# Interviewing Preschoolers: Comparisons Of Yes/No and Wh- Questions

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This study investigated the influence of question format on preschool-aged children's errors, their response accuracy, and their tendency to say "I don't know" when given non-misleading questions in a neutral, unbiased context. Children (3 to 5 years old) participated in a craft-making session that included a staged "accident" with two experimenters differing in gender and appearance; the environment also had several distinctive features. One week later children were interviewed about actions, participants, and environment; questions were yes/no format with the veridical response "yes" ("yes" questions), yes/no format with the veridical response "no" ("no" questions), and specific wh- format questions. Question format substantially influenced children's responses: they were most likely to make errors if asked "no" questions, and were unlikely to answer either yes/no question with "I don't know." In contrast, children spontaneously and frequently said "I don't know" to wh- questions about content they did not recall (environment), but not about content that was well recalled (actions). Implications of question format for reliability of eyewitness testimony by preschoolers are discussed.

With the burgeoning participation of preschoolers in police investigations and in courtrooms as witnesses, increased attention is being paid to how well children this young can recall and accurately report on events for which they were eyewitnesses. A number of investigators have suggested that preschoolers can in fact recall a great deal of information accurately (Baker-Ward, Gordon, Ornstein, Larus, & Clubb, 1993; Fivush, Haden, & Adam, 1995; Goodman, Hirschman, Hepps, & Rudy, 1991; Goodman, Quas, Batterman-Faunce, Riddlesberger, & Kuhn, 1994; Merritt, Ornstein, & Spicker, 1994; Ornstein, Gordon, & Larus, 1992; Peterson, 1996; Peterson & Bell, 1996), but there are some important caveats. One of the most important of these is that young children do not spontaneously provide a great deal of information in free recall or in response to open-ended probes such as "what happened" (e.g., Ceci & Bruck, 1995; Dent & Stephenson, 1979; Fivush, 1993;

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Fivush, Peterson, & Schwarzmueller, in press; Ornstein et al., 1992; Peterson & Bell, 1996; Poole & Lindsay, 1995). In particular, it has been suggested that children who are victimized seldom disclose details of their victimization in response to open-ended questions such as, "Can you tell me everything that happened?" (Ceci & Bruck, 1995).

Although the accuracy of information elicited by means of such open-ended questions or in free recall is typically better than that elicited by more specific questions (Dent & Stephenson, 1979; Fivush, 1993; Ornstein et al., 1992; Steward, Bussey, Goodman, & Saywitz, 1993; but see Poole & Lindsay, 1995), the reality is that young children, particularly preschoolers, are unlikely to provide very much information without prompting with specific questions. Thus, specific questions are necessary to increase the amount of information children report (see reviews in Ceci & Bruck, 1993, 1995). Furthermore, both police officers during investigations and lawyers in courtrooms pepper children with specific questions. For example, McGough and Warren (1994) analyzed interviews investigating child sexual abuse allegations conducted in Tennesee, and found that interviewers spent little if any time asking children open-ended questions. Instead, 90% of all questions were highly specific, requiring only a one-word response; most were also yes/no format questions that required only a "yes" or a "no" response. As another example, in a recent sexual abuse case in Arizona, fully 60% of the questions asked of the 28-month-old alleged victim by the police were yes/no in format; furthermore, all of the responses that formed the basis of the subsequent investigation were elicited by such questions (cited in Brainerd & Reyna, 1996).

Herein lies a problem: if young children require specific questions in order to report relevant information, what is the impact of such questions? One of the most serious concerns about such questions is that they can be suggestive or leading if the interviewer asks about something that did not happen or was not true. Such leading or misleading questions have frequently been found when the interviewer did not know the content of the child's experience or else was deliberately misinformed about it (White, Leichtman, & Ceci, 1997; also see Ceci & Bruck, 1995, for a review). Ignorance about the actual events experienced by a child is of course the typical scenario in forensic situations. It is generally found that preschool-aged children are the group most vulnerable to suggestive questions; in fact, in Ceci and Bruck's (1993) review, they found that 88% of studies found preschoolers to be more suggestible than older children. Thus, interviewers are faced with a dilemma: preschoolers provide little information in response to open-ended questions and thus specific questions are required, but they are more likely to be misled if the specific questions that are asked are suggestive.

The reasons for preschoolers' greater suggestibility in comparison to older children has been attributed to a number of factors: poorer memory, less relevant knowledge that can be applied, poorer vocabulary, inability to understand complex syntax, and a number of social factors (see recent reviews in Ceci & Bruck, 1993, 1995). However, another recent review (Fivush et al., in press) proposes that there may well be an additional important factor that has been relatively ignored: the syntax of specific questions and in particular, the prevalence of yes/no specific questions in interviews of children.

Two different question formats are used in most specific questions: (1) One can ask a yes/no format question in which the particular information of interest is provided by the interviewer and the child is simply asked to affirm or deny the truth of the proposition that is queried, for example, "Were you in the bedroom? Was your father there? Did the man wear a red shirt?" These have also been called recognition questions (e.g., Brainerd & Reyna, 1996). (2) Alternatively, one can ask a wh- format question in which the child is asked to specify a particular detail, for example, "Where were you? Who was there? What did the man wear?" These two question formats are not only different syntactically, they may well have quite different consequences in terms of the veracity of information provided by the child. A wh- format question requires the child to provide the sought-after information, while in contrast, for yes/no format questions the interviewer predetermines the information and the child simply says yes or no. In order to do this appropriately, the child must understand the underlying assumption of yes/no questions, namely that the truth of the stated proposition must be the *sole* determiner of the child's response.

In the research that has investigated preschoolers' memory for target events and in particular their responses to suggestive questions, one can find numerous instances where children said "yes" to inappropriate yes/no questions, some of which can be interpreted as having potentially sexual connotations. For example, preschoolers have said "yes" instead of the veridical "no" when asked questions like "Did the man kiss you?" "Did you take your clothes off?" (Rudy & Goodman, 1991), "Did the nurse lick your knee?" "Did the nurse blow in your ear?" (Ornstein et al., 1992), "Did the man put something yuckie in your mouth?" (Poole & Lindsay, 1995), "Did the man kiss your friends on the lips?" "Did the man remove some of the children's clothes?" (Lepore & Sesco, 1994), and "Did the man touch your private parts?" (Goodman et al., 1991). After reviewing such instances, the conclusion reached by Ceci and Bruck (1995:234–235) is "one can safely conclude that, compared with older children, young children, and specifically preschoolers, are at a greater risk for suggestion about a wide variety of topics, including those containing potentially sexual themes." It is important to stress that most of the children's responses were accurate; however, there was often a significant minority of responses that were not, and in forensic situations these could be of serious concern (Ceci & Bruck, 1995).

Unfortunately, much and perhaps even most of the research on suggestibility uses almost nothing but yes/no format questions. Even when non-yes/no format questions are included, there is no separate analysis of children's responses to yes/no questions versus other forms of questions (i.e., wh- format questions). Even worse, it is sometimes impossible to know what the format of the specific questions was that were used in some research studies. Some investigators have identified yes/no questions as "specific questions" (Baker-Ward et al., 1993; Lepore & Sesco, 1994), others have identified wh- format questions that request particular items of information as "specific questions" (Goodman et al., 1994), and still others use an unspecified mix of both yes/no and wh- questions as "specific questions" (Flin, Boon, Knox & Bull, 1992; Goodman et al., 1991; Merritt et al., 1994; Saywitz & Nathanson, 1993). To make matters even more confusing, terminology also varies

among investigators, with these questions being variously termed "specific questions," "direct questions," "cued recall," or "probed recall" (Peterson & Biggs, 1997).

It is possible, as proposed by Fivush et al. (in press), that the format of yes/no questions is particularly problematic and leads to higher estimates of preschoolers' suggestibility than if non-yes/no questions are used. Indeed, there have been a number of hints in the literature that yes/no questions are especially suspect as a question form. For example, consider the following exchange with a 3-year-old (from Peterson & Biggs, 1997):

Adult: Have you ever been to the doctor?
Child: No.
Adult: What did the doctor do?
Child: He gave me stitches 'cause I cut my knee.

It is difficult to interpret what the child meant by her initial response, and interchanges such as the above are commonly found by narrative researchers (e.g., Peterson & McCabe, 1983). They are also found by memory researchers. For example, Baker-Ward et al. (1993), in an investigation of children's recall of a pediatric examination, ignored initial "no" responses to questions like, "Did the doctor check your eyes?" if the child subsequently changed her response to "yes" when asked a related question like, "Did the doctor shine a light in your eyes?" With such a scoring scheme, they concluded that 3-year-olds recalled 75% of the information being queried; however, when these same data were reanalyzed after no longer scoring these "no"–"yes" inconsistencies as correct responses indicating recall, 3-year-olds' recall dropped to 47%, which does not appear to be significantly different from chance (Baker-Ward, Ornstein, Gordon, Follmer, & Clubb, 1995).

In early research that directly looked at responses to yes/no questions, Fay (1975) asked 3-year-old monolingual English speakers some questions that were clearly nonsense to them, for example, "El camino real?" These uninterpretable utterances were accompanied by the standard rise in intonation that accompanies English yes/no questions. In spite of the nonsensical nature of the questions, 62% of 3-year-olds nevertheless answered "yes." Hughes and Grieve (1980) asked children bizarre questions such as, "Is milk bigger than water?" or "Is red heavier than yellow?" and most children answered with a yes/no format response. Thus, yes/no questions seem to be interpreted by young children as calling for a response, even when children have no idea what the question is asking (Geiselman & Padilla, 1988; Moston, 1987; Saywitz & Moan-Hardie, 1994). In part this may be because children attempt to be cooperative conversational partners (Ceci & Bruck, 1995).

In a recent study of children's responses to yes/no questions, Peterson and Biggs (1997) compared children's responses of "yes" versus their responses of "no" when questioned about their recall of an injury requiring hospital emergency room treatment. Startlingly, the veracity of the children's two responses was quite different for preschoolers. When 2- to 4-year-old children said "no," the accuracy of their response was at chance levels. In other words, each time a preschooler said "no" in that study, the interviewer might as well have tossed a coin to determine if the child's response was veridical. In contrast, their responses of "yes" were more likely

to be accurate. In part, this seemed to reflect a response bias toward responding "yes" to yes/no questions. Such divergent accuracy rates when saying "yes" versus "no" were sharply reduced in 5-year-olds and had all but disappeared by the end of elementary school. The authors concluded that response biases that may differentially lead to a preschooler saying "yes" rather than "no" in some situations (or vice versa) make both responses suspect.

In summary, there is reason to be concerned about the format of questions asked to young children in contexts where their answers have important consequences (such as in forensic situations). Clearly, the format of specific questions needs to be explicitly investigated, especially in light of concerns that are directed toward yes/no questions in particular. In the present study, preschool-aged children were asked a series of specific questions about the details of an event that they experienced the previous week, and the format of the questions they were asked was systematically varied. One third of the questions asked of the children were specific wh- format questions, one third were yes/no format questions about the same details and for which the veridical response was "yes," and one third were yes/no format questions for which the veridical response was "no." Furthermore, the questions were counterbalanced across children so that all details were queried by means of all three question formats. Thus, the impact of question format on children's responses could be assessed.

There is another concern about all types of specific questions as well, namely that they seem to call for a response regardless of whether the child knows the queried information or not (Ceci & Bruck, 1995; Peterson & Biggs, 1997). In particular, children very seldom spontaneously answer "I don't know" when asked these sorts of questions, although they are more likely to do so if asked open-ended questions (Dent & Stephenson, 1979; Geiselman & Padilla, 1988; Moston, 1987; Saywitz & Moan-Hardie, 1994). Although some investigators have found that children are more likely to provide "I don't know" responses to specific questions if instructed to do so (Moston, 1987), others have not found this instruction necessarily helpful (Saywitz & Moan-Hardie, 1994). An important but heretofore unexplored question is whether the format of specific questions affects a child's likelihood of spontaneously saying "I don't know." In particular, are children less inclined to say "I don't know" if the specific question is worded in yes/no format and more inclined to acknowledge ignorance if the question is worded alternatively such as in wh- question format, even if the same information is being queried? This issue is addressed by the current study.

An additional issue addressed here is that of topic or content: how do children's responses to both specific yes/no questions and specific wh- questions as well as their likelihood of spontaneously saying "I don't know" differ depending upon the question content? Several previous studies have reported that the accuracy of children's responses vary depending upon content (e.g., Goodman et al., 1991; Peters, 1987; Peterson, 1996). In particular, children tend to be more accurate in their responses to questions about actions than about people or the room in which events took place. However, none of the above studies systematically compared the way that content interacted with question format. This was done here. In the present study, we compared children's responses to specific questions about (a) the

room or environment in which target events took place, (b) the experimenters or people who were present, and (c) target activities or actions in which they were engaged or which they observed. These included staged accidents that they observed and their own and others' actions in cleaning up resultant messes, as well as their own craft-making activities. Although differences in children's memory for events that they observed versus participated in have often been found, such differences are often small or nonexistent for highly salient events (e.g., see Rudy & Goodman, 1991).

It was hypothesized that yes/no format questions would not be equivalent to specific wh- questions. Specifically, we expected that yes/no questions would almost always be responded to with "yes" or "no" and would seldom elicit an "I don't know" response from children, whereas wh- format questions were more likely to elicit "I don't know." We also expected the number of errors as well as accuracy rates of the various question formats to be different, and in particular we hypothesized that accuracy of responses to questions where "yes" was the correct answer would be higher than for those where "no" was the correct answer. The interaction between question type and content was an important focus of this study, and it was hypothesized that children would not only be more accurate with all types of questions when queried about actions, their likelihood of saying "I don't know" would depend upon question format as well as question content. That is, they would seldom say "I don't know" to wh- questions about actions, but would be considerably more likely to do so to wh- questions (but not yes/no questions) about other types of content that seemed to be remembered less well.

## METHOD

### Participants

A total of 95 preschoolers (48 boys and 47 girls) participated individually, with parental permission. The children were 3- to 5-year-olds (mean age 4:2; range 3:1 to 5:0; almost all White and middle-class) recruited from three daycare centers associated with educational institutions.

### Design

Two variables were investigated in this study: (1) question format and (2) question content. Three question formats were used, namely yes/no questions for which the correct answer was "yes" (hereafter termed "yes questions"), yes/no questions for which the correct answer was "no" (hereafter termed "no questions"), and wh- format questions. There were also three types of question content: children were asked questions about actions, persons, and environment.

#### Question Format

A series of 18 questions was asked of the children, 6 of them "yes" questions, 6 of them "no" questions, and 6 of them wh- questions that asked the children to

produce the specific details that were queried in the yes/no questions. The question format was alternated among children such that for each particular item of information being queried, one third of the children were asked a "yes" question, one third were asked a "no" question, and one third were asked a wh- question. (See Table 1.)

### Question Content

One third of the questions asked about the actions of the child or experimenter. Specifically, children were engaged in a craft activity (spelling their names by gluing Alpha-Bit cereal pieces onto construction paper) during which a staged accident occurred, namely spilling the cereal all over the floor. The child was then asked to help clean it up. Accidents are highly salient events for children (Peterson & McCabe, 1983), and such staged, but unexpected encounters have been used in other research (e.g., Poole & White, 1991).

Another one third of the questions were relevant to person. Specifically, two experimenters participated: a primary experimenter, who was the major person interacting with the children and who caused the "accident," and a secondary experimenter, who did not verbally interact with the children and who provided the broom and dustpan so the child and primary experimenter could clean up after the accident. For half of the participants, the primary experimenter was male and the secondary one female; for the remaining participants, the opposite was true. This was to ensure that the gender of the interviewer did not affect the children's responses. Moreover, it was easy to differentiate between the experimenters in the questions given to the children by asking about "the woman" versus "the man." The experimenters differed not only in gender but also in appearance, e.g., glasses, black hat versus straw hat, and colorful Santa Claus tie versus large smiley-face buttons across the front of his/her shirt.

The last one third of the questions asked about the environment or room, which contained several distinctive features, e.g., artificial flower on the craft table, large colorful poster of dolphins, and a tape recorder playing bird songs. Because the study took place in a daycare center that had lots of drawings on the walls and other decorations, some of the items of the environment that were later asked about were made more salient by something being done to them in the child's presence. For example, the poster was hung on the wall after the child arrived in the room.

## Procedure

The children participated twice, separated by 1 week. For the first session, children were taken individually to a separate room in the children's daycare center. In the room was a table with the craft materials on it as well as a large flower in a vase. The secondary experimenter was seated on a chair that was situated within the child's clear vision. Once the children were seated and paying attention, the secondary experimenter stood up and hung the poster on the wall directly in front of the child. Next, the primary experimenter put on a black hat and large, colorful Santa Claus tie. (The secondary experimenter was already wearing a straw hat and smiley-face buttons.) A tape of bird sounds was turned on. The primary experi-

menter then informed the children that they would spell their name out of Alpha-Bits and glue the letters on colored construction paper. During this activity, the experimenter pretended to accidentally knock over the cup of Alpha-Bits and exclaimed to the child, "I can't believe I spilled the Alpha-Bits! Can you help me clean them up, please?" The secondary experimenter then nonverbally gave the primary experimenter a broom and dustpan and the primary experimenter and child cleaned them up, and then proceeded with the craft. After completing the task, the primary experimenter thanked the children for their participation and presented them with a red bracelet. Before exiting the room, the secondary experimenter walked over to the children and placed a sticker on their craft.

The second session followed 1 week later. The primary experimenter took the children individually to a separate room in their daycare centers; this room was deliberately different from the first one so that the children would receive no cues from the environment. None of the environmental props, the secondary experimenter, nor the distinctive clothing items were present. Paper and crayons were available if the children wanted to color pictures to maximize their being comfortable during the session; however, the experimenter only asked questions if the children were paying close attention to him/her. The primary experimenter asked the children 18 questions, with one third about each of the three content areas, and overlapping with this, one third of the questions were worded in accordance with each of the three formats. Six different questionnaires were developed that had the three question formats in different orders; questionnaires were randomly selected for each child with the exception that equal numbers of children received each of the six questionnaires. Responses by the children were audio-recorded. Examples of the questions are found in Table 1.

## RESULTS

Three sets of data and analyses are presented. Because errors (defined as providing incorrect answers) are often the most serious concern of investigators and can lead to potentially serious forensic consequences (Ceci & Bruck, 1995), the first analysis explored the frequency of errors. A second concern that could have potentially serious consequences in a forensic situation is children's apparent reluctance to say "I don't know" and instead provide answers to most questions, i.e., appear to provide a patina of certainty to their responses even when they may not know the answers. Thus, the second analysis considered children's likelihood of saying "I don't know." When children do provide informative responses (i.e., "yes" or "no" to yes/no questions or requested details to wh- questions), what is the likelihood that their responses are accurate? This was the focus of the third set of analyses.

### Errors

To see if preschool-aged children's likelihood of making errors was dependent upon the form of question asked, the percentage of errors in response to wh-

**Table 1.** Examples of the Questions Asked of the Children About Actions, Persons, and the Environment

| Content | Question format | Example |
|---|---|---|
| Action | Yes | Did you spell your name with Alpha-Bits? |
| | No | Did you spell your name with popsicle sticks? |
| | Wh- | What did you spell your name with? |
| | Yes | Did [primary experimenter] use a broom and dustpan to clean up the Alpha-Bits? |
| | No | Did [primary experimenter] use his/her hands to clean up the Alpha-Bits? |
| | Wh- | What did [primary experimenter] use to clean up the Alpha-Bits? |
| Person | Yes | Was the [secondary experimenter] wearing happy-face buttons? |
| | No | Was the [secondary experimenter] wearing a Santa Claus tie? |
| | Wh- | What was the [secondary experimenter] wearing on her/his shirt? |
| | Yes | Did the [primary experimenter] have a black hat on his/her head? |
| | No | Did the [primary experimenter] have a straw hat on his/her head? |
| | Wh- | What did the [primary experimenter] have on his/her head? |
| Environment | Yes | Was there a poster of dolphins in the room? |
| | No | Was there a poster of dogs in the room? |
| | Wh- | What picture was on the poster in the room? |
| | Yes | Was there a flower on the table? |
| | No | Was there a toy dog on the table? |
| | Wh- | What was on the table? |

*Note:* For questions relating to the female experimenter, regardless of whether she was the primary or secondary experimenter, the question used the label "the woman," and for questions relating to the male experimenter, the label "the man" was used.

questions, "yes" questions, and "no" questions was compared. Furthermore, to see if the content of the question (i.e., relating to the environment, people, or actions) made a difference, these were also included in the analysis. The percentage of errors was analyzed in an ANOVA with Question (three levels) and Content (three levels) the within-subject factors. (Preliminary analyses found no differences related to whether the primary experimenter was male or female nor to the gender of the child for any data set, so the data were collapsed across these variables.) There was a significant Question × Content interaction, $F(4, 376) = 17.28, p < .001$. (See Table 2.) Both main effects were also significant, $F(2, 188) = 23.26, p < .001$ for Question and $F(2, 188) = 46.73, p < .001$ for Content. Simple effects were calculated by considering each type of content separately and assessing whether or not the question format still had a significant effect. Question format was significant for action, $F(2, 188) = 26.68, p < .001$; person, $F(2, 188) = 29.21, p < .001$; and environment, $F(2, 188) = 4.83, p = .009$. Within the content of action, simple comparisons showed that children made more errors responding to "no" questions than to either "yes" or wh- questions, $F(1, 94) = 29.31, p < .001$, and $F(1, 94) = 36.45, p < .001$, respectively, and the latter two question formats in turn did not differ from each other. Within the content of persons, simple comparisons showed that children made more errors when answering "no" questions than "yes" ques-

tions, $F(1, 94) = 54.98, p < .001$, or wh- questions, $F(1, 94) = 25.20, p < .001$, and in turn made more errors to wh- questions than to "yes" questions, $F(1, 94) = 6.21, p = .014$. Within the content of environment, children made an equivalently high proportion of errors to both "no" and "yes" questions, while their responses were more accurate to wh- questions than to both "no" questions, $F(1, 94) = 4.17$, $p = .044$, and "yes" questions, $F(1, 94) = 9.87, p = .002$.

Overall, children were most likely to make errors when responding to "no" questions, and especially when those "no" questions were about persons. Disturbingly, fully half of their answers to "no" questions about persons were incorrect, i.e., responding was at chance levels since there is a 50/50 probability of a yes/no question being answered correctly by chance alone. In addition, both "yes" and "no" questions about the environment were problematic, with answers to more than one third of each being wrong. Since children can randomly guess when answering yes/no format questions and get half of them right, this level of error is quite high. The only content area for which children made few errors was that of actions, although even here children were wrong one fourth of the time when responding to "no" questions. In contrast, errors were rare when asked "yes" or wh- questions about actions.

## "I Don't Know" Responses

To see if children's likelihood of saying "I don't know" was affected by question format or question content, an ANOVA on the percentage of responses of this type was calculated with two within-subjects factors: Question (three levels) and Content (three levels). There was a significant Question × Content interaction, $F(4, 376) = 54.37, p < .001$. The main effect of Question was highly significant, $F(2, 188) = 173.35, p < .001$, with almost 40% of wh- questions responded to with "I don't know," while only 5% or less of "yes" or "no" questions were responded to that way. There was also a main effect of Content, $F(2, 188) = 96.11, p < .001$ (see Table 2). Simple effects were calculated for each type of content separately and assessing the effect of question format. Question was significant for the content of actions, $F(2, 188) = 12.48, p < .001$, persons, $F(2, 188) = 39.83, p < .001$, and environment, $F(2, 188) = 183.73, p < .001$. For the content of actions, follow-up simple comparisons showed that children said "I don't know" more frequently to wh- questions than to both "yes" and "no" questions, $F(1, 94) = 10.88, p = .001$, and $F(1, 94) = 16.79, p < .001$, respectively. However, they said "I don't know" equivalently infrequently to both "yes" and "no" questions. For the content of people, children again said "I don't know" more frequently to wh- questions than to both "yes" and "no" questions, $F(1, 94) = 39.74, p < .001$, and $F(1, 94) = 45.33$, $p < .001$, respectively, and the latter two forms of question did not differ from each other. For the content of the environment, they also said "I don't know" more frequently to wh- questions than to either "yes" or "no" questions, $F(1, 94) = 163.38, p < .001$, and $F(1, 94) = 290.97, p < .001$, respectively. They also said "I don't know" more often to "yes" questions than to "no" questions, $F(1, 94) = 7.48, p = .007$.

Children seemed to recall least about the environment, consonant with poorer

**Table 2.** The Percentage of Responses That Were Errors and "I Don't Know" for "Yes," "No," and Wh- Format Questions About Actions, Persons, and the Environment, as Well as the Percentage of Content-Rich Informative Responses (i.e., Omitting "Don't Know") That Were Accurate

| | Question format | | | | | |
|---|---|---|---|---|---|---|
| | "Yes" question | | "No" question | | Wh- question | |
| Content | % | (SD) | % | (SD) | % | (SD) |
| | A. Percentage of errors | | | | | |
| Action | 4.4 | (13.8) | 23.3 | (30.4) | 5.4 | (15.4) |
| Person | 16.5 | (29.9) | 55.1 | (38.9) | 29.1 | (36.1) |
| Environment | 44.2 | (46.6) | 35.8 | (42.3) | 24.2 · | (43.1) |
| Mean | 21.7 | (29.5) | 38.1 | (37.0) | 19.6 | (31.0) |
| | B. Percentage of "I don't know" responses | | | | | |
| Action | 1.9 | (11.9) | 0.5 | (5.1) | 10.8 | (23.8) |
| Person | 3.9 | (15.6) | 3.1 | (11.3) | 31.3 | (39.8) |
| Environment | 9.5 | (24.5) | 2.1 | (12.4) | 71.0 | (36.9) |
| Mean | 5.1 | (17.3) | 1.9 | (9.6) | 37.7 | (33.5) |
| | C. Percentage of accurate informative responses (omitting "I don't know") | | | | | |
| Action | 95.6 | (13.8) | 76.7 | (30.4) | 94.4 | (15.7) |
| Person | 83.4 | (30.0) | 44.9 | (38.9) | 62.7 | (36.9) |
| Environment | 53.8 | (46.7) | 58.8 | (42.4) | 47.8 | (50.1) |
| Mean | 77.6 | (30.2) | 60.1 | (37.2) | 68.3 | (34.2) |

recall of this sort of content in other studies (e.g., Goodman et al., 1991; Peters, 1987). Reflecting this poor recall, fully 71% of the wh- questions asked about the environment were responded to with "I don't know." On the other hand, they seemed to recall the most about actions and seldom responded to these questions with "I don't know." These differentiated responses to various sorts of content when wh- questions were asked sharply contrast with the children's nondifferentiated responses to questions phrased in a yes/no format. Here, the content of the question made little difference—virtually all were responded to anyway with an assertion of the truth or falsehood of the queried information, i.e., as if the child did know the answer. Thus, in the current study, children seemed to identify when they did not recall queried information, and did it in a discriminated way, when the question was phrased with a wh- question word, but almost never did so when a yes/no format question was asked. Of course, children's likelihood of saying "I don't know" may be different if questioners were more intimidating or if the content being queried was more threatening, e.g., involved sexual or violent events. Nevertheless, even in the innocuous situation children were in here, they almost never said "I don't know" when the question was phrased in yes/no question format.

## Accuracy of Informative Responses

When a child gives an informative response rather than saying "I don't know," what is the likelihood that that response will be accurate? To assess this, the questions to which children responded "I don't know" were omitted. Thus, this analysis only looked at those questions for which children asserted a concrete

response, whether that response took the form of "yes" or "no" to a yes/no question or a specific detail in response to a wh- question, and analyzed the percentage of these informative responses that were accurate. Because many children gave no informative responses for some combinations of question and content (most notably a number of children only said "I don't know" when wh- questions were asked about the environment), it was not possible to calculate an ANOVA with both factors of question and content. Thus, a one-way ANOVA was calculated separately for each of the factors of Question and Content for the percentage of information-rich responses that were accurate. The format of the question was important, $F(2, 184) = 17.34, p < .001$. Overall, when children gave an informative response, that response was correct 79% of the time for "yes" questions, 60% of the time for "no" questions, and 75% of the time for wh- questions. Simple comparisons showed that "no" questions were responded to less accurately than both "yes" questions, $F(1, 94) = 25.16, p < .001$, and wh- questions, $F(1, 94) = 21.10, p < .001$, and these latter two question formats did not differ from each other. Questions about different content were also responded to differently, $F(2, 188) = 61.97, p < .001$, with 87%, 63%, and 57% of informative responses being accurate for the content of actions, participants, and environment, respectively. Simple comparisons showed that responses were equivalently inaccurate to questions about participants and the environment, but informative responses to questions about actions were significantly more accurate than to questions about both participants, $F(1, 94) = 103.13, p < .001$, and environment, $F(1, 94) = 100.65, p < .001$. It was not possible to assess interaction effects because the two factors of question format and content were analyzed separately.

Although both "yes" and wh- questions have similar high accuracy rates when "I don't know" responses are omitted, there are important differences between these two questions. First, the probability that a child will be correct by chance alone when responding to a "yes" question is .50. That is, the child could be expected to get half of the answers right just from guessing randomly. This is not true for wh- questions. The *a priori* probability of answering a wh- question correctly by chance alone is much lower than .50, and in fact often cannot be specified. (Note, however, that a chance level of response for "no" questions is also .50, the same as for "yes" questions, and children's accuracy to such questions is little different from chance levels of response.) The second difference is that in many situations (and particularly in potentially forensic ones), the interviewer does not know beforehand whether a particular yes/no question is a "yes" or a "no" question. Since the accuracy of children's responses is so different to these two questions, this is a serious concern.

## DISCUSSION

In the recent decision of the *State versus Michaels* (1994), the court warned that if a child is not properly interviewed, his or her testimony may be excluded from the court regardless of its veracity (see Ceci & Bruck, 1995). Consequently, it is critical for interviewers to be aware of possible factors that may negatively

influence children's testimony. In this paper, we focus attention on a little-studied factor, namely the format of specific questions used in interviews.

Ideally, information in forensic interviews is elicited by means of open-ended questions; such questions are neither leading nor suggestive and responses to them have been found to be more accurate than responses to closed or specific questions. However, as has been frequently documented, preschoolers seldom provide very much information in response to open-ended questions (e.g., Dent & Stephenson, 1979; Fivush, 1993; Ornstein et al., 1992; Steward et al., 1993). Furthermore, studies of actual interviews conducted with children in forensically relevant cases have found that the vast majority of questions asked of children are specific questions, asking for little more than one-word responses (McGough & Warren, 1994). What has not been carefully assessed is the nature or format of such specific questions. Most of those specific questions in fact are yes/no format questions rather than specific wh- format questions (Brainerd & Reyna, 1996; McGough & Warren, 1994). Does this format difference make a difference in children's responses?

The findings of the current research suggest that it does. One problem is the variation in responses to yes/no questions to which the correct answer is "yes" versus those to which the correct answer is "no." (The questions to which the correct answer is "no" can also be seen as misleading, of course.) The children are considerably less likely to make errors and are considerably more accurate when responding to "yes" questions than to "no" questions. Because children were more accurate when answering "yes" questions and made fewer errors, does this mean that their answers are more reliable or believable when the answer is "yes"? Not necessarily. Children may well be guessing when answering yes/no questions about which they are unsure or do not know the answer, and their bias in this study seems to be to say "yes." Thus, the higher level of accuracy on "yes" questions may be an artifact of this bias.

Unfortunately, in forensic situations interviewers seldom know in advance whether the correct answer to a yes/no question is "yes" or "no." The fact that the children's accuracy to these two forms of yes/no questions as well as likelihood of making an error is so different suggests that there are response biases operating that influence their response, and in this situation making it more likely that they will answer "yes" to a yes/no format question. Indeed, young children often respond "yes" to nonsensical yes/no questions (Hughes & Grieve, 1980) and even to completely incomprehensible yes/no questions (Fay, 1975). Thus, their responses to yes/no questions may reflect not truth, but rather response bias, and this may have serious repercussions in those forensic interviews in which most of the interviewer's questions to the child are yes/no in format. In short, children's responses to yes/no questions are suspect.

This study fits in with other work suggesting that yes/no questions are particularly problematic. For example, the linguistic complexity of these questions has been highlighted because they require mastery of the auxiliary verb system (Steward et al., 1993). Yes/no questions have also been seen as very suggestive, and the suggestibility of young children is a serious concern (Ceci & Bruck, 1993). Unfortunately, it is unclear how much of the research documenting higher suggestibility in young children is based solely upon yes/no format questions (Fivush et al., in press),

or how different their suggestibility might be when questions take alternative forms. Children may well be much less suggestible when other question formats are used instead of yes/no questions.

In this study, yes/no questions were matched with questions that used a wh-question word which queried the same specific details as were queried in the yes/no questions. How did these wh- questions compare with yes/no questions in terms of eliciting errors? On average, 21% and 38% of responses to "yes" and "no" questions, respectively, were errors. Thus, combining these two sorts of yes/no questions, we find that children made an error almost 30% of the time they responded to a yes/no question. Since the probability of correctly answering each yes/no question by chance alone is 50%, this is a substantial error rate. In contrast, only about 15% of specific wh- questions elicited an error when one considers the responses to all wh- questions. Since the probability of answering a wh- question correctly by chance alone is often much less than 50%, this low production of errors is even more impressive. However, when one omits all "I don't know" responses from the data and includes just the informative responses of the children, their accuracy rates are about the same as that of yes/no questions when "yes" and "no" questions are combined.

There is another difference between yes/no format questions and wh- questions. Children almost never say "I don't know" when they are asked a question in yes/no format. Instead, they appear to respond with a veneer of certainty by providing an answer anyway. Even when asked about details that they may not recall they respond with a "yes" or "no." As an illustration of this phenomenon, the children seemed to have poor recall about the properties of the environment within which the staged events took place. In fact, their informative responses were at chance accuracy levels. Nevertheless, they asserted a response rather than spontaneously volunteering the information that they did not know the answer if the question was phrased in a yes/no format. Consequently, they made many errors to this form of question. In contrast, they spontaneously said "I don't know" or "I can't remember" almost three fourths of the time if they were asked a wh- format question. This high rate of spontaneous "I don't know" responses to wh- questions about the environment is very different from what occurred when they were asked a wh-question about something that they did seem to recall well, namely actions. For these latter questions, children seldom spontaneously responded "I don't know." Thus, children seem to be more willing to identify their own ignorance or lack of memory when the question posed to them has a wh- question word in it rather than if it is posed in yes/no format, at least in the sort of task involved here.

Other research has suggested that children rarely spontaneously produce "I don't know" when questioned (Dent & Stephenson, 1979; Geiselman & Padilla, 1988; Moston, 1987; Saywitz & Moan-Hardie, 1994). In this study, this was certainly true for yes/no format questions regardless of whether the veridical answer was "yes" or "no," but not for wh- questions. Other research has shown that children's likelihood of saying "I don't know" can be increased by appropriate instructions, although it has also sometimes led to inappropriate response biases and undifferentiated usage (Moston, 1987; Saywitz & Moan-Hardie, 1994). However, in the present study children were not instructed to use "I don't know," and their production of

this response was entirely spontaneous. The high production rate in response to wh-format questions as well as the differentiated usage of such responses is impressive, particularly in light of previous discussions of its rarity among preschoolers.

The present study does not represent a forensic interview of course; the children enjoyed the sessions in which they were involved, they had excellent rapport with the primary experimenter, and they were not questioned aggressively, leadingly, or in other ways that would produce distress. Furthermore, the interview was short and children were questioned about things that were not upsetting in any way. In some situations (such as child maltreatment cases), an "I don't know" response could be given deliberately to mislead, i.e., such a response could be a Type II error and thus may not always be harmless. In fact, it is always possible for children to say "I don't know" when they do know the answer to a question, although it is perhaps less likely in the innocuous laboratory situation of the present study. Nevertheless, this study does allow question format to be carefully controlled when the content being queried is held constant. And even in this optimal situation, yes/no questions are considerably more problematic than wh- questions. That is, not all so-called "specific" questions are created equal.

The conclusions of this study are unambiguous: there seem to be some dangers inherent in yes/no questions that are less evident when questions have a wh- format. In particular, yes/no questions frequently elicit errors, answers may be influenced by response biases or other factors besides how veridical the underlying proposition is, and children seldom say "I don't know" when they are uncertain or simply do not know the correct answer. All this undermines children's credibility as witnesses. Thus, even though they may be able to recall and report a great deal of accurate information, they may not be believed because of such credibility doubts. Specific wh- questions seem to be less problematic, at least when they are non-misleading and given in a neutral, unbiased context, especially because children are more likely to admit when they do not know the answer. This is not to say that these same patterns of results would necessarily be found with highly suggestive wh- questions— this requires further research. Nevertheless, although it is optimal to avoid all specific questions when interviewing young children, this is seldom possible. The increased likelihood of children saying "I don't know" as well as increased confidence in the veridicality of responses to wh- questions suggests that they are a much better format for questions directed to preschoolers.

## ACKNOWLEDGMENTS

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