



How Interviewers Navigate Child Abuse Disclosure After an Unproductive Start in Forensic Interviews

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Abstract

Obtaining abuse disclosure from children in forensic interviews can be challenging for interviewers. The present study explored strategies interviewers used when children did not disclose abuse in response to the initial invitation to provide the interview purpose. The sample included 116 forensic interviews with 4- to 16-year-olds who ultimately disclosed abuse (85% sexual). Interviewer strategies were coded following the non-productive initial invitation until the point of children's eventual disclosure. Four main types of strategies were found: re-phrasing the initial transition prompt, asking a follow-up question, introducing prior information, and using a minimal encourager (e.g., "Uh-huh"). Strategies were coded as high- or low-quality. Consistent with predictions, 85% of children's disclosures followed high-quality strategies. In a cycle of effective communication, such interviewer strategies predicted informative child responses, which then led to subsequent high-quality interviewer strategies. Both interviewers and children demonstrated consistency in their question and response patterns, respectively. Coupled with additional exploratory sequential analyses of interviewer-child reciprocal communication and the prior research literature, the present data suggest practical ways that interviewers can break ineffective cycles of communication in the process of obtaining child abuse disclosures.

Keywords Investigative interviewing · Forensic interview · Child sexual abuse · Training · Sequential analysis · Disclosure.

How Interviewers Navigate Child Abuse Disclosure After an Unproductive Start in Forensic Interviews

Obtaining disclosure from reluctant children is one of the most challenging tasks for interviewers in child maltreatment cases (Powell & Snow, 2007). Approximately one-third to one-half of child sexual abuse cases may not include evidence beyond a

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child's statement, such as medical documentation or other witnesses (Herman, 2010; Walsh et al., 2010). Even when such evidence is available, high-quality testimony from children remains relevant to the investigation and is valuable for prosecution (Pipe et al., 2013; Walsh et al., 2010). Although it is understood that a proportion of abused children do not disclose their abuse in forensic interviews (e.g., Hershkowitz et al., 2005), this research focuses on the subset that do disclose, and how interviewers might obtain key disclosure information from them expeditiously. We examined the techniques and behaviours interviewers used to elicit disclosure after a non-productive initial *transition prompt*—the prompt that moves the interview from the introductory to allegation phases (Lamb et al., 2018; Powell & Snow, 2007).

Transition Prompts and a Funnelled Approach to Disclosure

Experts in memory, child development, and forensic interviewing alike have suggested that, as much as possible, children should raise the purpose of the interview themselves (La Rooy et al., 2015; Newlin et al., 2015; Powell & Snow, 2007). This advice arises from the desire to avoid introducing information that the child has not reported. Most children who have previously disclosed their abuse, and know why they are being interviewed, can respond informatively to this question. For example, 67% of 4- to 12-year-olds ($n = 50$) interviewed using the NICHD protocol about their allegations of sexual abuse provided disclosure information to the initial transition prompt (Sternberg et al., 2001).

When children do not disclose immediately, interviewers in many jurisdictions are taught to proceed in a funnelled manner. The top of the funnel is the most open, and questions become increasingly more specific and leading until either the child discloses, or a decision is made not to proceed further to avoid risk of contaminating the interview (APSAC, 2012; Newlin et al., 2015). Interview protocols and guidelines vary in the extent to which they provide scripting in the transition phase: from a fully scripted list of increasingly more specific options or decision trees (e.g., Everson et al., 2020; Lamb et al., 2018), to unordered sample transition prompt phrasings (e.g., APSAC, 2012), to broader guidance concerning avenues to pursue (Powell & Brubacher, 2020). Decisions about introducing information may also be made on a case-by-case basis; for example, balancing the goal of uncontaminated testimony with investigation needs or child protection concerns (Everson et al., 2020).

Although interviewers receive guidance to help them elicit disclosure, every case is different, and interviewers must use their judgement—while adhering to a best-practice funnelled approach—about how to proceed. The strategies they use may be of varying quality, which may in turn affect the productivity of children's responses. Cycles of impoverished communication could ensue if low-quality strategies are used. For example, when young Finnish children gave uninformative responses in forensic interviews, interviewers tended to pose focused and leading questions, which obtained more short, uninformative responses (Korkman et al., 2006, 2008). One low-quality strategy, *unspecific suggestive questions*, involved attempts to elicit disclosure via vague descriptions of the emotional characteristics of the event. These tended to be very lengthy, and children

frequently responded negatively or not at all, as can be seen in the following example (Korkman et al., 2008, p. 119):

INTERVIEWER: Your mum is worried that during the time you spent at your daddy's place, something . . . something might have happened, something that . . . what do you think it could have been, was there something that you didn't like, or that you think that mummy thought you didn't like? Was there? At your daddy's place? CHILD: No.

Recently, researchers have taken a micro-level approach to examining how the structure of the initial transition prompt encourages children to provide topic-relevant information early in the interview. In one analogue study, 401 non-maltreated children aged 5 to 9 were asked either *what* they had come to speak to the interviewer about ($n=198$) or *why* they had come to speak with the interviewer ($n=203$; Earhart et al., 2018). The results showed that children produced informative responses to the *what* prompt 72% of the time compared to 52% for the *why* prompt. Older children provided more informative responses than younger children, but age did not interact with format. A field study has since provided further support for these findings (Garcia et al., 2022). The researchers identified the transition prompts used with 328 4- to 16-year-olds in interviews about allegations of abuse. Children's immediate responses were coded as informative or uninformative. The probability of obtaining an immediately informative response decreased by 60% when the format of the transition prompt contained *why* compared to *what*. Furthermore, indirect formulations—particularly “*Do you know what/why...*”—frequently yielded uninformative initial responses (Garcia et al., 2022).

One of the assumptions underlying research into transition prompt phrasing is that an initial “bad start” can lead to a cascade of negative interactions between the child and interviewer. Researchers who compared the dynamics in forensic interviews with children who did and did not abuse found that interviewers used a lower proportion of high-quality techniques, and children were less informative and cooperative throughout the interview, in cases where disclosures were not elicited (Hershkowitz et al., 2006). That pattern emerged as early as the pre-substantive phase, during episodic memory training (a phase that involves using open-ended questions to practice children in narrative responding about an unrelated neutral or positive event and can be useful for building rapport; see Roberts et al., 2011 for review). Children who ultimately did not disclose provided fewer informative responses in the episodic memory training phase compared to children who would eventually make allegations (Hershkowitz et al., 2006). The interviewers directed more utterances to ultimately non-disclosing children compared to those who would disclose, but the proportions of various question types and supportive and unsupportive comments did not differ. The small differences grew in the substantive phase, however, where interviewers directed more utterances, proportionally fewer high-quality prompts and supportive comments, and proportionally more low-quality prompts to children who did not disclose. Research that adopts a micro-level approach into how interviewer prompts and child responses directly influence each other is crucial to developing an understanding of which

interviewer prompts should be scripted in protocols and which can be discretionary. In the next section, we review the small body of research on sequential approaches to studying interviewer-child dynamics in child interviews.

Sequential Analyses to Characterise Interviewer-Child Communication

Sequential analyses are useful to examine sequences of events in forensic interviews. This type of analysis considers not only whether one specific behaviour (e.g., asking an open-ended question) affects another target behaviour (e.g., eliciting an informative response), but also how these behaviours unfold in real time and influence each other (Bakeman & Quera, 2011). Sequential analyses have been used in at least six previous studies in the field of child investigative interviewing. A series of analogue studies by Gilstrap and colleagues (Gilstrap & Ceci, 2005; Melinder & Gilstrap, 2009) showed how children's behaviour in interviews influenced interviewers, more so than the reverse. An earlier study relevant to this topic did not use sequential analysis but did investigate how interviewer's and children's behaviours influenced one another (Gilstrap & Papierno, 2004). In that study, forensic interviewers questioned 38 3- to 7-year-olds about a staged magic show. Several overt child individual differences (e.g., shyness) predicted the use of leading questions by interviewers. Using the same staged event and age range, Gilstrap and Ceci (2005) used sequential analysis to examine how leading versus neutral questions related to children's acquiescence or denial. Children's denials (compared to their acquiescence) were more likely to be followed by suggestive questioning, furthering the argument that certain child responses may have cascading effects on the quality of interviewer questioning. Interestingly, Gilstrap and Ceci's (2005) data also showed consistency across children's responses that occurred irrespective of interviewer questioning. In other words, children's behaviour prior to an interviewer question could predict children's behaviour after the question (e.g., denial-[interviewer question]-denial). This finding was replicated when forensic interviewers questioned 58 4-year-olds about a staged medical examination (Melinder & Gilstrap, 2009). Again, children were consistent in their response style, while interviewers were not consistent in their questioning style (i.e., asking a leading question was not associated with asking another leading question), and children's denials were followed by leading questions more often than chance.

Sequential analysis has also been used to examine interactions in field interviews (Ahern et al., 2014; Wolfman et al., 2016) and in court proceedings (Klemfuss et al., 2014). Patterns of interviewer support and child reluctance during the introductory phase (prior to the transition prompt) were examined in forensic interviews with 199 3- to-13-year-old children alleging intrafamilial sexual or physical abuse (Ahern et al., 2014). Half the sample was interviewed using the National Institute of Child Health and Human Development (NICHD) protocol (Lamb et al., 2018) and the other half using the revised version of the protocol, which places greater emphasis on socioemotional support (Hershkowitz et al., 2015). The introductory phase was the focus of the research because non-disclosing children exhibit reluctance at this early point (Hershkowitz et al., 2006). The results showed that interviewers did not respond with more support to reluctant (compared to non-reluctant) utterances, regardless

of protocol used. Instead, they were somewhat consistent in their responding. That finding was contrary to the authors' prediction and to the analogue studies, where interviewers adjusted their question types (Gilstrap & Ceci, 2005; Melinder & Gilstrap, 2009). Discrepant results could be due to different dependent variables or to the use of a semi-scripted protocol in the field interviews. Indeed, Ahern and colleagues (2014) found a main effect of protocol: Interviewers delivered more supportive utterances when they used the revised protocol than when they used the original.

Interviewers—and children—behaving consistently, and seemingly “talking past each other”, was the key message in a second field study (Wolfman et al., 2016). Researchers analysed the substantive phases of NICHD protocol interviews ($n = 103$) with 6- to 16-year-old child complainants of sexual abuse and coded five types of interviewer questions. Children's responses were coded dichotomously as including further (new) information about the allegation or not. Although question types did affect children's responses in predictable ways, interviewers were highly consistent in their questioning behaviours from one question to the next. These findings imply that interviewers lost opportunities to pair specific questions with open-ended follow-up questions to promote more elaborate responding. Pairing is a high-quality interviewer strategy whereby a specific question (e.g., “Who is Pops?”) that yields a productive response (e.g., “My granddad”) is followed up with an open-ended question to elicit elaboration on the previous response (e.g., “Tell me what happened with Pops”) (Orbach & Pipe, 2011). Without such scaffolding, children generally persisted in giving the same quality of information regardless of interviewer question (Wolfman et al., 2016). These results bear some similarity to what was found in a court sample. Attorney questions did influence child responses in typical ways (e.g., children were more likely to elaborate to wh-questions and less for option-posing questions), but children's elaborations had no effect on attorney's next questions (Klemfuss et al., 2014).

Particularly relevant to the current study was a recent investigation of interviews with 3- to 15-year-old children in Norway (Melinder et al., 2021), conducted according to local guidelines called the Dialogical Communicative Model. The researchers coded 12 types of interviewer utterances and nine types of child responses. Children were forthcoming, and results revealed high-quality cycles of questioning where interviewers asked open-ended questions, children provided informative responses, and interviewers subsequently delivered more open-ended questions and facilitators. When interviewers asked closed questions, children's “no” responses prompted more subsequent closed questions from the interviewers. Conversely, “yes” responses led to further closed questions or to open-ended questions, meaning that an impoverished communication cycle could be broken. Melinder and colleagues (2021) also analysed what information children were given about the purpose of the interview (called the subpoena); however, this analysis was unconnected to the subsequent sequential analysis of the substantive phase. Interviewers usually gave children information about the person and location in question (e.g., “You are here today to talk about how you have it at home with your mum and dad”, p.378). The subpoena in this context means that an interviewee should be informed about the purpose of the interview, so practitioners must strike a balance between adequately informing a child and not providing suggestive information (Melinder et al., 2021). Thus, the process of eliciting disclosure in these interviews would have differed somewhat

from interviews conducted in jurisdictions following recommendations that interviewers elicit the purpose of the interview from the child where possible (e.g., Lamb et al., 2018; Powell & Brubacher, 2020).

Current Study

The goal of the present study was to apply a dialogic analysis of communication to the transition phase where the purpose of the interview is raised, to determine what techniques interviewers use to elicit disclosure, how children respond, and how those responses impact interviewers' next steps. We predicted that (a) children's disclosure and (b) other productive information would be elicited in response to interviewer strategies that were high- versus low-quality. Furthermore, we expected that (c) productive children's responses would increase the immediate use of subsequent high-quality interviewer techniques, in a healthy communication cycle. Finally, given that the research using field interviews has generally pointed to consistency of responding, we predicted that (d) interviewers and (e) children would be consistent in many of their utterances regardless of the intervening response.

Method

Sample

Data for the current study were obtained from official deidentified transcriptions of interviews conducted by trained police officers around Australia ($n = 116$). Full ethical approval was obtained from Griffith University Human Research Ethics Committee prior to data collection (GU Ref No: 2018/512). This subset of the data used in a previous study (Garcia et al., 2022) comprises only those cases where children did not provide informative responses to the first transition prompt but did disclose later in the interview. One incomplete transcription from the original sample was excluded. Most of the interviews in the current sample included the following recommended phases: ground rules (98%), episodic memory training (76%), and a non-leading transition from introductory to substantive phases (e.g., "Why are you here today?").

Children were mostly female ($n = 89$; 25 males, and 2 missing cases) and were 4 to 16 years old ($M = 10.12$, $SD = 3.23$). Most children described being sexually abused ($n = 98$; 18 other type of abuse) by someone they knew (30 parent, 24 other family, 55 non-familial acquaintance, 7 stranger). Just over half of the described abuse episodes were considered severe (e.g., penetrative or injuries; $n = 61$), and just under half the children described being abused multiple times ($n = 55$).

Coding

A set of mutually exclusive and exhaustive codes was produced for each exchange of interviewer strategy—child response (Bakeman & Quera, 2011). Coded exchanges

started immediately after the first failed attempt of the interviewer to elicit the alleged abuse, until the exchange in which the child clearly acknowledged that an abusive experience happened. The total number of exchanges after the initial transition prompt until disclosure that were available for analysis was 1112 and total exchanges ranged from 1 to 117 for each individual transcript ($M=9.59$, $SD=15.56$).

Interviewers' Strategies

Coders identified four main strategies that interviewers used after an initial non-productive transition prompt: (a) using another *transition* prompt to ask for the purpose of the interview (e.g., "What are you here to talk about today?"); (b) *introducing prior information* (e.g., "I heard you were upset at school the other day, were you?"); (c) asking follow-up *questions* about the child's initial response (e.g., "Tell me more about that"); and (d) using *minimal encouragers* (e.g., "Uh-uh", verbatim repetition of child's last few words). Any prompt that did not fall into those four main categories was coded as *other* (e.g., statements, summaries). The four main strategies then were coded as high or low according to their quality. As much as possible, operational definitions for high versus low quality were informed by prior research. For example, given that both an analogue and field study have demonstrated more informative responses following a *what* than *why* transition prompt (Earhart et al., 2018; Garcia et al., 2022), the former was coded as high and the latter as low quality. Introducing prior information can be considered high quality if children are asked whether the information is accurate, and low quality if the introduced information is presumptive (Powell & Snow, 2007). Examples of coding and further definitions can be found in Table 1.

Children's Responses

Each child response (utterance) was coded as to whether it was *responsive* and *productive*. Responsive utterances are those related to the content of the interviewer's previous prompt (Lamb et al., 1996). Productive responses contained some offence-related information that was not previously mentioned in the interview. For example, mere restatements of facts were considered unproductive unless they included some detail that added to the understanding of the alleged abuse, its context, or its disclosure. Unresponsive utterances were always unproductive because they did not add any information with evidential value. Three categories emerged from this classification: responsive-productive, responsive-unproductive, and unresponsive-unproductive.

Reliability

All transcripts were coded by the first author who was not blind to study hypotheses but was blind to case characteristics during coding. A random sample of 38 transcripts ($n=5$ for initial training, $n=33$ after training; 33% of total sample) was

Table 1 Definition and examples of high- and low-quality strategies used by interviewers after an initial non-productive transition prompt

	Definition	Example
Transition prompt		
H:	Prompts directly ask children for the purpose and use <i>what</i> phrasing (instead of <i>why</i>).	What have you come to talk to me about today?
L:	Prompts indirectly ask about the purpose, and/or are <i>why</i> phrased.	Do you know why you're here today?
Introduce information		
H:	Interviewer confirms the introduced information, usually with a yes-no question or rising intonation, and the information is non-contentious (e.g., early complainant, location, time).	I've heard you talked to the principal of your school last week. Did you?
L:	Interviewer does not confirm introduced information and/or the information is contentious (e.g., mentioning the offence, the suspect). This also includes questions that introduce concepts of "bad", "wrong", etc.	Did something bad happen to you? I heard something happened in the garage. Tell me all about that.
Follow-up question		
H:	Questions are topic-related (close to the allegation) or logically follow up information given by the child. High-quality questions can be of any sub-type (e.g., open-ended, specific, option-posing), except leading.	Tell me more about the games you play in the washroom at school [after the child mentioned doing so].
L:	Questions where the interviewer jumps topics or asks about something tangential or unrelated from the allegation, also known as "fishing". We considered multiple questions and questions that strongly suggest the response (leading) as low quality, irrespective of their content. This approach extended to questions that challenged what the child just said.	So where were you? Were you at home? Tell me more. You really don't remember anything?
Minimal encourager		
H:	Backchannel utterances commonly used in conversation settings (e.g., mhm, yes, okay) or repeating the last words from the child as encouragement to elaborate further.	C: I went into the toilet. I: <i>uh-uh</i> C: and Mr. X was there. I: <i>Mr. X was there...</i>

Table 1 (continued)

	Definition	Example
L:	Utterances used with the intention of confirming information, rather than encouraging the children to elaborate further, including repeating the immediate last words from the child as a question.	C: I went into the toilet. I: <i>you went into the toilet?</i> C: yes
Other	Utterances that do not follow any of the previous categories (e.g., reinforcing ground rules).	Remember I wasn't there at your school...

H, high quality; *L*, low quality; *C*, child; *I*, interviewer

double coded by a research assistant uninvolved in the study and blind to hypotheses. There were high levels of agreement between coders for type of interviewer strategy used (Cohen's $\kappa=0.86$, $p<0.001$), quality of the strategy ($\kappa=0.73$, $p<0.001$), and child response ($\kappa=0.81$, $p<0.001$). Disagreements among researchers were resolved through discussion.

Results

We first present descriptive data concerning the interviewer strategies and child responses, followed by analyses and results related to each of the five hypotheses. Subsequently, we depict exploratory analyses undertaken to better understand sequences of interviewer–child dialogue in the transition phase.

Overview of Interview Strategies and Child Responses

After the initial transition prompt failed to elicit disclosure, the most-used strategy by interviewers in this sample was follow-up questioning (51%), then minimal encouragers (29%), alternate transition prompts (10%), and information introduction (7%). Chi-squared analyses indicated that follow-up questions were more likely to be low than high quality (54% low; $X^2 [1, N=542]=26.50$, $p<0.001$, Cramer's $V=0.16$) and minimal encouragers were more likely to be high than low-quality (70% high; $X^2 [1, N=318]=48.88$, $p<0.001$, Cramer's $V=0.21$). No differences in the quality of alternative transition prompts and information introduction were found. Other strategies, such as summaries, were used in 4% of cases. To test our hypotheses and obtain further detail about the specific strategies used, we combined both variables (interviewer strategy used and quality of the strategy) to create one variable with nine levels. Frequencies for each strategy type are in Table 2 (Total column). Children's utterances were descriptively most often responsive-productive (42%; reference group), followed by responsive-unproductive (31%) and unresponsive-unproductive (27%).

Strategies Used Immediately Before Disclosure (H1)

To test Hypothesis 1, that children's disclosure would be immediately preceded by strategies that are high, rather than low quality, we isolated the exchange of interviewer strategy/child response where disclosure was elicited for each transcript (wherever it occurred). Chi-squared analysis confirmed that disclosure was more likely to be preceded by high-quality strategies (85%; $X^2[1, N=116]=52.29$, $p<0.001$, Cramer's $V=0.22$). To establish how often each strategy type preceded disclosure, we calculated proportions by dividing the frequency of each strategy by the total count of the strategy observed (see Table 2 'before disclosure' column). Overall, the three most prevalent strategies immediately before disclosure

Table 2 Frequencies of strategies used in the total sample and immediately before disclosure

Strategy	Total		Before disclosure		Comparison	
	<i>N</i>	%	<i>N</i>	%	Disclosure proportion	Growth percentage
Transition prompt H	56	5	11	9	.196	188%
Transition prompt L	55	5	7	6	.127	122%
Introduce information H	37	3	1	1	.027	26%
Introduce information L	44	4	2	2	.045	44%
Question H	260	23	58	50	.223	214%
Question L	302	27	3	3	.010	10%
Minimal encourager H	223	20	29	25	.130	125%
Minimal encourager L	95	8	5	4	.053	50%
Other	40	4	0	0	0	0%
Total	1112	100	116	100		

Disclosure proportion is calculated by dividing *N* before disclosure by *N* total. Growth percentage is calculated dividing % before disclosure by % total. Percentages higher than 100% performed descriptively better than expected by chance and percentages lower than 100% performed descriptively worse. *H*, high quality; *L*, low quality

(controlling for frequency of use) were high-quality questions, transition prompts, and minimal encouragers. The three least frequent strategies were low-quality introducing information, high-quality introducing information, and low-quality questioning. No cases of disclosure were preceded by *other* strategies (e.g., summaries). Growth percentages in Table 2 show which strategies were descriptively more (> 100%) or less (< 100%) useful in eliciting disclosure.

Understanding the Sequence of Strategy-Response in the Transition Phase (H2 and H3)

Hypotheses 2 and 3 focused on the reciprocal influence that interviewer strategies and child responses have on each other in the transition phase of the interview. We hypothesised that the high-quality strategies would provoke more informative responses from children and that informative children's responses would subsequently increase the use of high-quality strategies in interviewers.

A multinomial logistic regression was used to test the effect of strategy quality on child response category. Results indicated that the log odds of obtaining responsive-unproductive utterances would increase by 1.85 ($SE = 0.16$, $p < 0.001$) if the strategy was low- than high-quality and the log odds of obtaining unresponsive-unproductive utterances would increase by 1.41 ($SE = 0.16$, $p < 0.001$) for low- than high-quality strategies. As predicted, children's responses to high-quality strategies were mostly responsive-productive (60%), instead of responsive-unproductive (20%) or unresponsive-unproductive (20%). On the contrary,

when interviewers used low-quality strategies, nearly half of the time children's responses were responsive-unproductive (47%), a third of the time they were unresponsive-unproductive (31%), and least often children's responses were responsive-productive (22%).

Logistic regression was used to predict the effect of child response type on the probability of the next strategy used by the interviewer being high- or low-quality. Supporting the third hypothesis, results indicated that the probability of the interviewer using high-quality strategies decreased by 79% ($\text{Exp}(B) = 0.21$, 95% $CI [0.15, 0.29]$, $p < 0.001$) after a responsive-unproductive utterance, and by 69% ($\text{Exp}(B) = 0.31$, 95% $CI [0.22, 0.44]$, $p < 0.001$) after an unresponsive-unproductive utterance, compared to a responsive-productive child utterance. High-quality strategies were used 75% of the time after a responsive-productive utterance, 48% after an unresponsive-unproductive utterance, and 38% after a responsive-unproductive responses.

How Consistent Were Interviewers and Children? (H4 and H5)

To test the hypotheses that interviewers and children would be consistent in their utterances, we conducted a sequential analysis using Lag 2. This setting allows analysis of the relationship between two variables while skipping the influence of the behaviour in between (e.g., child response \rightarrow [skip] \rightarrow child response). To simplify analyses, we examined three types of interviewer strategies (high-quality, low-quality, and other). Table 3 presents the results, only including those relationships that were statistically significant. Overall, both interviewers and children were consistent with their previous behaviours as expected, with all consistent relationships having large effect sizes (Yule's $Q > 0.9$). For example, interviewers who used a high-quality strategy were likely to continue using a high-quality strategy in the subsequent turn, irrespective of how the children responded. Interestingly, this pattern was

Table 3 Significant transitional lag 2: interviewer and Child consistency

Speaker	Variable	Transitional probability	z	Yule's Q
Child	RP \rightarrow RP	237 / 395 (0.6)	24.98**	0.91
	RU \rightarrow RU	233 / 337 (0.69)	27.52**	0.94
	UU \rightarrow UU	165 / 264 (0.63)	22.92**	0.9
	UU \rightarrow RP	54 / 264 (0.2)	4.64**	0.31
Interviewer	H \rightarrow H	345 / 518 (0.67)	26.45**	0.91
	L \rightarrow L	310 / 440 (0.27)	25.81**	0.9
	L \rightarrow H	156 / 518 (0.3)	3.76**	0.21
	Other \rightarrow other	11 / 38 (0.29)	11.95**	0.93
	Other \rightarrow H	14 / 38 (0.37)	2.4*	0.36

H, high-quality interviewer's strategy; *L*, low-quality interviewer's strategy; *RP*, responsive productive child's response; *RU*, responsive unproductive child's response; *UU*, unresponsive unproductive child's response

* $p < .01$, ** $p < .01$

interrupted for three behaviours. For the interviewers, *other* strategies (e.g., reinstating ground rules) were not only followed up with *other* strategies, but also with high-quality strategies. To a lesser extent, low-quality interviewer strategies could also be followed by high-quality ones. For the children, unresponsive-unproductive responses could also be followed by responsive-productive responses.

Exploratory Analyses

In the final two subsections, we present the results of our exploratory analyses to better understand disclosure dynamics. We first assessed relationships between specific interviewer strategies and child responses. Next, we tested whether the obtained patterns differed across transition phases of different lengths because it is reasonable to expect that strategies might change in their utility or effectiveness beyond a certain number of strategy-response exchanges, before obtaining disclosure.

Are There Relationships Between Specific Strategies and Type of Responses?

To assess the reciprocal (sequential) relationship between each of the nine interviewer strategies and each of the three children's response types, polar coordinate analyses were conducted using the HOISAN software (Hernández Mendo et al., 2012) and polar maps were plotted using the R package HOISAN_to_R (Rodríguez-Medina et al., 2019). Polar coordinate analyses allow for the reduction of data which originates in sequential analyses (e.g., the outputs of GSEQ software; Bakeman & Quera, 2011), by computing coordinates and plotting polar maps. To our knowledge, this is the first time that polar coordinate analyses have been used for research in the investigative interviewing field.

Coordinates from polar analyses are estimations based on the values of the standardised Z statistics derived from adjusted residuals (Bakeman & Quera, 2011). The original values were prospective and retrospective Zsum statistics (Lag -1 and Lag 1) computed using the software GSEQ (Bakeman & Quera, 2011). These original values were then transformed into coordinates with vectors and angles. Vector lengths illustrate the strength of the relationships between strategies and responses. Relationships are considered significant at $p < 0.05$ when the value of the vector is larger than 1.96. If the value is positive and larger than 1.96, the relationship is considered excitatory, and if the value of the vector is negative and smaller than -1.96, the relationship is considered inhibitory. The values of the estimated vectors are then used to calculate the angle that best represents the relationship between variables (e.g., mutually excitatory). The detail of the calculation of polar coordinate analyses, including formulas, is found in Castellano Paulis and Hernández Mendo (2003).

Once calculated coordinates are used to plot polar maps. Polar maps illustrate all the possible relationships between one targeted event (e.g., responsive-productive) and a set of other events (e.g., each of the nine types of interviewer strategies) that may happen before or after that target event. Polar coordinates are organised in four quadrants; each of them shows the type of relationship between the target event (i.e.,

type of response) and the strategies used. Quadrant I groups the strategies that are mutually excitatory with a particular type of child response, meaning that the presence of one activates another. Quadrant II groups those strategies that activate the target event but are not activated *by* the target event. Quadrant III groups strategies that are mutually inhibitory with the target event. Quadrant IV includes strategies that are activated by the target event but do not lead to target event (opposite to Quadrant II). Three polar coordinate analyses were computed, using one of child response type as the target event. The detail of the coordinates for each polar analysis is in Table 4.

First, we analysed the relationship between the strategies immediately prior or immediately posterior to *responsive-productive* utterances. Figure 1 illustrates these relationships (left panel). Three strategies were found to be mutually excitatory (Quadrant I) with responsive-productive responses: high-quality transition prompts, high-quality questions, and high-quality minimal encouragers. Three strategies were identified in Quadrant II: low-quality transition prompts, and high- and low-quality introduction of information. Being in this quadrant means that these strategies were likely to elicit a responsive-productive utterance, but not follow it. Two strategies were mutually inhibitory (Quadrant III) with responsive-productive responses: low-quality questions and other. Finally, low-quality minimal encouragers were found in Quadrant IV, meaning that they occurred after a responsive-productive response but were not likely to precede it.

Second, we analysed the relationship between the strategies immediately prior or immediately posterior to *responsive-unproductive* responses (Fig. 1 middle panel). Three strategies were found to be mutually excitatory (Quadrant 1): low-quality questions and low- and high-quality minimal encouragers. Two strategies

Table 4 Polar coordinates of the relationship between strategies used by interviewers and three types of child responses

Strategy used	Type of child response (target event)					
	Responsive productive		Responsive unproductive		Unresponsive unproductive	
	Quad	Vector	Quad	Vector	Quad	Vector
Transition prompt H	I	4.45 *	III	2.42 *	I	10.27 *
Transition prompt L	II	3.57 *	IV	2.92 *	I	10.49 *
Introduce information H	II	6.02 *	IV	0.85	I	8.54 *
Introduce information L	II	2.7 *	IV	0.65	I	11.01 *
Question H	I	18.84 *	IV	3.72 *	I	5.21 *
Question L	III	2.91 *	I	23.12 *	I	5.15 *
Minimal encourager H	I	17.93 *	I	6.92 *	III	2.77 *
Minimal encourager L	IV	2.97 *	I	10.6 *	I	7.49 *
Other	III	2.09 *	III	2.58 *	I	16.87 *

Total *N*, 1112 exchanges. Quad., quadrant; *H*, high quality; *L*, low quality

*Statistically significant relationship ($vector > 1.96$)

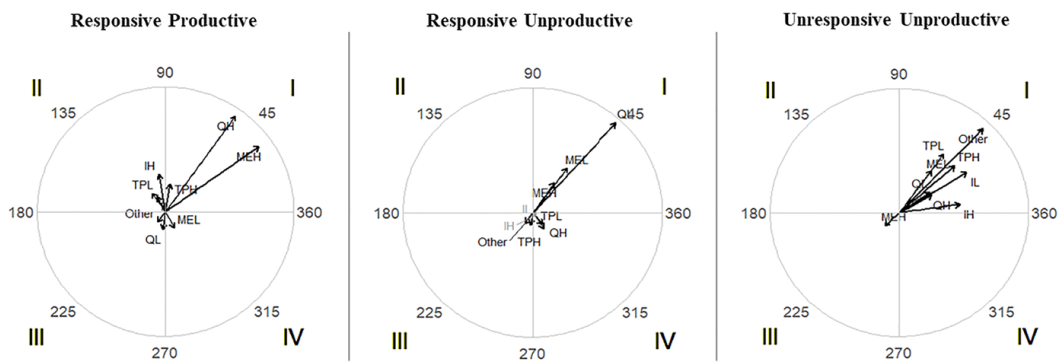


Fig. 1 Polar map of the different strategies used in the transition phase of 116 interviews in relation to the three types of child responses. Note: Total $N=1112$ exchanges. Individual figure titles are the target category. Strategy abbreviations are transition prompt high- (TPH) and low-quality (TPL), introduce information high- (IH) and low-quality (IL), follow-up question high- (QH) and low-quality (QL), and minimal encouragers high- (MEH) and low-quality (MEL)

were mutually inhibitory (Quadrant III): high-quality transition prompts and other. Finally, in Quadrant IV, we found low-quality transition prompts and high-quality questions. Introduction of information (low- and high-quality) was not significantly related to responsive-unproductive utterances.

Third, we analysed the relationship between the strategies immediately prior or immediately posterior to *unresponsive-unproductive* responses (Fig. 1 right panel). All strategies, except high-quality minimal encouragers, were mutually excitatory with unresponsive-unproductive responses (Quadrant 1). High-quality minimal encouragers were found to be mutually inhibitory (Quadrant III).

Do Strategy Patterns Hold Across Different Transition Phase Lengths?

Given that six of the nine strategies were more likely than chance to occur before desirable responsive-productive utterances (i.e., strategies in Quadrants I and II), we were interested in understanding whether these associations are equally likely to happen in interviews with different lengths of transition phase. To explore this possibility, we split the dataset into three subsets, according to the number of strategies-responses found in each transcript. Segments were defined using quantiles to section the dataset in three parts with enough cases of strategy-response exchanges to conduct analyses. *Short*-transition phases had 9 or fewer exchanges ($n=280$, $M=3.26$, $SD=2.49$), *medium* had 10 to 22 exchanges ($n=269$, $M=14.94$, $SD=3.76$), and *long* had 25 or more ($n=563$, $M=42.92$, $SD=24.08$). In terms of number of transcripts, this distribution was not even, each group having 86, 18, and 12 transcripts, respectively. Just 12 transcripts contained half of the total number of exchanges.

Sequential analyses were conducted, one for each data subset, using responsive-productive responses as the target event. These sequential analyses focused solely on understanding the strategies that were more likely than chance to occur immediately *before* a responsive-productive utterance in each subset of the data (Lag-1). Three statistics were used to describe the relationship between strategies and responsive-productive responses: transitional probability, adjusted residuals (Z scores),

and Yule's Q (Bakeman & Quera, 2011). Transitional probability is the probability of responsive-productive utterances given each strategy. The adjusted residuals (z scores) indicate the extent to which an observed relationship differs from chance. Yule's Q is an indicator of association and effect size. Because Yule's Q value ranges from -1 to $+1$, it can be interpreted like correlation coefficients. Statistics for each data subset are presented in Table 5.

In the *short* transition phase group, three high-quality strategies were significantly related to the posterior occurrence of responsive-productive utterances: transition prompts, follow-up questions, and minimal encouragers. In the *medium* group, six strategies were related to responsive-productive utterances: high- and low-quality transition prompts, high-quality questions, high- and low-quality information introduction, and high-quality minimal encouragers. In the *long*-transition group, four strategies were significantly related to posterior responsive-productive utterances: low-quality transition prompts, and high-quality questioning, information introduction, and minimal encouragers.

In summary, high-quality follow-up questions and minimal encouragers predicted responsive-productive utterances regardless of transition phase length. While the effect size for high-quality questions eliciting responsive-productive utterances increased with the length of the transition phase, the effect size for high-quality minimal encouragers decreased. In addition, high-quality information introduction was significantly related to responsive-productive utterances in medium and long transition phases, but not in short ones.

Discussion

The goal of this research was to establish the strategies interviewers used during the disclosure phase after the initial transition prompt did not elicit disclosure, and to identify which strategies were best at obtaining meaningful responses from children. As predicted, high-quality strategies predicted children's disclosure (wherever it occurred); 85% of children's disclosures followed a high-quality strategy. This finding provides strong evidence that interviewer behaviour does directly influence child disclosure, at least among children who would ultimately disclose.

High-quality strategies were also associated more broadly with children's responsive-productive utterances, meaning that they obtained allegation-relevant information. As has been found for the broader interview (Melinder et al., 2021), enriched patterns of communication were present within transition phases; children's informativeness reciprocally predicted better quality questions from interviewers. Although interviewers' and children's behaviours influenced each other in the present study, we also found the prevalent patterns of consistent responding demonstrated in other field studies (Ahern et al., 2014; Wolfman et al., 2016).

These data helped us to better understand the overall patterns that characterised how interviewers and children in this sample navigated the transition phase. They left us wondering, however, specifically how effective each strategy was at eliciting allegation-relevant information and whether those patterns changed as the length

Table 5 Lag-1 analyses on the effects of strategies used by interviewers in obtaining responsive productive responses by length of transition phase

Strategy	Length of transition phase								
	Short			Long					
	Transitional probability	Yule's Q	z	Transitional probability	Yule's Q	z			
Transition prompt H	20 / 32 (0.63)	.44	2.6**	5 / 9 (0.56)	.59	2.14*	2 / 15 (0.13)	0.1	.04
Transition prompt L	17 / 34 (0.5)	.2	1.14	1 / 8 (0.13)	-.4	-0.82	4 / 13 (0.31)	2.01*	.52
Introduce information H	7 / 10 (0.7)	.55	1.9	5 / 8 (0.63)	.68	2.47**	12 / 19 (0.63)	6.74***	.86
Introduce information L	8 / 14 (0.57)	.33	1.27	6 / 9 (0.67)	.72	2.91**	3 / 21 (0.14)	0.25	.08
Question H	73 / 95 (0.77)	.75	8.01***	48 / 69 (0.7)	.82	9.18***	51 / 96 (0.53)	12.61***	.85
Question L	2 / 10 (0.2)	-.47	-1.35	26 / 70 (0.37)	.33	2.52*	32 / 222 (0.14)	0.98	.11
Minimal encourager H	62 / 70 (0.89)	.88	8.83***	37 / 67 (0.55)	.65	6.12***	24 / 86 (0.28)	4.51***	.51
Minimal encourager L	4 / 9 (0.44)	.08	0.23	1 / 15 (0.07)	-.66	-1.66	7 / 71 (0.1)	-0.69	-.14
Other	0 / 6 (0)	-	-	1 / 14 (0.07)	-.63	-1.56	4 / 20 (0.2)	1.03	.28

Responsive productive response was the target category. Total N, 1112 exchanges; N_{Short}, 280; N_{Medium}, 269; N_{Long}, 563; H, high quality; L, low quality

* $p < .05$, ** $p < .01$, *** $p < .001$

of transition phases increased. Exploratory analyses showed that three of the four high-quality strategies (questions, minimal encouragers, and transition prompts) were mutually excitatory with responsive-productive utterances. This means that they were more likely than chance to occur one after another, in a cycle of effective communication. There were also three strategies that were useful in obtaining responsive-productive utterances but were not likely to happen after those type of responses: low-quality transition prompts and high and low-quality information introduction. Information introduction, in particular, is likely to occur after other strategies have not worked. It also parallels our finding that information introduction was related to responsive-productive utterances in medium and long transition phases but not short ones. Interviewers in the present sample were trained in an interview model that avoids introducing contentious information (e.g., suspect or offence) before other avenues have been exhausted (Powell & Snow, 2007). We support this practice but also recognise that our data suggest that information introduction (done properly) can be a useful strategy when non-leading options have not been fruitful. In the subsequent section, we discuss the applicability of this research to interview practice.

Navigating the Transition Phase Effectively (After an Unproductive Start)

After the initial transition prompt does not elicit a disclosure, interviewers must judge how to proceed in a manner that adheres to best practice (i.e., a funnelled approach) while being expedient so as to arrive at the topic of concern with few unnecessary questions (Powell & Snow, 2007). Interestingly, there were clues in the data that suggested ways in which interviewers might break ineffective cycles of communication. We observed that children's obviously informative (responsive-productive) and obviously uninformative (unresponsive-unproductive) utterances seemed to be detected by interviewers. Informative responses perpetuated high-quality strategies, and obviously uninformative responses were associated with all types of interviewer strategies (except high-quality minimal encouragers) suggesting that interviewers recognised the problem and varied their behaviours (sometimes with a good strategy and sometimes with a poor one).

Children's answers that were responsive but did not provide new information, however, seemed to lead to missed opportunities. This is logical conjecture because these responses would be on-topic and appear cooperative; thus, interviewers may persist with whatever strategy they are currently pursuing. Such a claim is reminiscent of the idea that interviewers may not notice ineffective communication arising from option-posing and other specific questions because those question types afford easy (but not necessarily accurate) responses for children (Korkman et al., 2008). We noticed that, in Quadrants I and IV (which represent interviewer strategies that are likely to follow the target child response), there were some high-quality interviewer behaviours that subsequently prompted responsive-productive child responses: specifically, follow-up questions and minimal encouragers. Of all the strategies, high-quality follow-up questions seem to be the most

promising avenue to enter a positive cycle of communication. We make this claim because this strategy was appropriate regardless of transition phase length, it was found to follow responsive-unproductive child utterances, and it was mutually excitatory with responsive-productive child utterances. When confronted with a child who appears responsive and cooperative, but is not providing new information, a carefully crafted question may be helpful to move the child to disclosure (see supplementary materials for a coded example).

Minimal encouragers emerged as a powerful strategy to obtain responsive utterances from children, regardless of transition phase length, but their effectiveness in eliciting abuse-related details depended on a child's current focus. For example, minimal encouragers used after children revealed new topic-related information (i.e., responsive-productive utterances) tended to obtain newer topic-related details, but minimal encouragers used after utterances that contain repeated or off-topic details tended to elicit more of the same. Minimal encouragers have been called "still your turn" utterances (Poole, 2016). The present findings show that this colloquial title is very apt; they essentially had the function of encouraging children to keep providing the same type of information. Understanding this phenomenon can help interviewers detect and correct unproductive practices (e.g., minimal encouragers are useful after new, relevant information but other strategies may be needed when children provide repeated details).

Regarding the strategy of rephrasing the transition prompt, we found that it is useful when performed earlier rather than late in the transition phase. This finding is highly logical; some transition prompt phrasings (e.g., "Do you know why...") are less likely to produce immediate topically relevant responses compared to others (Earhart et al., 2018; Garcia et al., 2022). When an interviewer subsequently rephrases the transition prompt in a better way, it helps a subset of children to respond informatively (Earhart et al., 2018). After those initial few exchanges, however, further re-phrasings are not likely to be productive. Conversely, introducing and confirming prior information (high-quality information introduction) in the current study became more important as the transition phase advanced without achieving a disclosure. This finding reflects the fact that information introduction is discouraged until after other attempts to elicit disclosure have failed (Lamb et al., 2018; Newlin et al., 2015; Powell & Snow, 2007). Prompts coded as low-quality information introduction included those questions that assumed prior information without first confirming with the child (e.g., "I want to know everything about Mr. X touching your Minnie" [not previously disclosed by the child]). Such prompts elicited responsive-productive utterances from children, but these practices can jeopardise the quality of the child's initial disclosure and therefore should be avoided as much as possible (Powell & Snow, 2007).

Other strategies used by interviewers, such as summaries of information without incorporating a request for information, did not predict children's responsive-productive utterances. This finding does not undermine the positive effects that accurate restatements of children's accounts may have for rapport (Hershkowitz et al., 2012), or also how useful these restatements are when paired with open-ended questions (Wolfman et al., 2016). It does, however, suggest that summaries may not be especially useful to obtaining initial *disclosure*-relevant information.

On a final note, some practitioner readers may wonder whether their transition phase strategies can, in fact, affect the likelihood of child disclosures when the present data and prior research demonstrate consistency in interviewers' and children's responses regardless of the intervening utterance from the conversational partner (Ahern et al., 2014; Gilstrap & Ceci, 2005; Melinder & Gilstrap, 2009; Wolfman et al., 2016). We suggest that consistency works like an anchor: Individual interviewers come to the interview predisposed to high- versus low-quality strategies (on average), and children arrive somewhere along the continuum from total reluctance to total cooperation. Each has the potential to influence the other via more or less adaptive forms of communication. The literature on interviewing best practices aims to equip interviewers with increasingly more high-quality tools.

Caveats and Limitations

The present results should be considered with regard to several limitations. First, whenever interview data are coded into discrete categories, some information is inevitably lost. For example, we coded strategies as high- versus low-quality in a manner that permitted operational definitions according to the literature and intercoder reliability, but it overlooked the fact that sometimes, a low-quality strategy could be useful. This was particularly likely in the case of low-quality transition prompts. When the first transition prompt did not elicit a disclosure, interviewers sometimes tried again with a different phrasing. This strategy often followed a child responsive-unproductive utterance, and then resulted in a responsive-productive utterance. Such a strategy also adheres to general principles of funnelled approaches to eliciting disclosure (Sternberg et al., 2001).

Second, other contextual factors that could be associated with disclosure (e.g., child's age) were beyond the scope of this study. Third, only children who disclosed were included in this research. It could be informative to repeat research of this nature with a sample of strongly substantiated cases (i.e., where abuse is confirmed by other evidence) to compare two child sub-samples: the ones who do and do not ultimately disclose in forensic interviews. Such investigation might provide further useful information about practices that lead interviews astray. Finally, the sample for this study was a convenience sample and therefore its results may not be generalisable, especially for a population that was under-represented in this study (e.g., males or witness of physical abuse). Future research may replicate this analysis using different sampling techniques. For example, systematic or random sampling may be useful to obtain generalisable results; or stratified sampling may be useful to obtain more information about a particular group of interest.

Conclusions

This research emphasises the benefits of maintaining high-quality strategies during the transition phase, irrespective of its length. When the initial transition prompt is not productive, interviewers must decide on next steps. Even if they have a scripted funnel to follow,

not every step in the funnel will be relevant to the case. Training programs may want to offer opportunities for practitioners to practice effective ways of breaking cycles of non-conductive communication during the transition phase (and elsewhere in the interview). High-quality follow-up questions appear to be a useful strategy to elicit disclosure or disclosure-relevant information. Interviewers can use children's words to form a question that seeks further elaboration. They can also prepare some pre-written potential high-quality questions if they have the opportunity to plan for the interview, to avoid improvising on the spot. The present research also corroborates the findings from previous studies about the reciprocal nature of interviewers' and children's dialogue. Interviewers have the potential to initiate and maintain a productive cycle of communication by using high-quality strategies.

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Declarations

Conflict of Interest The authors declare no competing interests.

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