

# Preschoolers' Suggestibility: Effects of Developmentally Appropriate Language and Interviewer Supportiveness

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Three- and four-year-old children were interviewed about a personally experienced event after a 2-week delay. Children were interviewed with one of four alternative interview protocols that differed with regard to degree of interviewer support and language appropriateness. Accuracy of responses to direct questions concerning event features was scored, and answers to misleading questions were coded as an indicator of suggestibility. Individual difference measures of language ability, temperament, task engagement, and parenting attitudes were also collected. The results indicate that interviewers can increase young preschoolers' resistance to suggestibility by using language that is easily comprehensible to young children. Language appropriateness was not as important for the older children and the degree of support did not influence suggestibility for either the younger or the older children. Furthermore, individual difference measures were not related to accuracy for direct questions or suggestibility.

As increasing numbers of young children participate in the legal system (see Daro & Mitchell, 1990; Gray, 1993), the accuracy with which they can provide reports of personal experiences has become an increasingly important social issue (Ceci, 1995). In efforts to enhance the quality of children's reports, psychologists have recently focused on interview practices that facilitate young witnesses' provision of information. For example, the use of the Cognitive Interview (Fisher & Geiselman, 1992), a protocol based on practices known to enhance retrieval in adults (e.g., reporting events from different perspectives), has been shown to facilitate school-aged children's reports of experimenter-provided interactions (Geiselman, Saywitz, & Bornstein, 1993; Fisher & McCauley, 1995). Recent work has established that interview practices can improve the reports of actual child witnesses. When children who had previously disclosed abuse were questioned by interviewers who used

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either specially prepared scripts that incorporated many of the principles of the Cognitive Interview or general guidelines, the use of the scripts resulted in substantially more open-ended recall (Sternberg, Lamb, Hershkowitz, Yudilevitch, Orbach, Esplin, & Hovav, 1997; see also Poole & Lamb, 1998).

Investigations concerning the use of the Cognitive Interview and similar protocols have certainly furthered the understanding of the conditions under which the reports of older children can be optimized. Much less is known, however, about facilitating the testimony of very young children. Indeed, as Sternberg et al. (1997) noted, "Although there is consensus among researchers and clinicians that children under 5 are the most difficult to interview, systematic field research on preschoolers in forensic contexts is nonexistent" (p. 1141). Moreover, studies of actual forensic interviews can provide very limited information regarding children's suggestibility, because all the details of children's reports cannot be verified under real-world conditions. For this reason, laboratory-based investigations, in which children's actual experiences can be specified, are needed to complement studies of forensic interviewing (see, e.g., Ornstein, Baker-Ward, Gordon, & Merritt, 1997). However, attempts to use such procedures that succeed with older children have had very limited success in laboratory investigations involving preschoolers (see Bekerian & Dennett, 1995; Poole & Lamb, 1998), in part because of the developmental limitations of very young children. Hence, more basic work with preschool children is needed to identify the practices that may prove to be of real-world importance. Techniques that may increase preschoolers' abilities to reject misleading questions are particularly needed because of the greater suggestibility of very young children (see Ceci & Bruck, 1993).

Although relatively few investigations have directly manipulated interview context to measure the effect on young preschoolers' suggestibility, there is some evidence that resistance to misleading questions can be increased under certain circumstances. For example, in a study designed to examine the effects of experimenter-provided stereotypes, Leichtman and Ceci (1995) reduced 3- and 4-year-old children's false accusations when the preschoolers were given simple countersuggestions. Empirically verifying aspects of practice that can enhance the accuracy of the youngest witness' reports can potentially inform the efforts of those who continue to develop protocols for forensic investigations. The present investigation examines two factors, the interviewer's provision of social support and the use of developmentally appropriate language, that have been hypothesized as important in affecting preschoolers' resistance to misleading questions.

### **Interviewer Supportiveness**

Interviewers' attempts to create child-friendly situations have been shown to influence young children's resistance to suggestion, as will be examined below. Unfortunately, as Goodman, Rudy, Bottoms, and Aman (1990) pointed out, in actual cases of abuse, interviewers who build rapport with children may be criticized. The critics of rapport-building suggest that this supportiveness may encourage inaccuracies by reinforcing false statements. In contrast, the limited extant data suggest that interviewer supportiveness may actually decrease suggestibility among the youngest children.

Goodman, Bottoms, Schwartz-Kenney, and Rudy (1991) conducted research that contradicts the above belief about the negative effects of rapport-building. These researchers told half of the 3- to 7-year-old participants that they were going to be interviewed by a "nice" experimenter (reinforcement condition). In this condition, the examiner began the interview by giving the children juice and cookies and then encouraged the participants as they recalled an inoculation. The interviewer smiled at the participant throughout the interview, complimented the child on her performance regardless of her accuracy, and praised the child with compliments such as "You're doing a great job" or "You've got a great memory" (p. 78). The participants in the other condition did not receive this degree of reinforcement. Here, the interviewer was neutral and did not make positive comments about the children's recall. Instead, the interviewer made comments such as "OK" and "all right" (p. 78). Although interviewer reinforcement did not affect the older children's recall, it enhanced the memory performance of the younger children. The 3- to 4-year olds in the reinforcement condition answered abuse-related questions more accurately than those in the no-reinforcement condition; indeed, their level of performance equaled that of the older children. Further, the younger children in the no-reinforcement group made significantly more commission errors than those in the reinforcement condition. Although interviewer effects were not reported, none were observed (B. L. Bottoms, personal communication, September 19, 1998).

Interviewers' nonverbal behaviors may also be seen as supportive. It seems that preschoolers can interpret warmth cues based on the amount of eye contact between conversational partners (Knapp & Hall, 1992). Mehrabian (1972) found that many nonverbal cues are interpreted as reflecting immediacy or intimacy. Some of these cues that may influence the supportiveness of an interview include: leaning forward, frequent eye contact, and more positive facial expressions such as smiling. It can be argued that children may be more likely to disagree with an interviewer whom they perceive as warm and accepting. If so, interviewers' supportiveness, as reflected in their praise of children's answers, may also decrease preschoolers' susceptibility to suggestions.

### **Appropriate Language**

Another possible way to insure that children are responding at an optimal level is by incorporating an appropriate level of language into the interview. When questioning a child, it is often difficult to know if the child understands the question, and so it is hard to determine what the child is able to report from the relevant incident. This difficulty is compounded by young children's failure to request clarification if they do not understand what they have been asked (Flavell, Speer, Green, & August, 1981). In addition, there are certain sentence constructions that are used regularly in everyday speech that are not typically understood by young children. Saywitz, Nathanson, and Snyder (1993) noted that compound sentences that contain embedded clauses are beyond the comprehension of many children under 8 years old. In addition, Saywitz (1995) suggested that interviewers should avoid three- to four-syllable words, pronouns, the use of relational terms such as more or less, and passive voice. Further, Dale, Loftus, and Rathburn (1978) found that 4- and 5-year

olds had higher rates of false alarms to questions that contained definite articles in comparison with indefinite articles. In other words, young children, influenced by the particularity of a definite article, would be more likely to answer incorrectly to the question, "Did you see the red shirt?" rather than, "Did you see a red shirt?".

Research concerning children's reports abounds with instances of questions that appear too complex for young children with regard to the standards for comprehension reported above. For example, questions asked by Ornstein and his colleagues in their investigations of children's memories for medical experiences (e.g., Baker-Ward, Gordon, Ornstein, Larus, & Clubb, 1993; Greenhoot, Ornstein, Gordon, & Baker-Ward, 1999; Ornstein, 1995) included, "Did he put his ear up against your chest and listen to your heart?" The pronouns and complexity of this sentence may be beyond a young child's understanding. Similarly, Rudy and Goodman (1991) presented the following question: "What did the costume that he asked the other boy [girl] to wear look like?" (p. 538; see Poole & Lamb, 1998, for additional examples). On the basis of the above research, it can be considered rather likely that the definite article and the clause in this question confused the younger children in this study, and consequently influenced their responses.

In addition to sentence difficulty, unexpected topic changes may be problematic for young children. Saywitz (1995) stated that when an interviewer is changing from one topic to another, the child needs transitional sentences to aid in understanding. For example, interviewers could say, "Now let's talk about what the doctor did" to introduce the child to the next topic. In children's everyday communications they usually receive links from one topic to another, but in an interview situation this is not as common (Brennan & Brennan, 1988).

Furthermore, Carter, Bottoms, and Levine (1996) found that very complex sentences similar to those used in court proceedings reduced 5- and 7-year olds' accuracy concerning questions about a puppet show. The complex questions included clauses, passive voice, difficult vocabulary (Latin words, legal terms), and other developmentally inappropriate features. In addition, the authors noted that the children rarely admitted their lack of comprehension of the questions.

From the above discussion, it is clear that interview questions must be short and unambiguous, and new topics must be introduced to the child before they are discussed. Otherwise, a participant is more likely to answer the questions in a way that was not intended. Additionally, individual difference factors may also predispose a child to inaccuracies in her responses.

### **Additional Factors Related to Accuracy of Responses**

Researchers have suggested that a child's temperament will affect her reporting of an event in a variety of ways. For example, Merritt, Ornstein, and Spicker (1994) interviewed 3- to 7-year olds after an invasive medical procedure. They found that two dimensions of temperament as described by the Temperament Assessment Battery for Children (TABC) (Martin, 1988), adaptability and approach or withdrawal, were positively and very strongly correlated with recall at both the initial interview and at a 6-week delay interview. Similarly, Gordon, Ornstein, Nida, Follmer, Crenshaw, and Albert (1993) also found that temperament predicted some

forms of recall. Specifically, for 3-year olds, the TABC dimension of approach or withdrawal significantly predicted open-ended recall.

A child's off-task behaviors during the interview may also reflect a predisposition to inaccuracies in responding. Here, if a child just wants to complete the interview and has no interest in the questions, the child may resort to answering all questions with a "yes" response. Comparing children on their degree of task engagement as it is manifested in their behaviors during the interview may also explain why some children are less accurate than others.

Children's verbal ability may also contribute to their susceptibility to suggestion. Gudjonsson (1990, 1991) found that with adults, suggestibility is modestly related to intelligence, and Sharrock (1988) found that suggestibility and intelligence were highly related. If a question is confusing for a child because the wording is too advanced or because the sentence construction is too complicated, the child will have difficulty answering the question regardless of memory strength. A measure of verbal ability such as mean length of utterance (MLU) may explain why some children exhibit increased suggestibility and others do not.

Finally, parental attitudes may also bear on a child's impression of interview demands. Children of parents who teach them that they should not disagree with adults may feel very uncomfortable in telling an interviewer that she is mistaken (i.e., in correctly rejecting questions about actions that did not transpire). A measure of parental attitudes such as the parental modernity (PM) scale of Schaefer and Edgerton (1984) may explain why some children are predisposed to suggestibility. With measures of temperament, verbal ability, off-task behavior, and parental attitudes, it may be possible to identify differences among children who are and are not relatively resistant to suggestion.

### **Rationale for the Present Investigation**

This investigation was designed to contribute to the understanding of suggestibility in preschool-age children by examining the effects of interviewer style and complexity of language. Children participated in an experimenter-provided activity so that details of their experience could be verified. Because of the limited extent to which children as young as 3 provide information in response to open-ended questions and the concerns that arise from the resulting need to rely on yes or no probes (see Baker-Ward, Ornstein, Gordon, Follmer, & Clubb, 1995), answers to specific queries were examined in this investigation. The interview protocols consisted of direct questions about present and absent actions in approximately equal proportions. Preschoolers were interviewed under "neutral" and "highly supportive" conditions. In this regard, the present research reflects an attempt to replicate and extend the Goodman et al. (1991) finding that children are less suggestible when they are in a supportive interviewing environment. Specifically, it may be possible that interviewers' supportiveness may interact with the degree of complexity of the interviewers' questions (as described below). Children who have a supportive interviewer may be more likely to ask for clarification when they do not understand a question. Based on Goodman's results and clinical experience that suggests the importance of establishing rapport (e.g., Gordon, Schroeder, Ornstein, & Baker-Ward, 1995), supportiveness was expected to improve interview performance.

Further, the effects of language on accuracy were examined by comparing children's memory performance when different interview protocols were used. A "standard language" interview contained questions typical of everyday speech and previous research concerning children's reports. The alternative "developmentally appropriate" interview protocol embodied the guidelines presented above. It was expected that appropriate language would reduce the frequency of inaccurate responses.

Individual differences were also explored to clarify their relation with accuracy of responses to direct and misleading questions. Children's MLU and extent of on-task behavior were expected to predict accuracy of reports, whereas a behavioral style characterized by greater withdrawal (as measured by the TABC) and more traditional parenting attitudes (as assessed by the PM scale) were expected to predispose a child to suggestibility.

## METHOD

### Participants

Participants were 64 children attending one of seven classes for preschoolers in daycare classes in suburban communities near Raleigh, North Carolina. The daycare centers served primarily middle- to upper-middle-income families. The participants' mean age was 48.41 months ( $SD = 4.19$ ), and the sample included 35 females and 29 males. Children were recruited from classes for 3-year olds in late spring; consequently, many participants would soon join a 4-year-old class. Reflecting the racial composition of the daycare centers, the sample consisted primarily of children of European ancestry. Approximately 91% of the children were white, approximately 6% were African-American, and 3% were Asian-American.

### Design and Procedure

The experiences of the children in the different groups varied only during the final interview. Each child was randomly assigned to one of four groups created by orthogonal combinations of interview support (supportive vs. neutral) and appropriate language (appropriate vs. standard). The procedure resulted in a 2 (interviewers' supportive behavior)  $\times$  2 (linguistic complexity) factorial arrangement of treatments. In an initial session, all participants in groups of two to four heard a volcano story (from Simon, 1988) and saw pictures of volcanoes. The next day, all of the children participated in a staged event in an unoccupied classroom. The event involved showing the children, again in the same groups of 2 to 4, how to make a model volcano that "erupted" when baking soda and red vinegar were mixed in a crater of sand. Each child participated in the event by measuring baking soda, pouring baking soda into the crater, and by smelling the vinegar before it was poured into the crater. See Appendix A for a more detailed description of the volcano event. Immediately after the event, each child was separately engaged in an unstructured conversation with the primary investigator. The conversation was recorded and subsequently analyzed to determine the child's basic level of language development. Two weeks after the staged event ( $M = 14.3$  days;  $SD = 1.6$ ), the



children were randomly assigned to one of four interview conditions. Two of these groups received an interview about the staged event that was very supportive, as defined by Goodman et al. (1991). The remaining two groups were interviewed by an interviewer who interacted more neutrally with the child. In addition, one supportive group and one neutral group were interviewed with a linguistically appropriate interviewing method. Two female undergraduate students in psychology were trained to conduct both supportive and neutral interviews. Each examiner interviewed about half of the children (56.25% vs. 44.75%) and contributed proportionally to the data obtained in each of the four cells of the design.

### **The Interview Protocols**

***Supportiveness.*** The interview protocol in the supportive conditions emphasized the importance of letting the child know that the interviewer is pleased to learn about the child's memory content, rather than agreement with the interviewer. Compliments such as "you've got a great memory!" and "you're working so hard!" were given at random points throughout the interview. Supportive interviewers talked in a friendly manner and made sure that the child understood the questions. Additionally, based on Knapp and Hall's (1992) and Mehrabian's (1972) research, the supportive interviewers demonstrated behaviors associated with greater comfort and intimacy in interpersonal interactions. Hence, when interviewing children in the supportive conditions, the interviewers made frequent eye contact with the child, sat in close proximity to the child, and leaned forward. In addition, to build rapport before the interview, the supportive interviewer gave the child juice and cookies.

A neutral interviewer smiled less frequently than a supportive interviewer and said only "OK" or "all right" after answers were given. The interviewer did not look at the child as often as with the supportive interviews, leaned back, and rarely used the child's name during the interview. The interviewer spoke in a neutral manner, did not monitor the child's understanding of the instructions, but also did not create an accusatory atmosphere. Participants in these groups were given their choice of juice and cookies after the interview. The supportive and neutral interviews were comparable in length.

Interviewers were trained in the use of supportive and neutral behaviors before data collection began, with each assistant completing several pilot interviews and participating in supervisory sessions involving viewing the tapes with the investigator to receive feedback. To provide a manipulation check, an undergraduate child psychology class ( $N = 20$  students) rated four randomly selected videotaped interviews, one supportive and one neutral, for each interviewer. Raters were instructed to rate the interviewer's behavior as supportive, neutral, or not nice for every 3-minute block. The students' ratings correctly classified the behavior of Interviewer 1 as supportive or neutral in 98% of the 3-minute blocks. Interviewer 2 was judged as using the approach corresponding to the actual interview condition in 91.7% of all classifications. No raters indicated that the interviewers were "not nice." Hence, it was concluded that the interviewers successfully followed the appropriate protocol in their interactions with the children.

***Linguistic Appropriateness.*** Based on the research described earlier, the protocol conveyed the same questions in shorter format than in the standard interview, rephrased embedded clauses, avoided definite articles whenever possible, and presented transitional sentences to structure the interview (e.g., “We were talking about craters. Now we are going to talk about lava.”). The standard interview protocol, in contrast, contained embedded clauses and finite articles, did not include transitional sentences, and asked the questions using relatively longer utterances.

***Interview Questions.*** The memory interviews were structured around the central events that occurred during the volcano story and model-building. The interview protocol also contained 10 questions about events that did not occur during these interactions. The interview was videotaped for data analysis.

All interviews consisted of specific yes and no questions, with three correctly leading and positively biased questions, six correctly leading and negatively biased questions, five misleading and positively biased questions, and four misleading and negatively biased questions. These four categories of questions were originally intended to separate those children answering with a yes-response bias from those who acquiesce. The children, however, did not exhibit response biases, so the present analysis will focus only on the misleading versus correctly leading aspect of the questions. (See Appendix B for a listing of the appropriate language and standard interviews.)

After the first 18 questions were answered, the interviewer told the child that she forgot to write some answers down and hence must ask some of the questions again. This was performed to insure that participants comprehended the negatively biased questions; six of these questions were rephrased and repeated with a positive bias at the end of the interview. Two questions originally phrased with a positive bias were also rephrased, but these retained the positive bias. This procedure also enabled the examination of the child’s consistency in response to questions asked twice.

## **Coding**

Children’s susceptibility to suggestion and accuracy of responses were coded from the videotapes. Participants’ answers were scored in terms of percent total correct responses to direct questions, percent correct denials of misleading questions, and percent of “I don’t know” answers. In addition, a percent change score was calculated to characterize the extent to which children changed their answers when questions were asked the second time ( $M = 13.93$ ;  $SD = 13.24$ ).

## **Individual Differences**

Participants’ task engagement behaviors were coded once every minute by two undergraduate students. Each judgment classified the child as on-task, somewhat on-task, and off-task. Coders were instructed to rate a participant as on-task when the child was always paying attention to the interviewer, did not protest in answering questions, and did not play with any objects. Coders were instructed to rate a participant as off-task if the child never paid attention to the interviewer, protested



in answering, or if the child consistently played with objects. A child was coded as somewhat on-task if a combination of the above codes was appropriate. The percentage of the child's behavior in each of the categories across all 1-minute blocks was tallied. Coders reached a reliability level of 87.5%.

In addition, MLU was measured to determine the relationship between verbal ability and accuracy of responding. After the volcano eruption, each child conversed with the primary investigator individually to determine the child's MLU. After the child made 10 distinct utterances, the child was prompted to talk about subjects that interested her. Each participant's next 30 sentences were recorded and analyzed. Subjects of discussion included the child's favorite movies, the daily routine at her child care center, the family pet, and siblings. Only 42 children's MLU scores could be calculated, however, because one participant refused to talk and the remaining 21 conversations were lost as a result of mechanical failures. Mean length of utterance was coded following standard procedures (Brown, 1973).

Two parental questionnaires were mailed to the parents along with the videotape of the child's completed interview. Parents were asked to return the completed questionnaires in a stamped envelope provided by the experimenter, and 64.1% of the families complied with the request. Ninety-eight percent of the respondents were mothers; two percent of the respondents were fathers.

The first instrument, the parent form of the TABC (Martin, 1988), was given to parents to elicit their impressions of the child's behavioral style. The 48 items of the TABC are intended to measure six dimensions of temperament: activity, adaptability, approach or withdrawal, emotional intensity, ease of management through distractibility, and persistence. Internal consistency is high with alphas ranging from .70 to .90.

The parents also received the PM scale of Schaefer and Edgerton (1984) along with the TABC. This scale is designed to measure traditional parenting attitudes such as viewing human nature as evil, emphasizing obedience, and respecting the parents' authority. Progressive attitudes such as open mindedness, respect of others' opinions, and having an emphasis on the future are also measured (Schaefer & Edgerton, 1984). The two subscales are independent; hence, it is possible for parents to receive high scores on both the traditional and the progressive dimensions. The authors crossvalidated the scale by comparing parental interviews concerning traditional and progressive views with scale scores.

## RESULTS

Correct responses to direct questions were defined in terms of correct responses to the questions addressing features that actually transpired during the volcano event. Suggestibility was operationalized as the child's failure to reject misleading questions. (See Appendix B for a listing of these questions.) Each correct rejection reflected the child's disagreement with the interviewer's implication about an absent event. Because interviewers on occasion omitted questions, both responses to direct questions and correct rejections of misleading questions were analyzed as the percent of questions presented to the child to which the child responded correctly. "Don't know" responses occurred very infrequently; only four children were ob-

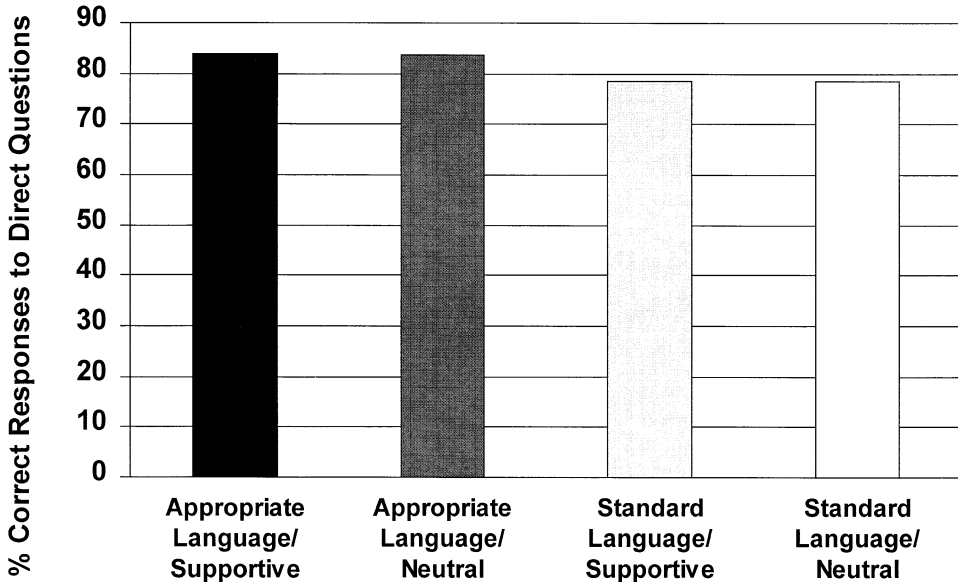
served to answer in this manner, and did so less than 6% of the time in each case. Hence, questions to which the child answered "don't know" could not be analyzed across conditions. Children answered either "yes," "no," or "I don't know" to all questions; there were no questions to which a child did not respond.

Preliminary analyses were performed first to insure that there were no differences in accuracy of responding based on gender, age, or interviewer. As expected, *t*-tests revealed no differences between males and females in either responses to direct questions ( $t(62) = 1.07; p = .85$ ) or suggestibility ( $t(62) = .99; p = .32$ ). Because the age range within the 3-year-old classrooms was greater than had been expected, ranging from 39 to 55 months ( $SD = 4.22$ ), the relation between months of age and memory performance was examined. Months of age were marginally correlated with correct responses to direct questions ( $r = .25; p = .07$ ) and strongly correlated with suggestibility ( $r = .41; p = .0017$ ).

The two examiners' comparability in eliciting successful performance in each of the interview conditions was examined in separate  $2$  (interviewer)  $\times$   $2$  (language condition)  $\times$   $2$  (supportiveness) analyses of variance (ANOVAs). No main effects or interactions involving interviewer were observed for either correct responses to direct questions ( $F(5, 58) = .64; p = .67$ ) or suggestibility ( $F(5, 58) = .56; p = .72$ ). Hence, because the two interviewers were equally successful in conveying supportive and neutral interview behavior and in using standard and developmentally appropriate language, the data were averaged across interviewers for the remaining analyses.

It is possible that the negatively biased questions in the appropriate language interview protocol may have been less easy to understand than the positively biased questions (see questions 3, 9, 11, and 13 for the appropriate language interview in Appendix B). To address this point, accuracy for the misleading, positively biased questions was compared with accuracy for the misleading, negatively biased questions. Correctly leading questions were not analyzed because of the small number of correctly leading, positively biased questions. It appears that the participants understood the negatively biased questions as well as the positively biased questions. Children answered 74% of the negatively biased questions and 70% of the positively biased questions correctly. Furthermore, negatively biased questions were not more difficult for younger than for older children. Children who were 48 months or younger correctly answered 74% of the negatively biased questions, whereas older children answered 73% correctly. Therefore, it is safe to conclude that the negatively biased questions in the appropriate language interview were not detrimental to children's accuracy.

The main analyses reported below examine the effects of interviewer behavior and language on correct responses to direct questions and suggestibility. Because age in months was linked with the rates of both correct responses to questions regarding present features and correct denials of misleading questions, analyses of covariance (ANCOVAs) were used to control statistically for the effect of months of age. The number of participants from whom data could be included in the analyses covarying age was reduced to 55, because months of age were unavailable for nine children. Within all of the analyses relating correct responses to direct questions and experimental conditions, age affected accuracy of reports, supporting its use as a covariate. These analyses are reported initially in the section below.



**Figure 1.** Percent Correct Responses to Direct Questions by Interview Group.

After the report of the ANCOVA, differences in age and accuracy were further explored for both correct responses to misleading questions and suggestibility by using months of age as the basis of a median split that separated the sample into younger and older groups of children. The effects of interview language and supportiveness as well as post-hoc age group were then examined in ANOVAs. The effects of interviewer behavior on memory performance were further explored by examining group differences with regard to responses to repeated questions and time on-task. In a final section, the relation between measures of individual differences and memory performance are explored in a series of correlational analyses.

### **Interviewer Language and Behavior**

Neither interviewer language nor degree of supportiveness appeared to affect accuracy of responses to direct questions when the sample is considered as a whole. Children in the appropriate language conditions responded correctly to 81.23% of the direct questions, whereas those in the standard language conditions responded correctly to 81.13% of the direct questions. Similarly, levels of performance were comparable in the two supportiveness conditions, with children who were interviewed by supportive interviewers responding correctly to 83.8% of the direct questions, compared with 78.5% among the children who were questioned by neutral interviewers. The pattern of results indicated in Figure 1 was not affected by removing the variability contributed by age. A 2 (appropriate language)  $\times$  2 (supportiveness) ANCOVA, with months of age as the covariate, revealed no

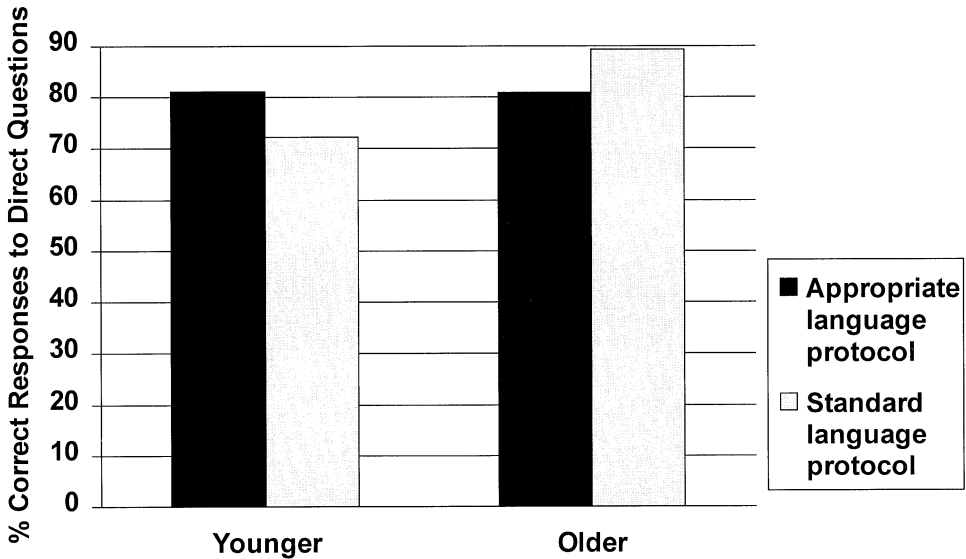
significant effect of the model in the analysis of correct responses to direct questions ( $F(4, 50) = .99; p = .42$ ).

To explore further the impact of age on group differences in accuracy of responses to direct questions, groups of younger and older participants were created by using months of age as the basis for a median split. The group of younger children included 12 males and 13 females. The mean months of age for this group was 44.5 (range = 39–47 months). The older group consisted of 14 boys and 16 girls, with a mean age of 51.7 months (range = 48–55 months).

Figure 2 presents the direct question scores by interviewer language for the younger and older groups of children. As shown in this figure, the effects of language condition appear to differ by age group. The younger children in the appropriate language conditions correctly reported a greater percentage of features ( $M = 81.07; SD = 16.03$ ) than younger children in the standard language conditions ( $M = 72.28; SD = 14.68$ ) for direct questions. This pattern was reversed, however, among the older children; those in the appropriate language conditions reported fewer features ( $M = 80.87; SD = 21.70$ ) than did older children in the standard language conditions ( $M = 89.33; SD = 14.21$ ). These apparent trends in the data, however, were not confirmed in the analysis. A 2 (age group)  $\times$  2 (supportive)  $\times$  2 (appropriate language) ANOVA determined that the full model was not significant ( $F(4, 50) = 1.15; p = .35$ ). Within this model, there was a marginal main effect of age group ( $F(1, 47) = 3.51; p = .07$ ). As expected, the older children reported a greater percentage of features ( $M = 85.10; SD = 18.53$ ) than did the younger children ( $M = 76.50; SD = 15.68$ ). The apparent age by language condition interaction did not reach significance ( $F(1, 47) = 3.40; p = .07$ ).

**Suggestibility.** Children in the appropriate language conditions accurately responded to 74.45% ( $SD = 15.05$ ) of the misleading questions, whereas children in the standard language conditions accurately responded to 65.31% ( $SD = 17.98$ ) of the misleading questions. In contrast, interviewer supportiveness did not seem to have an impact on performance, with children correctly denying 70.22% ( $SD = 16.55$ ) and 69.15% ( $SD = 17.89$ ), respectively, of the misleading questions in the supportive and neutral conditions. A separate 2 (appropriate language)  $\times$  2 (supportiveness) ANCOVA, with months of age as the covariate, revealed a significant effect of the model for correct rejections to misleading questions ( $F(4, 50) = 3.96; p = .007$ ). A main effect of appropriate language was indicated ( $F(1, 50) = 4.84; p = .03$ ). As expected, no significant effects were found for support ( $F(1, 50) = 0.07; p = .80$ ), and there was no support by language condition interaction ( $F(1, 50) = 0.00; p = .96$ ). Hence, when age is covaried, appropriate language significantly effects how suggestible young children are in an interview.

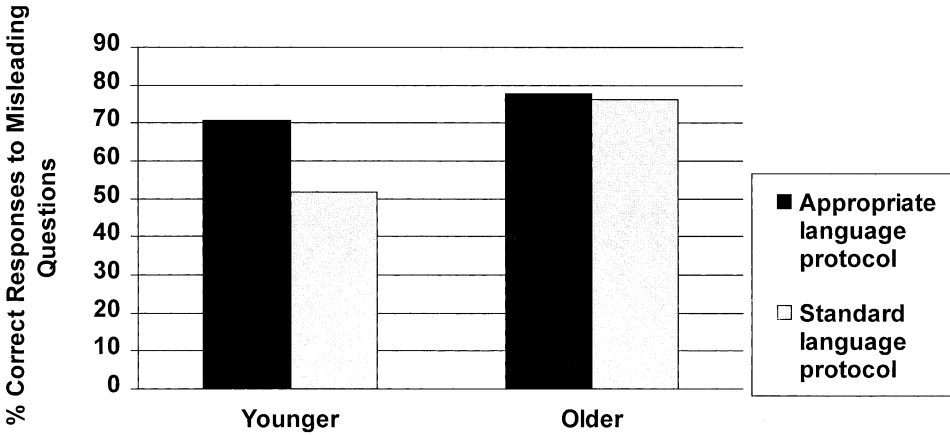
This pattern of results is further documented when age differences in suggestibility are examined by comparing suggestibility among older and younger groups of children. The post-hoc groups created by using months of age as the basis of a median split, as described above, were used to compare performance by language and behavior conditions. As shown in Figure 3, developmentally appropriate language appeared to enhance resistance to suggestibility among younger, but not older, children. This pattern was confirmed through the use of a 2 (age group)  $\times$



**Figure 2.** Percent of Correct Responses to Direct Questions by Age Group and Language Protocol.

2 (supportiveness)  $\times$  2 (appropriate language) ANOVA. The full model was significant for correct rejections of misleading questions ( $F(7, 47) = 4.13; p = .001$ ). Age group was significantly related to percent of correct rejections to misleading questions, with the older children being less suggestible ( $M = 77.0; SD = 13.5$ ) than the younger children ( $M = 60.8; SD = 17.1$ ). Moreover, there were main effects of appropriate language ( $F(1, 47) = 5.81; p = .02$ ). As expected, children in the appropriate language conditions were less suggestible ( $M = 74.5; SD = 15.1$ ) than children in the standard language conditions ( $M = 65.3; SD = 18.1$ ). These results, however, must be interpreted within the context of the expected age by appropriate language interaction ( $F(1, 47) = 5.09; p = .03$ ). The younger children in the appropriate language conditions exhibited less suggestibility ( $M = 70.7; SD = 14.6$ ) than younger children in the standard language conditions ( $M = 51.8; SD = 14.3$ ), whereas language condition did not affect the percent of correct rejections to misleading questions for the older age groups.

**Repeated Questions.** These questions were analyzed to measure whether supportive interviewers or linguistically appropriate questions reduce a child's tendency to change her answer if she is asked the same question twice. A 2 (supportive)  $\times$  2 (appropriate language) ANCOVA, with months of age as the covariate, did not reveal a significant effect for the full model ( $F(4, 50) = .68; p = .61$ ). Within the model, neither level of support ( $F(1, 49) = .27; p = .61$ ) nor appropriate language ( $F(1, 49) = .13; p = .72$ ) was significantly related to how often children changed their answers.



**Figure 3.** Percent of Correct Rejections to Misleading Questions by Age Group and Language Protocol.

### Task Engagement

The children's behavior was coded as on-task 60.92% of the time, as somewhat off-task 25.06% of the time, and as off-task 16.38% of the time. Because of previous speculation that supportive interviewer behavior might have detrimental effects on participation in the interview, group differences in off-task behavior were examined in a 2 (interviewer language)  $\times$  2 (interviewer supportiveness) ANCOVA, with months of age again used as a covariate. The extent to which children were off-task did not differ by language ( $F(1, 48) = .83; p = .37$ ) or supportiveness condition ( $F(1, 48) = .12; p = .73$ ). Furthermore, off-task behaviors were not related to accuracy of responses to direct questions ( $r = .17; p = .21$ ) or suggestibility ( $r = -.04; p = .79$ ).

### Individual Differences

Individual difference measures were hypothesized to be related to accuracy of responses to direct questions and suggestibility. Most correlations between individual difference variables and accuracy were conducted with the effects of months of age partialled because months of age and memory performance are related. The correlations between accuracy of responses to direct questions and MLU and suggestibility and MLU were not conducted with the effects of months of age partialled because these should be highly correlated. If these were related, it would then be interesting to note how much unique variance MLU explained after partialling out the effects of months of age.

In contrast to expectations, analyses of children's individual differences indicated that participants' MLU scores were not related to their accuracy of responses to direct questions ( $r = .18; p = .23$ ) or their correct rejections of misleading questions ( $r = .06; p = .73$ ). Furthermore, MLU was not different for language condition ( $F(1, 39) = 1.2; p = .28$ ) or supportiveness group ( $F(1, 39) = 2.1; p = .15$ ).



The TABC measures suggest that the sample as a whole is similar to the TABC normative samples. The mean score for the normed data for all eight dimensions of temperament is 50, with 10 points as the standard deviation. The present sample means for the eight dimensions ranged from 47.4 on the adaptability measure to 51.7 on the intensity dimension. Children's scores on the approach or withdrawal dimension of the TABC were not related to accuracy of responses to direct questions ( $r = -.03$ ;  $p = .82$ ) or to correct rejections of misleading questions ( $r = .12$ ;  $p = .51$ ). Interestingly, several dimensions of temperament were related to task engagement ratings, suggesting the validity of the parents' assessments of children's behavioral style. When children received high scores on the activity dimension of the TABC, their behavior during the interview was coded as on task less often ( $r = -.40$ ;  $p = .01$ ).

Parents showed little variability on the PM progressive parenting attitude scale ( $M = 34.1$ ;  $SD = 3.5$ ). The scores for traditional parenting attitudes suggest more variability ( $M = 50.8$ ;  $SD = 11.0$ ). Parents' scores on the traditional attitudes and progressive attitudes scales of the PM were not correlated with either accuracy of responses to direct questions ( $|r|s \leq .28$ ;  $ps > .08$ ) or suggestibility ( $|r|s \leq .22$ ;  $ps \geq .17$ ).

## DISCUSSION

This investigation examines young children's accuracy of responses to direct questions and suggestibility when differing interview protocols are used. Specifically, language appropriateness and supportive interviewer behaviors were hypothesized to increase accuracy of responses to direct questions and resistance to suggestibility. From the present results, it appears that to optimize young children's accuracy in reporting their personal experiences, it is important to tailor the interview language to fit the child's expected level of language development. The language guidelines proposed by Saywitz et al. (1993) and Dale et al. (1978) were used in this investigation to develop the appropriate language protocol. The resulting questions appear to be effective in enhancing young preschool children's abilities to reject misleading questions. Specifically, when very young children are involved, interviewers are encouraged to avoid embedded clauses, definite articles, and complicated syntax.

### Language Development

Interesting, these linguistic modifications did not appear to be as important for the older children in the sample, despite the fact that they were recruited from the same classrooms. To explore further the present age differences and inaccuracy of responses to direct questions, children were divided into two groups based on their months of age: children 47 months and younger were in the "younger" group, and children 48 months and older were in the "older" group. Here, the older children did not differ in suggestibility based on language appropriateness, but the two younger groups did differ by 8.8% for correct rejections of misleading questions, with the children in the appropriate language conditions exhibiting greater accuracy. These findings suggest that the youngest children in suggestibility studies are particularly sensitive to the complexity of the interview questions.

It seems likely that developmental changes in language abilities between approximately 3.5 and 4.5 years of age may underlie the differences in younger versus the older children's responsiveness to "developmentally appropriate" language as conveyed in the present interview protocol. However, the children's MLU, a frequently used measure of language production, was not associated with accuracy of responses to direct questions or suggestibility in this investigation, as discussed below. Work by Gordon et al. (1993) similarly failed to reveal a link between measures of memory performance and children's scores on an alternative measure of expressive language. Hence, future research efforts may benefit from assessing individual differences in receptive language, rather than expressive language. Although previous results have failed to find a link between receptive vocabulary, as measured by the Peabody Picture Vocabulary Test-Revised (PPVT-R), and recall (Baker-Ward et al., 1993), the present findings support the need to examine measures of syntax comprehension. Metalinguistic awareness appears to develop fully after age 5 (Saywitz & Wilkinson, 1982); this, too, may be an area in which more research is needed to understand better what children can report.

### **Supportiveness**

In contrast to expectations, interviewer language and supportiveness did not clearly affect accuracy of responses to direct questions, although there was a tendency for the younger children to benefit from appropriate language. In examining the general absence of effects of this kind of accuracy of responses, it should be noted that only yes or no questions were used in this investigation. Previous investigations (see Ornstein, Larus, & Clubb, 1991; Ornstein, 1995) have noted that younger children have particular difficulties in reporting information in response to open-ended probes. Hence, future investigations should examine the effects of developmentally appropriate language and child-friendly interviewer behavior on children's recounting of personally experienced events.

It was originally hypothesized that supportive interviewers would also reduce young children's suggestibility and increase their accuracy of responding to direct questions. The present data did not support this hypothesis even when the effects of months of age were covaried. It is important to note, however, that interviewer supportiveness did not *increase* suggestibility. Apparently, the opposite is believed to be true in the legal system. As Goodman et al. (1991) state, "... it has been proposed that interviewer practices, such as complimenting children on their performance, may reinforce inaccuracies and lead to false reports of abuse" (p. 72). In addition, in the present investigation, interviewer supportiveness was not associated with off-task behavior in the child. Hence, from the present results, one may conclude that if interviewers build rapport and compliment the child on her performance noncontingently, the child's experience in the legal system may be made more comfortable without negatively affecting the quality of her testimony.

An important point to be emphasized with regard to the supportiveness dimension is that the interviewers were neither badgering nor antagonistic to the children in the neutral conditions—they were simply neutral. The interviewers in this condition occasionally smiled at the children and sometimes, although less frequently

than in the supportive condition, told the children that they were doing well. The participants in the neutral conditions may have interpreted their interviewers' actions as more supportive than nonsupportive. For obvious ethical reasons, young participants cannot be subjected to nonsupportive interviews, but one may surmise that accuracy of responses to direct questions and suggestibility differences would occur if children were interviewed in this manner.

There exists a discrepancy between Goodman et al.'s (1991) findings concerning a supportive interviewer and the present results. Goodman et al. (1991) found that when comparing children in the supportive conditions, young participants' performance was not significantly different from the older children's performance concerning misleading questions about the room and person involved. Carter et al. (1996) also analyzed interviewer support in a similar manner and found that supportive interviewers had positive effects on children's accuracy. But as stated above, the present findings did not indicate that supportive interviewers reduced children's suggestibility. More information is needed in light of these conflicting results across investigations.

### **Repeated Questions**

Younger children are more likely to change their answers than older children when asked a question twice (Poole & White, 1993). This tendency has important implications in a forensic setting in that children who change their answers would appear less credible to a jury (see Wehrspann, Steinhauer, & Klajner-Diamond, 1987). Therefore, it is especially important to create an interview in which this tendency is lessened. In the present research, however, neither appropriate language nor a supportive interviewer significantly lessened this tendency. It is possible that this investigation may have underestimated the importance of interview supportiveness in enhancing children's consistent responses to repeated questions because of the limited range of interviewer behavior, as discussed above. In contrast, some interviewers in legal proceedings have been described as questioning children in an intimidating or coercive manner (see Ceci & Bruck, 1993). Further, the repeated questions were conveyed as a group at the end of the interview, and the children were given an explanation as to why it was necessary to repeat them. Higher rates of changed answers have been reported among preschoolers when the repeated questions were embedded throughout an interview and were delivered without interviewer comment. Because children in child abuse investigations are typically interviewed on multiple occasions (Gray, 1993), further research on the role of supportiveness in increasing consistency within as well as across interviews is needed.

### **Individual Differences**

Along with level of language development, aspects of temperament and parenting beliefs were hypothesized as influencing young children's accuracy of responses to direct questions and suggestibility in an interview. The results, however, did not support the hypotheses. With regard to the lack of relations among temperament dimensions and memory indicators, this outcome may be the result of the structured nature of the interview task. Previous research has indicated that the approach or

withdrawal dimension is linked with open-ended recall (Gordon et al., 1993). In contrast, this investigation measured children's answers to direct questions. It is possible that this aspect of behavioral style has a greater impact on spontaneous recall than on more highly structured event retrieval. In support of this possibility, Greenhoot et al. (1999) have found that different dimensions of behavioral style may predict memory performance in verbal and enactment interview conditions. Although the off-task ratings made by naive observers were not related to recall or suggestibility, the ratings were related to both the activity and the persistence dimensions of temperament. The relation between activity and off-task behavior makes intuitive sense in that parental reports of their children's motoric activity were reflected in the interview setting. Additionally, when parents describe their children as less persistent on the TABC, children are more likely to engage in tasks irrelevant to the interview. These findings provide validity for the TABC and contribute to the rationale for using the measure in future studies of the effects of temperament on interview behavior.

Traditional parenting attitude scores from the PM scale (Schaefer & Edgerton, 1984) were likewise not significantly related to accuracy of responses to direct questions or correct rejections of misleading questions when the effects of age were partialled from the analyses. Additionally, scores on the progressive attitudes measure of the PM scale were unrelated to accuracy of responses to direct questions and suggestibility. It was originally hypothesized that parents who were measured as more progressive in their attitudes would have children that were more likely to disagree with interviewers' misleading questions, but this was not the case. One possible explanation for these results is the that many of the questions on the PM address issues involving formal schooling and hence may not be appropriate for this age group.

### **Implications of the Present Study**

Clearly, the present investigation provides a very limited analog to a forensic investigation. Notably, children reported a pleasant interaction under relaxed conditions, and hence the stress that is inherent in most investigations of abuse was absent. Further, in contrast to legal proceedings, only one interview was conducted after a brief time interval, and the children's retelling of the experience was completely sanctioned by their caregivers. Nonetheless, because they provide empirical support for practices that are often recommended on the basis of clinical experience (Gordon et al., 1995; Saywitz, 1995), the findings have relevance for interviewing child witnesses. Initially, it is apparent that children under 4 years of age need interviews that contain simple language with few clauses and definite articles. The magnitude of these effects may not be huge, but response to even a few items in a child interview could change the outcome of the discovery or trial phase of an allegation of abuse. Conversely, simple language appears less important for 4-year-old children. Moreover, from the present research it appears that supportive interviewers do not increase suggestibility for 3- and 4-year-old children. For a child embroiled in an abuse case, a neutral interview may make the child uncomfortable, whereas a supportive interview may lessen the child's anxiety. Further, the topic of supportive interviewers warrants further research because it may make the interview process more tolerable to the child.

The results suggest further directions for research. The generalizability of the present research may be somewhat compromised in that the sample consisted primarily of white, middle- to upper-middle-income children in day care settings. Children from other racial and ethnic backgrounds or disadvantaged children may require different interviewing styles to enhance their accuracy of responses. The possibility that social support enhances open-ended recall should be investigated, and the effects of support on resistance to misleading repeated questions embedded in the interview should be examined. Although younger preschoolers' dependence on appropriate language has been documented, the aspects of language development that mediate this relation must be identified. Finally, the importance of social support and appropriate language should be examined within the context of preschoolers' reports of naturally occurring experiences (e.g., medical experiences) that can be documented by the researchers while incorporating greater complexity and stress.

**Acknowledgments:** Partial support for this research was received through HD 32214 from the United States Public Health Service. Thanks to Adrienne Murrell, Alicia Parr, Alan Behrman, Kelly Ratliff, Alex Ward, the cooperating child care centers and personnel, and the participating parents and children. The advice of an anonymous reviewer is also appreciated. Portions of this work were presented at the biennial meeting of the Society for Research in Child Development, Washington, DC, April 1997.

## APPENDIX A

### Features of the Volcano Event

#### *Day 1:*

In groups of three or four, children are read a book about volcanoes (Simon, 1988). Children see pictures of volcanoes.

#### *Day 2:*

PI molds volcano crater.

PI tells children that sand part is called a crater.

PI measures baking soda and drops it into crater.

Each child adds baking soda to crater.

PI measures vinegar.

Children smell vinegar; it's called "stinky."

PI puts red food coloring into vinegar to make lava red.

PI pours vinegar into volcano crater.

Volcano "erupts."

PI asks children if they want to see it erupt again.

Children say yes.

Volcano "erupts."

PI tells child that someone will come talk to her about the volcano in 2 weeks.

Child goes back to classroom.

## APPENDIX B

<i>Appropriate Language Interview</i>	<i>Standard Language Interview</i>
—All right, _____ first we will talk about a volcano story.	
1. Did Molly read you a story about volcanoes? <i>yes</i>	1. Did Molly read you the story about volcanoes? <i>yes</i>
2. Your teacher didn't tell you what a crater is? <i>negation</i> (Make sure that child knows what a crater is.)	2. Your teacher didn't tell you what a crater is, did she? <i>negation</i> (Make sure that child knows what a crater is.)
3. You didn't see a picture of a volcano? <i>negation</i>	3. You didn't see the pictures of the volcanoes, did you? <i>negation</i>
—Now we will talk about how you <i>made</i> your volcano	
4. Molly didn't make a crater out of <i>paper</i> ? <i>negation</i>	4. During the story, Molly didn't make a crater out of paper, did she? <i>negation</i>
5. Did Molly make a crater with a shovel? <i>no</i>	5. Molly made the crater with a shovel, didn't she? <i>no</i>
6. Did you pour some blue slimy stuff into a big spoon? <i>no</i>	6. Did you pour some blue slimy stuff into the big measuring spoon? <i>no</i>
7. You didn't put green stuff around the outside of the crater? <i>affirmation</i>	7. You didn't put the green stuff around the outside of the crater, did you? <i>affirmation</i>
8. Did you pour some smelly water into a cup? <i>yes</i>	8. Did you pour some smelly water into the cup? <i>yes</i>
9. You didn't smell some stinky stuff? <i>negation</i>	9. You didn't smell some stinky stuff, did you? <i>yes</i>
10. You didn't drink (some) smelly stuff? <i>affirmation</i>	10. You didn't drink some of the smelly stuff, did you? <i>affirmation</i>
11. You <i>didn't</i> pour some white stuff into the crater? <i>negation</i>	11. You didn't pour some white stuff into the crater, did she? <i>negation</i>
—Now, _____ we will talk about what <i>happened</i> to your volcano.	
12. Was the bubbly stuff red? <i>yes</i>	12. Was the bubbly stuff red that was in the crater? <i>yes</i>
13. Bubbly stuff didn't run down the <i>side</i> of the crater? <i>negation</i>	13. The bubbly stuff didn't run down the side of the crater, did it? <i>negation</i>
—Now we will talk about what happened <i>after</i> the volcano bubbled.	
14. Did a woman give a box of matches to Molly? <i>no</i>	14. Did the woman who came into the room give the box of matches to Molly? <i>no</i>
—OK, now we will talk about what happened <i>before</i> Molly left.	
15. Molly didn't tell you to wash your hands? <i>negation</i>	15. Molly didn't tell you to wash your hands, did she? <i>negation</i>
16. Did Molly give you a <i>sticker</i> ? <i>no</i>	16. Did Molly give you a sticker that you could take home? <i>no</i>
17. You didn't take your volcano <i>home</i> ? <i>affirmation</i>	17. You didn't take your volcano home, did you? <i>affirmation</i>
18. Did the volcano fall on the floor? <i>no</i>	18. Did the volcano fall on the floor before you left the room? <i>no</i>

(Continued on next page)



## APPENDIX B (continued)

<i>Appropriate Language Interview</i>	<i>Standard Language Interview</i>
—Oh, dear . . . I forgot to write down some of your answers. I am going to ask you some questions again. Don't change your answers. I want you to tell me exactly what you told me before. I need to write your answers down this time. I'm going to ask you about your volcano that you made.	—Oh, dear . . . I forgot to write down some of your answers. I am going to ask you some of the same questions again. Don't change your answers because I want you to tell me exactly what you told me before. I need to write your answers down this time.
19. Did you see pictures of a volcano? <i>yes</i>	19. Did you see the pictures of the volcano in the book? <i>yes</i>
20. Did Molly make a crater with a shovel? <i>no</i>	20. Did Molly make the crater with a shovel? <i>no</i>
21. Did Molly make a crater out of paper? <i>no</i>	21. Did Molly make the crater out of paper? <i>no</i>
22. Did you pour some smelly water into a cup? <i>no</i>	22. Did Molly pour some smelly water from a jar into a cup? <i>no</i>
23. Did you smell some stinky stuff? <i>yes</i>	23. Did you smell some stinky stuff in a cup? <i>yes</i>
24. Did Molly pour some white stuff into the crater? <i>yes</i>	24. Did Molly pour some white stuff from a box into the crater? <i>yes</i>
25. Did bubbly stuff run down the side of the crater? <i>yes</i>	25. Did bubbly stuff come out of the crater and run down the side of the crater? <i>yes</i>
26. Did you take your volcano home? <i>no</i>	26. Did you take your volcano home after you were through? <i>no</i>

Note: \* Correct answers are in italics; misleading questions are answered in the negative.

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