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## The Relationship between Cognitive Factors and Suggestibility in Children: Focused on the POLICE SCIENCE Perspectives

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### Abstract

*The importance of understanding suggestibility in forensics increased the empirical research studies on how a number of factors influence suggestibility in children. This paper is to examine the relationship between cognitive factors such as language abilities, memory, theory of mind, creativity, and suggestibility in children. Previous research studies suggested that two categories such as language abilities, when a comprehensive language was measured, and creativity were found to have a consistent relationship with suggestibility. Implication for police officers and psychologists for interviewing children witnesses or victims were discussed.*

**[Keywords]** Cognitive Factor, Suggestibility, Children, Victim, Police Science

### 1. Introduction

Due to landmark child sexual abuse cases in the mid-1980s, such as the McMartin case, the forensic importance of understanding suggestibility in children increased the empirical research studies. There have been studies on how a number of factors influence suggestibility in children: the use of specific or forced-choice questions, the introduction of stereotype, long term delays, intimidation, cues/props, and anatomically detailed dolls[1]. Adults in general have a negative view of young children's cognitive capabilities and many research results also suggested that mock jurors have viewed child witnesses to be less credible than adult witnesses because children are more susceptible to misleading questions and information[2][3]. This susceptibility to misleading information is suggestibility, which refers to "the degree to which children's encoding, storage, retrieval, and reporting of events can be influenced by a range of social and psychological factors"[4]. Based on the definition, inaccurate or distorted reports of

a child are influenced by both social and cognitive factors. Social factors may first influence lead to misinformation or misleading questions, but they may also lead to cognitive impairments involving memory changes with time. However, most of the research has been focused on external factors that increase or decrease suggestibility, such as interviewing techniques.

The purpose of this paper is to examine and identify the cognitive "internal" factors that influence children's suggestibility by reviewing the cascade of empirical research studies. It is clear that understanding both individual and developmental differences in cognitive factors is important since children's ability to provide accurate information depends on their memory capacity and ability to report information.

### 2. Cognitive Factors and Suggestibility

It is important to understand children's capacity for providing accurate information about their experience in court as witnesses or victims.

Based on a number of empirical studies, it is believed that children from approximately 4 years of age begin to form the ability to provide reliable and competent information[4][5]. For example, the concept of a lie is complex to children and their ability to understand the difference between truth and lies varies, but their understanding of the concepts increases continuously from around the age of 4 years. Furthermore, when children get older, their recall increases in terms of length, the amount of information, and complexity even though the basic structure remains the same[6][7]. However, it is just not possible to predict which children will be accurate witnesses and developmental and neurological change alone cannot fully explain children's performance. Children's memory can vary in terms of degree of accuracy and the accuracy can be distorted by adult intervention and/or affected by their difficulty distinguishing between real-life events and imagined or suggested events. A series of empirical studies[1][4] illustrated the effects of the repeated use of suggestive questions posed to very young children and the difficulty in correcting false information or statement questions from the interviewers. Younger children are more dependent on adult questions in order to search their memories in an efficient, systematic and organized fashion than are older children. Therefore, suggestibility in children must be understood or interpreted carefully because a variety of factors can influence what and how the children report. The effects of children's cognitive factors, such as linguistic abilities, memory, theory of mind, creativity, on suggestibility have been examined to explain and predict how cognitive internal factors influence suggestibility.

### 3. Language Abilities

First, a series of research studies was conducted in order to examine the relationship between the language abilities and suggestibility in children by using a variety of language assessment tools. Some research failed to find a significant relationship between language abilities and suggestibility when there was only one measure of language ability, usually vocabulary or receptive language[8][9]. However, other research findings, using a comprehensive language

battery in preschoolers, suggest that there is a significant relationship between language abilities and suggestibility. For example, Clarke-Steward, Malloy, and Allhusen(2004) examined the relationships between language abilities in five year old children and their suggestibility to misleading questions about an event that occurred about nine months ago. The results suggested that language abilities, inhibitory control, and the quality of children's relationships with their parents significantly and consistently influenced suggestibility in children. Suggestible children were more likely to have limited language skills, a lack of self-control and patience, and an insecure relationship with parents. Children with lower level of verbal comprehension, expression, and fluency, listening ability, speech spontaneity, and the ability to carry a conversation with adults as well as overall self-control in real life situation had a significant relationship with suggestibility in children. The above findings were already supported by previous research studies[10][11][12].

Furthermore, children's ability to communicate, such as speech style or manner of testifying as a witness, influences jurors' perception of credibility. Since jurors and judges make attributions about the credibility of a witness or victim based on the appropriateness of his or her language used during testimony, credibility judgment will be influenced by the speech style of the child witness or victim. For example, if a victim is expected to perform below the norm (such as a child), but performs at the norm level instead, the credibility of the victim will be inflated. If a victim is expected to perform at the norm level, but performs below the norm, the credibility will be underestimated. Ruva and Bryant(2004)[3] examined the effects of the age of witnesses, speech style, and prosecutor's questioning style on perceived witness credibility and trial outcome. The speech style of a child witness was manipulated as either powerful or powerless. Powerless speech condition includes false starts (e.g., "I...I saw...I heard"), verbal hedges (e.g., "I think," "kind of"), and verbal hesitation (e.g., "um," "well"), whereas powerful speech condition does not contain any of those feature in the testimony. The results indicated that the child witness with powerful speech style was rated as significantly more credible than the

child witness with powerless speech style. However, the effects of speech style on credibility judgment were greater in the adult witness condition than the child witness condition since a child witness speaking in a powerless style should not be viewed as lacking credibility because language expectancy is lower for children than adults. Furthermore, when open-ended questions were asked to the six years old witness, the child was viewed as more credible than ten or twenty-two year old witnesses. It means that a child witness who is able to provide answers sufficiently to open-ended questions should be evaluated as more credible than an adult witness who responded in a similar manner. Therefore, participants in the six year old witness with open-ended question condition were more likely to rate higher guilt ratings and yield guilty verdicts than ten or twenty-two year old witness conditions.

Although there are mixed research findings on language abilities and suggestibility, research studies suggest that there is a relationship between overall language abilities and suggestibility. Furthermore, the perceived ability of a child to coherently and clearly report his or her experience in court, also influences the credibility judgment of the child witness.

#### 4. Memory

There have been research studies that examined the relationship between memory influences children's suggestibility. How well children are able to remember and communicate memories to others determines their ability to provide accurate information. Child witnesses or victims of crimes, whether they are intellectually in normal range or disabled, may receive questions repeatedly before giving testimony in court. Henry and Gudjonsson(2004)[13] compared children of ten to thirteen years suffering from mild and moderate intellectual disabilities(ID) with typically developing peers of the same chronological age(CA). The literature review indicated that suggestibility effects may be related to the strength of the memory trace because the stronger memories should be more resistant to suggestion than the weaker memories. According to the fuzzy-trace theory, the distinction be-

tween gist memory and verbatim memory provides a framework for understanding the relationship between what types of memory are more activated or relied upon when children are interviewed or questioned during investigation. Because gist memory is used for meanings, concepts, and interpretation, free-recall and general questions are more likely to be relied upon in gist memory. Since verbatim memory is used for surface forms and item-specific information, specific question types, such as open-ended non-leading questions and leading and non-leading closed questions are more likely to rely upon verbatim memory, which is expected to decay more rapidly than gist memory. Researchers hypothesized that increasing memory trace strength should benefit intellectually disabled children and the effects of memory trace strength across question types should differ between the ID and CA children. The results suggested that there was no difference in effects of memory trace strength or memory process mechanism between ID and CA children. Furthermore, verbatim memory, in open-ended non-leading question and closed misleading question conditions, was benefited more from an increase in memory trace strength. Therefore, stronger memories are more resistant to the suggestibility.

More recently, Lee(2004)[14] examined the relationship between age, neuropsychological performance, the verbal paired associates scale, social cognitive status, and susceptibility to the misinformation in children(8 to 9 years old) and adolescents(15 to 17 years old) by using a various cognitive and social cognitive measures. The research findings indicated that performances of both children and adolescents were affected by misinformation. Further, a combination of neuropsychological and social cognitive measures provided reliable prediction to susceptibility. Participants with better associative memories(higher verbal paired associates scale, VPA) were more susceptible to the misinformation effect, but better associative memories were correlated with lower interrogative suggestibility. These findings show that better associative memory can be correlated with either higher or lower suggestibility depending on the way in which participants are misled. Furthermore, participants with better memories(scored by the medial temporal measure, such as California

Verbal Learning Test and verbal paired associates scale) were more likely to select the misinformation from in the recognition test and to misattribute the misinformation in the source memory test. Those participants were more likely to recognize the misleading information and reported that the misleading information came from an original source or post event information. Although some research results suggest no relationship between memory and suggestibility and some results suggest association between memory and suggestibility, it appears that children's suggestibility is not related to memory competence in general. A review of Bruck and Melnyk(2004)[15] suggests that somewhat mixed findings in memory and suggestibility research depends on context-specific factors rather than cognitive factors of individual children.

## 5. Theory of Mind

Theory of mind refers to "a cognitive capacity that allows us to know that others may have different feelings, intentions, and beliefs than oneself"[15] Empirical research suggested that most children develop theory of mind by the age of five and understand that two people can have conflicting beliefs about the world[16][17]. It is suggested that children's ability to understand theory of mind may act as a protection against the acceptance of misinformation. Children must be able to recall their original event, compare their original memory to what was suggested to them, and understand that one of the versions may be a more accurate representation of the event. The relationship between the development of theory of mind and children's suggestibility was examined by a number of researchers, but there are mixed findings about the relationship. Some studies found no relationship and some studies found that theory of mind decreases suggestibility. Literature reviews[15][18] indicated that the relationship between theory of mind and suggestibility is complicated and thus has mixed research findings. For example, a child with theory of mind can resist the suggestions of an interviewer because they can understand that the interviewer can have a false belief. In contrast, a child with theory of mind also can understand the false belief

of an adult interviewer but choose to provide answers that are consistent with the false belief for various reasons. Most recently, Scullin and Bonner(2006)[18] examined the relationship between development of theory of mind and suggestibility in three and five year old children in response to misleading questions about a live event. As expected, theory of mind was consistently related to children's lack of accuracy in response to misleading questions about a live event when children were given strong positive and/or negative feedback after each response to a misleading question. However, theory of mind was not significantly related to other suggestibility measures, shift(children's tendency to change their responses after receiving feedback) as well as total suggestibility measures. Since Melinder, Endestad, Magnussen(2006) and Bruck and Melnyk(2004) found that theory of mind measure was significantly correlated to resistance to suggestions, it can be concluded that a significant relationship is more likely to occur between development of theory of mind and suggestibility[19][15].

## 6. Creativity

The relationship between creativity and imagination and suggestibility were examined and a number of research findings consistently suggest that there are positive relationships between creativity and suggestibility in children. Melnyk(2004)[15] conducted a series of studies to examine the influence of imagery and individual differences on the accuracy of children's recall. The second study examined a relationship between false event creations and guided visual imagery instructions on preschool and third grade children. A magician performed two tricks on children in pairs and they were interviewed forty days after the magic show. The follow-up interview was conducted twenty-one weeks from the magic show and the children were interviewed in one of the four interviewing conditions: question and picture, question and imagery, question-only, and a non-reminder control condition. In the question and picture condition, children were asked to draw pictures about true and false events. In the question and imagery condition, children were asked to form mental images about true and false event[20].

The results demonstrated that the preschool children were more susceptible to false event creation than the third grade children. The preschoolers who asked to form visual images of the false event included more false details in their false reports, although guided imagery did not significantly increase the rate of false reporting. In the fourth study, the author examined the relationship between false event creation and imaginative involvement. Children were asked to think about or imagine the false event through three interactions. The results suggested a significant relationship between preschool children's imaginative involvement and false event creation. Thus, imaginative and creative children were more likely to be suggestible and to elaborate their false beliefs. However, the effects of children's creativity on imagination and memory should be treated differently. When asked to "make something up" and "remember details about an event" after misinformation should be interpreted differently. Children in Melnyk's(2004)[12] study seem to have had no difficulty in creating or imagining an event, which means that those children were more prone to memory impairment. However, creativity should play a lesser role when children are asked to simply report about what they remember regarding an event. As discussed earlier, children should rely more on their memory in this case.

## 7. Discussion

As a number of child suggestibility literatures suggests, it seems that children can be informative witnesses from four years old of age. Moreover, the two categories, such as language ability and creativity, were found to have a consistent relationship with suggestibility. When language ability was assessed by a single measure of vocabulary, it did not yield significant results. The significant relationship between language and suggestibility was obtained when overall and comprehensive language abilities of children were assessed. Creative children were found to provide more elaborative narratives about suggested events in five to eight year old children. The theory of mind studies results provided mixed results. The relationship between memory competence and suggestibility in chil-

dren yielded mixed findings, possibly due to context-specific factors rather than cognitive abilities of individual children.

However, a more important question is whether a certain degree of psychological influence from investigators or interviewers would jeopardize children's ability to be able to recall accurately and be believed in the legal context. It is also important to make sure that the accuser of child sexual abuse cases should not be determined as culpable if the case is generally too leading or too suggestive during the preliminary investigation. Therefore, all professionals must provide children with a chance to give their own stories from their own perspective during the preliminary investigation and to induce them to give further and specific details about events that are considered to be important information in legal context. How the information is received is crucial for the quality of the witness report. It is clear that suggestive techniques used by all professionals must be avoided.

One technique that all professional can use is the source-monitoring technique, which found to decrease child witness suggestibility. Thierry and Spence(2002) examined whether source monitoring technique would decrease suggestibility in three to four year old children. Half of the children received source monitoring training and another half received recognition training after watching live and video events. After the training, all children answered misleading and non-misleading questions. In source monitoring condition, children were asked to indicate why a question was misleading or not misleading. The results suggested that children who received source monitoring training were more accurate in response to yes-no misleading and non-misleading questions, but researchers failed to find significant difference in misleading open-ended questions between children in a source-monitoring and a control group. The results suggest that a limited, but careful use of the source-monitoring technique can decrease suggestibility in children. Source-monitoring training could be incorporated into preliminary investigation to be used to elicit more accurate information from child witnesses although further research has to be conducted. The training involves truth-lie discrimination, reminding that they have "don't

know” response options, and using nonsuggestive open-ended questions[2][21].

In general, the review of research studies suggests that police officers and psychologists should implement scientific knowledge about how information from children can be negatively affected by their interventions. In order to minimize contaminating the quality of children’s reports during the preliminary investigation, investigators and psychologists should coordinate their efforts to standardize interview protocols and to increase the chances that the child will be believed in court.

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