

ACCURACY OF DISCLOSURE AND CONTEXTUAL CONTROL IN CHILD ABUSE: DEVELOPING PROCEDURES WITHIN THE STIMULUS EQUIVALENCE PARADIGM

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ABSTRACT: Lack of reliable, nonintrusive disclosure techniques remains an obstacle in child abuse investigations. Stimulus equivalence procedures have been used to detect a range of social experiences. This paper explores the role that contextual cues play in the development of these procedures. Eight 6-9-year-olds were exposed to verifiable social experiences and then trained to respond differentially to two arbitrary stimuli. Phases 1-3 of the experiment began with a role-play in the laboratory. In Phase 1, the role-play was followed by conditional discrimination training; selecting arbitrary stimulus (*) in the presence of pictures depicting unusual activities in the role-play was reinforced, while selecting arbitrary stimulus (!) in the presence of other role-play stimuli was reinforced. In Phase 2, the role-play was followed by a testing procedure. In Phase 3, the two arbitrary stimuli were established as contextual cues. Following the role-play, accurate disclosure was reinforced in the presence of (*), while inaccurate disclosure was reinforced in the presence of (!). In Phase 4, a prearranged role-play took place at each child's home. Using the arbitrary stimuli as contextual cues, children were tested for accurate and inaccurate verbal accounts. All subjects achieved 100% correct responses in Phases 1-3. Four of the 8 subjects scored 100% in Phase 4, whereas the remaining subjects scored between 67% and 94%. Findings are discussed in the context of child abuse.

Key words: children's disclosure, contextual control, stimulus equivalence, verbal-nonverbal correspondence, child abuse.

The rise in reported cases of child sex abuse in recent years has led to a controversy about the accuracy of allegations. What constitutes a universally acceptable definition of accuracy (Finkelhor & Hotaling, 1984)? How do we distinguish between objective and subjective truths regarding the abuse (Sato & Sugiyama, 1994)? How do children learn to give accurate accounts of their experiences, in other words, how is verbal-nonverbal correspondence established (Paniagua, 1997)? Research findings have been inconsistent regarding the extent to

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which allegations are reliable. Some researchers advocate that false allegations are extremely rare (Jones & McCraw, 1987); others believe that false allegations are relatively frequent (Benedek & Schetky, 1987). It has been argued also that at times true allegations may include exaggeration of events (Comes-Schwartz, Horowitz, & Cardarelli, 1990) and that children may make false allegations under certain conditions or circumstances (Ceci & Bruck, 1993). It has been suggested that children may lack the necessary language skills to understand the questions, that they are at times unable to distinguish fantasy from reality, and that suggestibility and eagerness to please authority figures can lead to inaccurate accounts (Hynan, 1999).

Doubts about the validity of allegations of child sex abuse have implications for the calculation of prevalence estimates (Goodwin, McCarty, & Di-Vasto, 1981), but much more importantly they have serious repercussions for the individuals involved. On the one hand, children who have been abused may not be believed and thus exposed to additional trauma. For example, Brown, Palmer, and Rae-Grant (1994) found that 50% of adults in their study, who had been sexually abused as children, reported that when they initially disclosed no one believed them. On the other hand, innocent adults may be accused of having perpetrated child abuse. Green (1991), for example, found that in 2%-8% of cases individuals were falsely accused of perpetrating abuse.

Disquiet about the accuracy of verbal accounts by children in abuse cases has led to the development of a wide array of assessment tools. These assessment tools include medical examinations, direct observations of behavior (The Research Team, 1990), the use of anatomically correct dolls (Sirnkens & Renier, 1996), human figure and family drawings (Thomas & Silk, 1990), and the use of fables (Miller & Veltkamp, 1989). Unfortunately, however, these tools do not lead to higher accuracy rates (Ney, 1995; Quinn, 1991).

The most frequently used assessment method remains the interview. Computer assisted self-interviews have been used in a large-scale national crime survey and resulted in much increased prevalence estimates of sexual victimization in adults when compared to commonly used measurement approaches (Percy & Mayhew, 1997). However, in disclosure work with children professionals rely largely on verbal accounts of past events. In many cases interviews are conducted jointly by social workers and police; in some cases they are videotaped for use in court. However, questioning children about traumatic events such as abuse is difficult and the use of interviews has been criticized. The interviewer's facial expression or nonverbal gestures such as subtle nods of head and the tone of voice can influence the account. The use of repeated questions can lead to the child thinking she/he has not given the right answer yet, consequently the answer may change. Statements that are reinforced may be embellished and the account may become more descriptive (Hynan, 1999).

Lack of skills and training on the part of the professionals who carry out the interview are thought to be the main factors leading to false allegations (Ceci & Bruck, 1993; Doris, 1991; Halliday, 1986; Raskin & Yuille, 1989; Yuille, Hunter, & Harvey, 1990). Yuille (1991) points out that until recently many professionals

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had little training in interviewing children. Today, most professionals involved in interviewing children who have been abused are trained. While this training is not standardized there are some common beliefs about how to conduct assessment or disclosure interviews. For example, the general consensus is that open-ended questions yield more accurate accounts than closed questions. However, Rawls (1994) showed that while open-ended questions lead to an increase in accuracy rates when compared to closed questions, the accuracy rates are far from satisfactory. She exposed children to a role-play (i.e., dressing-up game). These role-plays were videotaped and used to verify accuracy of the interview results. Children then were interviewed using either closed questions or open-ended questions. While the use of closed questions yielded an average of about 47% accuracy, accuracy using open-ended questions averaged around 76%. In another experiment, Rawls gave the children harmless secrets to keep (e.g., playing with a toy, or being allowed to take an article away after the session without anyone knowing). The children disclosed these secrets in only 61% of the cases when open-ended questions were used, and in only 39% of cases when closed questions were used. These accuracy rates are far from satisfactory, especially when one considers that in child abuse cases children are frequently asked to keep the abuse secret. Procedures need to be developed that yield more reliable results (Sharland, Seal, Croucher, Aldgate, & Jones, 1996).

It has been suggested that procedures from the stimulus equivalence paradigm may offer a new avenue for achieving higher accuracy rates in the disclosure of child sex abuse (McGlinchey, Keenan, & Dillenburger, 2000). This suggestion is explored further in this paper. Generally, stimulus equivalence research focuses on variables responsible for emergent behavior. Typically, a subject is trained to match stimulus A to stimulus B and to match stimulus B to stimulus C. Following training, the stimuli are said to constitute an equivalence class if the three defining properties of equivalence relations are demonstrated: reflexivity, symmetry, and transitivity. Reflexivity occurs when identical stimuli are matched in a conditional discrimination test. To test for symmetry, the sample and comparison stimuli are reversed relative to their locations during training and the subject has to match them without further training. Transitivity is demonstrated when the subject is asked to match A to C without additional training (Sidman, Raizin, Lazar, Cunningham, Tailby, & Carrigan, 1982; Sidman & Tailby, 1982).

Procedures within the stimulus equivalence paradigm have been developed to distinguish reliably between the effects of different social experiences. For example, a pioneering study by Watt, Keenan, Barns, and Cairns (1991) examined social categorization by Northern Irish and English subjects and found that a modified equivalence testing procedure reliably distinguished between these two groups of people (cf. McGlinchey & Keenan, 1997). A related study by Leslie, Tierney, Robinson, Keenan, Watt, & Barnes (1993), that examined clinically anxious and nonanxious subjects, found that they too could be differentiated in terms of how each group responded in a modified equivalence testing procedure. Further studies along the same lines demonstrated that the stimulus equivalence

paradigm could be used also in the study of gender-role stereotyping (Moxon, Keenan, & Hine, 1993).

Given that the social experiences of abused children are clearly different from those of nonabused children, the question remains whether lessons from the above studies could inform the development of procedures that reliably distinguish between these two groups of children. McGlinchey, Keenan, and Dillenburg (2000) adopted the general procedure devised by Watt et al. (1991) and argued that “. . . it might be possible to differentiate between abused and nonabused children by examining the extent to which normal equivalence responding can be disrupted by [the inclusion of] socially loaded stimuli” (p. 729). In order to test this suggestion they conducted three experiments. First, they exposed two girls, aged 5 and 6 years old, to the standard equivalence training and testing procedure described earlier to ensure that the subjects showed expected equivalence responding. The following two stimulus classes were used: A1—picture of a pair of goggles that were later used in a role-play; B1—a circle; C1—picture of a girl, arrow pointing to leg; A2—picture of a hat that was later used in a role-play; B2—a triangle; C2—picture of a girl, arrow pointing to neck. Both children showed expected equivalence responding.

Verifiable social experiences then were arranged as suggested by Rawls (1994). Both children took part in a role-play in which certain items of clothing were placed on body parts on which they are not normally worn (e.g., braces¹ were placed on a child’s leg during the role-play). Having established these unusual experiences, the question of interest was whether or not the inclusion of visual stimuli appropriate to the experiences in an equivalence test would interfere with equivalence responding (cf. Watt et al., 1991). Using C1 as a sample stimulus, for example, the combination of comparison stimuli was either A1 and X1 or A1 and X2 (Note: because “novel” stimuli X1 and X2 were used, these tests were called “novelty” tests). Stimulus X1 was a picture of the actual braces that had been placed on the child’s leg during the role-play. Stimulus X2, on the other hand, was a control stimulus (e.g., a picture of a shirt not used in the role-play). It was expected that equivalence responding (i.e., selecting A1 in the presence of C1) would be disrupted and that instead subjects would match X1 (picture of braces) and C1 (picture of a girl, arrow pointing to leg). This did not happen.

McGlinchey et al. considered the possibility that the different rooms used for the role-play and for conditional discrimination training inadvertently established a significant role for contextual cues (Sidman, 1994) in the control of responding. To test this suggestion they arranged explicit contextual cues in the role-play (“W” and “Z”). Subjects were a girl aged 8 years and a young woman aged 24 years. Stimulus presentations and equivalence training procedures were the same as those

¹ British: a pair of straps worn over the shoulders for holding up trousers. U.S. and Canadian word: suspenders. We use the British word throughout this paper because the word “suspenders” is used in Britain for “an elastic strap attached to a belt or corset having a fastener at the end for holding up women’s stockings,” the U.S. and Canadian equivalent to “garter” (Collins English Dictionary, 1991).

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used previously. The role-play, however, began with the instruction to place items of clothing on themselves in the presence of one of two objects ("W" or "Z").

In the presence of the cue "W" reinforcement was given to subjects for placing braces on their leg. In the presence of cue "Z" reinforcement was given to subjects for placing a slipper on their head. Only when 100% correct responding was achieved did subjects proceed to the testing phase. In the first test, subjects were exposed to a standard equivalence testing procedure (i.e., C1/C2 as samples and A1/A2 as comparisons). Subjects responded equivalently. In the second test, subjects were exposed to the novelty test in the presence of the cues "W" and "Z." Equivalence responding was disrupted (i.e., subjects matched X1 and X2 with C1 and C2 respectively). In the third test, when subjects were exposed to the novelty test in the absence of the cues, they responded equivalently.

The conclusion from their work was that it is possible to detect prior social experiences using stimulus equivalence procedures, however, attention to contextual control is essential. The aim of the present research was to develop this conclusion further by exploring the potential of adapting procedures used in the study of stimulus equivalence for use in child abuse investigations. Specifically, we examined the possibility of designing a procedure that reliably distinguishes between accurate and inaccurate verbal accounts of previous social experiences.

Method

Participants and Setting

Four boys and 4 girls, aged between 6 and 9 years old, served as experimental subjects. All were typically developed and experimentally naive. Each child was trained and tested individually using a computer in a small experimental room with only the experimenter and the subject present. Each session lasted no longer than 60 min. Subjects were not exposed to more than two sessions per day, with the number of sessions needed to complete the experiment ranging between four and six.

Apparatus

Experimental stimuli were presented on an Apple Macintosh LC475 using HyperCard™ and a touch-sensitive screen.

General Procedure

The experiment reported here comprised 4 phases. During Phases 1-3 the children were exposed to a role-play (i.e., a dressing-up game) with the experimenter in the experimental room prior to training or testing procedures on the computer. Clothing for the role-play situation was as follows: a pair of boxing gloves, a yellow hat, a pair of adult trousers, a pair of adult slippers, a pair of adult

HyperCard™ is a registered trademark of Apple Computers, Inc.

braces, a pair of adult sunglasses, a flowery hat, and a pair of adult gloves. During each role-play interaction, both the experimenter and the child put on three items of clothing. The child then was asked to put two items of clothing on the experimenter. This was followed by the experimenter placing two items of clothing on the child, on parts of the body where they would not usually be worn; for example, braces were tied around one leg. In order to ensure that the children were familiar with the body parts on which clothing was placed, the experimenter asked each child to name all the relevant body parts (e.g., leg, feet, face, neck, stomach, head, and chest). The children also were asked to name each item of clothing prior to the role-play. The role-play situation lasted between 5 and 10 min.

During Phase 4 the parents of each child were instructed to carry out a role-play at home. This procedure was adopted in order to explore the effect of experiences that were less under experimenter control than the role-play situation that was previously used. Role-plays at home also increased temporal distance between the role-play and the testing and were therefore useful to begin exploring the effect of social experiences that had happened some time in the past. The role-plays at home contained unusual activities, for example, parents gave their child a knife and a fork for their breakfast cereal, placed a sock over the child's hand and cut a slice of bread with scissors. These activities were chosen to be unique experiences. The children had never engaged in these activities before. Parents assured the experimenter that they had carried out the role-playing exercise at home before the experiment continued.

Following the role-play in each phase either a training or a testing procedure was conducted on the computer. The experimenter and child sat in front of the computer and touch screen and a set of instructions was issued to the child verbally by the experimenter. The instructions were adapted to suit the developmental age of the child present and involved explaining where stimuli would be presented on the screen and how the child was to respond.

Phase 1

The purpose of this phase was to train differential responding in the presence of contextual cues on the computer. In the role-play one of two items of clothing was placed on the child's body in an unusual manner, for example, braces were placed on the leg, or a pair of gloves was placed on the feet.

Following the role-play children were brought into the room containing the computer and given instructions to select one of the symbols displayed on the screen by briefly touching that symbol. On the screen cards from a HyperCard stack contained the sample stimulus and two comparison stimuli. The sample stimulus was centered 2.5 cm from the top of the computer screen and comprised two pictures. On the left-hand side there was a picture of a boy or girl (depending on the gender of the child) with an arrow pointing to a part of the body. On the right-hand side there was a picture of an item of clothing (see Figure 1). Beneath the sample stimulus the two comparison stimuli were an asterisk (*) and an exclamation mark (!). The locations of these comparisons were varied in a semirandom manner across blocks of 32 trials. Using continuous reinforcement,

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selection of each comparison stimulus was reinforced according to whether or not the sample stimulus corresponded to events that took place in the role-play. If the sample stimulus corresponded to events in the role-play, then selecting the asterisk (*) was reinforced; if the sample stimulus did not correspond with events in the role-play, then selecting the exclamation mark (!) was reinforced. Throughout Phase 1 reinforcers were a pleasing melodic computer tone, explicit feedback from

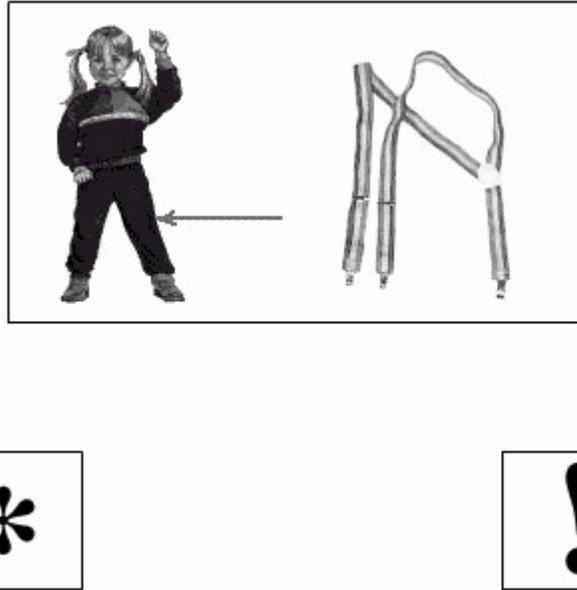


Figure 1. An example of stimuli used for Phases 1 and 2.

the experimenter (i.e., “Well done, that’s correct”), and an opportunity to move a counter on an abacus. Cartoon stickers were made available at the end of each session. Incorrect responses were followed by a less pleasing strident computer tone and explicit feedback from the experimenter (i.e., “No, that was incorrect”). Trials were repeated until 100% accuracy was achieved.

Phase 2

The purpose of this phase was to test whether differential responding occurred. In the role-play, two items of clothing were incorrectly placed on the child’s body, for example, a pair of braces was tied around the leg, and a flowery hat was placed on the foot. Following the role-play, children were brought into the room containing the computer and asked to look at the picture and press the correct symbol at the bottom without feedback. As in the previous phase, the locations of the comparisons were varied in a semirandom manner across blocks of 32 trials.

Trials were repeated until 100% accuracy was achieved. If this criterion was not met after three consecutive sessions Phase 1 was repeated.

Phase 3

The purpose of this phase was to train differential verbal accounts in the presence of the previously used arbitrary stimuli with the aim of establishing them as contextual cues. The role-play was identical to that in Phase 2. Following the role-play children were brought into the room containing the computer. Children were informed that the stimuli displayed on the screen had changed, that only one symbol would be displayed directly beneath the centred picture (see Figure 2), and that they would not always be informed if their response was correct or incorrect.

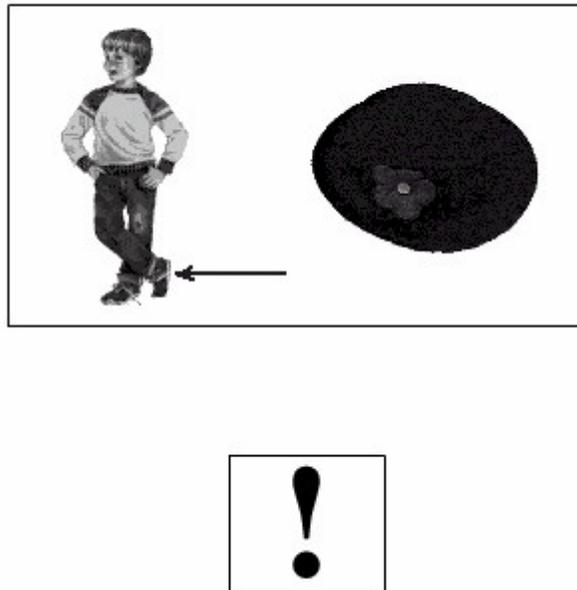


Figure 2. An example of stimuli used for Phase 3.

Children were asked to tell a story about the items in this picture in the presence of the displayed symbol. Verbal correspondence with events in the role-play was reinforced in the presence of the asterisk (*); verbal noncorrespondence with events in the role-play was reinforced in the presence of the exclamation mark (!). Explicit feedback was given for 60% of the trials. The criterion for completion of this phase was 100% accuracy. If this criterion was not met after three consecutive sessions Phase 2 and Phase 3 were repeated.

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Phase 4

The purpose of this phase was to test the accuracy of verbal account in the presence of contextual cues on the computer (no feedback). Parents conducted a role-play in the child's home on the test day before they brought the child to the experimental setting. This role-play included a number of unusual activities, for example, parents gave their child a knife and a fork for their breakfast cereal, they placed a sock over the child's hand, and they cut a slice of bread with scissors.

In the experimental setting each child was informed, prior to testing, that the images on the screen would be different to the ones previously shown but that the symbols placed beneath the sample were identical to those displayed in Phase 3. Each child also was informed that feedback would not be given. The sample stimulus presented on the computer reflected the unusual activities that had been carried out in the child's home (see Figure 3). The child then was asked to verbally

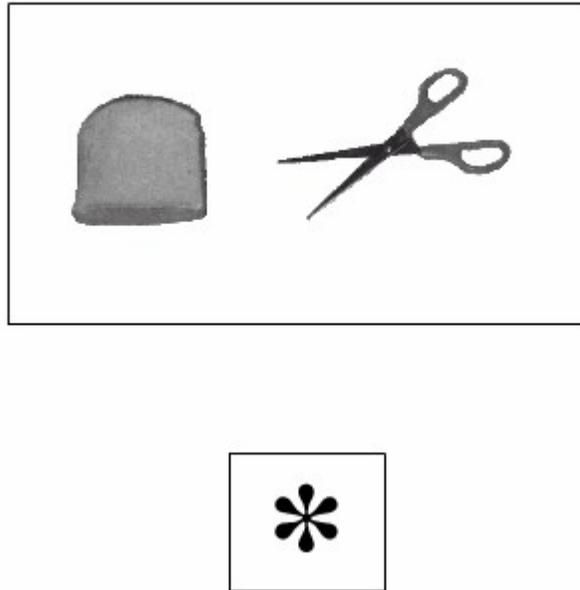


Figure 3. An example of stimuli used for Phase 4.

relay a story in the presence of the symbol displayed. That is, she/he was asked to tell a story in presence of the asterisk (*) and to tell a story in presence of the exclamation mark (!). Eighteen trials were carried out with each child.

Results

Figures 4-11 show the performances for each child over the four phases of the experiment. (Note: The * indicates repeat sessions.) The measure of performance is calculated in percent correct responses. Six of the children required three to six

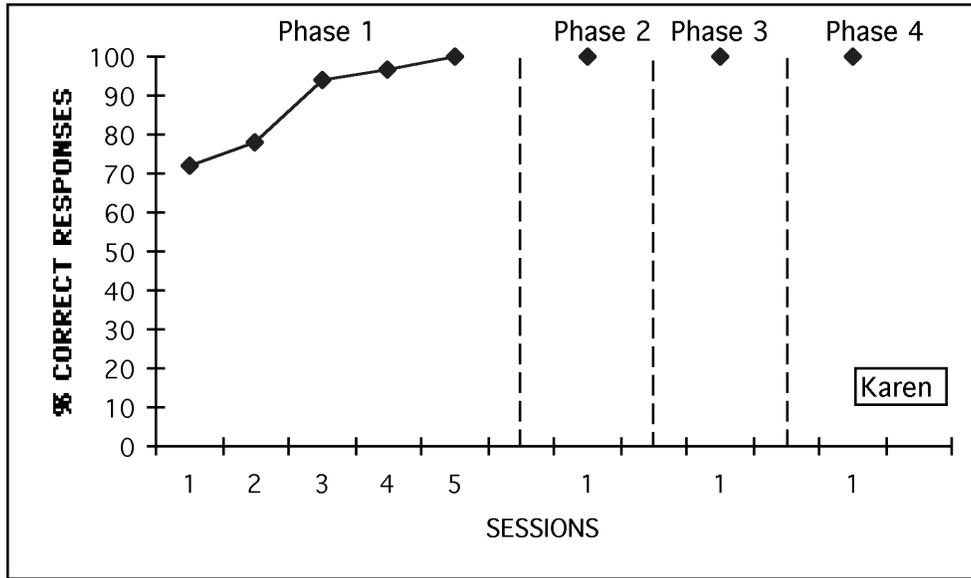


Figure 4. Karen's scores across each of the different phases.

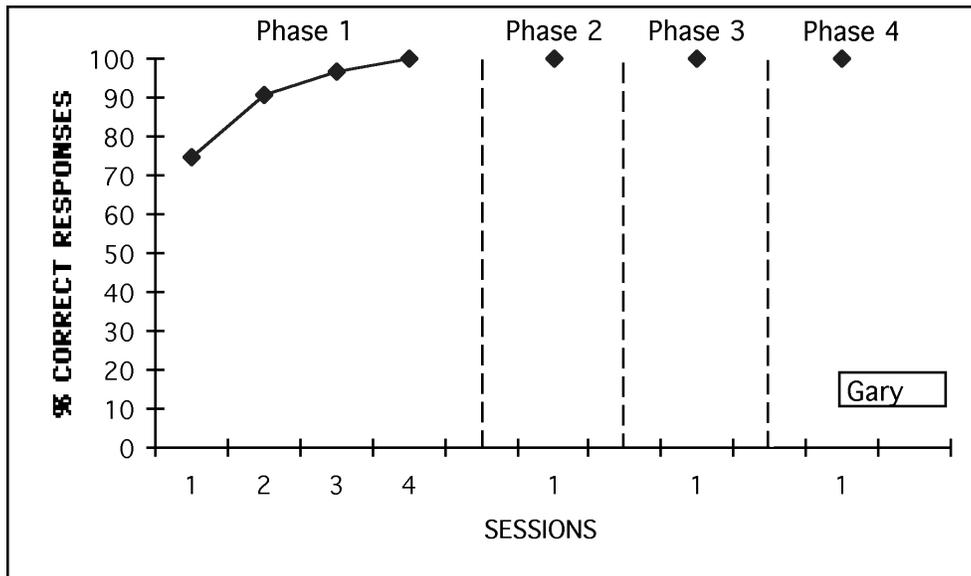


Figure 5. Gary's scores across each of the different phases.

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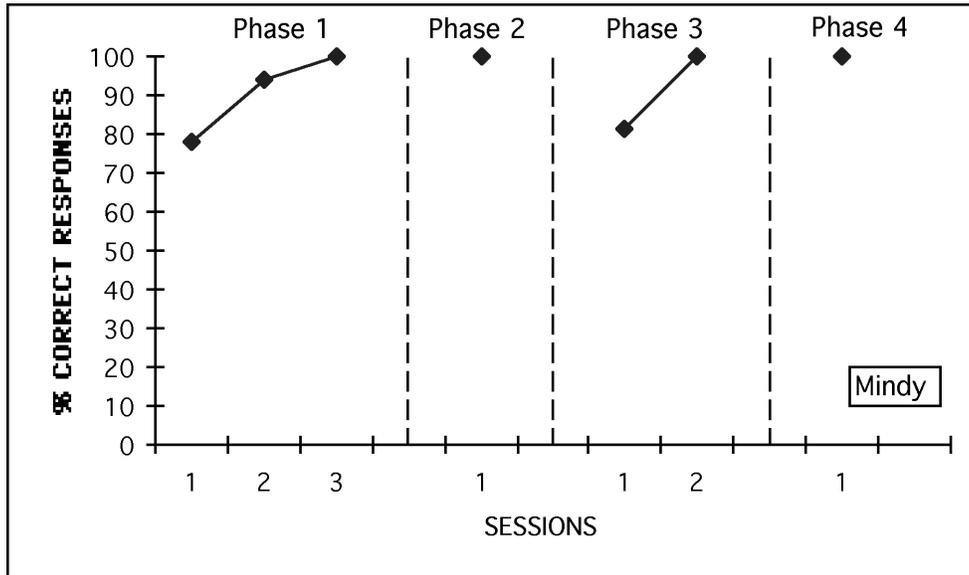


Figure 6. Mindy's scores across each of the different phases.

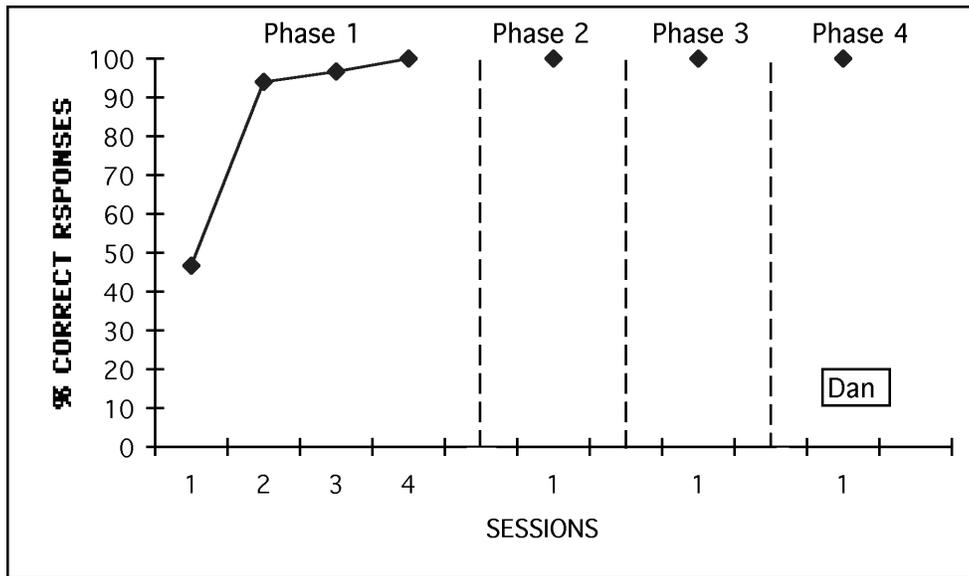


Figure 7. Dan's scores across each of the different phases.

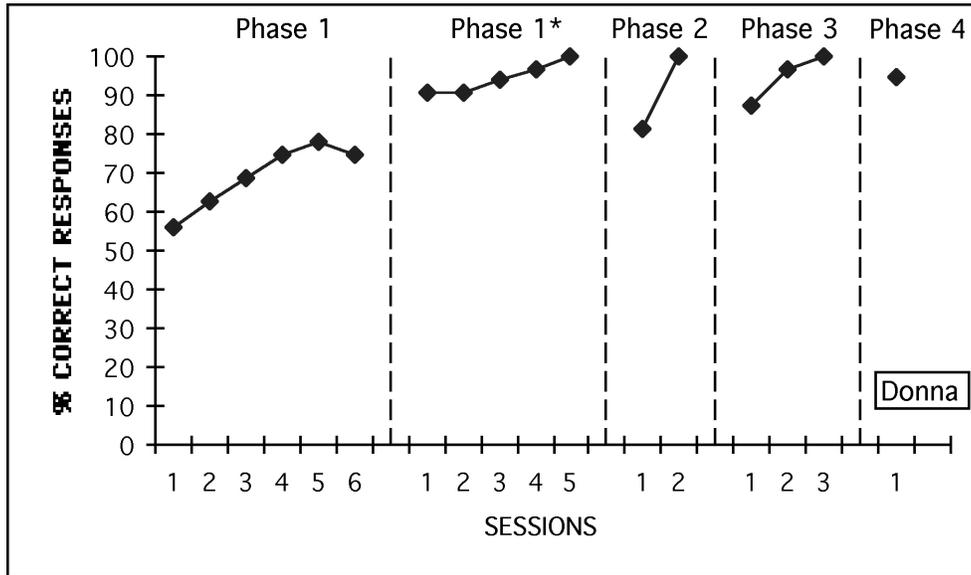


Figure 8. Donna's scores across each of the different phases.

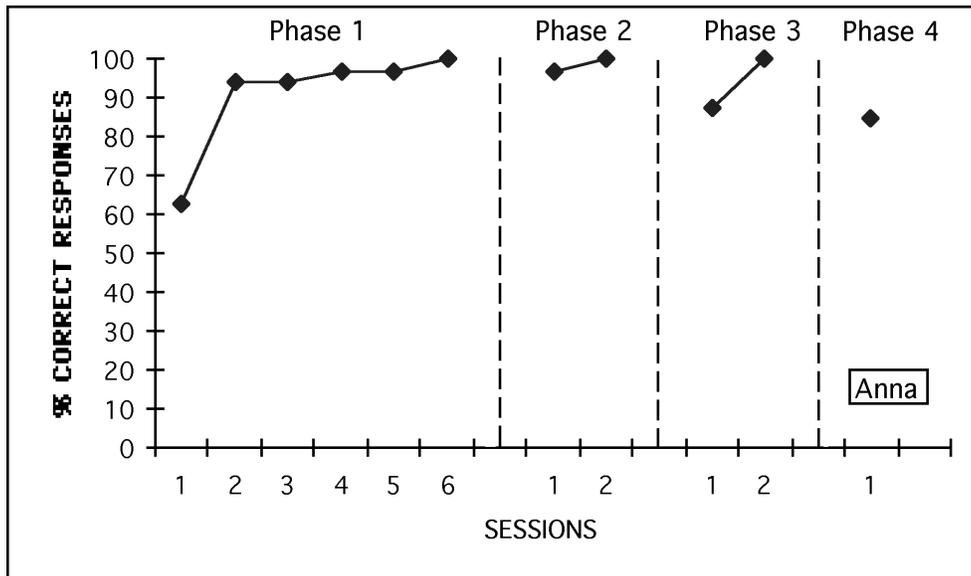


Figure 9. Anna's scores across each of the different phases.

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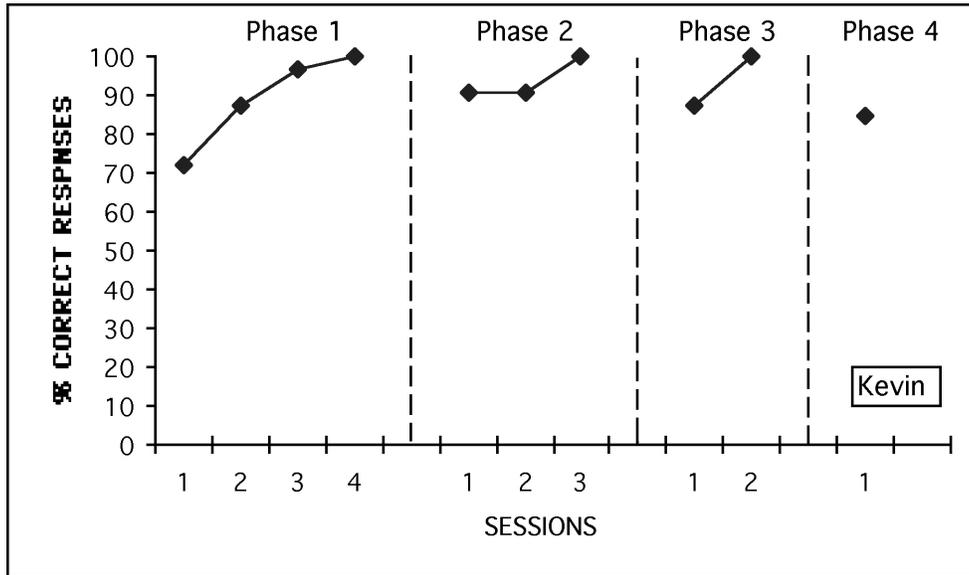


Figure 10. Kevin's scores across each of the different phases.

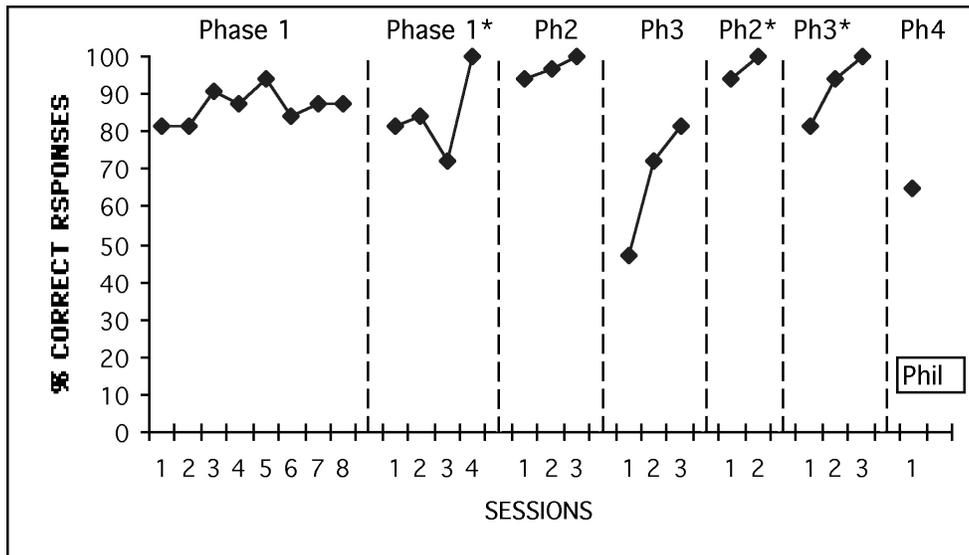


Figure 11. Phil's scores across each of the different phases.

training sessions during Phase 1 (select [*] if picture depicted events from the role-play and [!] if picture depicted events that had not been part of the role-play) before reaching the criterion of 100% correct (fictional names: Dan, Gary, Mindy, Karen, Kevin, & Anna). Two of the children (fictional names: Donna & Phil) required a repeat of Phase 1 before they reached criterion amounting to a total of 11 and 12 training sessions respectively for Phase 1. During Phase 2 (testing phase) four children (Karen, Gary, Mindy, & Dan) reached 100% correct in the first testing session. Two children (Anna & Donna) required two sessions, and two children (Phil & Kevin) required three sessions.

Four children (Karen, Gary, Mindy, & Dan) required one training session during Phase 3 to achieve 100% correct differential verbal reporting in the presence of the contextual cues, while two children (Kevin & Anna) required two sessions, and one child (Donna) required three sessions before reaching criterion. One child (Phil) repeated Phase 2 and Phase 3 before he reached criterion. In Phase 4 when children were exposed to role-plays at home and then were required to verbally report these events accurately in the presence of (*) and inaccurately in the presence of (!), four children reached 100% correct (Karen, Gary, Mindy, & Dan). The remaining four children reached 94% (Donna), 88% (Anna), 83% (Kevin), and 67% (Phil) correct.

Discussion

The aim of the present study was to explore the potential of adapting procedures used in the study of stimulus equivalence for use in child sex abuse investigations. Previous research had shown that social experiences can interfere with the emergence of experimentally derived relations (Watt et al., 1991). When McGlinchey et al. (2000) first adapted these general procedures to facilitate disclosure they found that contextual cues played an important role. Following on from their lead we arranged verifiable social experiences for each child prior to training and testing. Each child then was presented with pictures that depicted these social experiences and she/he was trained to differentially respond verbally in the presence of contextual cues. They were trained to give accurate (i.e., corresponding) accounts of social experiences in the presence of one contextual cue (*) and inaccurate (i.e., noncorresponding) accounts of social experiences in the presence of another contextual cue (!). In the final phase of the study, specific experiences were arranged at the children's own homes. When tested for accurate reporting of these experiences in the presence of (*) and inaccurate reporting in the presence of (!), 4 of the 8 subjects achieved 100% correct differential verbal reporting. The remaining subjects scored between 67% and 94% correct. These findings are encouraging especially when compared to previous studies that found much lower correspondence rates when interviews were used to elicit verbal accounts (Rawls, 1994).

Traditionally used interview techniques generally assume that verbal-nonverbal correspondence is inevitable. We found previously (McGlinchey et al., 2000) that relying on verbal instructions alone is ineffective in achieving

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correspondence. We had found also that children enjoyed the use of computers in the experiments. The use of computers in disclosure work is not new (Percy & Mayhew, 1997), however, merely using computers to ask the questions makes the same assumptions as traditional interviewing, that is, that verbal-nonverbal correspondence is a given and that verbal or written instructions suffice for it to be demonstrated. In this study, therefore, we explicitly trained differential verbal-nonverbal correspondence on the computer before testing and found that this led to much increased verbal-nonverbal correspondence in a subsequent test after social experiences were arranged at the subjects' homes.

This is developmental research. Further research is needed before the full potential of the approach taken by these experiments is realized. Generalizations can not be made at this stage. Implications of the findings for sex abuse evaluations have to be viewed with caution and are to be considered possibilities that may be realized on the basis of future research. Some problems that need to be addressed are exemplified by the finding that 4 subjects failed to reach 100% correct differential responding in the final test. Most of these children responded correctly to the contextual cue (*) (i.e., give an accurate corresponding account), but did not respond correctly to the contextual cue (!) (i.e., give an inaccurate noncorresponding account). When presented with the contextual cue (!) (i.e., give an inaccurate account) the children either did not respond or avoided giving inaccurate accounts. This failure to respond differentially to both experimentally trained cues might be attributed to the effects of prior social learning or other developmental issues. In terms of the overall objective of the study this kind of finding has important implications for future research. It shows that even where nonthreatening experiences occur, avoidance responding can complicate matters.

Future studies will also have to address the issue of avoidance especially because the avoidance behavior might manifest itself in the opposite direction to that shown here. That is, it is entirely possible that children who have been abused might respond by giving an inaccurate account to both contextual cues. Future studies should also consider experimenter influence. In this study the experimenter had arranged controlled social experiences for the children and, therefore, could verify accuracy immediately. Future experiments that leave the experimenter blind to experiences of subjects are necessary to reduce potential effects of experimenter influence. Further research also needs to include stimulus situations reflecting more accurately contexts involving potential abuse not addressed in this research, such as the threatening nature of abuse, the delay in reporting, the context for reporting, consistency in parental compliance in administering the role-play, and developmental differences of the participants. Ultimately, these experiments would have to be carried out with children who have already disclosed sex abuse, and with children for whom the indications are that they might disclose these kinds of experiences. Despite the difficulties noted above, however, this line of research opens up avenues for the development of a new assessment tool to be used to achieve higher accuracy rates in child sex abuse cases.

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