The Use of Anatomically Detailed Dolls in Forensic Investigations: Developmental Considerations

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ABSTRACT. The use of anatomically detailed dolls in forensic investigations of sexual abuse is a controversial practice. The objections to the use of the dolls are reviewed and discussed in light of empirical evidence. Although the use of anatomically detailed dolls does not appear to elicit sexualized behavior in non-referred children, it is not clear that the dolls facilitate accurate recall of past events in children younger than age 5. Young children's understanding of symbolic relations is considered in interpreting age differences in existing research on the usefulness of anatomically detailed dolls. Although it appears that the dolls facilitate accurate recall in children ages 5 and older, the differences between experimental and forensic settings make it difficult to draw firm conclusions about the usefulness of the dolls in forensic investigations.

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Journal of Forensic Psychology Practice, Vol. 5(1) 2005
http://www.haworthpress.com/web/JFPP

Digital Object Identifier: 10.1300/J158v05n01_05

KEYWORDS. Anatomically detailed dolls, sexual abuse, cognitive development, young children

In most cases of child sexual abuse, there is not conclusive physical evidence and the victim is typically the sole witness. As a result, investigation of sexual abuse allegations relies heavily on children's testimony. One of the consequences of the increase in child sexual abuse allegations that occurred during the 1980s was to focus greater research attention on young children's abilities to accurately report their experiences and on ways in which children's accounts could be affected (positively or negatively) by the techniques used by investigators. A continuing controversy in this area concerns the use of anatomically detailed dolls in interviewing young children about the occurrence of sexual abuse. These dolls, first developed in the 1970s, differ from other dolls in that they include genitalia and related sexual features. Anatomically detailed dolls vary considerably in specific details; for example, the genitalia on these dolls may be drawn on the doll's body, they may be stuffed, or they may be a different color than the rest of the doll. Some anatomically detailed dolls have openings to represent orifices including the mouth, anus, and vagina, but others do not. These dolls also may or may not have secondary sexual characteristics including breasts and pubic hair (Koocher et al., 1995).

In addition to variability in the dolls' features, their use in forensic interviews is not standardized (Koocher et al., 1995). Multiple protocols and guidelines for the use of the dolls exist, however, and using these materials Everson and Boat (1997) identified several potential functions of anatomically detailed dolls in forensic interviews. The two functions most commonly cited across protocols/guidelines include using the dolls as anatomical models and/or as demonstration aids. In the former case, the dolls are used to assess children's names for body parts and their functions, including knowledge the child may have about sexual functions. The child may also be asked questions about their experiences with sexual body parts, or the dolls may be used as a "body map" to help specify location of experiences (Everson & Boat, 1997, p. S57). When dolls are used as demonstration aids, children are asked to use the dolls to act out their experiences, typically after they have given a verbal description or suggestion that an experience has occurred. The utility of the dolls either as demonstration aids or as anatomical models requires a consideration of typical patterns of cognitive development. Because this issue is central to understanding the benefits and dangers associated

with their use, this commentary will focus on the use of anatomically detailed dolls from a developmental perspective. The following sections briefly explain the rationale underlying the use of anatomically detailed dolls as well as the general concerns surrounding their use. The majority of the commentary will evaluate the arguments in favor of and against the use of anatomically detailed dolls in light of the accumulated empirical evidence gathered by developmental psychologists and others.

RATIONALE FOR THE USE OF ANATOMICALLY DETAILED DOLLS AND CONCERNS ABOUT THEIR USE

There are two major reasons typically used to justify the use of anatomically detailed dolls in child sexual abuse investigations, one involving the young child's limited cognitive and language skills and the other involving the child's potential emotional reactions to the interview process. With respect to the first reason, anatomically detailed dolls may serve as cues or "props" to help young children recall their experiences accurately. In addition, they may help to overcome the difficulty posed by the young child's limited verbal skills. Children can use the dolls to represent their experiences when they are unable to articulate these experiences verbally. With respect to the child's emotional reactions, anatomically detailed dolls may reduce children's fear or embarrassment about disclosing details of their experiences by making it possible to express aspects of their experiences non-verbally (e.g., Koocher et al., 1995).

Multiple concerns have been raised over the use of anatomically detailed dolls. One important issue is whether the dolls may be inappropriately stimulating or disturbing to children and thus promote sexualized behavior in non-abused, "sexually naïve" children (Everson & Boat, 1997, p. S61). One implication of this possibility is that false allegations could be made on the basis of children's behavior with the dolls. Another issue concerns the utility of the dolls: Do anatomically detailed dolls facilitate accurate recall of sexually abusive experiences? It is possible that the dolls have no effect on children's ability to recall details of an abusive experience. A more troubling possibility is that they may decrease the accuracy of children's reports and increase the chances that non-abused children will report experiences that did not actually occur.

The first concern, that anatomically detailed dolls will elicit sexualized behavior in non-referred (and presumably non-abused) children,

has been addressed by two related bodies of evidence. First, a number of studies have examined normative behavior with the dolls in samples of non-referred children ranging in age from about 2 to 8 years. Although the procedures used are variable, most studies include opportunities for "free play" with the dolls as well as more structured play with an adult. In general, these studies of non-referred children indicate that it is fairly typical for children to show interest in the genitalia and other sexual characteristics of the dolls and to touch/explore them in various ways, although there is variability in children's interest in and reactions to the dolls. However, the research is also consistent in indicating that young children in non-referred samples do not commonly demonstrate explicitly sexual acts (e.g., intercourse, oral to genital contact) with anatomically detailed dolls (Aldridge, 1998; Ceci & Bruck, 1995; Everson & Boat, 1997; Koocher et al., 1995). Across 10 samples of approximately 550 children, Everson and Boat (1997) noted that only about 4% of the children demonstrated explicitly sexual acts with the dolls. However, some studies have reported some differences in the frequency of sexualized behavior as a function of demographic factors. For example, in a diverse sample of 209, two to 5-year-old children, Boat and Everson (1994) found that at least 20% of 5-year-old African-American boys from families of low socioeconomic status demonstrated sexual intercourse with the dolls. This behavior was more likely after the child was asked specific questions such as "Show me what the dolls can do together." Other studies have found similar associations between demographic factors and rates of sexually explicit behavior with anatomically detailed dolls (Geddie, Dawson, & Wuensch, 1998), suggesting caution in generalizing the findings from white, middle-class samples to all children. It also appears that when non-referred children do show explicit sexual play with the dolls, there are usually previous experiences in the child's history that may account for their behavior other than sexual abuse, such as exposure to pornography or witnessing sexual intercourse (Everson & Boat, 1997).

A second set of studies has compared non-referred children's behavior with anatomically detailed dolls to the behavior of children referred because of suspicion of child sexual abuse. The findings of these studies are mixed. Although some studies indicate that the play of referred and non-referred children differs, other studies find no significant differences (Aldridge, 1998; Koocher et al., 1995). The studies are variable in their samples and methodology, making the inconsistency in the findings somewhat less surprising (Koocher et al., 1995). In general, the findings from both sets of studies indicate that anatomically detailed

dolls do not elicit explicit sexual play in non-referred children. When non-referred children do show such play, it appears to be related to prior experiences (e.g., exposure to pornography or witnessing sexual activity) rather than being elicited by features of the dolls (Everson & Boat, 1997).

It is also clear from these studies that the way in which children play with anatomically detailed dolls is not diagnostic of sexual abuse. Even those studies that find significant between-group differences in comparisons of referred and non-referred children also reveal considerable overlap in the behaviors of both groups. In some cases, there are significant differences in some measures of relevant play behavior but not in others. Ceci and Bruck (1995) offer other cautions about the interpretation of differences between referred and non-referred children's play with anatomically detailed dolls. First, they note that there are likely to be children in both groups who are incorrectly classified; some children in the non-referred group may have been sexually abused and some children in the referred group may not have experienced abuse. In addition, the groups are likely to differ in terms of their experiences with the dolls. Children in referred groups are likely to have had previous interviews concerning sexual behavior, including interviews in which anatomically detailed dolls were used. Thus, differences in the behavior of the two groups of children may be due to differences in their amount of exposure to the dolls rather than to sexual abuse status. For these reasons as well as those reviewed above, researchers have argued that play with anatomically detailed dolls should never be used as a diagnostic test to determine sexual abuse (Aldridge, 1998; Ceci & Bruck, 1995; Everson & Boat, 1997; Koocher et al., 1995).

DO ANATOMICALLY DETAILED DOLLS FACILITATE ACCURATE RECALL IN YOUNG CHILDREN?

Although it is clear that children's play with anatomically detailed dolls cannot be used as a means of determining abuse status, anatomically detailed dolls may still be a useful tool in forensic interviews. The important question, as indicated above, is whether or not they facilitate young children's accurate recall of past experiences. In general, the developmental literature indicates that young children have more memory-related difficulties than older children or adults. For example, in "free recall" situations in which children are asked to state what they remember about an event in the absence of specific questions or prompts,

younger children typically recall less accurate information than older children or adults (Schneider & Bjorklund, 1998). Preschool children are also more suggestible than older children or adults (Ceci & Bruck, 1998; Schneider & Bjorklund, 1998). The limited verbal skills of young children can contribute to the difficulty of obtaining accurate reports of children's past experiences and can lead to errors when children fail to understand adults' questions (Ceci & Bruck, 1998; Koocher et al., 1995). At the same time, there is evidence that even very young children can remember more about past experiences than they are able to recount verbally and that their memories can be relatively long-lasting (Schneider & Bjorklund, 1998). Moreover, there is also evidence that when memory tasks are simplified through the use of relevant verbal or physical cues or props that young children's memory performance can be enhanced (Everson & Boat, 1997; Schneider & Bjorklund, 1998).

It is certainly possible that anatomically detailed dolls, by serving as concrete cues or props, could help children recall details of abusive experiences, and a number of studies have examined this issue. For obvious ethical reasons, experimental investigations cannot expose children to experiences that resemble sexual abuse. Thus, studies with anatomically detailed dolls do not necessarily examine children's recall of experiences involving body touch generally or genital touch specifically. However, some studies have been able to take advantage of normally occurring medical examinations or necessary medical procedures (both involving genital touch) to address questions about the influence of anatomically detailed dolls on children's recall of experiences that share some similarity (albeit limited) with sexual abuse.

Although findings across studies are not entirely consistent, this research indicates that anatomically detailed dolls can help children ages 5 years and older provide more accurate reports of their experiences, but they typically do not facilitate accurate recall in younger children and may increase the amount of inaccurate information provided (e.g., Bruck, Ceci, & Francoeur, 2000; Bruck, Ceci, Francoeur, & Renick, 1995; DeLoache & Marzolf, 1995; Goodman, Quas, Batterman-Faunce, Riddlesberger, & Kuhn, 1997; Saywitz, Goodman, Nicholas, & Moan, 1991). For example, DeLoache and Marzolf examined 2.5- to 4-year-old children's immediate recall of an experimental session in which each child played games with a male confederate, including one in which the confederate placed stickers on the child and another in which the confederate touched them on the hand and foot. After the session, children were asked to put stickers on the anatomically detailed doll in the same places where the male confederate had placed stickers on them. They

were also asked general and more specific yes/no questions about where the confederate had touched them and asked to demonstrate on the anatomically detailed doll. It is important to note that the sticker task made few demands on memory because most children still had the stickers on their bodies when asked to place stickers on the doll (and if not, they were reminded of the stickers' locations); in addition, if children made incorrect responses or didn't respond, the experimenter gave an explicit prompt ("Don put the big duck sticker on your knee. Can you put the little duck sticker on the doll in the same place that Don put the big duck sticker on you?").

Results indicated that 4-year-olds were very accurate in placing the stickers (92%) and that they were significantly more accurate than 3-year-olds, 71% of whom placed the stickers correctly. The 3-year-olds were significantly more accurate than the 2.5-year-olds, who performed below chance levels (41%). With respect to children's memory for touches, findings indicated that children provided more accurate information without the doll (in their verbal reports and non-verbal demonstrations on their own bodies) than when prompted to demonstrate on the doll what they had already reported. Moreover, the difference in children's accurate recall with and without the dolls was more pronounced for the younger children. Although this study is somewhat lower in external validity than the other studies to be discussed below because it does not involve children's memory for genital touch and because the anatomically detailed dolls remained clothed throughout the experiment, the findings have important implications for understanding developmental processes that may explain why young children do not seem to benefit from the use of anatomically detailed dolls as memory aids. This issue is discussed in greater detail below following a summary of other research in this area.

As indicated above, a number of studies have examined children's memories for experiences involving genital touch, potentially increasing the external validity of the findings. For example, a study by Bruck et al. (1995) examined 3-year-old children's immediate recall of a medical examination; in half of the exams, the doctor touched the child's genitals and buttocks. Following the exam, children were asked to label body parts using an anatomically detailed doll, including the genitals and buttocks. The interviewer asked whether the doctor had touched the child's buttocks or genitals while indicating the appropriate location on the doll ("Did Dr. F. touch you here?"). Children were also asked to demonstrate the location of both touches using the doll ("Show me on the doll how Dr. F. touched your ____"). Results indicated that children

in both conditions (genital touch and no touch) gave inaccurate reports. In the genital touch condition, 45% of the children answered the question about genital touch correctly; in the condition with no genital touch, 50% answered correctly that they had not been touched, but the other 50% of children answered (incorrectly) that they had been touched. When children were asked to demonstrate using the doll and other props, error rates were similar or higher. A recent replication of this study, which included a group of 4-year-olds, indicated a similar pattern of findings (Bruck, Ceci, & Francoeur, 2000).

In a study with 5- and 7-year-old girls using a similar design, Saywitz et al. (1991) examined children's memories of a medical examination that included a genital and anal exam for half the children. Children's memories were assessed 1 week or 1 month after the exam. Children were asked to describe what happened during the visit (free recall), to demonstrate the events using an anatomically detailed doll ("Show me with the doll what happened"), and to respond to specific questions, some of which were asked using the doll as a prop (e.g., "Did the doctor touch you here?" while pointing to the relevant body part on the doll). During the free recall part of the procedure, a minority of children who had received the genital/anal exam reported vaginal or anal touch (22% and 11% respectively). Results were very similar when children were asked to demonstrate using the anatomically detailed doll. However, when asked specific questions using the doll, the majority of children accurately reported vaginal and anal touch (86% and 81% respectively). None of the children who did not receive the genital/anal exam made inaccurate reports during free recall or when using the anatomically detailed doll; however, a small number of children did report genital touch inaccurately when questioned using the doll as a prop (8.3%). Thus, in this sample of older children, anatomically detailed dolls did not improve children's accuracy when used alone, but when the dolls were used in conjunction with specific questions, they increased children's accuracy. In addition, the use of the dolls resulted in only a small number of "false positives" when the dolls were paired with specific questions.

A study by Goodman et al. (1997) examined children's memories of a specific medical procedure involving urethral catheterization. Because the procedure is painful and involves genital penetration, it is likely to have greater ecological validity than medical examinations involving non-invasive genital touch (Koocher et al., 1995). Children ranging in age from 3 to 10 years were interviewed between 1 to 3 weeks after the procedure. The interview consisted of free recall as well

as asking the child to demonstrate the procedure using an anatomically detailed doll and other props. Findings indicated that although 3- and 4-year-olds did provide more accurate information when anatomically detailed dolls were used, they also provided more inaccurate information with the dolls. Moreover, much of the inaccurate information was related to children's use of the other props provided. In contrast, for children ages 5 to 10 years, the anatomically detailed dolls increased the amount of correct information provided without simultaneously increasing incorrect information.

In summary, as indicated above, the findings are generally consistent in indicating that for children under age 5, anatomically detailed dolls do not increase the accuracy of children's recall. In addition, in some studies the dolls appear to increase the likelihood that young children will report genital touch that did not occur (Bruck et al., 1995; Bruck et al., 2000). With older children, however, the use of anatomically detailed dolls appears to facilitate accurate recall of such experiences (Goodman et al., 1997; Saywitz et al., 1991). However, it is important to note that the methodological differences in existing studies, as well as the differences between experimental and forensic settings, makes it difficult to draw definitive conclusions (Ceci & Bruck, 1995; Everson & Boat, 1997).

CHILDREN'S UNDERSTANDING OF SYMBOLIC RELATIONS: IMPLICATIONS OF THE USE OF ANATOMICALLY DETAILED DOLLS

Although there are undoubtedly multiple developmental factors contributing to the age differences reviewed above, a critical issue concerns children's understanding of symbolic relations. The use of anatomically detailed dolls relies on the assumption that a young child understands the doll's symbolic function (i.e., that the doll represents the child). Work by DeLoache and colleagues (e.g., DeLoache & Marzolf, 1995) indicates that preschool children are likely to have difficulty in understanding symbolic relations. As discussed above, DeLoache and Marzolf (1995) found that 2.5-year-olds in their study were not accurate at placing stickers on a doll in the same places that stickers had been placed on them by a male confederate, even under conditions in which few memory demands were placed on the child. Although 3-year-olds were more accurate, a substantial proportion made errors (29%). In all

three age groups, accurate recall of body touches was also lower when the dolls were used than when they were not, although the difference was more pronounced for the younger children. As the authors note, these findings are consistent with the hypothesis that young children have difficulty understanding the doll's use as a symbol of the self.

Other work by DeLoache and her colleagues indicates converging results (see DeLoache, Miller, & Pierroutsakos, 1998, for a review). For example, a number of studies indicate that 2.5-year-olds do not show an understanding of the relation between a scale model of a room and the actual room itself. When a child is shown a toy being hidden in the scale model and then told that a similar, bigger toy is hidden in the same place in the actual room, 2.5-year-olds do not use this information to guide their search behavior, but 3-year-olds typically do. DeLoache proposes that an understanding of symbolic relations requires "dual representation," the ability to represent the symbolic object both as itself and as a symbol of something else. There are multiple reasons why this task is difficult for young children, including the fact that if the symbolic object is novel and interesting, young children have greater difficulty noticing its symbolic function (DeLoache, 2000).

An important finding from this program of research is that children's understanding of symbolic relations emerges gradually and that children's ability to understand a symbolic relationship in one context does not necessarily generalize to other contexts (DeLoache, 2000). The general pattern of findings across studies indicates that 2.5-year-olds have difficulty understanding the relationship between three-dimensional symbolic objects like dolls or scale models and their referents, but that the majority of 3-year-olds show an understanding of these symbolic relations. However, as DeLoache notes, there are multiple factors that influence 3-year-olds' performance on the tasks used to assess symbolic relations. For example, the similarity between the scale model and the actual room it represents influences children's performance; the less similar they are, the less likely 3-year-olds are to succeed at the task. Given these findings, DeLoache (2000) notes that children's ability to succeed at tasks assessing symbolic relations is greatly influenced by the particular task demands and that as a result there is not a specific age at which young children are universally successful at these tasks.

These findings have multiple implications for the use of anatomically detailed dolls with young children. In particular, the way in which task demands affect the performance of 3-year-olds is important to consider. For example, the physical similarity between the symbolic object and its referent influences 3-year-old children's abil-

ity to understand the relation between them. As Ceci and Bruck (1998) note, anatomically detailed dolls are not "exact replicas" of the child in the same way that scale models can be exact replicas of the room they represent, potentially making the symbolic relation considerably more difficult to understand. The fact that multiple dolls are typically used in forensic investigations makes the task even more complex (DeLoache & Marzolf, 1995), and young children have more difficulty in experimental tasks that require them to represent multiple symbol-referent relations (DeLoache et al., 1998). Thus, although in some circumstances 3-year-olds demonstrate an ability to understand symbolic relations, this ability is strongly affected by task demands. The findings from this program of research, as well as the findings indicating that anatomically detailed dolls do not typically facilitate accurate recall in children younger than 5 years, suggest that the dolls are most likely to be beneficial when interviewing children ages 5 and older. There are undoubtedly multiple reasons for the developmental differences in children's ability to use anatomically detailed dolls effectively, including young children's less sophisticated abilities to understand and use language, as well as other cognitive limitations. However, young children's inability to understand symbolic relations may be a particularly fundamental cognitive limitation that is likely to preclude the usefulness of the dolls.

In summary, the findings from the available research indicate that the use of anatomically detailed dolls is likely to be beneficial to older children (those approximately age 5 and older). It is important to note, however, that the apparent benefits of using anatomically detailed dolls in this age group are also based on experiments that differ considerably from typical forensic interviews (Ceci & Bruck, 1995; Everson & Boat, 1997). Although an extended discussion is beyond the scope of this commentary, factors such as the emotional tone of the interview and the type of questioning used in experimental and forensic contexts are likely to be quite different. In a forensic context, there are multiple factors that may affect children's reports (e.g., highly suggestive or misleading questioning, repeated questioning over time, pressure from the interviewer to report abuse). Thus, it is possible that the use of anatomically detailed dolls may be less beneficial in improving the accuracy of older children's reports in a forensic context than they appear to be in existing experimental investigations.

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RECEIVED: 03/04/04
REVISED: 03/04/04
ACCEPTED: 03/04/04