Is the Cart Pushing the Horse? The Effects of Child Characteristics on Children’s and Adults’ Interview Behaviours

LIVIA L. GILSTRAP\textsuperscript{1,*} and PAUL B. PAPIERNO\textsuperscript{2}

\textsuperscript{1}University of Colorado at Colorado Springs, USA
\textsuperscript{2}Cornell University, USA

SUMMARY

In the current study we examine the influence of child individual differences on children’s and adults’ behaviours in unstructured forensic interviews. Thirty-eight interviews conducted by actual forensic interviewers with 3- to 7-year-old children were analysed for child reporting behaviours (assent, denial, acquiescence, accurate and inaccurate details, verbosity and cooperation) and adult behaviours (leading vs. neutral questions). Consistent with our predictions, child individual differences that were visible (marked, e.g. sociability) more often predicted child and adult behaviours than those that were not as apparent (unmarked, e.g. source monitoring). In addition to direct influences of the child individual differences on child behaviours, for some variables the influence of the child individual difference was mediated by differential responses by an interviewer (i.e. indirect effects) which then, in turn, influence the child. The ability to examine indirect influences by using unstructured interviews is emphasized. Copyright © 2004 John Wiley & Sons, Ltd.

Increases in the reporting of child abuse, and the consequent rise in children’s participation in courtroom proceedings, has motivated a large body of research focused on child witnesses. One major area of study within the field of child witnesses is the influence of interviewer questioning style on child witness reporting accuracy. Researchers have established that neutral interviewing techniques, such as open-ended questions and free recall, elicit high rates of accuracy but few details in the youngest children (Hershkowitz, 2001; Hershkowitz, Lamb, Stemberg, & Esplin, 1997; Poole & White, 1991). On the other hand, more suggestive interviewing techniques, such as closed-ended and repeated questions, have been shown to increase the overall number of details provided by a child, but at the cost of increasing both accurate and inaccurate details (for reviews see Ceci & Bruck, 1995; Poole & Lamb, 1998; and also Garven, Wood, Malpass, & Shaw, 1998; Leichtman & Ceci, 1995; Thompson, Clarke-Stewart, & Lepore, 1997).

\*Correspondence to: Livia L. Gilstrap, UCCS—Psychology Department, PO Box 7150, Colorado Springs, CO 80933-7150, USA. E-mail: gilstrap@uccs.edu

Contract/grant sponsors: West Yorkshire Police Department; APA; APF; AP-LS; Mario Eunadi Travel; Department of Human Development, Cornell University.

Copyright © 2004 John Wiley & Sons, Ltd.
In concert with the study of external factors, such as the interviewer, on children’s suggestibility, researchers have searched for individual difference characteristics that can be used to identify certain children as more or less suggestible. Accordingly, memory researchers have investigated a host of cognitive and social individual differences that have been related to children’s interrogative suggestibility. Several thorough reviews of this literature have been published (Bruck & Ceci, 1997; Ceci & Bruck, 1993; Quas, Qin, Schaaf, & Goodman, 1997) therefore only an overview of the literature is presented here. We focus on cognitive and social factors despite proposed links between neurobiology and suggestibility, as these links await experimental evidence (Schacter, Kagan, & Leichtman, 1995).

Cognitive factors influencing suggestibility. Source monitoring, intelligence, and memory are often cited as predictors of individual differences in suggestibility and are included in many models of false memory development (Bruck & Ceci, 1997; Hyman, 1999; Johnson, 1993; Loftus, 1997). The findings regarding source monitoring and suggestibility are relatively consistent. Children with better source monitoring abilities have been found to be less suggestible (Leichtman, Ceci, & Morse, 1997; Poole & White, 1995; Thierry, Spence, & Memon, 2001). Less consistent are studies that have examined the link between suggestibility and intelligence. Some studies have found that children with higher intelligence scores are less suggestible (Danielsdottir, Sigurgeirsottir, Einarsdottir, & Haraldsson, 1993; M. L. Eisen, G. S. Goodman, & J. Qin, paper presented at the American Psychological Association, New York, 1995) and that they produce more details during general recall (see Roebers & Schneider, 2001 for an example of eyewitness memory in children). Others have found no relationship (Bruck, Ceci, Francoeur, & Barr, 1995; Roebers & Schneider, 2001; M. Scullin & H. Warren, paper presented at the the first joint meeting of the European Association of Psychology and Law and the American Psychology-Law, Dublin, Ireland, 1999). It bears noting, however, that the lack of relationship between IQ and suggestibility in some studies might be an artifact of restricted ranges, as children in the lowest IQ brackets are often not present in the classrooms being sampled.

Other cognitive characteristics have been proposed as important factors in suggestibility as well. Increased knowledge base has been linked to decreased suggestibility when children’s knowledge is consistent with the target event, but to increased suggestibility when children’s previous knowledge is inconsistent with a stimulus and when misinformation is consistent with their knowledge (see Bruck, Ceci, & Melnyk, 1997; Goodman, Quas, Batterman-France, Riddlesberger, & Kuhn, 1997). Increased understanding of theory of mind has been related to increased suggestibility (Templeton & Wilcox, 2000). Finally, children’s understanding of dual representations (Welch Ross, Diecidue, & Miller, 1997) has been associated with decreased suggestibility. Event memory has been associated with suggestibility, but as a contextual factor (i.e. repeating information to strengthen memory decreases suggestibility) rather than as an individual difference.

Social factors influencing suggestibility. Findings regarding the relationship between self-confidence, self-esteem and suggestibility are relatively consistent. Children with higher self-confidence (Vrij & Bush, 2000) and higher self-esteem (Baxter, Jackson, & Bain, 2003; Gudjonsson & Sigurdsson, 2003; Peiffer & Trull, 2000) are less likely to acquiesce to suggestion. Less consistently, compliance has been positively correlated with susceptibility to leading questions in institutionalized adolescents (Richardson & Kelly, 2004), although at least one study with adults found no relationship between suggestibility and compliance (Horselenberg, Merckelbach, & Josephs, 2003). Finally, some researchers
have found that shyness and suggestibility are not related (Muir-Broaddus, King, Downey, & Petersen, 1998; Young, Powell, & Dudgeon, 2003), whereas others have found that shy children are less accurate (although not necessarily more suggestible) (Roebers & Schneider, 2001). Again, these studies represent merely a sample of the literature on the relationships between various cognitive and social individual differences and memory and suggestibility.

When discussing possible causal mechanisms for the effects of individual differences on children’s reporting accuracy, the focus has traditionally been on the internal influence of each cognitive or social characteristic on the child. That is, individual differences are often presumed to operate solely within the child, affecting either how they manage information that is requested from or provided to them, or how they react to the individual seeking or presenting that information. For example, the roles of cognitive individual differences have been discussed in terms of their relation to children’s memory or comprehension. Similarly, social individual differences have been discussed in terms of their effects on children’s ability to interact and communicate in particular social contexts (e.g. an interview setting). The importance of these findings regarding direct influences of child characteristics towards our understanding of children’s reporting accuracy and suggestibility should not be underestimated. However, a focus on the effects of child individual differences on only the child’s interview behaviours, as opposed to a focus on the effects of child individual differences on the complete child-interviewer dyad, hinders a comprehensive understanding of the causal mechanisms underlying the influence of individual differences. Similarly, popular models of children’s suggestibility point to the unique influence of the interviewer, to children’s memory and metamemory, and to individual differences of the child, but empirically we have just begun to consider the interrelationships between these factors. This is crucial considering that suggestibility in an interviewing context is, by nature, dyadic.

In the current paper, we examine the role of individual differences on children’s reporting behaviour, more broadly defined, with specific consideration of the context of a forensic interview as a dyadic interaction. That is, we use the premise of an interview as a social exchange to predict the influence of multiple cognitive and social individual differences within children. Further, rather than focusing on a single measure of suggestibility, we explore a wide array of reporting behaviours. Our approach is predicated on the idea that, while it is important to examine whether child individual differences influence children’s suggestibility directly, as has been shown in past research, it is possible that individual differences in children affect other aspects of an interview that may ultimately influence their response behaviour. For example, the suggestibility literature is replete with examples of how an interviewer’s behaviour can affect the atmosphere of an interview, which may then significantly affect a child’s response to suggestive questions (Garven, Wood, Malpass, & Shaw, 1998; Leichtman & Ceci, 1995). However, we suggest that it is as likely that individual differences in children influence the social climate of an interview which could affect the behaviour of the interviewer and thus, indirectly, the child. Additionally, while direct measures of suggestibility are crucial for our understanding of children’s reporting accuracy, it is equally important to examine other facets of children’s reporting behaviour that may eventually contribute to memory distortion. Disentangling these direct and indirect effects on all facets of children’s reporting behaviour is critical for understanding the theoretical and practical underpinnings of the relationship between adult interviewing techniques and child suggestibility.
In our exploration of the mechanisms through which individual differences might operate, we focused on three aspects of child suggestibility. First, given our focus on the complete dyadic interaction, we were particularly interested in whether or not the influence of an individual difference would operate directly on the child or indirectly by contributing to the atmosphere of an interview (or both). To contribute indirectly means that the individual difference would affect interviewer behaviour as well as child behaviour and that this effect on the interviewer would significantly influence children’s reports. However, we also surmised that some individual differences would be more likely to influence an interviewer than others. We based this prediction on the assumption that, in order for an individual difference to influence an interviewer, the characteristic would have to be apparent to the interviewer (i.e. a marked individual difference such as sociability) because an interviewer would be less likely to actively respond to characteristics that they do not recognize in a child (i.e. unmarked individual differences such as source monitoring ability). To test this assumption, in the current study we compared both marked and unmarked individual differences. We hypothesized that unmarked characteristics, because they would be less evident to an interviewer, would be less predictive of child response pattern and interviewer behaviour than marked individual differences, which would be more evident to an interviewer and to which they could respond. Finally, given our prediction that child individual differences would affect interviewer behaviour, we further hypothesized that when the influence of an individual difference on interviewer behaviour was strong enough, interviewer behaviour would mediate the relationship between that child individual difference and child response pattern.

Second, we noted that the relationship between individual differences and children’s suggestibility has been, heretofore, primarily studied in structured interview settings (i.e. settings in which interviewers use a more scripted approach rather than tailoring their questions to a child’s statements). However, concerns have been raised that the use of structured interviews, because they control adult behaviours, may mask important process mechanisms that underlie children’s suggestibility (Gilstrap & Ceci, in press). This may be particularly true for child characteristics that are likely to affect adults (i.e. marked characteristics) because the design of structured interviews does not allow for the adult to respond—thus, eliminating any indirect effects. Using a structured interview design, only the direct relationships between child characteristics and a dependent variable, for example measuring acquiescence, can be examined. These methods do not permit analyses of how differences between children may affect the interviewers’ behaviours (e.g. interviewers may be more assertive with children who they feel have higher levels of social intelligence) and how those changes in interviewer behaviour may indirectly affect children’s reports. Only by analysing unstructured interviews can we test for the total (i.e. direct and indirect) effects of these individual differences. Thus, in response to these concerns, and in an effort to examine the role of individual differences in a more naturalistic context, the current study explores the effects of child characteristics on children’s reporting accuracy within unstructured interviews.

Finally, an important component of the current study is that we focus not just on suggestibility. Rather, we break down children’s response behaviours into seven variables that capture the spectrum of children’s response behaviour consistent with a conversationally based conceptualization of suggestibility: inaccurate and accurate details, simple assent, simple denial, acquiescence to the question at hand, verbosity, and cooperation. Examining all aspects of children’s reporting behaviour allows for a more comprehensive view of the effects of individual differences during an interview—it permits analysis of
important response patterns that are relevant to children’s testimonial accuracy, but may be overlooked in studies that only look at measures of suggestibility.

Given these guiding principles, the following global questions drove our analytic plan: (1) Do child individual differences (marked and unmarked) measured prior to the interview predict child behaviours in an unstructured interview; (2) If so, are marked individual differences more predictive of child response patterns than unmarked individual differences; (3) Do child individual differences measured prior to the interview predict interviewers’ behaviour in an unstructured interview; and, (4) Are the effects of child individual differences on child reports mediated by interviewers’ behaviour?

METHOD

Participants

Thirty-eight preschool and primary school-aged children (19 females) ranging from 36 to 82 months ($M = 56.4$ months, $SD = 11.6$) who were evenly distributed from a younger class (3 to 5 years) and older class (5 to 7 years) and 38 experienced interviewers (31 females) who specialized in child protection interviews participated in the study. Parents of each child were contacted directly and asked for permission for their child’s participation. Interviewers were recruited with the help of local agency heads in northern England. Both the sample of interviewers and the sample of children were British and primarily of northern European descent.

Procedures

One month before the interviews were conducted, an event was staged in which a magician visited the preschool and primary school facilities. In all classrooms, the children were in ‘circle time,’ and their teacher stopped the activity and asked children to pay attention to the visitor. The event was designed to hold the children’s attention, and in past research has been found to be both salient and exciting for the children (L. L. Gilstrap, H. K. Warren, & S. Hewitt, paper presented at the the first joint meeting of the European Association of Psychology and Law and the American Psychology-Law, Dublin, Ireland, 1999). An outline of the event is appended.

One week prior to the start of the interviews, researchers acclimated to the classroom and began collecting observational measures. This continued throughout the interview period. To avoid undo stress resulting from removing a child from a classroom twice in 1 day, interview and observational data were never collected on the same day. Additional teacher-report questionnaires were given to teachers 1 week prior to the start of the interviews and collected throughout the interviewing period.

At the start of each interview, the forensic interviewers were reminded of the name of the child and told that they had a maximum of 25 min to interview the child. Interviewers were told that a magician had visited the classroom and that they were to obtain information about the event using the techniques that they normally used. Although interviewers knew that they were participating in a research study, they were not aware of the specific purpose of the investigation (i.e. they were not told how interviews would be later analysed). Based on previous research, we expected the interviews to last 15–20 min. Interviewers were instructed to interview the child ‘as they normally would, using the
techniques that they would normally use’. All interviews were both audiotaped and videotaped for transcription and coding. After all interviews were completed, researchers revisited the schools to collect any missing observational or teacher-report individual difference measures from the children and to ask the children to identify the magician and worker from target-present photographic line-ups.

Materials

Child individual difference measures

In choosing our child individual differences, we used two criteria: First, we focused on individual differences that had already been associated with children’s interview behaviours. Second, we added individual differences that we felt would be predictive in a social setting (i.e. social competence and sociability) and for which well-validated measurements existed. After choosing the variables, they were categorized as marked or unmarked. Because of their less visible nature, all cognitive variables were classified as unmarked. Designation of social variables as marked or unmarked was determined by the authors and was based on a conservative estimate of whether or not the individual difference in question would be manifested in a child during an interview. Post-hoc review of the interviews confirmed our a priori classifications regarding the overtness of each individual difference.

Marked characteristics (shyness, sociability, emotionality, self-esteem, social competence, withdrawal)

The Emotionality, Activity and Sociability Temperament Survey for Children: Teacher Ratings (Buss, 1991). Teachers rate children on a 5-point scale on 20 items. The EAS indexes four factors: shyness (e.g. ‘Child tends to be shy’), sociability (e.g. ‘When with other children, this child seems to be having a good time’), emotionality (e.g. ‘Child cries easily’), and activity (e.g. ‘At recess, child is always on the go’).

Child self-esteem (Coopersmith & Gilberts, 1982). This child self-esteem measure is a short, six-item teacher-report questionnaire in which teachers rate children on a Likert scale on items such as ‘The child appreciates his/her own work’. In previous research this particular measure of self-esteem was found to be negatively related to suggestibility (A. Vrij & N. Bush, paper presented at the the biennial meeting of the American Psychology-Law Society, Redondo Beach, CA, 1998).

Social Competence and Behaviour Evaluation in Children—The Short Form (SCBE-30) (LaFreniere & Dumas, 1996). This teacher-report questionnaire consists of 30 items ranked on a scale from one to six and can be broken down into three factors: social competence, anger-aggression, and anxiety-withdrawal. The social competence dimension included items from the following subscales on the original scale: prosocial behaviour, cooperation, integrated, joyful and calm. The anger-aggression dimension included anger, oppositional activity, and aggression and was included in the unmarked category because the interview was not evocative of this characteristic within a normative (non-pathological) range. The anxiety-withdrawal dimension included anxiety, isolation, and depression. The scale was designed to assess social competence and emotional and behavioural problems. Observational research has validated these dimensions (LaFreniere & Dumas, 1996).
Unmarked characteristics (IQ, source monitoring, photographic line-up, suggestibility, activity, anger)

Intelligence (Weschler, 1989). The information and vocabulary subscales of the Wechsler Preschool and Primary Scale of Intelligence–Revised (WPPSI-R) were administered as an index of general intelligence, as these two subscales have large part-whole correlations with overall IQ (Sattler, 1988) and because they seemed most relevant to issues of world knowledge and linguistic ability which are proposed to be related to suggestibility.

Source monitoring. A source monitoring measure was administered immediately following the IQ measures. During the IQ tasks, children saw and heard about several objects. Six objects (three objects presented as pictures and three objects presented as words) that had been shown or mentioned at the start of the IQ task were chosen. During the source monitoring assessment children were asked to remember whether they ‘saw or heard’ the object in question. The order of ‘saw vs. heard’ was counterbalanced across children.

Photographic line-up. Children were asked to identify the magician and the worker from a five-photograph target-present line-up. The photographs were stratified such that they varied along major dimensions of the actual actor, for example whether they had a beard or wore glasses. Only the correct photograph contained all of the major features. The line-up was specifically designed so that if the child had any memory of the actor’s physicality the task would be relatively easy. Each child was provided with a brief description of the event, and was asked some open-ended questions to refresh their memory of the activities, none of which prodded information that would influence their choice in the line-up. They were then asked to identify the actor for that event.

The Storybook Suggestibility Scale for Children (Scullin & Ceci, 2001). This measure is a correlate of the Video Suggestibility Scale with Children and has the same two subscales intended to measure children’s propensity to ‘yield’ to leading questions and to ‘shift’ their answers in response to social pressure in the form of negative feedback. Children are given a series of 14 leading questions and four fact questions and then given global negative feedback, ‘You missed a few questions. Let’s go through them again and see if you can do better this time.’ They are then asked the series of leading questions a second time. Yield was calculated as the number of affirmative responses to leading questions across both times the questions were asked (total possible = 28). Shift was calculated as the number of changes on the second pass of the questions (total possible = 18).

Anger and activity. Anger and activity were considered unmarked characteristics and are defined in the sections for the SCBE-30 and EAS respectively.

Children’s and adults’ behaviours in the interview

Transcription. The videotaped interviews were transcribed by staff trained to provide detailed verbal transcriptions as well as to add pertinent nonverbal responses by the children such as nods or gesticular indicators (e.g. child holds hands apart to indicate size). The transcripts were then reviewed by a research assistant trained to accurately record turn-taking and to check again that relevant nonverbal responses had been recorded. A turn began when one actor spoke and ended when the other actor spoke. Each turn was given a code that represented the participant’s behaviour. The resulting transcripts were printed and used in conjunction with the videotapes for the remainder of the coding process.

Coding scheme. After transcription was completed, interviews were coded along three dimensions: stages of the interview, on- and off-topic speech, and turn types. First the
The interview was divided into six stages: introduction, rapport building, ground rules, free narrative, specific questioning and closure. The stages did not always occur in this order and not all interviews had all stages. After stage coding, the free narrative and specific questioning stages (content stages) were divided into on-topic and off-topic portions. Separate coders then coded child and interviewer turn types for all sections of free narrative and specific questioning that were on-topic. Turns were coded using two coding schemes, one for the interviewer and one for the child. Although staff who coded the child data could see the adult codes, which were entered first, two-letter codes were used so that the meaning of the code would not be evident. Thus, coders of the child data were unaware of the codes the adult coders had been given and vice versa. Coders were trained on transcripts from a different data set until 90% agreement was reached with the primary investigator. All interviews in the current sample were double coded and differences were resolved by discussion. An additional 10% of the interviews were coded separately by the principal investigator to calculate inter-rater reliability. Using the more conservative reliability measure, Cohen’s kappa, inter-rater reliability was high at 0.74 (Bakeman & Gottman, 1997).

The interviewers’ statements were divided into leading and neutral turn types. For the current study, leading questions were defined as any question that introduced information into the interview that the child had not previously mentioned and neutral questions were any turn that did not introduce information into the interview. The data had been originally coded into six types of leading questions (preference, repeated, introducing information, imagination requests, misphrasing the child’s statement, and introducing the possibility) and five types of neutral statements (targeted neutral, non-targeted neutral, clarification, rephrasing the child’s statement and filler) which were combined into global leading and neutral categories for the current work. The individual codes are more thoroughly defined in Gilstrap (2004).

The coding scheme for the children’s responses, verbal or nonverbal, was also organized hierarchically into six categories: (1) Event and question related—child gave details that addressed the interviewer’s question and were about the event, (2) Event but not question related—child gave details that did not address initial question, but were about the event, (3) Assent—child expressed agreement with the interviewer’s statement without giving details, (4) Deny—child expressed disagreement with the interviewer’s statement without giving details, (5) I don’t know—child indicated that they did not know the answer, (6) No response or refusal to respond—child did not answer the interviewer’s questions or stated that they no longer wanted to speak, (7) Other—child spoke but gave no information (Example: Don’t you think that is funny?). All codes for giving details, assent codes, and deny codes were also coded for accuracy (accurate or inaccurate) and redundancy (new or redundant). To give children the benefit of the doubt and to be conservative, all off-topic details, ‘I don’t know’ statements, lack of response and other statements were automatically coded as accurate even though some were not.

We used these codes to create seven dependent variables. Simple assent and simple denial were taken directly from child codes 3 and 4, respectively. To match a structured assessment we created the category of acquiescence which was any ‘yes’ statement (3) or details that indicated acquiescence to the content of the question at hand (a sub-set of code 1). Accurate details and inaccurate details were derived by summing across the accurate or inaccurate turns given child codes 1 and 2. Finally, two variables were created from the authors’ impressions after watching the videos. Verbosity was created as an index of multi-word instead of single word answers and combined child codes 1 and 2 regardless of
accuracy (i.e. the sum of accurate details and inaccurate details). *Cooperation* was created as an ad hoc index of children’s on-task behaviours and was created by summing child codes 1 and 3.

## RESULTS

### Descriptive data

Means, standard errors, ranges, and partial correlations with age (covarying length of interview, i.e. number of turns) for all variables are presented in Table 1. Consistent with previous findings, older children provided more accurate details \((r = 0.33, p < 0.05)\). Not surprisingly, they also stayed on topic (cooperation) more often \((r = 0.34, p < 0.05)\). The correlation between IQ and age is an artifact of using raw scores.

Correlations between the child response variables are presented in Table 2. As we predicted, some child behaviours were correlated. This was expected for two reasons: (1)

<table>
<thead>
<tr>
<th>Table 1. Descriptive information on child individual difference measures, adult interview behaviours and child interview behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mean</strong></td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td><strong>Marked child variables</strong></td>
</tr>
<tr>
<td>Emotionality</td>
</tr>
<tr>
<td>Self-esteem</td>
</tr>
<tr>
<td>Shyness</td>
</tr>
<tr>
<td>Sociability</td>
</tr>
<tr>
<td>Social competence</td>
</tr>
<tr>
<td>Withdrawal</td>
</tr>
<tr>
<td><strong>Unmarked child variables</strong></td>
</tr>
<tr>
<td>Source monitoring</td>
</tr>
<tr>
<td>Raw IQ scores</td>
</tr>
<tr>
<td>Anger</td>
</tr>
<tr>
<td>Activity</td>
</tr>
<tr>
<td>Photo line-up</td>
</tr>
<tr>
<td>Suggestibility</td>
</tr>
<tr>
<td><strong>Adult-interview</strong></td>
</tr>
<tr>
<td>Proportion of leading questions</td>
</tr>
<tr>
<td><strong>Child-interview</strong></td>
</tr>
<tr>
<td>Accurate details</td>
</tr>
<tr>
<td>Inaccurate details</td>
</tr>
<tr>
<td>Simple assent</td>
</tr>
<tr>
<td>Simple denial</td>
</tr>
<tr>
<td>Verbosity</td>
</tr>
<tr>
<td>Cooperation</td>
</tr>
<tr>
<td>Acquiescence</td>
</tr>
<tr>
<td><strong>Overall interview</strong></td>
</tr>
<tr>
<td>Total turns</td>
</tr>
</tbody>
</table>

\*\(p < 0.05\), for child and adult interview behaviours the correlation with age was a partial correlation covarying total turns in the interview. For easier interpretation we report descriptive data on the proportion of leading questions without the weighted arcsine transformation.
Some of the variables contain one sub-code in common and (2) some behaviours are related concepts that might be caused by similar underlying traits. Our use of hierarchically defined behaviours, however, was substantiated by analyses showing that many correlated child response variables were differentially predicted. For example, although inaccurate details and verbosity were correlated, self-esteem predicted one but not the other. These findings were consistent with our expectation that merely analysing a traditional criterion of children’s suggestibility (e.g. inaccurate details) might not reveal significant relationships between child characteristics and important child behaviours that are rarely, if ever, studied (e.g. verbosity). We next present our findings based on our aforementioned global questions. All subsequent analyses covary age and were run at $\alpha = 0.05$.

Can we predict child response behaviours in an unstructured interview from child individual differences measured prior to the interview?

We were first interested to see if any of the child response behaviours measured in the unstructured interviews could be predicted from child individual differences measured prior to the interviews. We then examined our findings to see whether individual differences with significant predictive value to child response behaviours were classified as marked (i.e. overt social) or unmarked (i.e. covert social or cognitive). A multivariate regression was conducted for each variable predicting the set of seven dependent variables (simple assent, simple denial, acquiescence, accurate details, inaccurate details, verbosity and cooperation) from the child individual difference measure, covarying age of the child and length of the interview. For this and all subsequent analyses, age and length of interview were non-significant predictors, therefore we do not report those findings.

Unmarked individual differences (see Table 3)
Within our social unmarked variables, anger-aggression and activity showed no significant relationships with any of our dependent measures. In our cognitive unmarked variables, IQ predicted cooperation ($B = 0.196, \eta_p^2 = 0.128$) but neither source monitoring, suggestibility nor photo line-up identification predicted any of the child response behaviours in the interview.

Marked individual differences (see Table 3)
Within our marked variables, higher levels of sociability were associated with increased inaccurate details ($B = 0.71, \eta_p^2 = 0.44$), verbosity ($B = 0.87, \eta_p^2 = 0.24$), cooperation ($B = 0.44, \eta_p^2 = 0.18$), and acquiescence ($B = 0.74, \eta_p^2 = 0.30$). Like sociability, increased
social competence was related to higher levels of verbosity ($B = 0.64, \eta^2_p = 0.18$), cooperation ($B = 0.38, \eta^2_p = 0.19$), and acquiescence ($B = 0.52, \eta^2_p = 0.21$). Anxiety/withdrawal was related to inaccurate details with higher levels of anxiety predicting fewer inaccurate details ($B = 0.41, \eta^2_p = 0.24$) and lower verbosity ($B = -0.81, \eta^2_p = 0.35$). Likewise, shyness was negatively related to inaccurate details ($B = -0.73, \eta^2_p = 0.21$) which also drove a negative relationship with verbosity ($B = -1.56, \eta^2_p = 0.36$). Self-esteem was associated with increased accurate details ($B = 0.44, \eta^2_p = 0.21$) which drove a positive relationship with verbosity ($B = 0.79, \eta^2_p = 0.27$). Higher levels of emotionality were associated with fewer inaccurate details ($B = -0.65, \eta^2_p = 0.29$). Finally, Table 3 also shows several trends that emerged. In particular, shyness was associated with higher simple assent ($B = 0.63, \eta^2_p = 0.16$), sociability was associated with lower levels of simple denial ($B = 0.35, \eta^2_p = 0.17$), and social competence was positively related to accurate details ($B = 0.38, \eta^2_p = 0.16$).

**Summary**

With the exception of IQ, our unmarked social and cognitive variables showed no predictive value for children’s response patterns in an unstructured interview. IQ showed a significant relationship with cooperation. On the contrary, every marked individual difference showed predictive value for at least one aspect of children’s response patterns and most of our marked variables significantly predicted multiple aspects of children’s response patterns. It bears noting that, with the exception of sociability and social competence, the individual differences that we measured predicted facets of children’s reporting behaviour other than acquiescence, which is most commonly used as the sole criterion in studies of children’s suggestibility.

Can we predict adult interviewing behaviour in an unstructured interview from child individual differences measured prior to the interview?

To determine if child individual differences influenced interviewers’ behaviour, each child individual difference measure was used to predict the arcsine-root transformed proportion
of leading questions (weighted by interview length) used by the interviewer, covarying child age (see Table 4). Of the individual differences that predicted child response behaviours, three significantly predicted adult interviewing behaviour (i.e. proportion of leading questions). Specifically, higher levels of shyness were associated with increased use of leading questions \( (B = 0.47, \eta^2_p = 0.19) \), as were higher levels of anxiety/withdrawal \( (B = 0.16, \eta^2_p = 0.18) \). In contrast, higher levels of social competence were associated with decreased proportions of leading questions \( (B = -0.63, \eta^2_p = 0.28) \).1

**Summary**

As expected, none of our unmarked individual differences predicted adult interviewing behaviour. However, three of our marked individual differences demonstrated predictive value for the use of leading questions. These results support the idea that certain marked individual differences may shape children’s reporting behaviour via their influence on adult questioning style. That is, it is possible that the effect of certain marked individual differences on children’s reporting behaviour may be mediated by adult questioning behaviour when adult behaviour is directly influenced by the child characteristic. To explore this hypothesis we next analysed the three predictive marked individual differences (i.e. shyness, withdrawal/anxiety, and social competence) following Baron and Kenny’s (1986) procedure for measuring mediation (see Figure 1). We examined Path A (the relationship between child individual differences and adult questioning style), Path B (the relationship between adult questioning style and child response), Path C (the direct relationship between child individual differences and child response) and then, when Paths A, B and C all indicated predictive relationships, we conducted a fourth analysis on Path C while covarying adult questioning behaviour (mediation model).

1Values are back-transformed for interpretability.

### Table 4. The effects of child characteristics on the proportion of leading questions asked by interviewers

<table>
<thead>
<tr>
<th></th>
<th>Df for F tests</th>
<th>( F )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unmarked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intelligence</td>
<td>1, 31</td>
<td>3.48</td>
</tr>
<tr>
<td>Suggestibility</td>
<td>1, 23</td>
<td>4.15</td>
</tr>
<tr>
<td>Source monitoring</td>
<td>1, 26</td>
<td>0.05</td>
</tr>
<tr>
<td>Photo line-up</td>
<td>1, 24</td>
<td>0.02</td>
</tr>
<tr>
<td>Anger</td>
<td>1, 22</td>
<td>0.07</td>
</tr>
<tr>
<td>Activity</td>
<td>1, 22</td>
<td>0.21</td>
</tr>
<tr>
<td><strong>Marked</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotionality</td>
<td>1, 22</td>
<td>0.09</td>
</tr>
<tr>
<td>Self-esteem</td>
<td>1, 22</td>
<td>2.39</td>
</tr>
<tr>
<td>Shyness</td>
<td>1, 22</td>
<td>*5.06</td>
</tr>
<tr>
<td>Sociability</td>
<td>1, 22</td>
<td>0.58</td>
</tr>
<tr>
<td>Social competence</td>
<td>1, 22</td>
<td>*8.34</td>
</tr>
<tr>
<td>Withdrawal</td>
<td>1, 22</td>
<td>*4.74</td>
</tr>
</tbody>
</table>

\*\( p < 0.05 \), model covariates (total turns in interview and child age). Proportion of leading questions transformed with weighted arcsine transformation.
Does interviewers’ use of leading questions predict children’s response behaviour in the interview?

Having tested Paths A and C above, we next analysed the relationship between adult interviewing behaviour (i.e. proportion of leading questions) and child reporting behaviour (Path B). Of our seven child response variables, two were significantly related to interviewers’ use of leading questions (see Table 5). Specifically, the proportion of leading questions used by interviewers predicted levels of verbosity and acquiescence. A higher proportion of leading questions was associated with decreased verbosity ($B = -22.73, \eta^2_p = 0.14$). A higher proportion of leading questions was also related to lower acquiescence ($B = -28.49, \eta^2_p = 0.36$). This latter finding is particularly interesting given the

Table 5. The effects of the proportion of leading questions asked by interviewers on child response behaviours

<table>
<thead>
<tr>
<th></th>
<th>$F$ (1, 43)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurate details</td>
<td>1.85</td>
</tr>
<tr>
<td>Inaccurate details</td>
<td>1.21</td>
</tr>
<tr>
<td>Assent</td>
<td>1.21</td>
</tr>
<tr>
<td>Denial</td>
<td><strong>3.64</strong></td>
</tr>
<tr>
<td>Verbosity</td>
<td>*5.37</td>
</tr>
<tr>
<td>Cooperation</td>
<td><strong>3.32</strong></td>
</tr>
<tr>
<td>Acquiescence</td>
<td>*18.72</td>
</tr>
</tbody>
</table>

*p < 0.05, **p < 0.10, model covariates (total turns in interview and child age).
decades of work on the influence of leading question use on child responses that have found increased acquiescence following leading questions in structured interviews. Two trends also emerged: A higher proportion of leading questions was associated with increased simple denial (B = 9.85, $\eta_p^2 = 0.10$) and a higher proportion of leading questions was related to lower levels of cooperation (B = −12.04, $\eta_p^2 = 0.09$).

**Does interviewer questioning style mediate the effect of child individual differences on child reporting behaviour?**

Finally, to see if the effect of child individual differences on child reporting behaviour was mediated by interviewers’ use of leading questions, three separate multivariate regressions were conducted to predict the set of seven dependent variables from shyness, withdrawal/anxiety, and social competence, as well as the proportion of leading questions, covarying child age and length of interview.

When proportion of leading questions was added to the model predicting child reporting behaviours from anxiety/withdrawal, the predictive value of anxiety/withdrawal to verbosity did not drop to statistical non-significance. Similarly, when proportion of leading questions was added to the model predicting child reporting behaviours from shyness, the relationship between shyness and verbosity remained unchanged. In other words, although anxiety/withdrawal did influence the proportion of leading questions used by interviewers, this association did not influence the direct relationship between anxiety/withdrawal and verbosity. Likewise, interviewer behaviour did not affect the relationship between shyness and verbosity.

Most strikingly, all significant relationships with social competence were fully mediated by interviewer behaviour. That is, the relationship between social competence and verbosity was rendered non-significant, $F(1, 20) = 1.94, p > 0.05$, as were the relationships between social competence and cooperation and acquiescence, $F(1, 20) = 1.63, p > 0.05$ and $F(1, 20) = 1.99, p > 0.05$, respectively. Thus, all of the significant relationships between social competence and children’s response behaviours during the interview can be explained by the effect that social competence had on the questioning behaviour of the interviewer which, in turn, influenced levels of verbosity, cooperation, and acquiescence.

**DISCUSSION**

The current study examined the relationship between child individual differences and children’s and adults’ behaviour in unstructured interviews. We found that child individual differences measured outside of the interview predicted children’s behaviours in interviews conducted by forensic interviewers. This was true more often for marked (i.e. overt social) than unmarked (i.e. cognitive and covert social) child individual differences. Further, child individual difference measures obtained outside of the interviews predicted interviewers’ behaviours in the interview. Finally, for one measure, social competence, the individual difference seemed to affect child behaviour indirectly through changes in the adult behaviour in response to the child.

The first finding, that child individual difference measures obtained outside of the interviews predicted children’s behaviours in interviews conducted by forensic interviewers, validates others’ research efforts using structured interviews. The only unmarked
variable to predict child behaviours was intelligence, with more intelligent children being more cooperative in the interview. Of the marked variables, emotionality, self-esteem, shyness, sociability, social competence and withdrawal all predicted various child interview behaviours. Higher levels of inaccurate details were associated with children who were more sociable, and less emotional, shy and withdrawn. Higher levels of accurate details were given by children with higher self-esteem. Simple assents were given more often by withdrawn children. Children who were more verbose had higher self-esteem, were more sociable and socially competent and were less shy and less withdrawn. Cooperation in the interview was associated with sociable and socially competent children who were less shy and less withdrawn. Finally, as is of particular interest to suggestibility researchers, children who acquiesced more often were more sociable and socially competent. Although many of these individual differences have been studied before in structured suggestibility interviews, the multiple response behaviours that we assessed give a fuller picture of how children with different characteristics behave in real forensic interviews.

The second finding, that child individual differences hypothesized to be visible to the interviewer were more predictive of child behaviours than unmarked individual differences, is a new finding. In our review of the literature, marked and unmarked individual differences did not seem different in predictive value in structured interviews. However, the distinction between marked and unmarked is not relevant if the interviewer is not allowed to respond to the child, as is the case in structured interview studies. Although many of the marked individual differences did not affect the proportion of leading questions asked within the interview, this does not mean that they did not affect more subtle aspects of the interview. In addition, because the marked variables were social measures and the unmarked were more often cognitive, it is not surprising that social variables were more predictive of conversational remembering than cognitive variables. It bears noting that because of the length and content of the interview, we categorized intelligence as unmarked. The fact that this variable did predict cooperation by the child in the interview, however, gives some support to the idea that intelligence may be a marked cognitive variable, giving rise to its predictive value in the interviewing context.

Three of the child individual difference measures predicted the behaviour of forensic interviewers within unstructured interviews with preschool-aged children. These are the first data that we know of on this issue to date and are questions that can only be answered when the interviewer is allowed to respond to the child (unstructured interviews). Shy and withdrawn children were asked proportionally more leading questions and socially competent children were asked proportionally fewer leading questions by forensic interviewers in unstructured interviews about staged events. Why? We can only hypothesize that interviewers felt the need to be more directive with shy and withdrawn children and felt able to ask open-ended questions with socially competent children. An interesting related question is whether interviewer individual differences are predictive of their own behaviour in unstructured interviews. A separate analysis conducted on this sample of interviews found that interviewers’ propensity to use certain leading question types was predicted by their self-reported preference for quality vs. quantity in their interviewing style (Gilstrap, 2004). Regardless, in the current sample it is clear that differences between children directly influenced different questioning techniques by the interviewers.

Using mediation analyses (Baron & Kenny, 1986), we found that the direct effect of social competence on certain child response behaviours dropped out of the analyses when we considered the proportion of leading questions asked by the interviewer.
social competence was found to predict child response behaviours directly (see Figure 1, Initial Models, Path C). Second, social competence was found to predict the interviewers’ propensity to ask leading questions in the interview (Path A). Third, the proportion of leading questions asked predicted those same child response behaviours (Path B). Finally, the proportion of leading questions asked was added to the models predicting from social competence to child response behaviours (see Figure 1). In this final mediation analysis, the direct effects of social competence on verbosity, cooperation, and acquiescence were rendered statistically non-significant. As detailed in Baron and Kenny, and illustrated with an example in Figure 1, this can be interpreted as meaning that the direct effect from child individual difference to child response behaviours is actually an indirect effect working from child individual difference, through adult response, to child response behaviour. Thus, the real influence of social competence was on interviewers’ responses to differences between children, which resulted in different questioning styles that led to different child response behaviours. We reiterate that this is an analysis that could only be done when interviewers are allowed to respond to the child (i.e. unstructured interviews).

Thus, while some variables predict child behaviours in both unstructured and structured interviews (e.g. self-esteem and shyness), other variables that are predictive of children’s responses to structured suggestibility interviews did not predict children’s behaviours in unstructured interviews (e.g. source monitoring ability and suggestibility). In addition, some variables predict children’s behaviours in unstructured interviews in large part through their influence on adults’ use of leading questions (i.e. social competence). Notwithstanding the theoretical importance of these findings, from a practical standpoint one must question the relative costs and benefits of using the findings from structured vs. unstructured interviews to inform the practices of front-line workers. This point is particularly true given our finding that higher proportions of leading questions were associated with lower levels of acquiescence. As we pointed out earlier, this result is in stark contrast to previous findings that have relied on structured interviews. One possibility might be that there is something about unstructured interviews that causes a psychological reactive response (Brehm & Brehm, 1981) in children following extensive use of leading questions.2 Patterson, Littman, and Brown (1968) found that an adult’s influence on a child, even when only implied, may trigger psychological reactance and Cassel, Roebers, and Bjorklund (1996) have suggested that psychological reactance may explain adults’ decreased compliance to leading questions compared to young children in structured interviews. Whether or not levels of psychological reactance in adults and children would differ in unstructured interviews requires further investigation, but findings along these lines would clearly have significant implications for how we perceive the influence of interviewers’ questioning behaviours on children’s response patterns in forensic interviews. The bottom line is that the findings are sometimes consistent and sometimes inconsistent when structured vs. unstructured interviews are employed in experiments, and this is a significant concern because the interviews to which the field is trying to generalize are unstructured (i.e. even structured forensic interviews allow more variation in interviewer behaviour than structured experimental interviews). Clearly, the next step is to understand the boundary conditions that determine when the difference between the two types of interviews matters to our study of children’s suggestibility, and why.

2We thank one of the reviewers for bringing this point to our attention.
Bearing that in mind, it is important to note that the current study is limited in its use of non-traumatic events, a sample where abuse has not been identified, and although forensic interviewers were used, the interviewers knew that the events were not abuse. Although there is evidence that findings of children’s suggestibility studies do generalize to negative, painful events involving bodily touching (see Bruck et al., 1995; Ornstein, Baker Ward, Gordon, & Merritt, 1997, but for an alternate argument see Saywitz, Goodman, Nicholas, & Moan, 1991), the use of non-traumatic events is always a limitation to consider carefully when applying the results of a study to a forensic setting. The current study did not sample children known to be or suspected of having been abused and it is possible that children in these two categories converse or remember differently. Finally, the interviewers in the current study were forensic interviewers, a group that more closely matches field interviewers. Still, the interviewers may have behaved differently without the pressures inherent in an actual case.

In future work, a set of structured interviews which measures the same child individual differences and also the same variety of child response behaviours would allow a direct comparison with these findings. Pre-testing classrooms and looking at children in the upper and lower quartiles of the distribution on various individual difference measures would provide a stronger test, as would a larger sample than in the current study. Additionally, asking interviewers, after they interview children, about characteristics that they recognized in the children they interviewed would provide a more empirical basis for classification of individual differences as marked vs. unmarked, as well as provide a better understanding of the mechanisms through which these differences influenced their interviewing strategies. Lastly, a cautionary note is that, because data from dyadic interactions inherently lack definitive temporal information, the possibility exists that, in fact, child response pattern is mediating interviewer behaviour. One way to check this would be to use path analysis with goodness-of-fit indices, but these methods have not yet been deemed statistically valid and would require much larger sample sizes. Although we can offer theoretical bases for one interpretation vs. another, this is an important question that we plan to empirically test.

To conclude, the current study validates the findings of structured interviews for some child individual differences, calls into question the generalizeability of findings regarding other child individual differences, and adds new variables that relate to children’s response behaviours in forensic interviews. In addition, the findings in this paper illustrate the interplay between children and interviewers in unstructured interviews and suggest that the relationships, and hence the mechanisms underlying the interviewer-child dyad, may be different when half of that dyad (the interviewer) is constrained. As we have discussed, this bidirectionality has important theoretical and practical implications for conceptualizations of child suggestibility and the mechanisms by which memory distortion occurs in forensic interviews.

ACKNOWLEDGEMENTS

We would like to thank the West Yorkshire Police Department for their generous support and the children and officers who participated. This work was also supported by awards to the first author: an APA Dissertation Award, an APF Dissertation Award, an AP-LS Grant-in-aid, a Mario Eunadi Travel Award and support from the Department of Human Development at Cornell University.
REFERENCES


**APPENDIX**

Magician event script.  
*Clothing:* Big clown boots; Red three quarter length coat; Black trousers; Floppy hat; Frilly apron  
*Act:* Audience participation song. Played with a hand held music box, incorporating a song which included children waving their hands, stomping their feet and wiggling their tongues. He then chose a winner. Winner received a balloon which magician then proceeded to keep blowing up and letting go [the balloon flies around the room]. The magician stated that, ‘I need my special apron to do this trick’ [put on frilly apron]. One of the children was asked to help do a magic trick with some Snow White and the Seven Dwarves cards. Again another balloon prize [the balloon flew around the room]. The magician selected audience members to make a band, they each received a different instrument to play. Another magic card trick. The event concluded with an audience participation song.