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SUGGESTIBILITY IN CHILDREN : A REVIEW

Rebecca Purchon

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Submitted in partial fulfilment of the Masters of Psychology (Clinical)

Edith Cowan University

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Overview of Submission

This submission consists of two independent articles, namely:

- 1) A Literature Review**
- 2) A Research Report**

The research report is presented according to the guidelines of the journal, Child Abuse and Neglect, and a copy of these guidelines is included within the submission.

Abstract

The following review outlines the broad area of children and suggestibility with a focus on children with intellectual disabilities. Key determinants of suggestibility including cognitive, social and stress factors underpinning the phenomenon are examined. Secondly, methodological issues such as poor ecological validity and generaliseability to the child-victim context are discussed. Relevant studies in the field are examined in light of these methodological issues. The implications of generalising from ecologically invalid studies for legal and psychological professionals are discussed. Finally, future directions for research such as effects of different ages, differences in ethnicity and IQ differences on suggestibility are outlined.

Reports of child abuse have increased exponentially over the past three decades (Bruck & Ceci, 1999). and as a consequence, child abuse cases are now being tried in unprecedented numbers (Shrimpton, Oates & Hayes, 1996). The increase of children as witnesses has sparked an international interest in the reliability of children's testimony and, in particular, whether children are suggestible witnesses.

During 1960s and 1970s child sexual abuse was recognised as a serious social problem (Ceci & Huffman, 1997). Previously, Australian law afforded some protection to children with the Offences Against The Person Act, which legislated severe penalties for crimes against children under age 14 (Shrimpton et al, 1996). However the emphasis on punishment of the offender rather than protection for the child meant that only the most obvious and clear-cut of crimes were prosecuted. In effect, the prevailing legislation prevented most cases from being tried (Shrimpton et al, 1996).

International legal reform in the area of child abuse began during the 1980s. Legal and welfare professionals recognised that child sexual abuse often occurred in secret with the victim being the sole witness. Consequently, courts in the United States of America (USA) amended laws pertaining to child abuse permitting children to give uncorroborated evidence (Bruck & Ceci, 1999).

In Australia the laws protecting children in the 1970s were still ineffective with perpetrators rarely being charged or brought to trial. This resulted in the women's movement, welfare groups and medical professionals lobbying parliament for amendments to existing legislation. In response, Australian courts introduced mandatory reporting of child abuse (Shrimpton et al, 1996).

During a notorious and controversial case - involving kindergarten worker "Mr Bubbles" - a New South Wales magistrate prevented children from giving evidence due to the wording of the existing 1900 Oaths Act. Ostensibly the Act excluded children's ability to give evidence unless it was deemed they were of sufficient intelligence to understand the oath. It was argued at the time, that a child of kindergarten age might be highly intelligent but still lack the ability needed to understand the Oath. Consequently the Act was revised allowing kindergarten children to give evidence (Parkinson, 1991).

With the international reform of child abuse laws came a new set of problems (Bruck, Ceci & Hembrooke, 1998). In the United States during the late 1970s and 1980s a number of lengthy, costly and highly publicised child sexual abuse cases involving "day-care ritual abuse" were tried (Garven, Wood, Malpass & Shaw, 1998). Perhaps the most famous case was the McMartin pre-school case *People Vs Buckey* (see Garven et al, 1998) where a 2-year-old male child, who had been sexually abused, accused Buckey of being a sexual abuse perpetrator. Buckey's mother and five former teachers were also accused as accomplices (Garven et al, 1998; Meyer, 1996).

Over the course of the trial several hundred children gave testimonies involving ritual sexual abuse with satanic themes (Garven et al, 1998). It was argued, however, that the prosecutors used highly misleading questions, threats and explicit suggestions to obtain testimonies from the children. Eventually, the majority of the charges against Buckey, his mother and the five former teachers were dropped due to a lack of evidence and the way in which children were intensively 'coached' to give 'correct' answers (Meyer, 1997).

Cases such as *People Vs Buckey* sparked an intense legal and psychological interest in the reliability of children's testimony and research in child witness testimony mushroomed during the 1980s and 1990s (Bottoms & Goodman, 1996; Bruck et al 1998; Warren & McGough, 1996). In turn, a controversy began among researchers over whether children are able to give accurate testimonies about experiences such as sexual abuse (Bottoms & Goodman, 1996; Bruck & Ceci, 1999; Goodman, Rudy, Bottoms & Aman, 1990; Rudy & Goodman, 1991; Thompson, Clarke-Stewart & Lepore, 1997).

While some researchers have focused on weaknesses in children's memories and their lowered resistance to suggestibility (Ceci, Ross & Toglia, 1987; Lepore & SESCO, 1994; Thompson et al, 1997), others have documented the strength of children's memories and the ways in which professionals interviewing children can maximise the accuracy of children's recall (Bottoms & Goodman, 1996; Goodman, Rudy, Bottoms & Aman, 1990; Ornstein, Gordon & Larus, 1992; Rudy & Goodman, 1991).

In addition to divergent views on children's resistance to suggestibility, contextual issues became a focus. In particular three key areas of research were highlighted namely: (1) are children more suggestible than adults? (2) under what conditions does suggestibility occur? and (3) do individual differences among children contribute to differences in suggestibility and what are these factors? (Thompson et al, 1997).

The following discussion outlines the broad area of suggestibility and the associated research. Firstly, key determinants of suggestibility including cognitive, social and stress factors underpinning the phenomenon are discussed. Secondly, methodological issues are outlined. Relevant studies in the field are examined in light of these methodological issues. Finally, the review discusses future directions for research with a focus on intellectual disability.

What is Suggestibility?

While some authors have focussed on suggestibility as a trait variable occurring more readily in some individuals than others (Gudjonsson, 1987; Gudjonsson, 1992), most research has focussed on the state or situational variants of suggestibility; that is - under what conditions individuals are likely to become suggestible (Ceci & Bruck, 1993; Rudy & Goodman, 1991; Thompson et al, 1997).

Suggestibility refers to the degree to which one's "...encoding, storage, retrieval and reporting of events can be influenced by a range of social and psychological factors" (Ceci & Bruck, 1993, p. 404). In other words,

suggestibility is the extent to which an individual's memory of an event can be influenced by post-event information such as leading questions. By leading (or misleading) questions about events it is meant that the interviewer introduces implicit or explicit 'hints' to the interviewee about the material they expect to hear. Least suggestive questions can be considered 'open' questions such as "what happened?" or "did the man say anything?" Questions considered to be highly leading contain implications such as "when did Mr X smack you?" (Endres, 1997).

The mechanisms underlying suggestibility are still unknown. Until recently researchers postulated that the phenomenon may be accounted for primarily by memory strength (McCloskey & Zaragoza, 1985). Recent research suggests that suggestibility is not only cognitively based but also has a social dimension. For example, some studies have found that children's recollections of ambiguous events can be altered by an authoritative or opinionated adult (Leichtman & Ceci, 1995; Ceci, Leichtman & White, 1998). The following discussion outlines these mechanisms.

Mechanisms Underlying Suggestibility

Cognitive Components of Suggestibility

Theorists postulate that children's suggestibility is strongly influenced by developmental differences in the accuracy of encoding and retrieving memory traces (Brainerd & Ornstein, 1991). In addition there are developmental

differences in rates of forgetting and retention of events (Brainerd, Kingma & Howe, 1985). In order to identify and understand the mechanisms underlying the phenomenon of suggestibility a brief discussion regarding the mechanisms underlying memory, encoding and delay will be outlined. A thorough investigation of this area is beyond of the scope of this review but can be found in Lepore, (1991).

In order to encode an event, two processes must occur. The first of these is pattern recognition whereby one encodes details of the event such as patterns of shapes, colours and size of objects and people. The second process is that of interpretative analysis whereby one assigns semantic meaning and emotion to the memory, giving it value (or not) (Ceci & Bruck, 1993).

Trace Theory

Trace theorists postulate that suggestibility occurs when post-event information in some way interferes with or alters the original memory trace (Howe, 1991). Both time and post-event suggestions can disrupt or 'loosen' an original encoding sequence (Howe, 1991). At the time of retrieval, post-event suggestions can recreate both pattern recognition and interpretative analysis, which can then encode the memory quite differently and inaccurately. Such processes depend on the strength of the original trace (Ceci, Toglia & Ross, 1988).

To account for reasons why children forget or distort information, researchers categorise possible hypotheses as either storage failures or retrieval

difficulties (Brainerd & Ornstein, 1991). Storage failures occur when the memory trace is lost due to the original memory being overwritten by post-event suggestions (or leading questions). These suggestions then interfere via competition with retrieval of the original memory information, rendering it inaccessible. Thus the original memory trace is then 'destructively updated' with the material presented by the suggestion (Ceci & Bruck, 1993).

Alternatively, some theorists hypothesise that suggestibility can be attributed to retrieval difficulties which occur when a number of competing scenarios are possible but selecting the accurate one poses difficulties (Bekerian & Bowers, 1983; Christiaansen & Ochalek, 1983). Generally researchers agree that suggestibility can best be explained by storage rather than retrieval failures (Brainerd & Ornstein, 1991).

Effects of Delay on Retention

Both time and post event suggestions are known to distort encoding (Ceci & Bruck, 1993). In Australia, the average length of time between a child's abuse disclosure and court trial is 15 months (Shrimpton et al, 1996).

Consequently, the effects of time delay, and misleading questions on memory retention are of particular interest to researchers and legal professionals.

Research assessing the effects of delay and memory for events typically take a presentation-delay-test design formats (Lepore, 1991; Pezdek & Roe, 1997). In other words, the presentation or stimulus event occurs first taking the form of a staged event (Thomson et al, 1997), a visit to a doctor, (Ornstein et al,

1992), an interaction with a confederate (Tobey & Goodman, 1992), or a video (Oates & Shrimpton, 1991) for example.

Designs normally involve immediate testing after the event (Thompson et al, 1997) and then a time delay varying between one day (Ceci et al, 1987) to two years (Pipe, Gee, Wilson, Clare & Egerton, 1999). After the delay the experimenter implements testing via an interview or series of interviews which typically includes post-event information in the form of leading questions. Some designs also utilise an interview incorporating suggestions prior to the delay as well as after the delay to investigate the effects of suggestion rehearsal (Ceci, Ross & Toglia, 1987).

Research concerning the effect of delay on children's memory retention has shown mixed results. Theorists have found that children's memory for salient events has been found to be quite good over long periods (Brainerd & Ornstein, 1991). For example, Pipe, Goodman Quas, Bidrose, Amblin and Craw (1997), performed a longitudinal study involving children's memories of a voiding cystourethrogram (VCUG) – a procedure designed to detect childhood urinary tract abnormalities via catheterisation. Pipe et al, (1997) found that all twenty-nine children, ranging between two and seven, were able to report some aspect of the VCUG after delays of 30 months. It was found that the length of time of delay did not have an impact on memory. Other researchers utilising a number of different contexts (Fivush, Hudson & Nelson, 1984; Goodman, Aman & Hirschman, 1987; Peters, 1987) have also replicated this effect.

Although cognitive factors play a major part in suggestibility, other social factors such as the pressure to conform to authority and interviewer bias are also important. These other factors will now be discussed briefly.

Social Factors

Suggestibility and Authority

Researchers agree that children are highly social and endeavour to participate with adults as competent conversational partners (Ceci & Bruck, 1993). As social partners, children find adults highly credible and tend to give answers which they believe will please them (Bruck, Hembrooke & Ceci, 1997; Garven et al, 1998; Hughes & Grieve, 1980). Studies have shown that even if questions are non-sensical – for example, “is milk bigger than water?” - children will aim to provide the answer they believe is sought, deferring to the adults authority (Hughes & Grieve, 1980). For example, in Tobey and Goodman's (1992) study, a research assistant (who acted as a baby sitter) interacted with four-year-olds who were divided into an experimental and a control group. Eleven days later another research assistant posing as a police officer interviewed the experimental group of children, stating that they needed to find out if “anything bad had happened with the baby sitter”. A neutral interviewer interviewed the control group. The results showed that the children interviewed by the ‘police officer’ were much more prone to inaccuracies in their testimonies compared to the neutral interviewer. This effect suggests that

children's memory for an event can be altered to comply with an authority figure.

The tendency for children to comply with authority figures is particularly pronounced if the interviewer is an adult as opposed to a peer (Ceci, Ross & Toglia, 1987a). For example, Ceci, Ross and Toglia (1987a), showed pre-school children short stories followed by illustrations. The next day, either an adult (group 1) or a child (group 2) provided misleading information about the stories. Two days later the children were interviewed about the stories. Ceci et al, (1987a) found that children were less suggestible when a child rather than an adult gave the same misinformation. In other words, children rely on adult's versions of reality but when misleading information is given by a peer, children rely on their own memories.

Interviewer Bias

Interview bias can be described as the interviewer's reliance on his or her own hypotheses when talking to the witness thus inadvertently affecting the information collected (Bruck, Ceci & Hembrooke, 1998). Interviewers who are biased tend not to look for alternative explanations to events. Instead, a biased interviewer rejects information that would disconfirm their hypotheses of an event. Interviewer bias may occur via body language. For example, interviewers may attend to certain details while ignoring others without

realising they are reinforcing the interviewees responses (Warren & McGough, 1996).

A robust finding among the research is that children are highly susceptible to interviewer bias and that interviewer bias leads to suggestibility (Bruck et al, 1997; Ceci et al, 1987a ; Ceci & Huffman, 1997; Garven et al, 1998; Saywitz, 1987; Tobey & Goodman, 1992). For example, in a study conducted by Ceci, Leichtman and White (1998), pre-school children were exposed to an event and then interviewed about the event one month later. The interviewer, a social worker experienced in investigations, was given some ideas about what may have happened to the children. In particular, the investigator was told that there was a good chance that one of the children had a marble put in their ear as well as other suggestions. Results showed that when the interviewer had correct information about the child's experience they were able to elicit correct information 93% of the time as opposed to 34% of the time when the interviewer was misinformed (Ceci et al, 1998).

According to Ceci and Bruck, (1993) social factors cannot fully account for suggestibility effects but it is more likely the interaction of cognitive and social factors cause the phenomenon. Another factor thought to affect children's testimony is the interaction between memory and stress.

Stress

The effects of stress on children's memory have important implications in the legal setting. It is well documented that witnessing or being victim-witness to abuse may traumatise children (Finkelhor & Brown, 1985; Terr, 1983). If stress impairs memory then the child's testimony may also be compromised due to problems with accurate recall.

Researchers cannot agree on whether stress impairs (Peters, 1991) or strengthens (Goodman, Hirschman, Hepps & Rudy, 1991) children's memory of an event. Compelling evidence has found that stress strengthens memory based on the phenomenon of flashbulb memories. For example, many people remember exactly what they were wearing and the place they were at the time of President J. F. Kennedy's assassination. Theorists suggest that events featuring high arousal elicit immediate encoding (Brown & Kulik, 1977) via adrenaline releasing glucose which may have an effect on long-term memory storage (Gold, 1987).

In laboratory experiments examining the effects of stress on memory, researchers often use routine childhood inoculations to assess stress reactions in children and the effects of recall (Goodman, Bottoms, Schwartz-Kenney & Rudy, 1991; Goodman, Hirschman, Hepps & Rudy, 1991). Outcomes of these types of studies have shown that stressed children recalled more accurate

information than non-stressed children did, particularly when questioned about salient information regarding the event (Goodman, Hepps & Reed, 1986).

In contrast, Peters (1991) conducted a series of studies on stress and recall. The studies utilised a variety of stimuli such as a visit to the dentist, a stranger visiting the kindergarten, inoculations and fire-alarms where children later identified the key confederate utilising voice recognition and photo line-ups. The children used in these studies varied between ages of three and nine. Peters' studies all found that stress while witnessing an event impairs accurate voice recognition or photo line-up identification.

Finally, a series of recent longitudinal studies have been conducted whereby children were given a VCUG (described earlier) (Brown, Salmon, Pipe, Rutter, Craw & Taylor, 1999; Brown, Salmon, Pipe, Rutter, Craw & Taylor, 1996; Pipe et al, 1997). The stressful element of these procedures coupled with the inevitable genital touching render these contexts directly applicable for studying children's recall when stressed. Results have shown that when children are interviewed about the VCUG within one week (Brown et al, 1999) and in another study, one month (Brown et al, 1996) after the event, their recall is more accurate for the event than other less stressful physical examinations.

The discrepancies in stress research may be attributed to the fact that the studies focussed on different domains. While Peters focussed primarily on identification via photo line-ups, Goodman's studies and Brown et al's studies

focussed on recall of salient information. Overall, the results suggest that stress may impair children's ability to identify faces but enhance their ability to accurately recall personally salient information.

Issues of cognition, social factors and stress provide a backdrop for understanding the mechanics of suggestibility. In addition, researchers have been interested in understanding practical aspects of suggestibility. For example, does the age of the child affect suggestibility? Do different types of questions elicit inaccuracies in memory? The research addressing these questions will be outlined further but must be critically examined first in light of the issue of methodological validity.

Methodological Issues in Research

The central problem of generalising memory research from the laboratory to the real world is that laboratory experiences are unlikely to imitate the highly salient and traumatic events which a sexually abused child might experience (Brainerd & Ornstein, 1991). For example studies often do not replicate the complexity and ambiguity of the abuse scenarios or interview questions (Lepore, 1991). Such problems with generalisation are known among the research as problems with 'ecological validity'. Many previous studies do not comply with form (live versus recorded event) or content (story versus crime-based event) validity and thus have little application to the trial process (Cohen & Harnick, 1980; Duncan, Whitney & Kunen, 1982; Ceci, Ross & Toglia, 1987a).

For example, many designs which have found children highly prone to suggestibility have used short films or videos (Cohen & Harnick, 1980), staged events (King & Yuille, 1987), and stories (Ceci, Ross & Toglia, 1987a) as the stimuli. Interviews with misleading information based on the observed stimuli then ensue.

Obviously, the ethical issues raised in replicating sexual abuse scenarios prevent researchers from examining the effects of suggestibility in a laboratory setting. However, a number of critical features have been suggested within modern literature as being necessary for emulating generalisability to the trial process (Rudy & Goodman, 1991; Ceci & Bruck, 1993). For example, as discussed, the variable of stress (Peter, 1991; Tobey & Goodman, 1992; Pipe et al, 1997) and active involvement in the event (versus observation of the stimuli) (Rudy & Goodman, 1991; Saywitz, Nicholas, Goodman & Moan, 1991), have been viewed by researchers as important analogue elements of the initial abuse. In addition, the salience of interview questions (Goodman, Aman & Hirschman, 1987), questions asked about abuse (Bruck, Ceci, Francour & Renick, 1995; Rudy & Goodman, 1991), repetition of interviews (Poole & White, 1991; Thompson, Clarke-Stewart & Lepore, 1997), and age of subjects (Goodman, Hirschman, Hepps & Rudy, 1991) have all been seen as vital elements of the child abuse scenario.

Age

Young children's testimony has been of most interest to legal professionals due to the fact that, in comparison to older children, a disproportionate number of pre-schoolers both report sexual abuse and testify in such cases (Bruck & Ceci, 1999). Many researchers have also found a robust effect concerning information retention and age – toddlers in particular forget information of all types at a faster rate than adults (Brainerd, Reyna, Howe & Kingma, 1990; Goodman & Reed, 1986; Poole & White, 1993).

Research has consistently found that younger children recall less information than older children (Brainerd & Ornstein, 1991) but they are not necessarily more inaccurate with the information they do recall, especially when asked to recall information after a delay (Ornstein et al, 1992). Although the general conclusion can be drawn that younger children are more suggestible than older children it must be noted that an unpublished meta-analysis by McCauliff, Kovera & Viswesvaran, 1998 (cited in Bruck & Ceci, 1999) found that although pre-schoolers are less resistant to suggestions than older children or adults, the effect size is much smaller than they had anticipated and that generally they are still quite accurate.

Participation

Research has shown that children's memory for neutral events is less accurate than memory for live events (King, 1984, cited in Yuille, 1988; Ratner, Smith & Dion, 1986). Many past studies lack generalisability to the

child-victim context as most have not used the child as an active participant (as they would be in a sexual abuse case). A typical example of this flaw is where children watch a video or play and are then asked questions about their experience after the event (Ceci et al, 1987; Cohen & Harnick, 1980; King & Yuille, 1987; Leichtman & Ceci, 1995; Thompson et al, 1997).

Furthermore, studies on both sides of the controversy which have used children as active participants (rather than merely observers in an experiment) have not isolated the active/passive dimension as a fundamental variable affecting children's responses to questioning and recall of events (Lepore & SESCO, 1994; Oates & Shrimpton, 1991; Ornstein et al, 1992). In contrast, other researchers have repeatedly found that direct participation in an event increases children's resistance to suggestibility (Goodman et al, 1990; Rudy & Goodman, 1991; Tobey & Goodman, 1992).

Of prime importance when examining suggestibility are the effects of question type on children in terms of their resistance to suggestibility.

Controversy regarding the accuracy of children's testimony has resulted in an amalgam of research investigating what effect free recall, direct questioning and time delay has on memory accuracy.

Effects of Free Recall Questioning

Free recall is utilised to assess children's basic retention after a time delay (Brainerd & Ornstein, 1991). Free recall has been found to produce the most accurate information from both adults and children, the disadvantage being that less information is gained than from specific questioning (Warren & McGough, 1996). Research reveals the information children do recall is as accurate as adult free recall (Ceci, Ross & Toglia, 1987a; Goodman & Aman, 1990; King & Yuille, 1987; Ornstein, Gordon & Larus, 1992) but the amount of information recalled is negatively correlated with age (Rudy & Goodman; Saywitz, 1987).

For example, Saywitz studied children grouped by school grade (between grades 3-10). The children were shown a videotaped story of a theft and were then asked to free-recall any events they remembered afterward. Although the third grader's free recall performance was not as complete as the older children's, recognition cues improved their performance to the same level as the older children.

Pipe et al, (1997) in the VCUG procedure discussed earlier, reports that although children were able to remember aspects of the VCUG, there were highly significant age differences in recall. Pipe et al, (1997) found that children older than four remembered significantly more details than those younger than four.

Effects of Direct Questioning

In contrast to free recall of events, direct questioning involves asking specific questions. Asking specific questions utilises either cued recall or recognition memory. Subjects generally witness an event and are then asked questions after (Lepore, 1991).

Specific questions are either suggestive or non-suggestive and the primary means for establishing levels of suggestibility (Ceci & Bruck, 1993). The effects of direct questioning (including both specific and misleading questions) have been extensively documented (Bruck & Ceci, 1999). While the use of specific questions gains more information from a child, errors also increase, surpassing free recall (Bruck & Ceci, 1999; Ceci & Huffman, 1997; Rudy & Goodman, 1991).

Controversy exists over whether or not children can be accurate when presented with misleading information in the form of post-event suggestions. On the one hand many researchers have demonstrated that children evidence inaccuracies and poor memories when post-event information is distorted (Bruck, Ceci, Francour & Barr, 1995; Leichtman & Ceci, 1995; Lepore & SESCO, 1994; Thompson et al, 1997). On the other hand however, an equal number of studies have shown that children can be resistant to misinformation, particularly when the information is personally relevant to them (Ornstein, Gordon & Larus, 1992; Pezdek & Roe, 1997; Rudy & Goodman, 1991; Saywitz, Nicholas, Goodman and Moan, 1991; Tobey & Goodman, 1992).

The issues which affect whether or not a child is resistant to post-event suggestions are manifold and include such aspects as question type, interview repetition, extent of involvement in the event and ecological validity to name a few. Although a common thrust within the literature (particularly in recent years) illustrates the weaknesses in children's memories (Bruck & Ceci, 1999; Ceci & Huffman, 1997), the key studies used to illustrate these deficits also possess significant flaws in validity. The following discussion will examine four key studies in light of methodological issues.

Research Using Misleading Questions

Thompson et al, (1997) conducted a study with a group of 5-6 year old children ($n = 56$). The children watched a staged event by a confederate acting as a janitor who cleaned and played with dolls. The children were then interviewed one hour later by a number of people including their parents and were then interviewed one week later. The interview questions were either neutral, incriminating (suggesting the janitor had done a bad job of cleaning) or exculpating (suggesting he had done a good job of cleaning). Results showed that children gave accurate accounts when the questions were neutral but were more prone to suggestibility when the questions were either incriminating or exculpating.

Poole and Lindsay (1995) found similar results in a series of studies whereby parents suggested false events to their children. For example, pre-schoolers interacted with a character called "Mr Science" and played with

various laboratory exhibitions. Four months later, the children were read a story by their parents about their experience in the laboratory that departed from what the children had seen. Importantly, it was suggested that the children had their faces wiped with a wet towel that tasted "yukky". The story was read three times and the children were then interviewed to assess what they recalled about their visit with 'Mr Science'. Results showed that 71% of children believed that the event really happened.

In contrast, Pezdek and Roe, (1997) using a large sample of children ($n = 160$) investigated whether or not false memories about touch could be implanted in four and ten year olds using misleading information. Children were either touched in a specific way or not at all. After the event it was suggested that the children experienced either a different touch, a completely new touch or no touch. Pezdek and Roe found that children were suggestible only when a different touch was suggested. However, it was found that memories could not be implanted when it was suggested that no touch occurred at all or that no touch had occurred when it had. In other words although a theme of touch may be changed, it is unlikely that a completely new event can be either erased or implanted in memory.

Rudy and Goodman's study utilised ($n = 36$) 4 and 7 year olds. The children were assigned either to be the participant or bystander. The participant played games with a male confederate such as thumb wrestling, Simon-says (involving touching the confederate on the knee), lifting the child onto the desk and taking photos. The observer child was asked to watch everything closely.

Ten to twelve days later all children were interviewed using either free recall, correctly leading or misleading questions about the event. Some questions related to touching and some misleading questions implied abuse, such as "did the man kiss you?" Results showed that, overall, younger children were not significantly more suggestible than older children except when the questions related to events (rather than person or actions). In addition, children were found to be less influenced by suggestibility if they were involved in the action rather than witnessing it. Finally, children were not found to be suggestible (via errors of commission) in relation to action and person questions about sexual abuse.

The designs and sample sizes of each of these studies vary making discrepancies in the results difficult to interpret. One important difference however is the issue of ecological validity. For example, in Thompson et al's study, the children were not directly involved in the event which reduced personal salience – a problematic point considering that researchers found that children were more likely to be inaccurate about neutral events than central, personally salient events (Rudy and Goodman, 1991).

In addition, the incriminating questions asked in Thompson et al's interview did not imply abuse but merely examined the janitors job performance. Similarly, in Poole and Lindsay's study the children were not questioned regarding themes of abuse. This must be treated with caution as implanting relatively non-significant details about an event in a laboratory

departs significantly from the very real experience of sexual abuse. Such a belief may be significantly more difficult to implant in a naturalistic setting.

Conversely, both Pezdek and Roe, and Rudy and Goodman's designs were weakened due to the use of single interviews (Ceci & Bruck, 1995; Thompson et al, 1997), a feature which has been found to increase inaccuracies in children (see next discussion).

Repeated Interviews

According to researchers, repeated interviewing is a feature of the pre-trial interrogation process which is often omitted from experimental designs – ultimately reducing ecological validity (Thompson et al, 1997). Researchers have found that repeated interviewing after an event increases inaccuracy in children (Ceci, Huffman, Smith & Loftus, 1994; Leichtman & Ceci, 1995; Poole & White, 1991; Thompson et al, 1997). This effect is pronounced if suggestions of false events are repeated (Leichtman & Ceci, 1995).

Furthermore, the age of the child is inversely correlated with an increase in believing the narrative they have been led to believe (Ceci, Huffman, Smith & Loftus, 1994; Poole & White, 1991; Thompson et al, 1997).

Ceci, Huffman, Smith & Loftus (1994) repeatedly interviewed pre-school children between the ages of 3-6 ($n = 120$) about an event. At each interview they asked the children: "Think real hard, did you ever get your hand caught in a mousetrap and go to the hospital to get it off?" The results indicated that 44% of younger pre-schoolers stated they remembered the hospital event compared

to 25% of the older pre-schoolers in the first interview. After ten interviews, 58% of all of the children agreed they had experienced the event at the hospital and some were able to provide a detailed narrative about their experiences.

In another study by Poole and White (1991) a group of 4, 6, and 8 year olds ($n = 48$) watched an ambiguous event and were interviewed immediately and one week later using leading questions and interviewer bias. The authors found that the children's accuracy decreased when repeatedly asked the same specific questions both within and across interviews.

Findings of suggestibility when repeatedly interviewing children appear to be robust. Again however, these results should be treated with caution due to departures from ecological validity. For example, none of the studies cited above directly involved the children, rather they watched events and were then interviewed about them. In addition, none of the children in the studies cited above were actively included and questions involving themes of abuse were not asked. This reduced the personal salience of the material.

Questions with Themes of Abuse

Although many studies have found children to be highly suggestible to leading questions (Ceci et al, 1987; Oates & Shrimpton, 1991; Thompson et al, 1997), few have examined suggestibility with leading questions involving themes of abuse. However the impact of such questions on children's suggestibility is likely to produce very different results to neutral questions due to their lack of personal relevance.

Goodman, Hirschman and Rudy (1987, reported in Goodman, Bottoms, Schwartz-Kenney & Rudy, 1991) interviewed both three and six year old children ($n = 41$) about a routine vaccination. The children were interviewed one week after the event and one year after the event. Questions involving themes of abuse were asked within both interviews such as "did the nurse hit you?" and "did the nurse kiss you?" Goodman et al, (1987) found that none of the children made false reports concerning abusive events and this effect was enduring even after a year.

Goodman et al's (1987) findings have been consistently replicated in different designs (Goodman & Aman, 1990; Rudy & Goodman, 1991; Saywitz et al, 1991). This may be to avoid embarrassment, to comply with cultural taboos (Goldman & Goldman, 1982) or to ensure personal safety and freedom (Rudy & Goodman, 1991).

Other studies however, which included questions of abuse and physical touching show divergent results. One such study conducted by Bruck, Ceci, Francoeur and Renick (1995), involved a paediatric examination. Half of the children received a routine genital examination and the control group received a non-genital examination. During an interview after the examination children were asked "where did the doctor touch you?" Only 45% of the children who had received a genital exam reported genital contact and 50% of the children in the non-genital condition reported genital contact. Children were later asked suggestive questions using anatomical dolls. Children who experienced genital contact further denied the touching with only 25% of the children reporting the

event. In contrast 55% of children who did not experience genital touching reported genital touching using the dolls (Bruck et al, 1995).

A similar study by Saywitz, Nicholas, Goodman and Moan (1991) utilised five and seven year old girls who underwent a medical check-up which included a vaginal and anal examination. Half of the children had a genital examination and the other half had a scoliosis examination. The children were later interviewed utilising free recall, anatomically detailed dolls and misleading questions. Most of the children who experienced the genital examination only revealed the examination when asked directly about it. No children in the 'non – genital' condition falsely reported genital touch in either free recall, anatomically correct dolls or misleading questions.

Ornstein et al's (1992) study used 3 and 6-year-old children who visited the doctor for a general physical check-up which included a genital examination. Children were interviewed after the experiment and again after 3 weeks using both free recall questions, specific questions and misleading questions. All children had significant rates of recall when immediately interviewed and older children provided more information than younger children on free recall after a delay of 1-3 weeks. Both sets of children evidenced accurate recall when questions were misleading, although older children performed slightly better than younger children.

In both Bruck et al's (1995) study and Saywitz et al's study (1991) children who experienced genital contact were likely to omit details of genital touching. The fact that children who had experienced genital touching omitted these

details lends support to the hypothesis that children do not willingly disclose an event like sexual abuse and that they are resistant to misleading questions of abuse.

The divergent results of subjects in the non-genital condition may be explained in part by the different age groups used. For example Bruck et al (1995) used three year olds in comparison to Saywitz et al (1991), who used five and seven year olds. However in the study conducted by Ornstein et al (1992), both 3 and 6 year olds were resistant to misinformation albeit that 3 year olds were slightly less resistant than the older children.

It is entirely probable that many of the research designs discussed so far are seen merely as 'games' to the child rather than real scenarios with serious consequences. The likely outcome of a child knowing they are playing games is to 'play along' with the experimenter. Thus the child gives the answer which is required, whether it be that their hand was caught in a mousetrap (Ceci et al, 1994), or that a janitor was playing with dolls, or that a 'scientist' had wiped their face. The fact that these scenarios are not seen as serious events may well decrease personal salience for the child – which in turn may distort their answers for the sake of the 'game'.

The effects of suggestibility in pre-schoolers and young children has been amply documented and researchers now recognise the importance of investigating other developmental periods such as older children and adolescents in terms of their resistance to misleading questions and post-event information (Bruck and Ceci, 1999). In addition, researchers are becoming

interested in individual differences among children, which contribute to accurate children's testimony (Bruck & Ceci, 1999; Ceci & Huffman, 1997).

The area of individual differences within suggestibility has been postulated as the trend in future research (Bruck & Ceci, 1999). Of interest and value to both psychological and legal professionals would be knowledge about cultural, socio-economic and gender differences in suggestibility. A better understanding of older age children is also a relatively unexplored area. Perhaps the most vital (and unexplored) area of suggestibility would be individual differences in terms of IQ. To date there has been no research investigating whether or not children with an intellectual disability are more suggestible than non-disabled children using designs which maximise ecological validity.

Individual differences in IQ is an important area of research as children with intellectual disabilities are more likely to be sexually abused than children from the normal population (Conway, 1994; Tharinger, Burrows-Horton & Millea, 1990; Turk & Brown, 1993). Despite this fact their testimonies are often disregarded within the legal setting due to the assumption that children with disabilities cannot provide reliable statements and that, in particular, they are more prone to suggestion within the pre-trial interview than other adults or children (Valenti-Hein & Schwartz, 1993).

The assumption that people with intellectual disabilities are more prone to suggestion than people with normal IQ's is not well founded by empirical research. Studies in the early part of the century found that suggestibility

increases as IQ decreases (Hurlock, 1930; Otis, 1924; Sherman, 1925).

However the theoretical basis behind assessment of suggestibility was crude and the methodology problematic. Subjects were required to complete paper and pencil tests to assess 'auto-suggestion'. For example, the experimenter would show the child a series of six lines that became progressively longer except for the fifth and sixth lines, which remained the same length. The child would then be instructed to accurately draw the final line, which they tended to draw longer than the observed sixth line. According to Binet, this illustrated the principle of autosuggestion or a variant of suggestibility (Ceci & Bruck, 1993).

Modern studies examining the relationship between intellectual disability and suggestibility are scant. The majority of studies focus on suggestibility as a trait variable occurring more readily in people with an intellectual disability (Gudjonsson, 1987; Gudjohnsson, 1992). A problematic feature of these studies is that the degree of suggestibility was rated via questionnaire format. Paper and pencil tests are not ideal formats for examining the potential of intellectually disabled subjects due to understanding and execution problems.

Recent studies which have utilised a stimulus-delay-test format also have methodological problems (Dent, 1991). For example, the stimulus employed in Dent's studies were a film and a staged event rather than personal interaction – neither of which may have been personally salient for the child. In addition, Dent's study did not include any questions involving themes of abuse thus decreasing ecological validity.

As court appearances involving children both with and without intellectual disabilities will probably increase, the area of children's testimony will become more important. Future research directions will undoubtedly take the course of identifying further interview techniques which maximise accuracy in children's testimony. In the area of individual differences it would seem important for future researchers to address suggestibility with populations most at risk such as intellectually disabled children – particularly using research designs which maximise ecological validity.

In conclusion, the current paper has reviewed the major trends in suggestibility and children's testimony over last three decades. Cognitive, social and biological mechanisms underlying the phenomenon of suggestibility were discussed. The review has also detailed the major areas of study such as effects of age, question-type and participation on suggestibility while highlighting the issue of ecological validity. Finally, future areas of research including individual differences were discussed with a particular interest in IQ differences and suggestibility. Forensic and psychological findings of suggestibility research to date and the ensuing implications for this population were outlined.

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**SUGGESTIBILITY DIFFERENCES BETWEEN CHILDREN
WITH AND WITHOUT MILD INTELLECTUAL IMPAIRMENT**

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Abstract

This study examined the influence of participation and suggestive questioning on 9-11 year-old children's reports based on a study by Rudy & Goodman (1991). Rudy and Goodman's design was used to replicate the study with a larger sample and examine the variable of intellectual impairment and suggestibility. Fifty-seven children (26 mildly intellectually impaired and 31 non-impaired children) were assigned either to a participant or observer role. The participant child interacted with an unfamiliar male assistant while the observer watched. One week later children were individually interviewed about the experience with the assistant using an interview schedule developed by Rudy and Goodman (1991). The interview schedule measured children's memory using the following question types: free recall; specific; misleading and correctly leading questions. Questions which had implications of abuse were also measured. Results were analysed using MANOVA's, ANOVA's and t-tests. Overall, participation was found to be unrelated to suggestibility. Children without intellectual impairments recalled more information and were more accurate on both specific and misleading questions than intellectually impaired children. However intellectually impaired children were found to be equally as resistant to suggestibility as non-impaired children when questions were specific and about the person involved or implicated abuse. The implications of intellectually impaired children's testimonies for psychological and legal contexts are discussed.

Introduction

The phenomenon of suggestibility has received increased attention over the last three decades (Ceci & Huffman, 1997). Simultaneously, children are now being involved to a greater degree in the legal system in order to provide testimonies of physical and sexual abuse (Shrimpton, Oates & Hayes, 1996). Accordingly, there is an increasing legal interest in psychological constructs which aid in eliciting accurate witness testimonies (Ceci & Bruck, 1993). The current paper examines the issues of individual differences in suggestibility – particularly suggestibility differences among children with and without intellectual impairments.

There are many relevant questions regarding intellectually impaired children's testimony which have not been addressed in the literature. For example, do intellectually impaired children find it more difficult to resist suggestions (in the forensic context) than non-impaired children? Are intellectually impaired children able to answer some types of questions more accurately than others and how does this compare with non-impaired children? Are intellectually impaired children able to encode memory for the experience better when they are actively involved rather than observing the event and how does this compare with non-impaired children? Finally, does participation in an event help a child resist suggestions? In addition, the current paper is interested in differences between these groups within an ecologically valid context.

There has been much controversy over whether children in general - and intellectually impaired children in particular - are able to give accurate testimonies about experiences such as sexual abuse. In addition, the debate has focussed on whether as witnesses, children are particularly prone to suggestion when asked leading questions about events (Ceci & Huffman, 1997; Pezdek & Roe, 1997; Rudy & Goodman, 1991; Saywitz, Nicholas, Goodman & Moan, 1991; Thompson, Clarke-Stuart & Lepore, 1997).

There is little consensus among the literature as to whether children are more suggestible than adults and, if so, under what conditions. However discrepancies within research findings may be explained by a range of factors including methodological and paradigmatic differences within research designs and poor sample sizes (see Ceci & Bruck for review, 1993).

In the 1990s, child witness research has also focussed on the issue of ecological validity (Bruck & Ceci, 1999). For example, many research contexts in the 1980s did not replicate essential, salient aspects of an abuse scenario or the forensic interview (Ceci, Ross & Toglia, 1987; Cohen & Harnick, 1980; Duncan, Whitney & Kunen, 1982), and thus have little application to the trial process (Lepore, 1991; Warren & McGough, 1996). An important aspect of the abuse situation and trial process is the issue of witness participation.

Participation

The issue of active participation in an event (as opposed to observation of an event) is considered by most researchers to be an important aspect of a research

design (Goodman & Aman, 1990; Bruck, Ceci & Hembrooke, 1998; Lepore, 1991; Warren & McGough, 1996). Many past studies lack ecological validity, as most have not used the child as an active participant (as they would be in a sexual abuse case). For example, the child has been asked to watch a video or play (Ceci et al, 1987; Cohen and Harnick, 1980; King and Yuille, 1987) and then has been asked questions about their experiences after the event. Put simply, children who watch a play or video-clip are not likely to discuss the event with parents or peers afterwards. However, children involved in an interaction with a research assistant are likely to rehearse the event in their minds thus strengthening the memory trace (Lepore, 1991).

Participation in an event (as opposed to observation) has repeatedly been found to increase the child's recall of the event (Baker-Ward, Hess & Flannagan, 1990; Goodman, Aman & Hirschman, 1987; Goodman & Aman, 1990; Rudy & Goodman, 1991; Tobey & Goodman, 1992) and help the child resist post-event suggestions. Studies by Rudy and Goodman, (1991) and Tobey and Goodman, (1992) found that children who acted as observers in an event were significantly more likely to accept false suggestions about the assistant and the event than participants were.

Although the precise mechanisms assisting memory when involved in participation are unknown, various hypotheses suggest that participation in an event will encode the material more meaningfully by integrating with self-schemas (see Rudy & Goodman, 1991 or Tobey & Goodman, 1992 for reviews).

Question Type

There exists a good deal of controversy about the degree to which children are able to resist suggestions when asked misleading questions (Ceci & Bruck, 1993). Many studies have documented that children are easily convinced of false events when interviewed using misleading questions (Ceci, Huffman, Smith & Loftus, 1994; Ceci, Leichtman & White, 1998; Thompson et al, 1997). Other studies however, have found children to be highly resistant to suggestions (Goodman et al, 1987; Ornstein, Gordon & Larus, 1992; Pezdek and Roe, 1997; Rudy & Goodman, 1991; Saywitz et al, 1991) particularly, when the questions have implications of abuse. Although discrepancies in the results partly reflect paradigmatical differences, a fairly consistent finding is that false events which are negative, imply genital contact or abuse are difficult to implant in children (Ceci & Huffman, 1997; Goodman et al, 1987; Rudy & Goodman, 1991; Saywitz, et al, 1991).

Reasons for a heightened resistance to suggestibility when asked about abuse are not well known. Researchers have postulated that children are highly accurate about the factuality of abuse and actively resist disclosing such details to avoid embarrassment, comply to cultural taboos and ensure personal safety and freedom (Rudy & Goodman, 1991).

The effects of suggestibility in pre-schoolers and young children have been amply documented and researchers now recognise the importance of investigating other developmental periods such as older children and adolescents in terms of their resistance to misleading questions and post-event information (Bruck and Ceci,

1999). In addition, researchers are becoming interested in individual differences among children, which contribute to accurate children's testimony (Ceci & Huffman, 1997; Bruck & Ceci, 1999). Of interest and value to both psychological and legal professionals would be knowledge about cultural, socioeconomic and gender differences in suggestibility. A better understanding of older age children is also relatively unexplored.

Perhaps the most vital (and unexplored) area of suggestibility would be individual differences in terms of IQ. For example, children with intellectual impairments are more likely to be sexually abused than children from the normal population (Conway, 1994; Tharinger et al, 1990; Turk & Brown, 1993). However their testimonies are often disregarded within the legal setting due to the assumption that they cannot provide credible statements - particularly that they are more prone to suggestion than other adults or children (Valenti-Hein & Schwartz, 1993).

To date there has been no research investigating whether or not children with intellectual impairments are more suggestible than non-impaired children using designs which maximise ecological validity. Earlier studies found that suggestibility increases as IQ decreases (Hurlock, 1930; Otis, 1924; Sherman, 1925), however the theoretical basis behind assessment of suggestibility was crude and the methodology problematic. Subjects were required to complete paper and pencil tests to assess 'autosuggestion'. For example, the experimenter would show the child a series of six lines which became progressively longer except for the fifth and sixth lines which remained the same length. The child would then be instructed to accurately draw the

final line, which they tended to draw longer than the observed sixth line. According to Binet this illustrated the principle of autosuggestion or a variant of suggestibility (Ceci & Bruck, 1993).

Modern studies examining the relationship between intellectual impairment and suggestibility are scant. Most of the research focuses on suggestibility as a trait variable occurring more readily in people with an intellectual impairment (Gudjonsson, 1987; Gudjonsson, 1992). A problematic feature of these studies is that the degree of suggestibility was rated via questionnaire format. Like past studies, paper and pencil tests are not ideal formats for examining the potential of intellectually impaired clients due to understanding and execution problems.

Other studies such as Dent (1991) which utilised a stimulus-delay-test format also had methodological problems. For example, the stimuli events employed in Dent's studies were a film and a staged event rather than personal interaction – neither of which may have been personally salient for the child. In addition, Dent's study did not include any questions involving themes of abuse thus decreasing ecological validity.

The present research is based on Rudy and Goodman's study (1991) which, a) examined the effect of participation on children's suggestibility and b) utilised interview questions with themes of abuse. Whereas Rudy and Goodman were primarily interested in the dimensions of participation and abuse-related questions in both pre-schoolers' and school-aged children, the current study is interested in the

above dimensional differences between intellectually impaired and non-impaired children.

Rudy and Goodman's design was chosen as a basic template for this study for a number of reasons. Firstly, Rudy and Goodman's design and questionnaire can be seen as very useful in determining whether children are resistant to suggestibility and leading questions in the case of sexual abuse than many other studies to date. For example, as discussed, most other designs to date either omit the important elements of participation or abuse related questions. Secondly, the questionnaire was constructed by a team of professionals with extensive experience in child abuse cases. In addition, the questionnaire was initially aimed at young children (4-7 year olds) making the language easily comprehensible by mildly intellectually impaired children between ages 9-11. Thirdly, Rudy and Goodman's (1991) study had a small sample size (36) which made the results found difficult to generalise to the general population. In this respect, a replication with a larger sample size will provide an interesting comparison for children without intellectual impairments.

Based on past research, it is expected that participant children, regardless of IQ level will evidence better memory and greater resistance to suggestibility than non-participant children. The current experiment makes no directional predictions about differences in suggestibility between children with an intellectual impairment compared to children without an intellectual impairment. It is also expected that children regardless of IQ will be more resistant to questions involving themes of abuse than either specific or misleading questions.

Method

Participants

Sixty-one children (36 boys and 25 girls) between the ages of nine and eleven participated in the study. Participants were sourced from metropolitan primary schools with Education Support Units (ESC) attached to the school. Schools were not randomly selected, rather, the sample comprised of all schools in the Perth metropolitan area that agreed to participate in the study. At least three-quarters of the schools were located in lower socio-economic areas.

Half of the participants had an intellectual impairment with a Full Scale IQ range of 64-69 (as measured by the WISC-R) to ensure sufficient verbal and memoric skills, and half of the participants were children from the mainstream primary school with varying IQ scores in the normal range. The principals of the ESC units were asked to select participants, excluding children with significant hearing and sight deficits, a known history of sexual abuse, and autism spectrum disorders.

Table 1

Sample Numbers of Children by Level of IQ and Role Before and After
Outlier Removal

Sample Number	IQ				Total Children
	Mainstream		ESC		
	Participant	Observer	Participant	Observer	
	13	18	17	13	

NB. See page 15 (Results section) for information regarding removal of outliers.

Equal numbers of mainstream school children were selected by mainstream principals and were matched on age (within 2 months) and gender. Data from four ESC children (all boys) were omitted from the study due to the fact that they were significant outliers (see Table 1 and Results for further information).

Materials

Questionnaire

The questionnaire used for this study was based on the questionnaire used by Rudy and Goodman (1991)(see Appendix). The current study differed from Rudy and Goodman's original questionnaire in that 'Room' and 'Time' questions were omitted due to practical constraints. The questionnaire was designed to test both memory and suggestibility and comprised of three main sections: (1) free recall; (2) age identification and (3) structured interview.

1. Free recall

The free recall section comprised of three separate questions concerning the event such as "tell me everything that happened in the room? What did the man look like? And, tell me about the games that you played?"

2. Age identification

The second section focussed on accuracy with age identification. Firstly, 10 adults were shown magazine pictures of five males. The males differed in age, depicting young childhood, teenage, early adulthood, middle age and older age. The 10 adults (described above) rated the approximate ages of each picture. The mean

ages of each photo were, 6 (young child), 15 (teenage), 25 (early adulthood), 41 (middle age) and 62 (older adulthood). All children participating in the study were asked to choose which picture was closest in age to the assistant (who was aged 61). In addition, the children were asked to guess the assistant's approximate age.

3. Structured interview

The last section was a structured interview consisting of 14 'person' and 28 'action' questions. 'Person' questions comprised of seven specific questions (e.g. was anyone in the room with you?) and seven misleading questions (e.g. he wasn't a grown up was he?). The 'action' questions comprised of 15 specific questions, 12 misleading questions and 1 correctly leading question. The correct answers for these questions often differed depending on whether the child was the observer or participant. For example the question "the person in the room didn't touch you did he?" would have been misleading for the participant but correctly leading for the observer as the observer was not touched by the assistant. It was noted by Rudy and Goodman (1991) that the correctly leading question was included to maintain continuity of questioning.

Fourteen of the 'action' questions also had implications of physical or sexual abuse, for example, "how many times did he smack you?" These questions had particular relevance to sexual abuse cases and thus were an integral part of the study to maximise ecological validity. According to Rudy and Goodman (1991) the abuse related questions were constructed by a team of eight professionals with doctoral

degrees in both social work and psychology to ensure that such questions accurately reflected child abuse cases. All members of the team had extensive interviewing experience in the area of child sexual abuse. The abuse related questions were rated by the team depending on how likely they would have been asked in a sexual abuse case investigation. The scale ranged from (1) most likely to be asked in a case investigation to (6) most unlikely to be asked in an investigation. The 14 abuse questions scored a mean rating of (2.0), which rated as 'very likely'.

Procedure

Pairs of children (one from the ESC and one from mainstream) were invited to participate in the study. Prior to the study, parents of the children were informed of the purpose of the study and were asked not to discuss this with the child until after the experimental period was over even though the child may mention it from time to time.

The children had been told that a person would be coming to the school who was writing children's stories and games and that some of the children would be selected to "play some games" and help him with his book. Children selected were asked if they objected to helping him with this study; none of them did. The study was divided into two parts of 10 minutes each: Session A, the interactional component; and Session B, the follow-up interview. All stages of the study were recorded on video for data recovery and parental interest.

Session A

Children were invited into the room and the assistant introduced himself and established rapport with the children by playing with a puppet and a mask and asking them about their hobbies and school. Children were randomly assigned the observer or participant role based on choosing which hand a coin was in (see Table 1). The child assigned to the observer role was told that the job was very important and to watch everything closely.

The assistant asked the participant child to play a game of 'Simon says' and, in the course of the game asked the child to touch their own knee and the knee of the assistant. The child was then asked to put a magicians costume over their clothing with minimal help from the assistant. The child was then lifted onto a table and was asked to strike two different poses while the assistant took two photos. A discussion about being a magician ensued and the child was asked to touch the assistant's nose and to tickle him on the arm. After helping the child off the table and removing the costume, the assistant played a final game of thumb wrestling. The observer child was told to watch all interactions closely and was praised continually about the importance of the job they were doing.

Session B

All children were asked to return in seven days time and were interviewed individually. The children were requested to sit at a desk in order to ask them some questions about their "experiences in the room". During the interview, the

experimenter firstly assessed the child's free recall of the event by asking three recall questions: 1. "I was not there when you played the games with the man, can you tell me everything that happened?" 2. "Can you tell me what the man looked like?" 3. "Can you tell me about the games you played?" Children were then asked if they could say the man's age and were then provided with pictures from a magazine of four men of different ages. The children were asked to pick which man was the closest in age to the research assistant. The experimenter then asked specific, misleading and correctly leading questions about the event (see Appendix). The specific, misleading and correctly leading questions were in relation to the assistant and his actions.

Following the interview the children were debriefed. Children were told that the experiment was assessing how good their memory was and that there were some misleading or "tricky" questions asked. The children were invited to comment on the process and ask any questions.

Results

Analyses were performed on free recall of the event, age identification and the structured interview. Accuracy of children's responses was of prime interest but specific, misleading and abuse related questions were also analysed separately due to the role differences of participants. The total number of 61 participants was reduced to 57 as these cases were found to be multivariate outliers, which violated the assumptions of homogeneity of variance for MANOVA analyses.

One other marker independently scored five interviews using the questionnaire to establish inter-rater reliability. The proportion of agreement between raters was .84 indicating high reliability. The analysis below is based on the first raters judgements.

Free Recall

Recall was coded by listing the essential interactions experienced by the children during the event. Question 1 consisted of 18 possible correct responses, six possible correct responses for Question 2 and six possible correct responses for Question 3. As the children recalled information it was marked against the correct criteria or was recorded as incorrect. Scores for each question were then converted into percentages.

A 2 x 2 between subjects multivariate analysis of variance (MANOVA) was computed on three free recall questions (dependent variables) to determine whether percentage of correct free recall questions differed as a function of IQ (mainstream or ESC) or role (participation versus observing) see Table 2. Overall the multivariate effect of role was not significant, $F(3,51) = 1.40$.

The multivariate effect of IQ on overall recall was significant with ESC children recalling significantly less information than mainstream children, $F(3,51) = 5.00$, $p < .01$. Univariate tests showed that although mainstream children recalled significantly more information, than ESC children on the first recall question, "tell me everything that happened to you?" $F(1,53) = 6.52$, $p < .05$, and the second recall question, "what

did the man look like?" $F(1,53) = 13.90, p < .001$, there were no significant differences between ESC and mainstream children on the last free recall question, namely, "what were the games that you played?" $F(1,53) = 2.99$. There were also no significant interactions found between role and IQ, $F(3,51) = .32$.

Table 2

Means and Standard Deviations for Percentages of Correct Information of Three Free Recall Questions

Condition	First Question		Second Question		Third Question	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Observers						
ESC	22.22	8.28	26.66	17.91	21.66	13.72
Mainstream	30.55	8.57	47.22	13.09	25.92	14.25
Participants						
ESC	18.75	11.80	18.75	24.24	16.66	13.60
Mainstream	23.93	9.45	38.46	22.95	25.64	14.61

In contrast to expectations, there were no significant differences between observers and participants regarding recall. Overall, ESC children recalled less information than mainstream children with the exception of the third question, "tell me about the games that you played?" which yielded no significant differences between the groups.

Both groups of children were very accurate with the information they did recall. Erroneous information on free recall was negligible (only one ESC child) thus this information was not recorded.

Specific Questions

Structured interview questions were recorded either as correct or incorrect.

Scores were then converted into percentages for analysis. To establish whether there were differences in accuracy as a function of IQ or role, a 2×2 between subjects MANOVA was conducted on the overall accuracy of specific interview questions. Multivariate tests revealed that there was no interaction between role and IQ.

Multivariate analyses revealed that participants were not significantly more accurate than observers on specific questions, $F(2,52) = 2.06$ (see Table 3). Univariate tests however showed that there were significant differences in accuracy between observers and participants for specific 'Person' questions with observers being more accurate than participants, $F(1,53) = 3.90, p < .05$.

Multivariate tests revealed no significant IQ effect for accuracy on specific questions, $F(2,52) = 3.08$. Univariate tests however, showed that although there were no significant differences in accuracy between ESC and mainstream children for specific 'Person' questions, there were significant differences between groups for specific 'Action' questions, $F(1,53) = 5.75, p < .05$.

In contrast to expectations, participants did not significantly differ from observers in accuracy on specific questions with the exception of 'person' questions where observers were more accurate than participants. In addition, ESC children were not significantly less accurate than mainstream children on specific questions except for questions relating to action where mainstream children were slightly more accurate.

Misleading Questions

To determine children's ability to resist misleading questions, a 2 (IQ) x 2 (role) between subjects MANOVA was performed with percentage of misleading questions answered correctly as dependent variables (see Table 3). There were no significant interactions between role and IQ, $F(2,52) = .55$. Multivariate tests revealed that there were no significant differences between observers or participants in ability to resist misleading questions, $F(2,52) = 1.00$. In addition, multivariate tests revealed a significant effect for IQ with ESC children being less able resist misleading questions than mainstream children, $F(2,52) = 11.56$, $p < .001$.

Overall observers and participants did not differ in their ability to resist misleading questions but mainstream children are much more able to resist misleading questions than are ESC children.

Correctly Leading Questions

Of particular interest was one question which involved touching and which was correctly leading. A further analysis was conducted to determine whether children were accurate answering the correctly leading question. This question was coded either as correct or incorrect depending on whether the child was an observer or participant. A 2 (IQ) x 2(role) analysis of variance (ANOVA) was conducted with accuracy being the dependent variable. Univariate tests revealed that observers were

not significantly less accurate than participants when answering correctly leading questions, $F(1,56) = .55$, and that ESC children were not significantly less accurate than mainstream children when answering correctly leading questions, $F(1,56) = .22$.

Table 3

Means and Standard Deviations for Group Accuracy on Specific, Misleading and Abuse Questions

Question	Participants				Observers			
	Main		ESC		Main		ESC	
	M	SD	M	SD	M	SD	M	
Specific								
Person	96.70	6.26	93.75	10.39	99.20	3.36	98.57	4.51
Action	96.70	5.54	90.62	5.66	95.23	4.90	94.28	5.63
Misleading								
Person	84.61	14.82	55.35	25.48	86.50	13.39	68.57	24.09
Action	94.87	9.34	86.97	17.47	94.44	8.08	86.66	8.05
Abuse -								
Related	99.45	1.98	96.87	6.37	98.80	2.73	97.14	4.99

Abuse Questions

To determine children's ability to accurately answer questions with themes of abuse, an independent sample t-test was performed (see Table 3). Because of violations of the assumption of homogeneity, a Levene's Test for Equality of Variances was computed and found to be significant. The t-test revealed that

mainstream children were not significantly more accurate than ESC children when answering questions which contained themes of abuse, $t(32.40) = 1.73$.

Age Identification Questions

Two questions were asked in relation to age identification. The first question involved presenting the children with five pictures of males of varying ages and then asking the child to identify which picture would be closest in age to the assistant. The second question involved asking the child to name the assistant's approximate age. In regard to the question involving picture identification, pictures were rated as 0-4 with 4 depicting the youngest child (see Method). A one-way ANOVA revealed that ESC and mainstream children did not significantly differ in their choice of ages depicted by magazine pictures, $F(1,56) = 3.62$. Both mainstream and ESC children were very accurate in their choice of age ($M = .15$, $SD = .41$) which accurately depicted the picture of the oldest man.

Although the assistant's age was 61, four adult raters' guessed ages ranging from 48-52. The mean age guessed by mainstream children was $M = 49.89$, $SD = 7.25$, compared to ESC children who guessed a mean age of $M = 46.40$, $SD = 9.75$. An independent-sample t-test revealed that there were no significant differences between these means, $t(47) = 1.44$.

Errors

Of interest were the errors made for both for specific, misleading questions and abuse-related questions. Total number of errors were converted into a percentage for

analysis (see Table 4).

A 2(IQ) x 2(role) between subjects analysis of variance (MANOVA) was conducted with percentage of misleading, specific and abuse-related errors as dependent variables. Multivariate tests indicated there were no interactions between role or IQ. In addition, multivariate analyses revealed that observers did not make significantly more errors than participants $F(3,51) = .41$. The multivariate IQ effect was highly significant, $F(3,51) = 7.74$, $p < .001$. Univariate tests revealed that ESC children were more likely than mainstream children to record errors on misleading questions, $F(1,53)$, $p < .01$, but not specific, $F(1,53) = 4.90$, or abuse-related questions, $F(1,53) = 3.82$.

Table 4

Means and Standard Deviations for Error Percentages for Specific, Misleading and Abuse Related Questions

Condition	Misleading Question Errors		Specific Question Errors		Abuse-Related Question Errors	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Observers						
ESC	18.00	10.32	5.90	5.27	2.85	4.99
Mainstream	7.50	6.00	4.79	3.96	1.19	2.73
Participants						
ESC	21.56	12.61	9.09	6.21	4.46	9.71
Mainstream	7.69	7.25	4.19	4.33	0.00	0.00

Overall observers did not make more or less errors than participants for both misleading and specific questions but ESC children were more likely to make errors than mainstream children on misleading questions. Importantly however, both ESC and mainstream children were very accurate in terms of the amount of errors made overall (see Table 4) with mean percentage errors on misleading questions being $\underline{M} = 6.34$, $\underline{SD} = 5.29$, on specific questions, $\underline{M} = 3.17$, $\underline{SD} = 2.74$ and for abuse-related questions, $\underline{M} = .71$, $\underline{SD} = 1.95$.

A final analysis was computed on abuse-related errors compared to total interview errors to determine children's resistance to questions with themes of abuse compared to other questions. A dependent samples t-test was computed between errors on abuse-related questions and total interview errors. The result indicated that children in general, were more likely to make less errors on abuse-related questions than specific or misleading questions, $t(56) = -8.94$, $p < .001$.

Discussion

The current paper replicated the design of Rudy & Goodman's (1991) study but used intellectually impaired and non-impaired children as participants. It was expected that participation in an event as opposed to observation would increase resistance to suggestibility. Overall however, no significant differences were found between observers or participants for recall, specific, misleading or abuse questions. In fact, based on the means, observers often averaged higher percentages than

participants. Secondly, it was expected that children, regardless of IQ or role would be more resistant to questions involving themes of abuse than other more neutral interview questions, which was supported by the analysis.

Thirdly, the study was interested in examining differences between intellectually impaired and non-impaired children, but had not hypothesised directional differences between the groups. In general the results revealed that children with intellectual impairments both recalled less information and were significantly less accurate than non-impaired children. As predicted however, children with intellectual impairments were not significantly less accurate than non-impaired children with abuse-related questions.

The lack of effect for participation departs significantly from established theory that participation in an activity strengthens memory (Rudy & Goodman, 1991; Tobey & Goodman, 1992). While there were no significant differences in accuracy found between observers or participants, observers were found to be more accurate than participants for specific questions about the assistant (see Appendix). In addition, means for observers were consistently higher than means of participant children.

On an applied level, the implications of this finding are that the role the child plays (in an abuse scenario) may have little effect (in terms of resistance to suggestibility) unless the interviewer asks specific questions about the person involved. In this instance, to observe an event rather than be actively involved may reinforce memory.

Reasons for this anomaly are unclear. One reason for this finding may be that the current study had substantially more subjects ($n = 57$) than both Rudy and Goodman (1991)($n = 36$), or Tobey and Goodman (1992)($n = 39$). Another possibility for the discrepancy may be that both the event and the interviewing took place in a school, creating an academic context. For example, a number of times before and after the event, children asked the assistant and experimenter if they would be "tested" on the 'stories' the man was researching". Although the original story was reinstated, the observer child was asked during the session to "watch everything closely". In an academic 'test-oriented' context, these instructions may make the observer child more keenly encode specific details, perhaps more than the participant did.

The findings that children with an intellectual impairment are in general, more suggestible than non-impaired children is probably not a surprise. On a theoretical level, the findings raise questions about encoding differences as these children may encode less information than non-impaired children. Alternatively, the intellectually impaired child may be more susceptible to acquiescence (a wish to please the interviewer) than non-impaired children. Of course the results may reflect both encoding difficulties and acquiescence.

The results indicated that children with intellectual impairments are less likely to accurately answer misleading questions than non-impaired children. Of interest, however, is that children with intellectual impairments are not uniformly more suggestible than non-impaired children. While intellectually impaired children tend

to recall less information than non-impaired children, they recall the same amount when, asked specifically about the interactions (or games) that took place. Similarly, children with intellectual impairments are as accurate as non-impaired children when asked specific questions about the person (they were interacting with), rather than their actions. As can be seen in Table 3, both groups of children show very high accuracy rates (over 90%) with both specific and abuse related questions. Whereas non-impaired children are able to maintain that trend with misleading questions, intellectually impaired children's accuracy declines. Of most interest however, is that children with intellectual impairments were able to answer both abuse-related questions and correctly leading questions as accurately as non-impaired children.

The implications of these findings have clear relevance to the child testimony context. It would appear that children with mild intellectual impairments may be able to answer as accurately as other children when asked specific questions about the person they have encountered (as opposed to the actions) or about abuse against themselves. However these children may find misleading questions more difficult (or confusing) to answer and thus give the answer they believe is required.

Consistent with previous research, all children (regardless of IQ) were much more accurate at answering questions with themes of abuse, compared to other misleading or specific questions. These results would concur with past findings which suggests that children are able to resist suggestions when the information they are presented with is salient (Goodman, Aman & Hirschman, 1987; Saywitz et al, 1991).

Of interest were the results relating to accurate photo and age identification. Intellectually impaired children were able to correctly identify approximate age of the assistant (from a photo line-up) and guess the age of the assistant as accurately as non-impaired children. In addition, both intellectually impaired and non-impaired children's answers did not differ significantly from adults' answers. These findings have clear forensic implications about the abilities of both intellectually impaired and non-impaired children's to accurately report approximate ages of encountered people.

A limitation of the current study is that although both groups of children were highly resistant to abuse-related questions, the questions were not asked repeatedly within or across testing sessions. This shortcoming has been noted among other researchers (Thompson et al, 1997; Ceci, Huffman, Smith & Loftus, 1994) as an important predictor of suggestibility. In addition, repeated interviewing is highly likely to occur in the forensic context. Future research, including repeated questions of the type included in the current interview would maximise ecological validity.

Another feature omitted from the current study which could be addressed in future research is the need not only to identify IQ functioning with the WISC-R, but to identify verify adaptive functioning (and appropriate classification) of intellectual impaired children. In addition, future studies could report the IQ levels of non-impaired children.

The current study provides information about 9-11 year old children with mild intellectual impairments. However research investigating other age levels and ability

levels of intellectually impaired children would be useful – particularly designs employing pre-school children with intellectual impairments. In addition, investigating differences between intellectually impaired and non-impaired children utilising a stressful context (such as pediatric examination or other physical procedure) would also provide useful information in terms of stress, participation and suggestibility.

In conclusion, the findings in this study reflect that participation in an activity does not necessarily increase memory strength of that event. In addition, children regardless of IQ are more resistant to suggestions of abuse than other types of questions about an event. Although children with intellectual impairments are not as resistant to suggestibility as non-impaired children, they can be as accurate when asked specific questions about the person involved or about abuse. These findings imply that existing research in suggestibility with intellectually impaired children has limitations, which may disadvantage this population legally.

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Appendix

Specific, Misleading and Age Questions for Children in the Participant and Observer Conditions.

The following set of questions were used in the interview and include whether or not the question was abuse-related (A), specific (S), misleading (M) or correctly leading (CL). As mentioned the interview is based on the interview schedule by Rudy and Goodman (1991).

Person Questions

1. Was anybody in the room with you? (S: Yes, a man)
2. Anybody else? (S: Yes, another child)
3. Did she [he, they] stay inside the room the whole time? (S: Yes)
4. When you first went into the room, was there already
someone inside? (S: Yes)
5. Was the person a man or a woman? (S: Man)

6. He didn't have grey hair did he? (M: Yes he did)
7. What colour was the hat he was wearing on his head? (M: No hat)
8. He was very fat wasn't he? (M: No)
9. What colour skin did he have? (S: White)
10. Where had you seen him before that day? (M: Nowhere)
11. He had a beard and moustache right? (M: No)
12. Was he a tall man or a short man? (S: Tall)
13. He wasn't a grown up was he? (M: Yes he was)
14. He didn't have blue eyes did he? (M: Yes he did)

Action Questions

15. The person in the room didn't touch you did he? (A)[Participant, ML: Yes]
[Observer, CL: No]
16. He didn't touch the other boy or girl did he? (A) [S:No]
17. Did he kiss you? (A)[S:No]
18. Did he kiss the other boy or girl?(A)[S:No]
19. Did he ask you to put on a costume?[Participant,S: Yes][Observer, S:No]
20. Did he ask the other boy or girl to put on a
costume?[Participant,S:No][Observer, S:Yes]
21. He took off your clothes didn't he? (A)[M:No]
22. He took off the other boy or girl's clothes didn't he?(A)[M:No]

23. What did the costume that he asked you to wear look like? (Participant, S: A magicians outfit) [Observer, misleading; I didn't wear one]
24. What did the costume that he asked the other boy or girl to wear look like? [Participant, M: He(she) didn't wear one] [Observer, S]
25. Did he take a picture of you? (A) [Participant, S: Yes] [Observer, S: No]
26. Did he take a picture of the other boy or girl? (A) [Participant, S: No] [Observer, S: Yes]
27. He showed you some pictures of people in bathing suits didn't he? [M: No]
28. He showed the other boy or girl some pictures of people in bathing suits didn't he? [M: No]
29. When he took the picture, were you sitting, standing or lying down? [S: Sitting]
30. When he took the picture, was the other girl or boy sitting, standing or lying down? [S: Sitting]
31. When he took the picture, did he ask you to sit, stand or lie down a certain way? [S: Yes]
32. When he took the picture, did he ask the other boy or girl to sit, stand or lie down a certain way? [S: No]
33. How many times did he smack you? (A) [M: None]
34. How many times did he smack the other boy or girl? (A) [M: None]
35. Did he put anything in your mouth? (A) [S: No]
36. Did he put anything in the other boy or girl's mouth? (A) [S: No]
37. Did you touch him? (A) [Participant, S: Yes] [Observer, S: No]

38. Did the other boy or girl touch him? (A)[Participant,S:No][Observer,S; Yes]

39. He took you to some other room and took your shoes off right?[M:No]

40. He took the other boy or girl to another room and took their
shoes off right?[M:No]

41. He didn't talk to you with puppets did he?[M: Yes he did]

42. He didn't talk to the other boy or girl with puppets did he?[M: Yes he did]

Age Identification Questions

A) Here are some people I found in a magazine. This is a little boy of about your age Here is a picture of a teenager, here is a man of about my age, here is a man of about your Dad's age and here is an old man. How old was the man you played games with a week ago?

B) Can you tell me how old you thought that man was?