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## 110. Adults' interpretation of invitations using the word "time"

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## ORIGINAL ARTICLE

# Adults' interpretation of invitations using the word 'time'

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## Abstract

The present study examined adults' interpretations of invitations using the word 'time'. Recent research has demonstrated that children may misunderstand these invitations as solely requesting temporal information (Friend et al., 2022). This study tested whether adults perceive the ambiguity in these invitations and whether they understand the source of children's pseudotemporal errors. We examined 401 adult participants' perceptions of invitations using the word 'time', varying the phrasing of the invitation (*about the time* vs. *what happened*) and whether the participant had exposure to a child's pseudotemporal response. Adults largely interpreted the invitations as requests for what happened during an event, not requests for when an event occurred. They rated the invitations as clear, not difficult and appropriate for elementary-aged children. However, they were more likely to rate *about the time* invitations as temporal compared to *what happened* invitations. Additionally, their perceptions of clarity and age appropriateness decreased when they were exposed to children's overtly pseudotemporal responses. These results suggest that although adults typically fail to identify the ambiguity in invitations using the word 'time', they are able to adjust their interpretation of the questions, at least when they are provided clear evidence of children's misinterpretation.

## Key Practitioner Messages

- Recent research has demonstrated that invitations with the word 'time' can be confusing for witnesses, as these invitations can be misunderstood as requests for time.
- Using the phrasing 'about the time' in these invitations increases the rate of temporal misunderstanding. Therefore, when using invitations with the word 'time', interviewers should always phrase their question with 'what happened' language.

## KEYWORDS

child witness, children, forensic interviewing, maltreatment, time

## INTRODUCTION

In cases of alleged child maltreatment, often children's reports are the strongest piece of evidence available (Cross & Whitcomb, 2017). However, a robust literature of applied developmental research has demonstrated that obtaining reliable, accurate and detailed reports from child witnesses can be a challenging task for forensic interviewers (McWilliams et al., 2012). Fortunately, empirically informed forensic interviewing protocols such as the National Institute of Child Health and Human Development (NICHD) Investigative Interview Protocol, facilitate high-quality responses from children (i.e. more detailed, more accurate and in response to open-ended questions) compared to when a protocol is not used (Lamb, Orbach, Hershkowitz, Esplin, et al., 2007; Lamb, Orbach, Hershkowitz, Horowitz, et al., 2007).

However, even while adhering to the recommended best practices in forensic interviewing, miscommunications between children and interviewers still arise. These miscommunications are important because when a child misunderstands an interviewer's intentions they can respond with incorrect or nonsensical responses which, if left unclarified, can disrupt the flow of an interview. Miscommunications that occur in the interview context can also have downstream effects as the perceived errors or nonsensical responses could influence the credibility of a child's entire report (Merriwether et al., 2023).

Why do these miscommunications occur even though interviewers are asking open-ended questions? One reason is developmental differences in understanding semantics, syntax and the nuances within questions. For example, children and adults differently interpret questions requiring temporal judgements using a recurring landmark (e.g. Merriwether et al., 2023), and questions that explicitly ask whether the child remembers the information and implicitly requests that information such as 'Do you remember if you went to the hospital' (Wylie et al., 2019). In both contexts, children's responses, while not incorrect, may surprise adults and could disrupt the flow of questioning or negatively influence fact finders' perceptions of children's credibility (Merriwether et al., 2023). It is likely these examples are not the only types of questions where adults and children have diverging understandings about the goal of the question. The current study examines another area where this problem may arise, invitations using the word 'time' (e.g. 'Tell me about the last time...').

## PSEUDOTEMPORAL INVITATIONS: THE AMBIGUITY OF INVITATIONS USING THE WORD 'TIME'

Recently researchers have identified how children may misinterpret invitations using the word 'time' as asking for temporal information (Friend et al., 2022; McWilliams et al., 2023). These invitations are non-temporal prompts (e.g. 'Tell me about the last time you played soccer') that include the word 'time', and thus may be misinterpreted as asking about the time rather than the event (e.g. 'It was on Saturday.'; Friend et al., 2022; McWilliams et al., 2023). Invitations using the word 'time' are recommended by standardised interviewing protocols as a means of eliciting information about specific episodes (Sternberg et al., 2001; Zajac & Brown, 2018). Invitations refer to 'one time', 'the first time', 'the last time', 'a different time' or the 'time you remember most' in order to focus children's attention on a singular event. Although these invitations often work to elicit episodic narrative responses, the ambiguity of the word 'time' can lead to miscommunication. Children may misinterpret the prompt as temporal in nature and respond with only conventional temporal information about *when* the event happened (e.g. moment, hour, day, year) rather than *what* happened, or worse, give an 'I don't know (IDK)' response because they do not recall temporal information (Friend et al., 2022; McWilliams et al., 2023). We will refer to these errors as pseudotemporal responses.

Researchers have demonstrated in both the laboratory and field that children often misunderstand these prompts and give pseudotemporal responses. For example, McWilliams et al. (2023) examined six- to nine-year-old maltreated children's pseudotemporal responses to questions about recent events. The phrasing of the invitation varied, either presenting the invitation 'Tell me *about* one/the first/the last time' or a reformulated invitation 'Tell me *what happened* one/the first/the last time'. Though both questions include the word 'time', which can be misinterpreted as a request for conventional temporal information, the authors hypothesised that *what happened* would unambiguously request narrative information. As predicted, children more often gave pseudotemporal responses in response to the invitations phrased 'Tell me *about* the time' (31%), compared to the reformulated invitations 'Tell me *what happened* the time' (5%). Notably, pseudotemporal responding did not differ with age, as even the oldest children (i.e. 9-year-olds) provided conventional temporal information 25 per cent of the time. Pseudotemporal responding has also been observed in the field, whereby child witnesses questioned about sexual abuse sometimes responded to invitations using the word 'time' with temporal information, and did so more often to *about the time* invitations compared to *what happened* invitations (Friend et al., 2022). Moreover, pseudotemporal responding did not decrease with age, despite the fact that the sample included children as old as 15 years of age.

The dangers of pseudotemporal responding when the interviewer is seeking critical information are outlined by both Friend et al. (2022) and McWilliams et al. (2023). First, children's pseudotemporal responses are problematic because they provide solely conventional temporal information rather than a narrative of the sequence of events, which limits the ability of an interviewer to follow up. Additionally, the interviewer might view a limited response (e.g. 'It happened a long time ago') as due to motivational or memory difficulties, which could change the questioning tactics the interviewer uses throughout the rest of the interview. Consistent with this point, Friend et al. (2022) found that in a third of cases where children showed misunderstanding following an invitation the interviewers failed to clarify the intent of their invitation. Instead, the interviewers moved on to another topic or asked a more direct question. A second risk is

that children's pseudotemporal responses will be factually incorrect, and potentially impeachable, since children have difficulties providing accurate, conventional temporal information into early adolescence (Friedman, 1991; Friedman & Lyon, 2005; Wandrey et al., 2012).

A final limitation is that children who do not recall conventional temporal information may simply respond to these prompts by saying that they do not know. For instance, if an interviewer asks 'Tell me about the time your uncle hurt you' and the child responds 'I don't know', the child could mean that she does not know the time, but the interviewer could misinterpret the response as suggesting that the child does not recall the event or is a reluctant witness. When faced with IDK responses, interviewers often resort to suboptimal questioning. For example, Earhart et al. (2014) found that when children provided IDK responses, forensic interviewers often disregarded such responses (30% of the time) and followed up with a riskier question about the same topic (e.g. moving from a recall question to a yes-no or forced-choice question) 69 per cent of the time. Therefore, how a child responds to invitations using the word 'time' may have a downstream effect, influencing the reliability of the information provided in response to the ambiguous invitation as well as the quality of the information extracted from follow-up questioning.

## ADULT PERCEPTIONS OF INVITATIONS USING THE WORD 'TIME'

How adults perceive invitations using the word 'time' and how they interpret children's pseudotemporal responses is unknown. Adult's perceptions are important for two reasons. First, lay adults judge children's credibility in cases that make it to trial. Thus, it is important to know how they interpret invitations using the word 'time' and what they identify as the source of pseudotemporal responses. If adults fail to discern the ambiguity in the invitations and assume children will provide narrative responses, then they may view children's conventional temporal responses as inadequate. And, instead of seeing the question as unclear and problematic, they may blame the child's failure on the child, potentially undermining the child's credibility. Second, the findings can help inform practitioners who have not been properly trained on the pseudotemporal problem. The results from Friend et al. (2022) suggest that forensic interviewers do not always pick up on the difficulty of these questions and could benefit from the knowledge gained by exploring adults' perceptions of these errors. Additionally, attorneys who often question children, yet are not trained as forensic interviewers, are not likely to pick up on the problems inherent in these questions on their own. Therefore, they could also benefit from learning whether this form of miscommunication may undercut child witnesses' credibility. Failure to recognise ambiguity can lead to miscommunication, prevent follow-up questioning (because the questioner does not recognise the alternative interpretation), and ultimately hinder perceptions of the accuracy and reliability of children's reports.

In addition to examining adults' perceptions of invitations, it is also important to investigate how a child's response influences an adult's perceptions. Whether adults' interpretation of children's pseudotemporal responses is influenced by children's ability to articulate their understanding of the question is unknown. Children's temporal responses might lead adults to assume that the questioner intended to seek temporal information, whereas IDK responses might lead adults to believe that the child could not remember narrative information.

Researchers have demonstrated that adults lack awareness of the ambiguity of other forms of questions. For example, adults often overlook the fact that 'Do you remember if/whether' questions (e.g. 'Do you remember if you went to the hospital') are referentially ambiguous, asking both explicitly whether the child remembers the information and implicitly requesting that information (Wylie et al., 2019). This lack of awareness often leads adults to form their own interpretation of children's responses. Wylie et al. (2019) found that adults were equally likely to interpret unelaborated 'no' responses as answering the implicit question (34% interpreted as 'No, it did not happen') and explicit question (26% interpreted as 'No, I don't remember'), and rarely identified children's responses as being unclear (7% of the time). Wylie et al. (2021) found that even when they were given an explicit instruction explaining that unelaborated responses to 'do you remember' questions lead to ambiguity, adults failed to recognize referential ambiguity when presented with transcripts containing ambiguous answers to 'do you remember' questions.

## THE CURRENT STUDY

The current study examined adults' ( $N = 401$ ) interpretations of both *about the time* and *what happened* invitations and children's pseudotemporal response. We believed the majority of adults would not perceive these prompts as temporal in nature, and that they would rate these questions as clear and not difficult. We believed that absent a child response, they would not see a problem with these invitations. However, we predicted that both the phrasing of the invitation and the presence of a child's pseudotemporal response would draw their attention to the ambiguity.

We believed that the phrasing of the invitation would likely matter because both laboratory and field work with children have determined that including the phrase ‘what happened’ in these invitations significantly decreases pseudotemporal responses (Friend et al., 2022; McWilliams et al., 2023). Therefore, we varied the invitations to include two forms of phrasing ‘Tell me *about the time*’ and ‘Tell me *what happened*’. We did not expect adults to believe any of the invitations were temporal in nature, but if they did, we predicted they would be more likely to think prompts phrased *about the time* were temporal in nature compared to those phrased *what happened*.

We were also interested in whether adults were able to identify ambiguity in the invitations alone or if they needed to see a child’s pseudotemporal responses in order to recognise potential problems with the invitations. Therefore, we varied whether participants viewed the invitations alone or paired with a child’s response and predicted that participants would be more likely to rate the questions as less clear and more difficult when they were exposed to children’s pseudotemporal response (Response Present condition) compared to when they saw only the invitation (Response Absent condition).

Finally, because previous researchers have suggested that the danger of these invitations could depend on what type of pseudotemporal response the child gives, we examined differences in adults’ perceptions of pseudotemporal responses across three types of child responses: (1) conventional temporal responses, (2) responses indicating temporal ignorance, or (3) only IDK responses. Given that all of these responses could be perceived as failures to respond to the question asked, we did not have any directional hypotheses regarding how the responses would affect adults’ interpretation of children’s understanding. Rather, we conducted exploratory analyses to determine whether adults deemed any of these responses ‘more appropriate’ than others and what explanations they gave for children’s errors.

## METHODS

### Participants

Participants were 401 adults recruited via Amazon Mechanical Turk (Mturk). To ensure quality data, we required Mturk workers to have a 95 percent Human Intelligence Task (HIT) approval rate and 500 completed HITs. Participants ranged in age from 20 to 76 years old ( $M = 41.56$ ,  $SD = 11.66$ ) and the sample was approximately half male (51%,  $n = 203$ ). Participants were primarily White, Non-Hispanic (78%) followed by Black or African-American (12%), Asian/Native Hawaiian/Pacific Islander (8%), Hispanic, Latino/a/x or Spanish origin (5%), American Indian or Alaska Native (1%), and other (self-reported as ‘black american’ and ‘middle eastern’; 0.7%). Approximately half of the sample had completed at least some college education (48%) and 17 per cent had some form of graduate work or graduate degree. The remainder of the sample had either completed some high school (35%) or middle school education (0.2%).

### Materials

The invitations were taken from forensic interviews in investigations of alleged child sexual abuse conducted in Child Advocacy Centers in Los Angeles County from the years 2004 to 2020. All invitations were taken from cases involving the interview of an alleged child victim between the ages of four to 15 years old. The only adjustments made to the interviewers’ questions or child responses were anonymization to avoid divulging any identifying information. To increase ecological validity, the invitations were presented to participants as attorney questions, rather than forensic interviewer questions, as lay people are most likely to evaluate the quality and content of questions in a trial.

To examine participants’ perceptions of invitations, our design included one between subjects manipulation and one within subjects manipulation, resulting in a  $2 \times 2$  mixed factorial design. For our between subjects manipulation, we systematically varied whether the participants saw the child’s responses to the invitations (Response Present) or not (Response Absent). In the Response Present condition, the participants saw invitations paired with the child’s responses (e.g. Q: ‘Tell me about the time Anna touched your peepee., A: She touched it a long time ago, like, two days ago.’). In the Response Absent condition, the participants saw only invitations (e.g. Q: ‘Tell me about the time Anna touched your peepee.’).

For our within subjects manipulation, in both the Response Absent and Response Present conditions, we varied whether the invitation was asked with the less desirable *about the time* phrasing (e.g. ‘Tell me about the time Anna touched your peepee’) or with the more desirable *what happened* phrasing (e.g. ‘Tell me everything that happened the time that you remember the man touching you’). All participants were shown four *about the time* invitations and two *what happened* invitations.



To explore participants' perceptions of children's pseudotemporal errors, we had one within subjects manipulation. In the Response Present condition only, we varied the overtness of the child's pseudotemporal response. Across the six invitations/responses, two included responses with only temporal information (Conventional Temporal condition) (e.g. Q: 'Tell me about the time Anna touched your peepee., A: She touched it a long time ago, like, two days ago.'). Two responses included an admission of ignorance about temporal information (Temporal Ignorance condition; e.g. Q: 'Ok, and tell me about the time your mom got really, really upset.', A: 'I don't really remember the day.'). In the remaining two responses the child gave a generic IDK response and thus it was unclear whether the child was giving a pseudotemporal response (e.g. Q: 'Tell me everything that happened the time that you remember the man touching you.', A: 'I don't remember.').

To increase ecological validity, we exposed participants to question and answer pairs that were taken directly from forensic interviews. However, this limited the ability to fully control all elements of our materials. More specifically, our choice to use invitations from forensic interviews resulted in two design limitations. First, each invitation was always paired with the same response and not evenly distributed across invitation and response type. The *about the time* invitations were paired with conventional temporal responses and temporal ignorance responses and *what happened* invitations were paired with IDK responses. Second, the content and phrasing (beyond *what happened/about the time*) of our invitations were not kept consistent. In our discussion we address these limitations and how they influence our interpretations of our findings.

## Adults' perceptions of interviewers' invitations

### Topic of the invitation

To measure participants' interpretation of the topic of the invitations, including whether they believed the invitations to be temporal in nature, we asked participants a forced choice question about whether the question was asking about the time something happened or what happened during the event. For instance, for the prompt 'Tell me about the time Anna touched your pee pee', participants were asked 'Is the attorney asking about the *time* Anna touched the child or *what happened* when Anna touched the child?' Additionally, for all prompts participants were provided the following clarification 'The *time* refers to information about when (e.g., clock time, date, month) the event occurred and *what happened* refers to a narrative description about the event.' Participants could then respond with one of the following options: (1) The time or (2) What happened.

### Clarity

To assess how clear the participants found the invitation we asked them to respond to the question 'How clear was the attorney's question?' using a 5-point Likert scale with the low end of the scale (1) indicating *Not clear at all*, the mid-point of the scale (3) indicating *Neutral*, and the high end of the scale (5) indicating *Extremely clear*.

### Difficulty

We asked participants to provide their feelings on the overall difficulty of the question by responding to the question 'How difficult was the attorney's question?' using a 5-point Likert scale. For this scale, the low end (1) represented feelings that the question was *Not at all difficult*, the midpoint of the scale reflected feelings of *Neutral* on difficulty, and the high end of the scale (5) indicated an opinion that the question was *Extremely difficult*.

### Age appropriateness

To determine whether participants had any feelings about the developmental appropriateness of each of these types of invitations we asked them the open-ended question 'What is the youngest age witness for whom this question would be appropriate?' Most participants provided a single numerical value in response to this open-ended question. However, some participants provided an age range. Given the question asked for the 'youngest age witness', we used the lowest age indicated in any response that included an age range or multiple age options.

## Invitation rephrasing

To further examine participants' understanding of the meaning of each invitation, and to determine whether the participants could identify any potential problems with the prompts, we asked them to provide the ideal phrasing for each invitation. Specifically, participants were told: 'In your own words, what would be the best way for the attorney to ask this question?' See coding description below regarding how participants' responses were categorised.

## Perceptions of child responses (Response Present condition participants only)

### Appropriateness of child's response

In order to determine whether participants felt children had provided an adequate response to the question asked, we asked participants the forced choice question 'Do you think the child answered the question that the attorney was asking appropriately?' The responses included the options: (1) Yes, (2) No or (3) I could not tell from the excerpt. If the participants responded 'No', indicating that the child had not provided an appropriate response, they were directed to a forced-choice follow-up question 'You responded that you did not think the child answered the question the attorney was asking appropriately. Why do you think this happened?' Participants were then able to pick one of the following reasons for the inappropriate response: (1) the child did not know the answer; (2) the child did not understand the attorney's question; (3) the child is not a credible witness; or (4) other. If the participant chose 'other' they were prompted to specify their reason. However, all participants who chose 'other' specified reasons that either fell into the above categories or suggested a combination of lack of credibility or reluctance. Therefore, their responses were recoded and 'other' is not reported as a separate category in the results. Additionally, we adapted our forced choice response category 'The child is not a credible witness' to become credibility/reluctance.

### Child response rephrasing

In order to further examine participants' opinion on the witnesses' understanding of the invitations, we had them rephrase the child's response to best indicate what the child meant. Specifically, we instructed participants 'In your own words, please rephrase what you think the child was trying to say.' See coding description below regarding how participants' responses were categorised.

## Coding

### Invitation rephrasing

We coded participants' rewording of the attorneys' invitations for two pieces of information. First, we coded for whether the participant changed the phrasing of the invitation or not. A code of Change indicated that the participant rephrased the original invitation or provided instructions on how to do so. No Change reflected that the participant simply copied and pasted the original invitation, used a slight deviation (changed 'Tell me about the time Anna touched your pee pee' to 'Tell me about the time Anna touched you'), or directly replaced a word with a synonym (i.e. 'Tell me about the time' became 'Tell me about when').

Next, for the responses where the participant changed the wording of the invitation we coded for the focus of the new phrasing. Each response was coded as one of five mutually exclusive categories: (1) What happened: the participant changed the wording of a *what happened* invitation but it remained a request for a narrative account of a what happened question, or the participant changed the wording of an *about the time* invitation into a clear request for a narrative account of what happened; (2) Pseudotemporal: the participant changed the wording of an *about the time* invitation but it remained a pseudotemporal invitation (i.e. included 'the time', 'when', etc. with no inclusion of 'what happened'), the participant changed the wording of a *what happened* invitation into a pseudotemporal invitation; (3) Temporal: the participant changed the wording of an invitation into an actual request for temporal information (e.g. 'When did your mom get really, really upset?'); (4) Off topic: the participant changed the wording of an invitation to be neither a request for a narrative account of what happened or a request for temporal information (e.g. 'How frequently does your mom get mad?', 'Did he ever hit you?'); and (5) Explanatory: the participant did not reword the question but instead explained what they would improve (e.g. 'more subtle').

## Child response rephrasing

We coded participants' rephrasing of children's responses for whether their response indicated the child was answering *when* the event happened or *what happened* during the event. Specifically, all responses were coded as one of four mutually exclusive categories: (1) What Happened: the response indicates the participant thought the child was responding to what happened during the event (e.g. 'They cannot remember if Anna ever touched them.');

(2) Time: response indicates the child is answering about when the event happened (e.g. 'They don't know the day it happened');

(3) Time + What Happened: The response indicates the participant believes the child is providing information about both the timing of the event and what happened/if it happened (e.g. 'I can't exactly remember the day, but I know what happened');

or (4) Unclear: One cannot tell from the participants' response if they think the child is answering about the timing of the event happened or what happened during the event (e.g. 'They don't know').

For all coding, two coders independently coded 20 per cent of the transcripts. Interrater reliability was high on all codes with coders reaching  $\kappa \geq 0.80$  for each coding category.

## Procedure

After providing consent, participants were told they would be presented with 'six questions taken from transcripts of alleged cases on child sexual abuse where an attorney is questioning a child victim/witness on the stand.' The instructions indicated that each invitation was taken from a separate case and that the children testifying in these cases ranged in ages from four to 12 years old. They were asked to evaluate each invitation individually. They were randomly assigned to one of two child response conditions whereby they saw six invitations that contained either just the attorney invitations (Response Absent Condition,  $n = 205$ ) or the attorney invitations paired with the children's responses (Response Present Condition,  $n = 196$ ). For both child response conditions, the order of the invitations was randomly assigned. Following each invitation (or invitation and response), the participants were asked several questions to examine their understanding and perceptions about the invitations (both conditions) and child responses (Response Present Condition only). All participants received the open-ended questions requiring them to reword the invitation (and response in the Response Present condition) first. Then they received the closed-ended questions measuring their understanding in a random order. Lastly, participants provided answers to several demographic questions. The demographic questions included participants' age, sex, race/ethnicity, marital status, education level, and approximate income level.

## RESULTS

### Perceptions of invitations

Overall, across both invitation phrasing and child response conditions, participants generally did not misinterpret the topic of the invitations to be temporal. Eighty-six per cent of participants' responses indicated they believed the invitations were asking the child about what happened during the target event. However, 36 per cent of participants indicated the topic of at least one of the invitations was temporal, and on average, each participant responded to 15 per cent (i.e. 0.87 out of 6;  $SD = 1.45$ ) of the invitations they saw indicating they were temporal. Participants did not feel the questions were particularly unclear or difficult. The average ratings across all invitations were 3.16 (out of 5,  $SD = 0.89$ ) on clarity and 2.64 (out of 5,  $SD = 0.88$ ) on difficulty, meaning they believed the invitations were 'neutral' on their clarity and only 'somewhat difficult'. Additionally, the participants believed these invitations to be appropriate for elementary school children, with an average age of 6.47 years old ( $SD = 3.08$ ) given to the question of what is the youngest age witness for whom these questions would be appropriate. To see full descriptive data broken down by question, refer to Table 1.

### Differences by condition and phrasing

We conducted a series of mixed model analyses of variance (ANOVAs) to examine whether participants' perceptions of topic, clarity, difficulty and age appropriateness differed by invitation phrasing or child response condition. For all models we included invitation phrasing (*about the time* vs. *what happened*) entered as a within-subjects factor and child response condition (Response Absent vs. Response Present) entered as a between subjects factor.



**TABLE 1** Participants' perceptions of attorney's pseudotemporal invitations for each question.

Response Absent condition ( <i>n</i> = 205)					
Invitation	Response	Topic % Time	Clarity <i>M</i> ( <i>SD</i> )	Difficulty <i>M</i> ( <i>SD</i> )	Age <i>M</i> ( <i>SD</i> )
About the Time					
Tell me about the time he hit you.		18%	3.76 (1.06)	2.30 (1.18)	6.27 (3.48)
Tell me about the time Anna touched your pee pee.		16%	3.92 (1.03)	2.62 (1.40)	5.98 (3.50)
Tell me about the time with him that something happened.		19%	2.20 (1.27)	3.19 (1.24)	7.44 (3.62)
Ok, tell me about the time your mom got really, really upset.		15%	3.47 (1.19)	2.31 (1.17)	6.01 (3.21)
What Happened					
Well so tell me everything that happened the time that Matt smacked your butt.		6%	3.59 (1.22)	2.50 (1.26)	7.04 (3.72)
Tell me everything that happened the time that you remember the man touching you.		10%	3.28 (1.27)	3.06 (1.24)	7.23 (3.41)
Response Present condition ( <i>n</i> = 196)					
Invitation	Response	Topic % Time	Clarity <i>M</i> ( <i>SD</i> )	Difficulty <i>M</i> ( <i>SD</i> )	Age <i>M</i> ( <i>SD</i> )
About the Time					
Tell me about the time he hit you.	Five weeks ago.	27%	3.36 (1.31)	2.25 (1.14)	7.45 (2.76)
Tell me about the time Anna touched your pee pee.	She touched it a long time ago, like, two days ago.	19%	3.42 (1.21)	2.47 (1.22)	6.78 (3.76)
Tell me about the time with him that something happened.	I do not know when it was.	18%	2.12 (1.21)	3.15 (1.25)	7.99 (3.10)
Ok, tell me about the time your mom got really, really upset.	I do not really remember the day.	14%	3.02 (1.27)	2.38 (1.13)	6.83 (2.62)
What Happened					
Well so tell me everything that happened the time that Matt smacked your butt.	I do not know.	7%	3.08 (1.27)	2.64 (1.26)	7.89 (3.00)
Tell me everything that happened the time that you remember the man touching you.	I do not remember.	7%	2.93 (1.33)	2.97 (1.28)	7.96 (2.83)

### Topic

Our first analysis examined whether adults' misunderstanding of the topic of the invitation as temporal was affected by the invitation phrasing or by seeing a child's response (i.e. child response condition). To do so, we used the proportion of temporal responses for each participant (i.e. they indicated the topic of the invitation was time) as our dependent variable. The results revealed that the proportion of temporal responses differed by invitation phrasing ( $F(1, 399) = 53.23$ ,  $p < 0.001$ ,  $\eta^2 = 0.12$ ), but not by child response condition ( $F(1, 399) = 0.08$ ,  $p = 0.77$ ,  $\eta^2 < 0.001$ ). The participants were more likely to interpret the question as temporal if the invitation was phrased *about the time* ( $M = 0.18$ ,  $SD = 0.30$ ) compared to if it was phrased *what happened* ( $M = 0.08$ ,  $SD = 0.23$ ). However, participants interpreted the questions as temporal at a similar rate in both the Response Absent condition ( $M = 0.14$ ,  $SD = 0.25$ ) and the Response Present condition ( $M = 0.15$ ,  $SD = 0.24$ ).

### Clarity and difficulty

Our next set of analyses examined participants' average ratings of clarity and difficulty by invitation phrasing and child response condition. For clarity, the results revealed that invitation phrasing did not affect participants' ratings ( $F(1, 399) = 2.54$ ,  $p = 0.11$ ,  $\eta^2 = 0.01$ ), but child response condition did ( $F(1, 399) = 17.80$ ,  $p < 0.001$ ,  $\eta^2 = 0.04$ ). Participants rated both *about the time* invitations ( $M = 3.14$ ,  $SD = 0.91$ ) and *what happened* invitations ( $M = 3.21$ ,  $SD = 1.14$ ) as neutral on clarity. However, child response condition did significantly affect participants' perception of clarity, such that participants in the Response Absent condition ( $M = 3.34$ ,  $SD = 0.82$ ) rated the invitations as significantly clearer than those in the Response Present condition ( $M = 2.98$ ,  $SD = 0.90$ ), suggesting that seeing the child's error/inability to answer the question negatively influenced participants' ratings of the question's clarity.

For perceptions of difficulty, results revealed a significant difference by invitation phrasing ( $F(1, 399) = 22.16$ ,  $p < 0.001$ ,  $\eta^2 = 0.05$ ), but not for child response condition ( $F(1, 399) < 0.001$ ,  $p = 0.98$ ,  $\eta^2 < 0.001$ ). Participants rated *what happened* invitations ( $M = 2.78$ ,  $SD = 1.11$ ) as significantly more difficult than the *about the time* invitations ( $M = 2.57$ ,  $SD = 0.89$ ). But participants in the Response Absent condition ( $M = 2.65$ ,  $SD = 0.88$ ) and those in the Response Present condition ( $M = 2.64$ ,  $SD = 0.85$ ) did not differ in their opinions, they both rated the questions as neutral or only 'somewhat difficult'.

### Age appropriateness

For participants' perceptions on the age appropriateness of the invitations there was a main effect of invitation phrasing ( $F(1, 399) = 45.66$ ,  $p < 0.001$ ,  $\eta^2 = 0.10$ ) and of child response condition ( $F(1, 399) = 4.00$ ,  $p = 0.046$ ,  $\eta^2 = 0.01$ ). For invitation phrasing, participants reported that *about the time* invitations were appropriate for younger children ( $M = 6.26$ ,  $SD = 3.08$ ) compared to the *what happened* invitations ( $M = 6.92$ ,  $SD = 3.43$ ). For response condition, participants in the Response Absent condition ( $M = 6.19$ ,  $SD = 3.21$ ) reported a significantly lower average age than those in the Response Present condition ( $M = 6.80$ ,  $SD = 2.88$ ).

### Invitation rephrasing

First, we examined whether participants actually changed the attorneys' invitations when asked to provide the best way to phrase the attorneys' questions. Results revealed that the majority of the participants changed the invitations in some way (80%,  $n = 1928$ ), with only 20 per cent ( $n = 472$ ) of responses being categorised as No Change, indicating that the majority of participants felt the attorneys' invitations could be improved upon in some way. See full descriptives of participants' choice to rephrase attorneys' invitations by question in Table 2.

We then explored whether the participants' choice to rephrase the question was affected by the invitation phrasing or child response condition. We conducted a mixed model ANOVA with the proportion of changed responses across *about the time* and *what happened* invitations entered as a within subjects factor and child response condition entered as a between subjects factor. Results revealed a main effect of invitation phrasing ( $F(1, 397) = 10.31$ ,  $p = 0.001$ ,  $\eta^2 = 0.03$ ), but not child response condition ( $F(1, 397) = 1.31$ ,  $p = 0.25$ ,  $\eta^2 = 0.003$ ). The main effect of invitation phrasing was subsumed by a significant Phrasing  $\times$  Child Response interaction ( $F(1, 397) = 16.08$ ,  $p < 0.001$ ,  $\eta^2 = 0.04$ ). Examination of simple effects revealed that there was a significant effect of child response condition for *about the time* invitations ( $F(1, 397) = 11.48$ ,  $p < 0.001$ ,  $\eta^2 = 0.03$ ), but not for *what happened* invitations ( $F(1, 397) = 1.73$ ,  $p = 0.19$ ,  $\eta^2 = 0.004$ ). More specifically, participants were significantly less likely to change *about the time* invitations in the Response Absent condition ( $M = 0.74$ ,  $SD = 0.34$ ) than they were in the Response Present condition ( $M = 0.84$ ,  $SD = 0.24$ ). This suggests that participants were less likely to see an issue with *about the time* phrasing when they were not exposed to the child's pseudotemporal error compared to when they were. The same was not true for *what happened* invitations, as the participants were equally likely to change the wording of the invitation in both the Response Absent ( $M = 0.87$ ,  $SD = 0.32$ ) and Response Present condition ( $M = 0.83$ ,  $SD = 0.32$ ).

Because 'changing' an invitation did not necessarily mean the participants changed the focus of the question, but could have simply adjusted the words used, we also examined the focus of participants' changed responses. Results indicated that 55 per cent ( $n = 1054$ ) of participants' changed responses were What Happened responses, meaning their response indicated both a belief and ability to clearly articulate that the focus of the question was a request for narrative information about what happened during the event. Eighteen per cent of changed responses indicated that participants either did not see an issue with the temporal language or thought the question was about when the event happened. More specifically, 5 per cent ( $n = 99$ ) of responses were Pseudotemporal and 13 per cent ( $n = 247$ ) of responses were Temporal questions that were reworded into questions that were actually about time. Twenty per cent ( $n = 375$ ) of responses were Off topic, in which participants changed the focus of the question to be about something other than what happened or time upon rephrasing the invitation. Lastly, a small percentage (8%,  $n = 153$ ) of participants' responses gave Explanatory responses, whereby they simply gave general instructions on how the question could be made better. See breakdown of all invitation rephrasing by question in Table 2.

To determine whether invitation phrasing or child response condition influenced whether the focus of participants' changed responses was What happened or Temporal we conducted a series of mixed models ANOVAs. We entered the proportions of changed What Happened and Temporal responses participants gave to both *what happened* and *about the time* invitations as a within subjects factor and child response condition as a between subjects factor. We did not conduct analyses on the remaining categories because they were either not central to the research question (i.e. Off Topic, Explanatory) or included a small number of responses (i.e. Pseudotemporal).

For What Happened responses, there was a significant effect of invitation phrasing ( $F(1, 397) = 13.81$ ,  $p < 0.001$ ,  $\eta^2 = 0.03$ ), but no main effect of child response condition ( $F(1, 397) = 0.65$ ,  $p = 0.42$ ,  $\eta^2 = 0.002$ ). The main effect

**TABLE 2** Percentage of focus of participants' 'changed' invitations by condition.

Response Absent ( <i>n</i> = 205)								
Invitation	Response	% No change	% ( <i>n</i> ) Changed response	Focus of changed response				
				% What Happened	% Pseudo- temporal	% Temporal	% Off Topic	% Explanatory
About the time								
Tell me about the time he hit you.		29%	71% ( <i>n</i> = 146)	49%	1%	12%	29%	10%
Tell me about the time Anna touched your pee pee.		29%	71% ( <i>n</i> = 146)	42%	1%	14%	32%	12%
Tell me about the time with him that something happened.		21%	79% ( <i>n</i> = 161)	62%	4%	9%	15%	10%
Ok, tell me about the time your mom got really, really upset.		29%	29% ( <i>n</i> = 146)	51%	1%	9%	25%	14%
What Happened								
Well so tell me everything that happened the time that Matt smacked your butt.		17%	83% ( <i>n</i> = 171)	57%	10%	6%	19%	8%
Tell me everything that happened the time that you remember the man touching you.		12%	88% ( <i>n</i> = 181)	60%	7%	5%	18%	11%
Response Present ( <i>n</i> = 195)								
Invitation	Response	% No change	% ( <i>n</i> ) Changed response	Focus of changed response				
				% What Happened	% Pseudo- temporal	% Temporal	% Off Topic	% Explanatory
About the time								
Tell me about the time he hit you.	Five weeks ago.	10%	90% ( <i>n</i> = 175)	52%	3%	33%	7%	5%
Tell me about the time Anna touched your pee pee.	She touched it a long time ago, like, two days ago.	20%	80% ( <i>n</i> = 156)	49%	3%	22%	20%	5%
Tell me about the time with him that something happened.	I do not know when it was.	14%	86% ( <i>n</i> = 167)	61%	4%	16%	14%	5%
Ok, tell me about the time your mom got really, really upset.	I do not really remember the day.	20%	80% ( <i>n</i> = 157)	54%	5%	21%	15%	6%
What Happened								
Well so tell me everything that happened the time that Matt smacked your butt.	I do not know.	14%	86% ( <i>n</i> = 167)	55%	13%	5%	21%	6%
Tell me everything that happened the time that you remember the man touching you.	I do not remember.	21%	79% ( <i>n</i> = 155)	62%	8%	1%	23%	7%

of invitation phrasing was subsumed by a significant Phrasing  $\times$  Child Response condition interaction ( $F(1, 397) = 5.81, p = 0.01, \eta^2 = 0.01$ ). Simple effects tests revealed a significant main effect of invitation phrasing in the Response Absent condition ( $F(1, 203) = 22.55, p < 0.001, \eta^2 = 0.10$ ), but not in the Response Present condition ( $F(1, 194) = 0.72, p = 0.40, \eta^2 = 0.004$ ). More specifically, when participants did not see the child's response (i.e. Response Absent), they were significantly less likely to rephrase an *about the time* invitation ( $M = 0.38, SD = 0.33$ ) into a question about What happened than they were to keep the focus of *what happened* invitations ( $M = 0.51,$

$SD = 0.40$ ) about What happened. However, when they saw the child's pseudotemporal errors (i.e. Response Present), participants were equally likely to rephrase *what happened* invitations ( $M = 0.48$ ,  $SD = 0.41$ ) and *about the time* invitations ( $M = 0.45$ ,  $SD = 0.33$ ) to be about What happened.

For Temporal responses there were significant main effects of both invitation phrasing ( $F(1, 397) = 83.47$ ,  $p < 0.001$ ,  $\eta^2 = 0.17$ ) and child response ( $F(1, 397) = 11.08$ ,  $p < 0.001$ ,  $\eta^2 = 0.03$ ) conditions, which were fully subsumed by a Phrasing  $\times$  Child Response condition interaction ( $F(1, 397) = 35.10$ ,  $p < 0.001$ ,  $\eta^2 = 0.08$ ). Tests of simple effects revealed an effect of child response condition for *about the time* invitations ( $F(1, 397) = 25.49$ ,  $p < 0.001$ ,  $\eta^2 = 0.06$ ), but not for *what happened* invitations ( $F(1, 397) = 1.50$ ,  $p = 0.22$ ,  $\eta^2 = 0.004$ ). Participants were more likely to rephrase *about the time* invitations to be Temporal in the Response Present condition ( $M = 0.20$ ,  $SD = 0.27$ ) compared to the Response Absent condition ( $M = 0.08$ ,  $SD = 0.18$ ). But they were equally unlikely to make the focus of *what happened* invitation Temporal in both the Response Absent ( $M = 0.04$ ,  $SD = 0.14$ ) and Response Present conditions ( $M = 0.03$ ,  $SD = 0.12$ ).

## Perceptions of children's responses

Next, for participants in the Response Present condition ( $n = 196$ ), we examined perceptions of children's responses. First, we examined whether participants felt the children's answers to the attorneys' questions were appropriate. Overall, 44 per cent ( $n = 518$ ) of participants' responses indicated they believed children's answers to the attorneys' questions were appropriate, 47 per cent ( $n = 555$ ) believed children's answers were not appropriate, and 9 per cent ( $n = 112$ ) indicated they could not determine if the child's answer was appropriate with the given information. For those who indicated the child's response was inappropriate we asked them to provide a reason why they believed the child gave an inappropriate response. The majority of responses indicated that participants believed the child did not answer the question because the child did not understand the attorneys' invitation (71%,  $n = 354$ ). However, 15 per cent ( $n = 77$ ) of responses indicate the participant believed the child did not know the answer, and the remaining 13 per cent ( $n = 65$ ) felt the child was being reluctant/was not credible. To see full descriptive statistics for participants' perceptions of children's responses by prompt refer to Table 3.

**TABLE 3** Participants' perceptions of the child's pseudotemporal responses for each question.

					Reasons why response is not appropriate		
					Didn't know	Didn't understand	Reluctant/ not credible
Invitation	Response	% appropriate	% could not determine	% not appropriate			
Conventional							
Tell me about the time he hit you.	Five weeks ago.	49%	4%	47% ( $n = 91$ )	6%	94%	0%
Tell me about the time Anna touched your pee pee.	She touched it a long time ago, like, two days ago.	56%	5%	39% ( $n = 75$ )	7%	86%	7%
Temporal Ignorance							
Tell me about the time with him that something happened.	I do not know when it was.	34%	9%	57% ( $n = 111$ )	13%	80%	7%
Ok, tell me about the time your mom got really, really upset.	I do not really remember the day.	46%	10%	44% ( $n = 86$ )	15%	76%	9%
I do not know (IDK)							
Well so tell me everything that happened the time that Matt smacked your butt.	I do not know.	32%	16%	52% ( $n = 102$ )	25%	52%	23%
Tell me everything that happened the time that you remember the man touching you.	I do not remember.	46%	13%	41% ( $n = 81$ )	24%	49%	27%

## Differences by child response type

To examine whether participants' perceptions of the appropriateness of children's responses and their reasons for inappropriate responses differed by the type of pseudotemporal response the child gave we conducted a series of repeated measures ANOVAs. First, we examined perceptions of appropriateness with the type of children's pseudotemporal response (conventional temporal, temporal ignorance, IDK) entered as a within-subjects factor and the average rating of appropriateness entered as the dependent variable. Results revealed a significant effect of type of pseudotemporal response ( $F(2, 195) = 10.80, p < 0.001, \eta^2 = 0.05$ ). Post hoc least significant difference (LSD) tests revealed that participants reported the conventional temporal responses as being an appropriate answer significantly more than temporal ignorance responses ( $p < 0.001$ ) or IDK responses ( $p < 0.001$ ), indicating that if the child gave a substantive response (e.g. 'Five weeks ago'), even if temporal in nature and therefore a pseudotemporal response, participants considered it more appropriate than admitting lack of knowledge, temporal or not. There was no significant difference in ratings of appropriateness between temporal ignorance or IDK responses ( $p = 0.78$ ).

Next, for the participants who indicated the child's response was inappropriate ( $n = 555$ ), we examined the reasons why they felt the response was inappropriate. We conducted three separate repeated measures ANOVAs to examine whether the proportion of reasons for inappropriate child response (i.e. child did not know the answer, child did not understand the question, child is reluctant/not credible) differed across type of pseudotemporal response (i.e. conventional, temporal ignorance, IDK).

Participants' beliefs that the child did not know the answer to the attorney's question as an explanation for the inappropriate response significantly differed by the type of pseudotemporal response,  $F(2, 251) = 13.33, p < 0.001, \eta^2 = 0.05$ . Post hoc LSD tests revealed that participants most often felt the child did not know the answer when the child gave IDK responses ( $M = 0.09, SD = 0.23$ ), compared to both temporal ignorance responses ( $M = 0.04, SD = 0.14, p < 0.001$ ) and conventional temporal responses ( $M = 0.02, SD = 0.11, p < 0.001$ ). There was no significant difference across temporal ignorance and conventional temporal responses ( $p = 0.12$ ).

For the explanation that the child did not understand the attorney's question, there was a significant effect of type of pseudotemporal response ( $F(2, 251) = 13.38, p < 0.001, \eta^2 = 0.05$ ), whereby participants were most likely to respond with this explanation when the child's response was conventional temporal ( $M = 0.30, SD = 0.02$ ) compared to temporal ignorance ( $M = 0.22, SD = 0.02, p < 0.001$ ) or IDK ( $M = 0.19, SD = 0.02, p < 0.001$ ). There was no significant difference between temporal ignorance and IDK responses ( $p = 0.12$ ).

There was also a significant effect of type of pseudotemporal response for the explanation that the child's response was inappropriate because the child was reluctant or not credible,  $F(2, 251) = 21.83, p < 0.001, \eta^2 = 0.08$ . An LSD post hoc test revealed that participants were most likely to state reluctance/credibility as the source of an inappropriate response when the child gave IDK responses ( $M = 0.09, SD = 0.02$ ) compared to temporal ignorance ( $M = 0.03, SD = 0.01, p < 0.001$ ) and conventional temporal responses ( $M = 0.01, SD = 0.004, p < 0.001$ ). There was no significant difference between temporal ignorance and conventional temporal responses ( $p = 0.07$ ).

## Child response rephrasing

We asked participants to rephrase the child's response to demonstrate what the child was trying to say. The majority of participants indicated the child's responses (53%,  $n = 622$ ) were Time responses, such that participants rephrased or explained the child was giving information about when the event occurred. Only 14 percent ( $n = 163$ ) of responses were What Happened responses and 2 per cent ( $n = 25$ ) were Time + What Happened responses, suggesting few participants thought the child was giving information about what happened. However, 31 per cent ( $n = 360$ ) of responses were Unclear, suggesting that a large portion of participants felt that they could not determine the specific meaning of the child's response with the information given.

We examined whether participants' rephrasing of the child's response was affected by the type of pseudotemporal response the child gave by conducting a series of repeated measure ANOVAs. We conducted three separate tests with the proportion of response rephrasing category (i.e. Time, What Happened, Unclear) given across each type of pseudotemporal responses (Conventional Temporal, Temporal Ignorance, IDK) entered as the within subjects variable. We did not conduct any inferential statistics on the Time + What Happened responses because they were rare.

For Time rephrasing, there was a significant main effect of type of pseudotemporal response,  $F(2, 194) = 644.39, p < 0.001, \eta^2 = 0.77$ . A post hoc LSD test indicated that participants were significantly more likely to rephrase the child's response to be about time if the initial response was a Conventional Temporal response (i.e. they kept the response about time) ( $M = 0.92, SD = 0.21$ ) compared to initial Temporal Ignorance ( $M = 0.62, SD = 0.38; p < 0.001$ ) or initial IDK responses ( $M = 0.04, SD = 0.01; p < 0.001$ ). Additionally, they rephrased initial Temporal Ignorance responses into Time language more often than initial IDK responses ( $p < 0.001$ ).



There was also an effect of type of pseudotemporal response for What Happened rephrasing,  $F(2, 194) = 23.41$ ,  $p < 0.001$ ,  $\eta^2 = 0.11$ . A post hoc LSD test revealed that participants were the least likely to rephrase initial Conventional Temporal responses ( $M = 0.02$ ,  $SD = 0.11$ ) into What Happened responses, compared to both initial Temporal Ignorance responses ( $M = 0.10$ ,  $SD = 0.22$ ,  $p < 0.001$ ) and initial IDK responses ( $M = 0.14$ ,  $SD = 0.23$ ,  $p < 0.001$ ). But they were equally likely to rephrase initial Temporal Ignorance responses and IDK responses into What happened responses ( $p = 0.02$ ).

Finally, for Unclear rephrasing, there was again a main effect of type of pseudotemporal response,  $F(2, 194) = 76.23$ ,  $p < 0.001$ ,  $\eta^2 = 0.28$ . An examination of the means using post hoc LSD tests indicated that participants indicated (through rephrasing) that the child's initial IDK responses ( $M = 0.31$ ,  $SD = 0.24$ ) were Unclear significantly more than they did for the child's initial Temporal Ignorance responses ( $M = 0.26$ ,  $SD = 0.35$ ,  $p = 0.04$ ) or initial Conventional Temporal responses ( $M = 0.03$ ,  $SD = 0.15$ ,  $p < 0.001$ ). They also rephrased the child's initial Temporal Ignorance response as Unclear significantly more often than they did for initial child's Conventional Temporal responses ( $p < 0.001$ ).

## DISCUSSION

The current study examined adults' interpretations of both invitations using the word 'time' and children's pseudotemporal responses to these invitations. Overall, in line with our predictions, the majority of adults did not interpret invitations using the word 'time' as a request for temporal information, and thought the questions to be clear, not difficult, and age appropriate for elementary school children. However, the percentage of adults that did interpret invitations using the word 'time' as requesting information about the time was surprising (14%). Furthermore, we found that the phrasing of the pseudotemporal invitation and the child's response largely influenced adults' perceptions.

### Perceptions of pseudotemporal invitations

Though some adults did mistakenly interpret invitations using the word 'time' as requesting temporal information, this was more often the case for invitations phrased as *about the time* (18%) compared to *what happened* (7%). This mirrors the findings of both laboratory and field research with children. Laboratory research found that six- to nine-year-old children were more likely to give pseudotemporal responses to *about the time* invitations compared to *what happened* invitations (McWilliams et al., 2023). Field research also observed this pattern of results, whereby children were more likely to give pseudotemporal responses to *about the time* invitations compared to *what happened* invitations in forensic interviews (Friend et al., 2022). Additionally, Friend et al. (2022) found that older children were as susceptible to this mistake as younger children. Their results indicated that, 10- to 15-year-old children gave conventional temporal answers to 15 per cent of *about the time* invitations and 4 per cent of *what happened* invitations. But four- to nine-year-old children gave conventional temporal responses to 8 per cent of *about the time* invitations and 7 per cent of *what happened* invitations. Taken together, these findings suggest that, for some, *about the time* invitations remain unclear through adolescence and into adulthood.

Adults also rated both *about the time* invitations and *what happened* invitations as clear and only somewhat difficult, and even found *what happened* invitations to be more difficult than the *about the time* invitations. Furthermore, adults reported that *about the time* invitations could be asked of younger witnesses than *what happened* invitations. This was surprising, given that *what happened* invitations are thought to be the optimal form of the question and have been repeatedly shown to be less likely to lead to pseudotemporal responses (Friend et al., 2022; McWilliams et al., 2023). Unfortunately, these findings may suggest that adults are failing to recognise the lack of clarity in *about the time* questions. However, there is another possible explanation for these findings. The *what happened* questions used in the current study design were grammatically challenging and included an extra clause compared to the *about the time* invitations. It is possible that this difference in sentence structure complexity may have hindered perceptions of the difficulty of *what happened* questions. Therefore, future work will need to measure adults' perceptions of these invitations while keeping the content and structure of the invitation constant.

In addition to the influence of invitation phrasing, we were also interested in whether the presence of a child's response compared to reading the invitation alone, would influence how adults perceive the question. We found that when participants viewed the question alone they rated the invitations as clearer and more appropriate for younger children, compared to when they saw the invitation paired with the child's response. This suggests that often adults do not automatically see ambiguity in these invitations, but rather the exposure to the children's errors or inability to answer the questions is needed to negatively influence participants' perceptions of the questions. This information is important for forensic interviewers and attorneys who question children as it demonstrates that lay adults may blame an

interviewer for a child's difficulties in responding, which means a mistake to an ambiguous pseudotemporal invitation may not fully undermine a child's credibility.

## Invitation rephrasing

When asked to rephrase the attorneys' invitation, the majority of the adults (80%) changed the question in some way, suggesting that they felt the invitation could be improved upon. However, both invitation phrasing and child response condition interacted to influence whether participants changed the invitation. Participants were least likely to change *about the time* invitations in the Response Absent condition, suggesting absent a child's error, participants were less likely to see a problem with these invitations (compared to *what happened* invitations and Response Present *about the time* invitations). This is consistent with our findings on rating of difficulty and age appropriateness which seem to suggest that participants find *about the time* invitations to be easier questions for young children compared to *what happened* invitations, until they are exposed to children's responses. However, as mentioned above, it is important to note that our *what happened* invitations did include an extra clause, compared to the *about the time* invitations, meaning it is possible that participants may have had a problem with these particular *what happened* invitations, rather than the overall concept. Future research will need to explore this possibility by examining participants' perceptions of *about the time* and *what happened* invitations that keep the general sentence structure consistent.

Among the changed invitations, we also examined the focus of the response to determine how changes the participants may have made altered the focus of the questions. Our results indicated in their rephrasing over half of the adults kept the focus of the invitations to be about what happened, indicating that many seem to recognise the purpose of these questions is to obtain narrative information about what happened from the children. However, there was variation in their responses suggesting that many interpreted these invitations to be something other than a request for a narrative account of what happened. Twenty per cent of responses were off topic, meaning the participants narrowed the focus of the question into something other than a request for what happened or a question about time, such as 'Did he ever hit you' or 'Why did your mom get angry?' These responses could mean the participants misunderstood the goal of the initial invitation, however, they could also reflect a belief of some participants that more narrowly focused questions are better for extracting information from young witnesses. Another 18 per cent either did not see an issue with the ambiguous temporal language (5% used pseudotemporal language) or thought the question was actually about time (13% rephrased to a true temporal question), which is concerning as it supports the findings above that the focus of pseudotemporal invitations are not entirely clear, even for adults.

Invitation phrasing and child response condition influenced the focus of participants rephrasing, largely suggesting that while participants rated *about the time* invitations as clear and only somewhat difficult, their interpretation of these prompts changed based on the information presented, which was not true for *what happened* invitations. However, it is important to note the responses that participants saw to the *about the time* invitations in the Response Present condition was also an explicit temporal misunderstanding, whereas the response to the *what happened* invitations were always IDK responses. Therefore, the effects we are seeing based on the child's responses may not be specific to the invitation type, but rather to the response type. Future research will need to investigate this important question.

## Perceptions of children's responses

Next, we were interested in how adults perceive children's responses (conventional temporal, temporal ignorance, IDK). Surprisingly, adults found conventional temporal responses, which are the most explicit pseudotemporal response (e.g. A: 'She touched it a long time ago, like, two days ago.'), to be the most appropriate response to these invitations, compared to both temporally ignorant responses (e.g. A: 'I don't really remember the day') or IDK responses. One interpretation of these findings is that adults are not aware that temporal responding is problematic, and that if children provide any substantive response, even if temporal in nature, adults view this as more appropriate than admitting lack of knowledge, either temporal or not. This finding was surprising given that the majority of adults identified the topic of the question to be what happened, not when the event happened, which suggests they should see a temporal response as a misunderstanding. However, a second interpretation of this is that there is an operationalisation issue with 'appropriate'. For example, it is possible that participants interpreted 'appropriate' to mean providing information and as a result found the lack of information in temporal ignorance and IDK responses inherently inappropriate. Unfortunately, we cannot answer this question with our data. Additionally, based on our design, we only know that adults find conventional temporal responses to *about the time* invitations appropriate, not conventional temporal responses to *what happened* invitations. As it is more likely that adults think *about the time* invitations are asking about time (compared to what happened invitations), it is possible that adults would not find conventional temporal responses

to *what happened* invitations as 'appropriate'. Future research will need to explore both of these questions to determine how adults define appropriate responding within the context of child interviewing and testimony.

Despite the interpretation, within the interviewing context, adults' negative perceptions of IDK responding is of concern. Especially if adults are misinterpreting IDK responses as the child saying they do not recall the event or as being a reluctant witness, in turn blaming the child for providing an inappropriate response, rather than picking up on the ambiguity that is causing the child to say they 'do not know' *when* the event occurred. Though it is perfectly reasonable for children not to remember specific details about an event, IDK responses have often been perceived as less credible (Aronson et al., 2021). Of note, the current study design was not fully counterbalanced as the IDK responses were always given in response to *what happened* invitations rather than *about the time* prompts. Adults were more likely to interpret *about the time* invitations to be about time, thus it is possible that IDK responses to *about the time* invitations would be deemed more appropriate because participants would be more likely to understand the possibility of the response meaning I do not know *when* it happened. However, we did test temporal ignorance responses (e.g. 'I do not remember when it was') to *about the time* invitations and they were deemed equally as inappropriate as IDK responses were to *what happened* invitations, suggesting this may not be the answer. Future research is needed to specifically test each invitation response pair to fully answer this question.

In addition to participants' ratings of appropriateness we also examined why participants felt the child's response was inappropriate, including because the child did not know the answer, the child did not understand the question and the child was reluctant/not credible. We found that the reasoning adults had for children's inappropriate questions differed depending on what type of response the child gave. Adults were most likely to believe the child did not know the answer or the child was being reluctant/lacked credibility when the child gave an IDK response, which suggests that adults are less likely to pick up on the ambiguity of pseudotemporal prompts when a child gives an IDK response. This suggests that IDK responses to invitations using the word 'time' are particularly problematic and subject to misinterpretation.

When children gave conventional temporal responses, adults were usually able to recognise that the child failed to understand the question. Thus, among those adults who deemed a conventional temporal response as inappropriate, there was an understanding that the temporal response was because the child misunderstood the invitation to be temporal in nature. However, we do not know whether participants who deemed conventional temporal responses appropriate had an inkling that there had been a miscommunication, limiting our ability to say that most adults perceive the ambiguity of a pseudotemporal invitation when a conventional response is given.

## Rewording of response

When asked to rephrase the child's response to indicate what the child was trying to say, the majority of participants (53%) provided phrasing or explanations that were temporal, suggesting that adults were interpreting the child's response as answering *when* the event occurred. Fewer responses provided information about what happened (14% What Happened, 2% Time + What Happened), indicating adults were less likely to interpret the child's response as providing information about *what happened*. A large number of responses also indicated participants felt the meaning of the child's response was unclear (31%). Participants' rephrasing of the child response was influenced by what type of temporal response the child gave. Adults were most likely to correctly identify conventional responses as temporal in nature, and were less likely to identify temporal ignorance and IDK responses as being about time. This is logical given that conventional responses specifically gave temporal information, whereas the meaning of temporal ignorance and IDK response answers were more ambiguous. They were also more likely to indicate that temporal ignorance responses were about time compared to IDK responses. These findings serve as an informal manipulation check as they indicate that participants picked up on the varying levels of explicit temporal information communicated in the child's responses. Consistent with our discussions above regarding the dangers of IDK responses, adults were more likely to rephrase an IDK response (compared to temporal ignorance and conventional responses) into a phrasing indicating the meaning to be *what happened*. Unfortunately, we did not expose participants to any IDK responses paired with *about the time* invitations, so it is unclear whether this finding is a product of participants' interpretation of IDK responses or their interpretation of the full attorney/child interaction (i.e. invitation paired with response). Future research will need to address this important question.

## Limitations and future directions

The current findings provide important insights into how adults perceive invitations with the word time and children's pseudotemporal responses. However, there are limitations to the current study that need to be addressed before we can fully apply these findings to the forensic interviewing context. For this study we took invitation and answer pairs from

a sample of real forensic interviews, which increased the ecological validity of our materials, but limited our control over the materials resulting in four specific limitations.

First, we found that children's IDK responses were ambiguous, and as such participants were most likely to vary in their interpretation of these responses. Additionally, our results hint that *about the time* invitations paired with IDK responses may be the most problematic combination. In those cases, the interviewer is asking for details about the event, whereas the child may be responding that they do not know when the event occurred. Because adults usually interpret *about the time* invitations to be requesting information about the event, they are likely to interpret child's unelaborated IDK responses as stating that the child has forgotten the entire event. However, we only tested participants' perceptions of IDK responses to *what happened* invitations so we cannot confirm that conclusion. Future research should examine whether adults are especially likely to misconstrue children's IDK responses when asked *about the time* invitations.

Second, in our materials the same answers were always given to the same invitations, which limited our ability to fully interpret our significant Phrasing  $\times$  Child Response condition interactions as well as our child response findings. Because the same answer was given to the same invitation we cannot fully determine if the differences in participants' perceptions were due to the child responses alone or the combination of the responses to the specific invitation. We did examine participants' perceptions of the invitations absent any response (Response Absent condition), which provides full insight into their interpretations of the invitations. But, in order to understand whether true Phrasing  $\times$  Child Response interactions exist, future research needs to examine a fully crossed design of invitation and response pairs.

Third, we did not test participants' perceptions of these invitations when the child did not give a pseudotemporal response. We can posit that the perceptions with no error would mirror those of participants who saw the invitations alone; however, this hypothesis will need to be tested.

Fourth, because we used questions from real interviews, the sentence structure and content of the invitations varied across each invitation. While this variation is representative of how these invitations are asked in practice, it makes it difficult to determine whether the findings are true differences between *about the time* and *what happened* invitations or simply a product of variations in general sentence structure. For example, we found that participants rated *what happened* invitations as more difficult than *about the time* invitations. It is possible that adults are completely unaware of the ambiguity of *about the time* invitations and prefer them over *what happened* invitations. However, it is also possible that the *what happened* invitations used in this study are more grammatically confusing or 'difficult' than the *about the time* invitations used and that the difficulty differences observed would not be present with a more simplistic version of a *what happened* invitation. Thus, it will be important for future research to compare these two invitation types while holding the question structure and content constant (e.g. 'Tell me about the time he hit you' compared to 'Tell me what happened the time he hit you').

## Conclusion

Forensic interviewing is critical in cases of alleged child maltreatment, as children's reports are often the strongest pieces of evidence (Cross & Whitcomb, 2017). However, young witnesses have vulnerabilities that make obtaining reliable, accurate and detailed reports more difficult than when interviewing adult witnesses (McWilliams et al., 2012). While standardised forensic interviewing protocols have greatly improved how we interview children, miscommunications between children and interviewers still arise. The current study examined one potential cause of ambiguity in forensic interviews, invitations using the word 'time'. Our findings suggest that when evaluating invitations using the word time, adults do not recognise the ambiguity inherent in these invitations, and rate them as clear and only somewhat difficult for elementary school-aged children. The phrasing of the invitation does matter for adults' understanding, as they (like children and adolescents) are more likely to give pseudotemporal responses to *about the time* invitations compared to *what happened* invitations. The presence of a child's pseudotemporal response also matters, as it sometimes alerts adults to the potential problems of these questions, whereby children's errors negatively influence adults' perceptions of these questions. If the child overtly indicates that they do not recall the time of an event, adults may see the problem. But if the child simply says 'I don't know', adults may not know whether the child is referring to the event or the time of the event.

These findings are important for all professionals that interview children as they provide evidence that invitations using the word time are ambiguous for both adults and children. Additionally, unelaborated answers to invitations using the word time may be misunderstood by lay audiences who fail to detect the ambiguity in these questions. Given that interviewers do not always follow up when children make pseudotemporal errors, and instead change the topic or turn to more direct lines of questioning (Friend et al., 2022), these miscommunications have the potential to negatively affect communications with children. And, unfortunately, adult factfinders may fail to see the source of the problem. However, interviewers who are trained on pseudotemporal issues can avoid these pitfalls by using (and encouraging others to use) *what happened* invitations and following up on unclear or unelaborated responses to invitations using the word time.



## CONFLICT OF INTEREST STATEMENT

None.

## ETHICS STATEMENT

We complied with all of APA's ethical standards when conducting the research and the project was approved by the CUNY Human Research Protection Program (HRPP) at John Jay College, protocol number 2022-0384-JohnJay.

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