

RESEARCH ARTICLE

Pronoun Anaphora and Children's Developing Abilities to Backward Reference in Criminal Cases of Alleged Child Sexual Abuse

Ciara Ruiz-Earle¹  | Colleen E. Sullivan²  | Stacia N. Stolzenberg¹ 

¹Arizona State University (Criminology and Criminal Justice), Phoenix, Arizona, USA | ²Arizona State University (School of Interdisciplinary Forensics), Glendale, Arizona, USA

Correspondence: Colleen E. Sullivan (cesulli3@asu.edu)

Received: 3 April 2024 | **Revised:** 11 July 2024 | **Accepted:** 12 September 2024

Funding: The authors received no specific funding for this work.

Keywords: children's backward referencing | children's misunderstanding | children's testimonies | criminal trial testimonies | pronoun anaphora

ABSTRACT

In child sexual abuse (CSA) testimony, attorneys may ask children questions containing pronoun anaphora (e.g., “Where was your Dad?” “What did he do?” *he* is a pronoun anaphora for referent, *Dad*). To answer these questions, children must recall the pronoun's referent and appropriate answer to the question. This may be too complex a cognitive task for young children, especially when there are multiple question-and-answer (Q–A) turns between the referent and pronoun, leading to misunderstanding. We examined Q–A pairs containing pronouns in 40 CSA testimonies of 5 to 10-year-olds. Many attorneys' questions (24%) contained pronouns. Attorneys averaged 4.11 Q–A turns between the referent and pronoun. With each additional Q–A turn, the likelihood of misunderstanding increased. Children's age was also associated with a significant decrease in misunderstanding, meaning older children exhibited fewer misunderstandings. To reduce misunderstanding, those questioning children should clarify the referent quickly when their question contains pronoun anaphora.

1 | Introduction

When interviewing children about alleged sexual abuse, it is generally recommended that interviewers ask short and simple questions because they are more cognitively appropriate for children's developing linguistic skills (La Rooy et al. 2015). In child sexual abuse (CSA) trial testimony, prosecutors will likely attempt to follow best practice recommendations and ask children short and simple questions (Lamb et al. 2018), while defense attorneys may ask children vague and complex questions to undermine the credibility of the child's testimony (Andrews, Lamb, and Lyon 2015; Evans, Lee, and Lyon 2009; Sullivan et al. 2022). One understudied side-effect of the above

is that the prosecution's motivation to keep questions short and simple and the defense's motivation to keep questions vague may lead both attorneys to use pronoun anaphors (e.g., *he*, *she*, *they*) when questioning children about alleged abuse. This is important, because it is likely that pronoun anaphora can lead to miscommunications, which can have clear legal implications for how children's reports are understood and then assessed for credibility.

Pronoun anaphora in attorney questioning occurs when pronouns are used in place of the initial referent (e.g., “Where was Sam?” “I don't know.” “Was *he* in the room?” “Yes”). To properly respond to questions containing pronoun anaphora,

A portion of the data in this manuscript was presented for Ciara Ruiz-Earle's M.S. thesis. The data in this manuscript have been disseminated via a conference presentation at the 2024 Annual Meeting of the American Psychology-Law Society. This study's design was not pre-registered.

children must refer back (i.e., backward reference) to the question that contained the referent (e.g., “Sam”). This places additional cognitive demands on the child because they must recall the referent *and* think of the appropriate response to the question. The cognitive load may be even greater when there are multiple question-and-answer (Q–A) turns between the referent and pronoun, and when the pronoun could reasonably refer to more than one individual (e.g., “Where were Sam and Max?” “I don’t know.” “Was he in the room?” “Yes”). The added cognitive load required to answer questions with pronoun anaphora may lead to children’s misunderstanding (Sullivan et al. 2022). However, no published studies have examined: (1) how often attorney questions contain pronoun anaphora during children’s courtroom testimony, (2) whether the number of Q–A turns between a referent and pronoun (i.e., backward referencing distance) predicts misunderstanding from children respondents, and (3) whether the number of individuals a pronoun could refer to predicts misunderstanding from children respondents. To ensure best practices when questioning children about abuse and help prosecutors avoid misunderstanding, it is critical to examine how pronoun anaphora predicts children’s clear misunderstandings in courtroom questioning.

Through analysis of Q–A pairs from CSA criminal court trial transcripts, the current study examined how often attorney questions contained pronoun anaphora and whether backward referencing distance (i.e., the number of question-answer turns since the original referent) and number of individuals the pronoun could reasonably refer to predicted children’s misunderstandings.

2 | Children’s Understanding of Pronoun Anaphora

Anaphora generally refers to a word being substituted for a previously mentioned word, phrase, or concept. One of the most common uses of anaphora are pronouns in place of a subject name, for example, “Bill is moving to New York. He is very excited.” In this sentence, “Bill” is the initial referent and “he” is a pronoun anaphora for “Bill.” Rather than repeating the same name multiple times, pronouns can be used to shorten and simplify sentences. However, the use of pronouns can be ambiguous and quickly cause confusion when the initial referent is unclear, particularly when children are answering questions containing pronoun anaphora.

When a question contains a pronoun, the respondent must link the pronoun to its referent; researchers have found this task to be challenging for young children, particularly when the pronoun is vague (Sekerina, Stromswold, and Hestvik 2004; Tyler 1983). In a study that compared 4–7-year-old children with adults, researchers found that children were significantly slower than adults in linking an ambiguous pronoun to its referent (e.g., “The boy placed the box behind him;” when shown a picture of a boy placing a box behind a man) (Sekerina, Stromswold, and Hestvik 2004). When children are testifying to alleged sexual abuse in court, where they are frequently recalling details about abuse after a delay and are likely experiencing stress, the cognitive demands of linking an ambiguous anaphora to its referent

may be too difficult for children, especially young children, leading to misunderstanding.

Pronoun anaphora can be particularly ambiguous when there are multiple Q–A turns between the referent and pronoun. If the referent and pronoun are in the same Q–A pair or one Q–A turn apart, referencing backward and identifying the pronoun’s referent may not introduce much cognitive demand for children. However, as the number of Q–A turns between the referent and pronoun increases, the referent may become more difficult to recall and the pronoun becomes more ambiguous. In these instances, backward referencing may place a heavy cognitive load on children, leading to confusion and misunderstanding. For example, working memory must hold the referent in mind through multiple Q–A turns. In addition, inhibition may be implicated when there are distractions and interruptions, and the child must inhibit salient distractions and remain focused on the dialogue to be able to backward reference; as such, distractions between the Q–A turns, such as interruptions, introduce an additional cognitive burden that makes backward referencing even more difficult (Arnold 2010). This is especially relevant in a courtroom where objections can easily interrupt the flow of questioning. However, no published studies have examined how the number of Q–A turns between the referent and pronoun predict misunderstanding in children’s CSA trial testimony.

Pronoun anaphora can also be ambiguous when the initial question contains more than one referent and it is unclear who the pronoun is referring to. For example, consider the question, “So you were with Bill and Sam. And what did he do?” In this question, the initial subject that the pronoun “he” is referring to could reasonably be Bill or Sam. Using a pronoun instead of a subject name when there are multiple possible referents takes significantly longer to process (Gernsbacher 1989). Furthermore, identifying the initial referent is more difficult for children when there are multiple possible referents (Sekerina, Stromswold, and Hestvik 2004). However, no published studies have examined whether the number of individuals a pronoun could reasonably refer to predicts children’s misunderstanding in trial testimony. Given the limitations in the literature, the current study examined how the number of Q–A turns between the initial referent and pronoun and the number of individuals the pronoun could reasonably refer to predicted children’s misunderstanding in CSA trial testimony.

3 | Pronoun Anaphora in Trial Testimony

Questions containing pronoun anaphora may be particularly difficult for children when testifying in court because of the mental stress the courtroom environment can create. In the courtroom, children must answer questions in an environment they are unfamiliar with (Pantell 2017), in front of a crowd, and with the alleged perpetrator present. The stress of CSA trial testimony can lead to reduced memory capabilities among children (Nathanson and Saywitz 2003). Due to this stress, backward referencing and recalling the correct referent, particularly when there are many Q–A turns between the referent and pronoun and numerous possible referents, may be particularly difficult for children. The stress of trial testimony may, in turn, increase the likelihood of

brief, unelaborated responses from children and clear misunderstanding in response to questions with pronoun anaphora.

Since both attorneys may frequently ask children questions containing pronoun anaphora, and these questions may be particularly likely to elicit misunderstanding in the courtroom, it is critical to examine the use of pronoun anaphora in CSA trial testimonies. Few studies have examined attorneys' use of pronoun anaphora during children's testimony, and these studies are limited in several respects. No published studies have examined how often attorney questions contain pronoun anaphora during children's trial testimony and whether the use of pronoun anaphora predicts clear misunderstanding.

3.1 | Prior Research on Anaphora in Trial Testimony

Few researchers have assessed the use of anaphora in courtroom questioning. Those who have noted that responding to questions with anaphora and particularly, "backward referencing," may be difficult for children (Brennan 1995; Kranat and Westcott 1994; Sullivan et al. 2022; Zajac and Cannan 2009). One practice guide for child interviewers warned against the use of ambiguous anaphora (Walker 2013). However, this research merely noted the occurrence of anaphora and that it might create issues for children. In these prior studies, researchers did not examine the frequency with which anaphora was used or how backward referencing distance and other vague uses of anaphora can predict children's misunderstanding.

One published study by Sullivan et al. (2022) qualitatively explored children's misunderstanding when describing the body mechanics of an abuse incident in CSA trial testimony. In this study, the researchers found that questions containing anaphora and elliptical questions (i.e., questions that include an omission of one or more elements from an utterance: e.g., "Did you say anything?" "Did your mom?" where "say anything" is elided from the second question) contributed to 18% of clear misunderstandings (i.e., child expressed confusion, offered inconsistent details, offered a clearly inappropriate level of detail, and/or failed to provide clear and informative answers after repeated questioning) between attorneys and children. This study, however, included elliptical questioning and other forms of anaphora in their categorization and explored anaphora qualitatively. Although elliptical questioning is related to anaphora because it involves word omission, including elliptical questioning in this category means the influence of pronoun anaphora alone in leading to misunderstanding is unclear. Furthermore, because this study explored anaphora qualitatively and assessed other forms of anaphora (e.g., "it" and "that" to describe abusive acts), the researchers did not examine how backward referencing distance and number of individuals a pronoun could refer to statistically predicted the likelihood of misunderstanding. As such, while Sullivan et al. (2022) identified that anaphora leads to misunderstanding in CSA trial testimony, the current study examined two factors (backward referencing distance; number of possible referents) that may partially explain *why* the use of anaphora can lead to child misunderstanding.

4 | Examining Misunderstandings in Children's Trial Testimony

Misunderstandings between the child and attorney may undermine the credibility of the child's testimony, because if the child does not overtly express confusion (e.g., "I don't get what you mean") then misunderstanding indicates that the child's response was inconsistent or clearly under-informative (Sullivan et al. 2022). When children's responses are unclear or inconsistent due to misunderstanding, this can negatively affect their perceived credibility (Denne et al. 2020; Tabak and Klettke 2014). It is therefore critical to examine the types of questions that elicit misunderstandings between children and attorneys in CSA trial testimony. However, due to children's typical response patterns when answering questions in court, it is challenging to accurately capture misunderstanding.

It is difficult to study children's misunderstanding during trial testimony because children often do not display overt misunderstanding and rarely request for clarification (Malloy et al. 2015). Sullivan et al. (2022) captured misunderstanding if the child expressed confusion, offered inconsistent details, offered a clearly inappropriate level of detail, and/or failed to provide clear and informative answers after repeated questioning. However, attorneys' questions during trial testimony are primarily closed-ended (e.g., yes/no questions; Andrews, Lamb, and Lyon 2015; Andrews et al. 2016; Stolzenberg et al. 2020), and children most often display formal reticence, where they provide minimally sufficient responses to answer the questions (e.g., "yes" or "no" without additional elaboration; Stolzenberg and Lyon 2017; Stolzenberg and Lyon 2014). Furthermore, in response to closed-ended questions children will likely guess rather than express uncertainty (Fritzeley and Lee 2003; Waterman and Blades 2013). As such, a child may misunderstand a question but simply respond "yes" or "no," and if their "yes" and "no" responses are not clearly inconsistent, a misunderstanding would not be captured. The current study used Sullivan et al. (2022) coding scheme to capture misunderstanding, but our frequency of misunderstandings was likely underestimated. Because of this, we also qualitatively explored attorneys' questions in which a vague pronoun was used and children provided minimally sufficient responses when answering the question.

5 | Current Study

We examined whether pronoun anaphora, backward referencing distance, and number of individuals the pronoun could refer to predicted children's misunderstanding in CSA criminal court testimonies. As few studies have examined pronoun anaphora in this context, we assessed the frequency of pronoun anaphora and hypothesized that these questions would be common in trial testimonies. Given the cognitive demands associated with backward referencing, we further hypothesized that as the number of Q-A turns between the initial referent and pronoun increased, the likelihood of misunderstanding between the child and attorney would increase. Finally, we hypothesized that as the number of individuals the pronoun could reasonably refer to increased, the likelihood of misunderstanding between the child and the attorney would increase. We reasoned pronouns that could refer to more than one individual should introduce greater ambiguity, leading to increased misunderstanding. Finally, to capture additional

questions that were difficult but children did not display clear misunderstanding, we qualitatively explored attorneys' vague use of pronoun anaphora and children's brief, unelaborated responses.

6 | Method

6.1 | Sample

This study examined archival data and was categorized as exempt by Arizona State University's Institutional Review Board (IRB). We examined 40 testimonies of children 5 years old to 10 years old ($M_{\text{age at trial}} = 8$ years old, $SD = 1.54$ years) in criminal court cases of Child Sexual Abuse (CSA). Because criminal cases are public record, the Maricopa County District Attorney's Office provided us with information regarding 398 victims in 252 cases of CSA prosecuted between January 2005 through December 2015 in Maricopa County. Cases were eligible for our initial sample if they included at least a single charge of Sexual Conduct with a Minor (A.R.S.13-1405), Child Molestation (A. R.S. 13-1410) or Sex Abuse (A. R.S. 13-1404). We contacted and paid court reporters to provide transcripts of completed cases; 73 court reporters were contacted and 47 provided transcripts (64% response rate). We were unable to obtain transcripts when the court reporters could not identify the court records, retired, moved, or were otherwise unreachable. We received 214 complete victim's testimonies across 142 cases (some cases included multiple victims). Of these 214 testimonies, 134 were minors at testimony (across 101 cases; $M_{\text{victim per case}} = 1.33$, $SD_{\text{victim per case}} = 0.65$); the remaining transcripts involved young adults testifying about alleged victimization during their childhood. For the purposes of the current study, we examined the 40 testimonies involving the youngest child witnesses (5- to 10-year-olds). We chose to focus on a younger age range based on prior research that younger children struggle with vague pronoun use (Sekerina, Stromswold, and Hestvik 2004).

Children in our sample were 90% female. Children were 27.5% White, 30% Latino, 5% Black, 5% Asian, 2.5% Native Indian/Alaska Native, and 30% unknown. Defendants in our sample were 50% White, 42.5% Latino, 5% Black, and 2.5% Native Indian/Alaska Native. Defendants (97.5% male) were the child's parent or caregiver 27.5% of the time, another family member 27.5% of the time, a stranger 5% of the time, and categorized as 'Other' in 40% of cases. Children alleged penetration or attempted intercourse in 15% of cases, oral copulation or genital contact in 10% of cases, and less severe abuse (e.g., fondling, exhibitionism) in 50% of cases, and other/unclear in 25% of cases. About half of the children in our sample (52%) alleged repeated abuse. Eighty-five percent of cases resulted in a conviction of at least one charge.

6.2 | Coding

6.2.1 | Pronoun Anaphora Coding

We began by identifying all Q-A Pairs that contained a pronoun anaphora. The following pronouns were machine identified: She, Her, Hers, Herself, He, Him, His, Himself, They, Them, Their, Theirs, Themselves. Then, two coders coded the number of Q-A Turns that occurred between the initial referent and pronoun, the number of individuals a pronoun could reasonably

refer to, and whether the attorney or child provided the referent. Take, for example, the following turns of Q-A Pairs from a trial transcript:

Q-A Pair 1:

Q. And did you—did **Becca** tell you what to talk about when you were talking to **Barb**?

A. No.

Q-A Pair 2:

Q. Did **she** tell you what to say?

A. No.

Q-A Pair 2 contains the identified pronoun (she) and Q-A Pair 1 contains the referents (Becca; Barb). As such, there is one Q-A turn between the referents and pronoun. There are 2 possible referents because there are 2 individuals that "she" could refer to, "Becca" and "Barb." The attorney offered the initial referents, as both "Becca" and "Barb" are named in the attorney's question.

Our gold standard coder first coded the entire sample. Then, a second research assistant coded the first 25% of the sample and reliability was assessed. Cohen's Kappa exceeded 0.81 for all variables, and percent agreement exceeded 88% for all variables. Specifically, for the number of Q-A turns between the initial referent and pronoun, $\kappa = 0.85$, 88% agreement; for number of people the pronoun could reasonably refer to, $\kappa = 0.86$, 95% agreement; for whether the attorney or child provided the initial referent, $\kappa = 0.81$, 98% agreement.

6.2.2 | Misunderstanding Coding

Two coders reliably assessed all Q-A pairs containing pronoun anaphora for probable misunderstandings. Both coders independently coded the entire sample and all disagreements were resolved to ensure 100% reliability. We used the same misunderstanding coding structure as Sullivan et al. (2022). Specifically, we coded a misunderstanding when: (1) the child expressed confusion (e.g., 'I don't get what you mean'); (2) provided inconsistent details (e.g., Q. 'Did he touch you with a different part of his body?' A. 'No.' Q. 'Did your dad touch you with his hand?' A. 'Yes.');

(3) provided a clearly inappropriate level of detail (e.g., Q. 'What were you wearing when he touched you?' A. 'Clothes.');

(4) failed to provide clear and informative answers after repeated questioning (e.g., Q. 'When you say he raped you, what do you mean?' A. 'He did adult stuff to me.' Q. 'When you say adult stuff, can you tell me what that means?' A. 'He did nasty stuff to me.').

Finally, we machine coded for terms that may indicate misunderstanding (e.g., "understand," "get it") as an extra measure to capture any overlooked misunderstandings.

7 | Results

Across the 40 cases examined, we identified a total of 2,940 attorney questions (24% of all questions asked) that included

pronoun anaphora (total sample = 12,314 questions). Within the questions containing pronouns, 75% contained masculine (he, him, his), 29% feminine (she, her, hers), and 11% plural (they, them, their) pronouns. The attorney offered the initial referent in 92% of Q–A pairs ($n = 2717$), whereas the child offered the referent in 6% of Q–A pairs ($n = 165$). In 1.6% of Q–A pairs, the initial referent could not be identified; the initial referent was so difficult to identify that two trained coders could not do so in these instances. We identified 146 pronoun anaphora Q–A pairs (5% of Q–A pairs containing pronoun anaphora) that were part of a clear misunderstanding.

7.1 | Backward Referencing Distance and Misunderstanding

Pronouns averaged a distance of 4.11 Q–A turns from their referent ($SD = 10.14$). At most, an attorney question contained a pronoun that was 146 Q–A turns away from its referent; there were 20 total instances where a pronoun was more than 50 Q–A turns from its referent. When children offered the referent, there was an average distance of 2.6 Q–A turns ($SD = 2.97$) between the pronoun and referent, compared to when attorneys offered the referent, where the average distance was 4.21 Q–A turns ($SD = 10.43$). This difference was marginally significant ($F(1, 2879) = 3.9$, $p = 0.048$, $\eta^2 = 0.001$), indicating the pronoun anaphora occurred closer to the referent if the child offered the referent first.

We conducted a logistic regression to examine whether the number of Q–A turns between the referent and pronoun (i.e., backward referencing distance) and age predicted the odds of a misunderstanding occurring (Table 1). The overall model was statistically significant $\chi^2(2) = 13.67$, $p < 0.001$. The model explained 1.4% (Nagelkerke R^2) of the variance in misunderstanding and correctly classified 95% of cases. With each 1-Q–A pair increase in backward referencing distance, a misunderstanding was 1.02 times more likely to occur ($b = 0.02$, $S.E. = 0.01$, Wald $\chi^2(1) = 14.4$, $p < 0.001$, 95% CI [1.01, 1.03]). With each 1-year increase in age, a misunderstanding was 0.88 times less likely to occur ($b = -0.13$, $S.E. = 0.06$, Wald $\chi^2(1) = 4.89$, $p = 0.027$, 95% CI [0.79, 0.99]). This pattern of results is consistent when outlier instances longer than 50 Q–A turns are removed from the analysis.

7.2 | Number of Possible Referents for Pronoun and Misunderstanding

We observed 342 Q–A pairs (12%) that contained pronouns that could reasonably refer to more than one person. For example, in

the testimony of a 7-year-old female, a prosecutor question about an abuse incident contained a pronoun, “he,” that could reasonably refer to 2 individuals, Logan and the child’s father:

Q: “What did he do? What did Logan do?”

A: “Logan knocked on the door.”

Q: “And what did your father say?”

A: “I don’t remember.”

Q: “Okay. Did Logan go into the room?”

A: “No.”

Q: “And each time he would rub your private?”

A: “Yes.”

In this instance the child provided primarily brief, unelaborated responses and did not display clear misunderstanding, but the pronoun referent was nevertheless vague.

We conducted a logistic regression on all anaphora Q–A pairs to examine whether the number of individuals a pronoun could reasonably refer to and child age predicted the odds of a misunderstanding occurring (Table 2). The overall model was statistically significant $\chi^2(2) = 19.92$, $p < 0.001$. The model explained 2% (Nagelkerke R^2) of the variance in misunderstanding and correctly classified 94.8% of cases. Contrary to our expectations, with each 1-person increase in the number of individuals a pronoun could refer to, a misunderstanding was 0.26 times less likely to occur ($b = -1.36$, $S.E. = 0.44$, Wald $\chi^2(1) = 9.36$, $p = 0.002$, 95% CI [0.11, 0.61]). With each 1-year increase in age, a misunderstanding was 0.89 times less likely to occur ($b = -0.13$, $S.E. = 0.06$, Wald $\chi^2(1) = 4.29$, $p = 0.038$, 95% CI [0.79, 0.99]).

7.3 | Other Ambiguous Pronoun Anaphora and Unelaborated Responses

We identified numerous additional questions where attorneys used vague pronoun anaphora. For example, there were 173 Q–A pairs (6%) where it was impossible to determine the number of individuals being referred to (e.g., Q. “[Who was] in the apartment, Hassan’s apartment?” A. “Everybody.” Q. “Everybody?” A. “Yes.” Q. “And where were they in the house or the apartment?”). Similarly, we were unable to identify the initial referent in 1.6% of Q–A pairs ($n = 47$).

TABLE 1 | Logistic regression of backwards referencing distance and age predicting misunderstanding.

Predictor	df	Wald	B	SE (B)	Odds ratio
Backward Referencing Distance	1	14.4**	0.02	0.01	1.02
Age	1	4.89*	−0.13	0.06	0.88
Constant	1	14.94**	−1.93	0.50	0.15

Note: Model $\chi^2(2) = 13.67$, $p < 0.001$.

* $p < 0.05$.

** $p < 0.001$.

TABLE 2 | Logistic regression of number of possible referents and age predicting misunderstanding.

Predictor	df	Wald	B	SE (B)	Odds ratio
# of Possible Referents	1	9.36**	−1.36	0.44	0.26
Age	1	4.29*	−0.13	0.06	0.89
Constant	1	0.34	−0.4	0.69	0.67

Note: Model $\chi^2(2) = 19.92, p < 0.001$.

* $p < 0.05$.

** $p < 0.001$.

We qualitatively examined the 47 Q–A pairs where coders could not identify the initial referent. These questions contained vague pronoun anaphora and, although children largely did not display clear misunderstanding, most of their responses were brief and unelaborated. Many questions with vague pronoun referents were about practicing testimony and disclosure ($n = 17, 36\%$), which could carry implications of coaching and have consequences for the child's credibility. Furthermore, many questions were leading and closed-ended.

For example, in the testimony of a 6-year-old girl, the defense attorney first asked the child, Q. "Now, before you came down here, your mom and you and your sister went to someplace and did anybody else tell you about what the courtroom was going to look like?" The child responded, A. "Yes." The attorney then followed up with a question containing the pronoun "they," Q. "Okay. And did they tell you that there were going to be some people listening to what you were going to be talking about?" Here, the referent for "they" was vague – "they" refers to "anybody else" that the child talked to "someplace." In response to this question, the child simply responded, A. "Yes."

In the testimony of another 6-year-old girl, when talking about a prior interview the prosecutor asked, Q. "And do you remember telling the ladies those things?" A more specific initial referent could not be identified in preceding Q–A pairs. The child simply responded, A. "No." Three Q–A turns later, the attorney asked, Q. "Okay. When you told them about the things that happened -- well, what don't you remember?" Again, it is unclear who "them" is referring to beyond "the ladies." In response to this question, the child responded, A. "Nothing."

In the testimony of an 8-year-old girl, the defense attorney asked, Q. "And a whole bunch of other people [talked to you], too; didn't they?" The child responded, A. "Yes." Four Q–A turns later, the attorney asked, Q. "Okay. And sometimes some of those people, would they tell you what they thought the truth might be?" The child responded, A. "Yes." Two Q–A turns later, without clarifying a referent beyond "people," the attorney asked, Q. "And did it help to have people sometimes tell you what they thought really did happen?" Again, the child simply responded, A. "Yes."

In the testimony of a 9-year-old girl, the defense attorney asked, Q. "...Have you talked to Bianca about what happened? Is that what I asked you?" and the child responded, A. "Yes." Here, the referent was clear—Bianca, who was referred to by feminine

pronouns (she/her) in prior questions. However, 3 Q–A turns later, the attorney used a plural pronoun "them," seemingly to refer to Bianca, Q. "And you told me that you talked a little bit with them about it but not all of it; is that right?" The child responded, A. "Yes."

Finally, in the testimony of a 10-year-old girl, the defense attorney asked, Q. "After you had made your relation to Cassie, did you have an interview with a woman? Do you remember that interview?" The initial referent is vague, "a woman." The child responded, A. "Yes." Two Q–A turns later, the attorney used a plural pronoun "them," seemingly to refer to the woman, Q. "And you told them that your grandpa -- the next thing you said was that your grandpa was teaching you dirty stuff that you're not supposed to learn yet; is that right?" The child responded, A. "Yeah."

These qualitative examples demonstrate that, although children did not often express clear misunderstanding, many attorneys asked children about prior disclosures through using pronoun anaphora without a clear initial referent, and children provided brief, unelaborated responses to these questions, consistent with formal reticence, and at times assented to coaching.

8 | Discussion

The purpose of the current study was to examine the use of pronoun anaphora in children's trial testimonies, and whether backward referencing distance and number of individuals a pronoun could refer to predicted misunderstanding. We examined 40 criminal trial testimonies of 5 to 10-year-old children. Overall, attorneys frequently used pronoun anaphora throughout children's testimonies; one out of every four Q–A pairs contained a pronoun.

Pronoun usage is not inherently problematic. It becomes problematic when the referent is unclear and multiple Q–A turns away from the pronoun, as the respondent may misinterpret to whom the pronoun refers. We found that attorneys averaged more than 4 Q–A turns between the referent and pronoun. In the most extreme instance, a pronoun was 146 Q–A turns away from its referent. Although most pronouns were less than 20 Q–A turns away from the referent, there were several instances where pronouns were more than 50 Q–A turns away from the referent. As such, we found that children must do considerable backward referencing to answer questions containing pronoun anaphora during CSA trial testimony. However, children did not frequently display clear misunderstanding; only 5% of Q–A pairs containing pronoun anaphora produced a clear misunderstanding.

Although misunderstandings were relatively infrequent, we hypothesized that as the number of Q–A turns between the referent and pronoun increased (i.e., backward referencing distance increased), the likelihood of a misunderstanding between the child and attorney would also increase. This hypothesis was supported. Researchers have qualitatively observed that during trial testimony, questions containing anaphora place additional cognitive demands on children (Brennan 1995) and lead to misunderstanding (Sullivan

et al. 2022). Furthermore, researchers have experimentally shown that 5- to 10-year-old children are slower than adults at processing sentences containing pronoun anaphora (Sekerina, Stromswold, and Hestvik 2004; Tyler 1983), with 5-year-old children experiencing the most difficulty (Tyler 1983). In the current study, we found that backward referencing distance was associated with a significant increase in misunderstanding and age was associated with a significant decrease in misunderstanding. This provides further evidence that the additional cognitive strain backward referencing places on children, compounded with the cognitive demands of recalling the answers to attorney questions and stress of the courtroom environment, overwhelms young children's cognitive abilities, likely leading to an increase in misunderstanding.

Because pronouns with numerous possible referents are vague, we further hypothesized that as the number of individuals the pronoun could reasonably refer to increased, the likelihood of a misunderstanding would also increase. This hypothesis was not supported. We expected since children have more difficulty linking a pronoun to its referent when it is vague (e.g., "The boy placed the box behind him;" when shown a picture of a boy placing a box behind a man) (Sekerina, Stromswold, and Hestvik 2004), linking a pronoun to its proper referent when there are numerous possible referents would place an additional cognitive strain on children, leading to an increase in misunderstanding. Although we again found that age significantly decreased the likelihood of misunderstanding, we found that contrary to our expectations, as the number of individuals the pronoun could refer to increased, the likelihood of misunderstanding significantly decreased.

There are two potential explanations for this unexpected finding. First, it is possible that when a singular pronoun could refer to more than one individual, in most instances the referent was so clear given the context that it did not elicit misunderstanding. For example, if an attorney mentioned the child's sibling and the defendant in the same question and later asked about an abusive act using a pronoun (e.g., Q. "So Logan and your father were home?" A. "Yes." Q. "Okay. And then he rubbed your privates?"), most children may understand from the context that "he" refers to the defendant. Second, this unexpected finding may be due to our coding scheme. Specifically, we coded pronouns *they/them/theirs* as instances in which there were multiple possible referents, and many "they" pronouns referred to a clear duo or group of people. For example, "they" at times referred to the child's parents or another couple (e.g., Q. "Who did Tuesday live with?" A. "Drew." Q. "Did they used to be boyfriend and girlfriend?" A. "Yes"). Other "they" pronouns referred to a clearly defined group of people, such as law enforcement (e.g., Q. "Did you see the police when they came up to the door?"). As such, the inclusion of *they* pronouns in this coding scheme may have contributed to our unexpected finding that an increase in the number of individuals a pronoun could refer to led to a decrease in the likelihood of misunderstanding.

Finally, we qualitatively explored Q-A turns where the initial referent could not be identified. In many of these instances, both the prosecution and defense asked children about disclosure and referred to disclosure recipients in vague terms such as "those people," "the ladies," "anybody else," "a woman." Researchers

find that the majority of attorney questions in CSA trial testimony assess children's credibility, including questions about coaching and suggestive influence (Denne et al. 2020). While both attorneys are likely to ask children about credibility, they have different motivations that will influence the way their questions are phrased; namely, the prosecution is motivated to ask children short, simple questions, and defense attorneys are motivated to ask children vague questions (Zajac, Gross, and Hayne 2003). Our findings demonstrate that questions from both the prosecution and defense contained vague pronoun anaphora and were largely about prior disclosures, presumably to assess or challenge children's credibility. In response to these questions, children rarely exhibited clear misunderstanding but displayed formal reticence (Stolzenberg and Lyon 2017), where they provided brief, unelaborated responses and at times assented to coaching. When children are asked about prior disclosures through vague pronoun anaphora, their responses to such questions may undermine their credibility, even if they do not display clear misunderstanding.

8.1 | Limitations and Future Directions

This study had limitations that can be addressed by future research. First, the results of our logistic regression showed relatively small effects. However, because we examined children's testimony in the field, we were unable to assess the accuracy of children's responses and had to rely on clear expressions of misunderstanding (e.g., "I don't understand"). This likely led to an underestimation of children's misunderstanding, because in many instances, children may have misunderstood the question without displaying overt misunderstanding (e.g., by providing a simple "yes" or "no" response). Still, although misunderstandings were uncommon, they were significantly more likely to occur in questions containing pronoun anaphora with longer backward referencing distances. In addition, we could not determine with certainty that the misunderstandings we identified were due to the use of anaphora. In the future, researchers should experimentally examine children's misunderstanding in response to forensically relevant questions containing pronoun anaphora. Experimental studies would allow researchers to capture both overt misunderstandings and children's incorrect responses. If the experimental task does not require recall (so incorrect responses would not reflect forgetting), incorrect responses can serve as an additional indicator of child misunderstanding in response to anaphora. Furthermore, researchers examining anaphora and misunderstandings in child interview field transcripts should consider examining children's brief, unelaborated responses, particularly in response to questions with vague anaphora, as this type of response may mask misunderstandings.

An additional limitation was that "they" pronouns were always coded as potentially referring to multiple individuals in our coding scheme. Of all Q-A pairs containing pronouns with more than one possible referent, 47% ($n = 161$) contained a "they" pronoun, so this likely drove our unexpected finding that an increase in the number of possible referents led to a decrease in the likelihood of misunderstanding. As such, we did not precisely assess the phenomenon we were aiming to, where attorneys refer to two or more individuals (e.g., "Where were Bill and

Sam?”) and subsequently use a singular pronoun to refer to one of the individuals (e.g., “What did he do?”). In the future, researchers should separately examine instances in which a singular pronoun could refer to multiple individuals of the same gender (e.g., “he” could refer to the child’s father or brother) and whether these instances predict misunderstandings.

Finally, this is only one sample of data from one jurisdiction at one point in time, which may limit generalizability. For example, it is possible that a sample with a lower conviction rate might have differences in the use of pronoun anaphora, as well as in the frequency of children’s misunderstandings. Furthermore, in more recent courtroom testimonies attorneys, particularly prosecutors, may be increasingly aware of best practices for questioning children and may use pronoun anaphora less frequently. Only a handful of researchers internationally have collected samples of criminal trial testimonies in cases of alleged child sexual abuse. Researchers should continue to collect and analyze different samples, across time and from different locations, and examine attorney differences, to get a better assessment of attorney practices and children’s responses in a more global manner.

8.2 | Implications for Child Interviews

Those interviewing children about alleged sexual abuse should continue to ask children short, simple questions, as they are better suited for a child’s developing cognitive abilities (La Rooy et al. 2015). However, interviewers should be cautious to avoid pronoun anaphora in their questions and instead use individuals’ names. If a pronoun anaphora is used, interviewers should clarify the referent quickly to avoid misunderstanding. Interviewers should be particularly cautious to avoid asking children multiple questions using only pronouns without re-clarifying the referent, as this increases the likelihood of misunderstanding.

Prosecutors may want to object when defense attorneys ask children multiple questions using pronouns without re-clarifying the referent, as these questions are ambiguous, children have difficulty with ambiguous pronouns (Sekerina, Stromswold, and Hestvik 2004; Tyler 1983; Walker 2013) and backward referencing is difficult for young children (Brennan 1995; Kranat and Westcott 1994; Sullivan et al. 2022; Zajac and Cannan 2009). As such, research supports that these questions are not developmentally appropriate for young children. Prosecutor objections may be particularly important when defense attorneys ask children about prior disclosures and other difficult topics through a series of closed-ended questions containing pronouns, children must backward reference multiple Q–A turns to identify the referent, and children are providing brief, unelaborated responses to the questions. Children’s responses to such questioning may undermine their credibility to the jury (Tabak and Klettke 2014).

9 | Conclusion

This study examined the role of pronoun anaphora, backward referencing distance, and number of individuals a pronoun could refer to in predicting misunderstanding during CSA criminal court testimony. We found that attorneys regularly asked questions containing pronoun anaphora and continued for several

Q–A turns without clarifying the referent. With every additional Q–A pair between the referent and pronoun (i.e., backward referencing distance increased), misunderstanding was more likely to occur. To avoid misunderstanding, those interviewing children about alleged sexual abuse should clarify the referent quickly when their question contains a pronoun anaphora.

Author Contributions

Ciara Ruiz-Earle: conceptualization, investigation, writing – original draft, methodology, writing – review and editing, project administration. **Colleen E. Sullivan:** conceptualization, investigation, writing – review and editing, methodology, supervision, formal analysis. **Stacia N. Stolzenberg:** conceptualization, supervision, writing – review and editing, methodology, funding acquisition, data curation.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data and analysis code is available upon request by contacting the study team. This study examined archival data and was categorized as exempt by Arizona State University’s Institutional Review Board (IRB).

References

- Andrews, S. J., E. C. Ahern, S. N. Stolzenberg, and T. D. Lyon. 2016. “The Productivity of Wh-Prompts When Children Testify.” *Applied Cognitive Psychology* 30, no. 3: 341–349. <https://doi.org/10.1002/acp.3204>.
- Andrews, S. J., M. E. Lamb, and T. D. Lyon. 2015. “Question Types, Responsiveness and Self-Contradictions When Prosecutors and Defense Attorneys Question Alleged Victims of Child Sexual Abuse.” *Applied Cognitive Psychology* 29, no. 2: 253–261. <https://doi.org/10.1002/acp.3103>.
- Arnold, J. E. 2010. “How Speakers Refer: The Role of Accessibility.” *Lang & Ling Compass* 4, no. 4: 187–203. <https://doi.org/10.1111/j.1749-818X.2010.00193>.
- Brennan, M. 1995. “The Discourse of Denial: Cross-Examining Child Victim Witnesses.” *Journal of Pragmatics* 23: 71–91. [https://doi.org/10.1016/0378-2166\(94\)00032-A](https://doi.org/10.1016/0378-2166(94)00032-A).
- Denne, E., C. Sullivan, K. Ernest, and S. N. Stolzenberg. 2020. “Assessing children’s Credibility in Courtroom Investigations of Alleged Child Sexual Abuse: Suggestibility, Plausibility, and Consistency.” *Child Maltreatment* 25, no. 2: 224–232. <https://doi.org/10.1177/107759519872825>.
- Evans, A. D., K. Lee, and T. D. Lyon. 2009. “Complex Questions Asked by Defense Lawyers but Not Prosecutors Predicts Convictions in Child Abuse Trials.” *Law and Human Behavior* 33, no. 3: 258–264. <https://doi.org/10.1007/s10979-008-9148-6>.
- Fritzley, V., and K. Lee. 1994. “Do Young Children Always Say Yes to Yes–No Questions? A Meta developmental Study of the Affirmation Bias.” *Child Development* 74, no. 5: 1297–1313. Portico. <https://doi.org/10.1111/1467-8624.00608>.
- Gernsbacher, M. A. 1989. “Mechanisms That Improve Referential Access.” *Cognition* 32, no. 2: 99–156. [https://doi.org/10.1016/0010-0277\(89\)90001-2](https://doi.org/10.1016/0010-0277(89)90001-2).
- Kranat, V. K., and H. L. Westcott. 1994. “Under Fire: Lawyers Questioning Children in Criminal Courts.” *Expert Evidence* 3: 16–24.
- La Rooy, D., G. Heydon, J. Korkman, and T. Myklebust. 2015. “Interviewing Child Witnesses.” In *Communication in Investigative*

and *Legal Contexts*, edited by G. Oxburgh, T. Myklebust, T. Grant, and R. Milne, 55–78. Hoboken, NJ: John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781118769133.ch4>.

Lamb, M. E., D. A. Brown, I. Hershkowitz, Y. Orbach, and P. W. Esplin. 2018. *Tell Me What Happened: Questioning Children About Abuse*. Hoboken, NJ: John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781118881248>.

Malloy, L. C., C. Katz, M. E. Lamb, and A. P. Mugno. 2015. “Children’s Requests for Clarification in Investigative Interviews About Suspected Sexual Abuse.” *Applied Cognitive Psychology* 29, no. 3: 323–333. <https://doi.org/10.1002/acp.3101>.

Nathanson, R., and K. J. Saywitz. 2003. “The Effects of the Courtroom Context on Children’s Memory and Anxiety.” *Journal of Psychiatry & Law* 31, no. 1: 67–98. <https://doi.org/10.1177/009318530303100105>.

Pantell, R. H. 2017. “The Child Witness in the Courtroom.” *Pediatrics (Evanston)* 139, no. 3: 1–9. <https://doi.org/10.1542/peds.2016-4008>.

Sekerina, I. A., K. Stromswold, and A. Hestvik. 2004. “How Do Adults and Children Process Referentially Ambiguous Pronouns?” *Journal of Child Language* 31, no. 1: 123–152. <https://doi.org/10.1017/s0305000903005890>.

Stolzenberg, S. N., and T. D. Lyon. 2014. “How Attorneys Question Children About the Dynamics of Sexual Abuse and Disclosure in Criminal Trials.” *Psychology, Public Policy, and Law* 20, no. 1: 19–30. <https://doi.org/10.1037/a0035000>.

Stolzenberg, S. N., and T. D. Lyon. 2017. ““Where Were Your Clothes?” Eliciting Descriptions of Clothing Placement From Children Alleging Sexual Abuse in Criminal Trials and Forensic Interviews.” *Legal and Criminological Psychology* 22, no. 2: 197–212. <https://doi.org/10.1111/lcrp.12094>.

Stolzenberg, S. N., S. J. Morse, D. L. Haverkate, and A. M. Garcia-Johnson. 2020. “The Prevalence of Declarative and Indirect Yes/no Questions When Children Testify in Criminal Cases of Child Sexual Abuse in the United States.” *Applied Cognitive Psychology* 34, no. 1: 194–204. <https://doi.org/10.1002/acp.3607>.

Sullivan, C., S. S. George, S. N. Stolzenberg, S. Williams, and T. D. Lyon. 2022. “Imprecision About Body Mechanics When Child Witnesses Are Questioned About Sexual Abuse.” *Journal of Interpersonal Violence* 37, no. 13–14: NP12375–NP12397. <https://doi.org/10.1177/0886260521997941>.

Tabak, S. J., and B. Klettke. 2014. “Mock Jury Attitudes Towards Credibility, Age, and Guilt in a Fictional Child Sexual Assault Scenario.” *Australian Journal of Psychology* 66, no. 1: 47–55. <https://doi.org/10.1111/ajpy.12035>.

Tyler, L. K. 1983. “The Development of Discourse Mapping Processes: The On-Line Interpretation of Anaphoric Expressions.” *Cognition* 13, no. 3: 309–341. [https://doi.org/10.1016/0010-0277\(83\)90013-6](https://doi.org/10.1016/0010-0277(83)90013-6).

Walker, A. G. 2013. “The Handbook on Questioning Children: A Linguistic Perspective.” In *ABA Center on Children and the Law*, 3rd ed. Washington, D.C.: American Bar Association. (ISBN: 978-1-62722-203-7)

Waterman, A. H., and M. Blades. 2013. “The Effect of Delay and Individual Differences on children’s Tendency to Guess.” *Developmental Psychology* 49, no. 2: 215–226. <https://doi.org/10.1037/a0028354>.

Zajac, R., and P. Cannan. 2009. “Cross-Examination of Sexual Assault Complainants: A Developmental Comparison.” *Psychiatry, Psychology and Law* 16, no. sup 1: S36–S54. <https://doi.org/10.1080/13218710802620448>.

Zajac, R., J. Gross, and H. Hayne. 2003. “Asked and Answered: Questioning Children in the Courtroom.” *Psychiatry, Psychology and Law* 10, no. 1: 199–209. <https://doi.org/10.1375/pplt.2003.10.1.199>.