that the interviewer was requesting episodic rather than temporal information. In 55% ($n = 28$) of the cases, the interviewer simply moved onto a different episode or topic. In the other 45% ($n = 23$) of cases, the interviewer moved to a more closed-ended question.

4. Discussion

This study examined the extent to which children misinterpret invitations containing the word "time" as requesting conventional temporal information. We identified 1405 invitations that either asked "about" a time (About invitations) or what "happened" a time (Happened invitations) in 827 forensic interviews with 4- to 15-year-olds questioned about sexual abuse. Consistent with our predictions, children were more inclined to give exclusively temporal responses to invitations using the word "about." Furthermore, excluding questions asking about "another time," which virtually never occurred in conjunction with Happened invitations, we found that children were more likely to express temporal ignorance or uncertainty when asked the About invitations than when asked the Happened invitations.

Children exhibited little understanding that the reference to "time" was ambiguous. Requests for clarification did not differ in About and Happened invitations, and children specifically attempted to clarify whether the interviewer wanted temporal information in only five cases (out of 1405 responses). These results are strikingly similar to the experimental work by McWilliams et al. (in press) on the pseudotemporal problem discussed in the introduction; in that study, children also asked if the interviewer was requesting temporal or episodic information in only five cases (out of 1149 responses).

When children provided temporal information or expressed temporal uncertainty, interviewers usually clarified their intent, and children's subsequent responses were almost always informative. However, in a third of the cases in which pseudotemporal failure occurred, interviewers failed to clarify the ambiguity.

4.1. Effects of age

We did not find any evidence that older children were less vulnerable to pseudotemporal failure, despite the fact that we included children up to 15 years of age. Indeed, the rate of temporal IDK/uncertain responses increased with age, and descriptively the highest rate of exclusively temporal responses occurred among the older children when asked About invitations. Similarly, McWilliams et al.'s (in press) experimental work failed to find a decrease in pseudotemporal failures with age in 6- to 9-year-old children. Although older children are better at recognizing and overcoming referential ambiguity (Beal & Flavell, 1984), younger children may be less likely to interpret invitations as requesting temporal information because of their limited awareness of conventional temporal concepts. Younger children are less likely to mention conventional temporal information when asked explicitly temporal questions (McWilliams

et al., in press; Tartas, 2001).

4.2. Limitations and future research directions

Because this was an observational study, we could not easily control for extraneous differences between About and Happened invitations that might affect their difficulty, and in turn affect the likelihood that children gave pseudotemporal responses. As we noted, when interviewers asked children about "another time," they almost always used About invitations rather than Happened invitations. If children remembered nothing about "another time," they would more likely simply give an IDK response rather than express temporal uncertainty or provide conventional temporal information. Indeed, 14% of children asked "another time" invitations gave don't know answers, and when we excluded "another time" invitations from our analysis of temporal uncertainty, we found the predicted difference between About invitations and Happened invitations.

The pseudotemporal problem might seem relatively minor. The percentage of exclusively temporal responses and temporal IDK responses was quite low, even when children were asked About invitations: 14% of the About invitations were clear pseudotemporal failures. Furthermore, in two-thirds of the cases where pseudotemporal failure clearly occurred, interviewers appeared to recognize the problem and clarified their intentions. However, although the ultimate rate of failure might seem low, the errors are significant, because they reflect a failure on the part of the interviewers to elicit details about specific episodes in abuse cases.

For example, in one of the interviews in our sample, the 7-year-old child's pseudotemporal failure led the interviewer to conclude that the child was incapable of narrating individual episodes:

Q: And tell me about the last time that Benny touched you on the butt.

A: I think I was, I forgot. I think it was Thursday or something. I don't know, remember.

Q: You don't remember the last time?

A: [Headshake.]

Q: Ok. And tell me about the first time that Benny ever touched you on the butt.

A: I don't know either.

Q: Ok. I understand. Um [7 s pause].

At this point the interviewer abandoned the attempt to elicit narratives of individual episodes and questioned the child about generic aspects of the abuse.

Furthermore, the pseudotemporal problem is likely to occur in other contexts. As part of narrative practice, children are often asked to narrate their last birthday (Henderson et al., in press). However, children may misinterpret "tell me about your last birthday" as a request for their birthdate, and their brief response (e.g., "October second") may lead interviewers to move to more direct questions rather than persist with invitations. In court, children are often asked "do you remember" questions, and children tend to answer them with unelaborated "yes" and "no" responses (Evans, Stolzenberg, & Lyon, 2017). If children misinterpret "do you remember the time" questions as asking for conventional temporal information, and provide unelaborated "no" responses, then the pseudotemporal problem is overlooked. The reader will recall that the pseudotemporal problem identified by Richardson (1990) involved children responding "no" to "do you remember a time" and "do you remember the day" questions, but then fortuitously elaborating on their responses, making their misunderstanding clear.

The pseudotemporal problem may also occur in contexts in which the interviewer's true intentions are unclear, compounding confusion. In the questions studied here, one can say with confidence that the interviewers were seeking narrative and not conventional temporal information. Interviewers attempting to date events are likely to directly ask children about their age or other temporal information (Wandrey, Lyon, Quas, & Friedman, 2012), and an interviewer asking for clock time (which would be unusual) would ask "what time" rather than "about the time." However, other questions may be ambiguous. Questions about "when" events occurred may be seeking conventional temporal information, but may also be seeking sequential information, which helps build a narrative of the event (Tartas, 2001). Future research should explore whether other question topics and question types elicit high rates of pseudotemporal failure. Moreover, because we failed to find any age-related decreases in pseudotemporal failure, research should include adolescents and young adults.

4.3. Implications for training and practice

The results of this study have significant implications for forensic interviewers. Interviewers should be trained to replace questions asking "about the time" with questions asking "what happened the time." Furthermore, because pseudotemporal failure may occur in other contexts, and even when Happened invitations are asked, interviewers should be trained to monitor children's responses for misunderstanding. A child who appears to produce temporal information without a temporal request may be misinterpreting the interviewer's question, and the interviewer should first attempt to reword the invitation before moving on.

5. Conclusion

In sum, this study found that invitations including the word "time" can lead children to misinterpret questions about an episode as

questions requesting conventional temporal information. Forensic interviewers should clarify to child interviewees that they want to know *everything that happened* when asking about an episode of abuse in order to minimize incomprehension and encourage productive episodic recall.

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Declaration of competing interest

None.

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