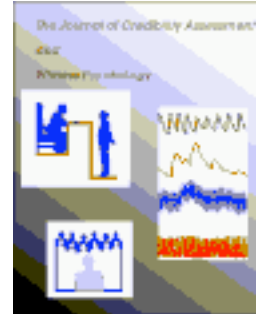


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## **Children's Suggestibility For Peripheral and Central Details**

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**ABSTRACT:** In 2 studies, age differences in suggestibility for peripheral and central information were examined. In Study 1, 40 children from 2 age groups (7-, and 10-year olds) listened to an emotional story. Next, suggestive questions were asked about the gist of the story (central event) and about peripheral story information. In study 2, 82 children (6-, and 11-year olds) watched an emotional video fragment. Next, they answered questions about peripheral and central details. In line with previous work, both studies found that younger children are more suggestible than older children. Moreover, irrespective of their age, they were found to be more susceptible to suggestions pertaining to peripheral details than to suggestions focusing on gist. However, the difference between suggestibility for peripheral and central details varied with age, such that larger differences were found for older children.

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## **Children's Suggestibility For Peripheral and Central Details**

### **Introduction**

With the ever-increasing numbers of children testifying in civil court or during criminal procedures, there has been a cascade of experimental studies on the reliability of their testimonies. One important area of research is the effect of suggestive questions on children's memory. Since young children's spontaneous free reports of events are typically brief (Ceci & Bruck, 1993), forensic interviewers tend to ask them many specific questions. Obviously, this might be a source of suggestive influences. Suggestive or misleading questions are questions that contain false suppositions (Bruck & Ceci, 1999). A recurrent finding is that with increasing age, children are more able to answer open-ended questions and to resist suggestions. Research has consistently found a negative correlation between age and suggestibility (e.g., Candel, Merckelbach & Muris, 2000; see for a review: Ceci & Bruck, 1993).

However, it is of forensic relevance to differentiate between suggestibility related to the gist of an event and suggestibility associated with peripheral details of an event. Arguably, for criminal investigations it is more important that children accurately respond to questions about the gist of an emotional event than to questions pertaining to peripheral event information. So far, studies on the relationship between age and susceptibility to suggestive questions about peripheral versus central details have produced mixed results. For example, Rudy and Goodman (1991) addressed this issue in a study in which 4- and 7-year old children were left in a trailer with a stranger. One child played with the stranger, while the other observed the event. Ten days later, the children were asked open-ended questions about the event, some of which were highly misleading. Thus, a number of questions suggested abuse (e.g., "He took off your clothes, didn't he?"). Results showed that there were age differences in susceptibility to misleading information about non-central features of the event. However, there were no such differences when children were asked misleading questions about the central event. These results

are very similar to those of Saywitz, Goodman, Nicholas, and Moan (1991). In their study, 5- and 7-year old girls were asked questions concerning central and peripheral details of a medical check-up. Children responded more accurately to items about central information than about peripheral information. However, this pattern did not vary with age.

On the other hand, Roebbers and Schneider (2000) found that, compared to 8- and 10-year old children or adults, 6-year old children more readily accepted misleading information about central details. More specifically, these authors showed 284 participants from four different age groups a short video fragment. Three weeks later, participants were asked either unbiased or misleading questions suggesting an incorrect answer. Eight misleading questions referred to the gist of the event. Another 8 misleading questions focused on peripheral information. Overall, younger children were more suggestible than older children and adults. Also, across all age groups, participants were more suggestible with respect to peripheral than central information. However, in contrast to what Saywitz et al. (1991) reported, 6-year olds were more susceptible to misleading questions about central details than the other age groups. With respect to peripheral questions, 6-year olds differed from 10-year olds and adults but not from 8-year olds.

In sum, then, it is not clear to what extent age differences in suggestibility depend on the type of information that children are requested to produce during a memory task. The reason for the inconsistent findings in this area might be a methodological one. In previous studies, children were questioned about either self-relevant events (Rudy & Goodman, 1991; Saywitz et al., 1991) or about a video (Roebbers & Schneider, 2000). Perhaps, then, age does not play a role in suggestibility for highly self-relevant central information.

Given the inconclusive results in this area, the aim of the present studies was to examine the relationship between age and susceptibility to misleading information about peripheral and central details. This issue is, of course, highly relevant for the legal domain. It is widely accepted that young children give a less elaborate free recall of events (Goodman & Reed, 1986). Thus, interrogators often tend to provide them with cues to promote recall of relevant information. When these cues have suggestive features (i.e., contain false information), this might have far reaching consequences for the reliability of children's testimonies. The present studies explored age differences in the ability to resist such suggestions. In 2 studies, a distinction was made between central and peripheral details. In study 1, children listened to an emotional story, while in study 2, children were exposed to an emotional story that involved both the auditory and the visual modality.

## **Study 1**

### **Method**

#### **Participants**

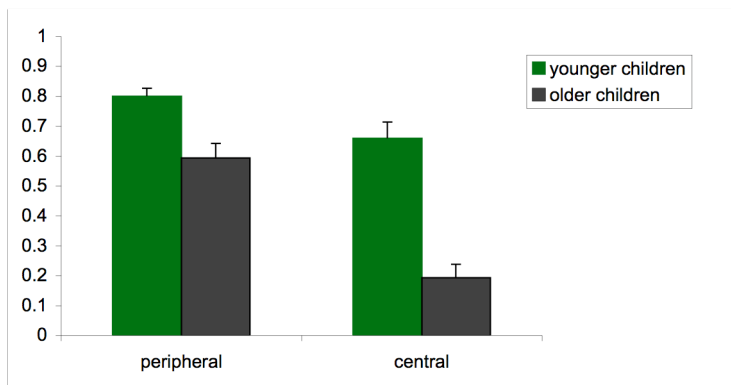
Study 1 involved 40 primary school children. Two different age groups were included. Mean age of the young age group ( $n = 20$ ) was 6.97 years ( $SD = 0.38$ ) and of the older age group ( $n = 20$ ) 9.93 years ( $SD = 0.43$ ). Both groups consisted of 12 boys and 8 girls. Children participated in the experiment after parents and teachers had given their written informed consent. The standing ethical committee of the Psychology Faculty approved the study. Children were tested individually. They were given a small present in return for their participation.

#### **Material and Procedure**

Children listened to a tape-recorded emotional story (female voice) with duration of about 3 min. The story was about Roy, a boy who is hit by a car. It was inspired by the narrative that is part of the Bonn Test of Statement Suggestibility (BTSS; Endres, 1997; Candel et al., 2000), an instrument that intends to measure suggestibility in 4- to 10-year old children. In the story employed in the current study, the boy ends up in the hospital with a broken arm. Children were asked to listen carefully to the story. During a 5 min filler task, they made a drawing. Next, 28 questions were asked about the story. Fourteen questions were memory questions (e.g., "What is the name of Roy's friend?"). These questions served as distracter items and aimed to disguise the real purpose of the test. Answers were scored as follows. One point was assigned for each correct answer. A total memory score (range: 0-1) was derived by summing across memory items and dividing this sum by 14. The remaining 14 questions were suggestive questions. Following Endres (1997), a question is defined as leading or suggestive when it includes information about the desired or expected answer. Half of the suggestive questions referred to peripheral details (i.e., peripheral suggestive questions; e.g., "Did the accident happen on Tuesday or Wednesday?"). Peripheral details were defined as details that can be changed or deleted without altering the story line. The other half referred to central details (i.e., central suggestive questions; e.g., "Roy neglected the red light, didn't he?") which were defined as details that cannot be changed or deleted without altering the story line (Ceci, Huffman & Smith, 1994). To obtain suggestibility indices, one point was assigned when the child accepted leading information. Thus, for each child a peripheral suggestibility index and a central suggestibility index could be obtained. Both indices varied between 0 and 7. Next, peripheral and central suggestibility scores were expressed as proportions, with higher scores indicating higher levels of suggestibility. A total suggestibility score was obtained by summing peripheral and central suggestibility scores.

## Results and Discussion

Mean memory scores for the 7- and 10-years old were 0.41 (SD = 0.19) and 0.71 (SD = .14), respectively,  $t(38) = 5.78$ ;  $p < .001$ . Mean peripheral and central suggestibility scores for the younger age group were 0.80 (SD = 0.12) and 0.66 (SD = 0.25), respectively. For the older age group, these means were 0.59 (SD = 0.22) and 0.19 (SD = 0.20), respectively. Suggestibility data were subjected to a 2 x 2 Analysis of Variance (ANOVA) with age (young vs. old) serving as between-subjects factor and type of detail (peripheral vs. central) as within-subjects factor. This yielded a significant main effect of age,  $F(1,38) = 38.83$ ;  $p < .001$ , and of type of detail,  $F(1,38) = 64.40$ ;  $p < .001$ . Moreover, a significant interaction was found between age and detail type,  $F(1,38) = 14.45$ ;  $p < .01$ , indicating that the difference between peripheral and central suggestibility scores in the younger group was less pronounced than that in the older age group (Figure 1). A significant correlation, Spearman  $r = -.58$ ;  $p < .01$ , was found between memory performance and total suggestibility score, indicating that higher levels of memory performance goes hand in hand with reduced suggestibility.



**Figure 1. Mean peripheral and central suggestibility score for younger ( $n = 20$ ) and older ( $n = 20$ ) children.**

(2000). Their study also revealed that young children are more suggestible than older children and that children (and adults) are more susceptible to misleading peripheral information than to misleading central information. Moreover, the current study replicated that of Roebers and Schneider in showing that the difference between peripheral and central suggestibility varies with age. That is, in older children, this difference becomes more pronounced because they are less susceptible to misleading information about the central features of an event.

The main results of Study 1 can be summarized as follows. To begin with, as was the case in many previous studies (e.g., Candel et al., 2000), younger children were found to be more suggestible than older children. Secondly, overall, children were more susceptible to misleading information about peripheral details than about central details. Thirdly, this pattern was modulated by age. All in all, our findings are very similar to those of Roebers and Schneider

## Study 2

In study 1, children listened to an aversive story. According to Scullin and Ceci (2001), the use of an audio taped story in assessing suggestibility in younger children might be problematic. With the use of video fragments, information is encoded in a manner more similar to that of an event that a child might actually

witness or experience. For that reason, Scullin and Ceci (2001) developed the Video Suggestibility Scale for Children (VSSC) to measure individual differences in suggestibility in young children. There is evidence that the VSSC is a reliable and valid tool for measuring suggestibility in children (Scullin & Ceci, 2000). We employed a similar approach in our second study on susceptibility to misleading information about peripheral and central details in younger and older children.

## **Method**

### **Participants**

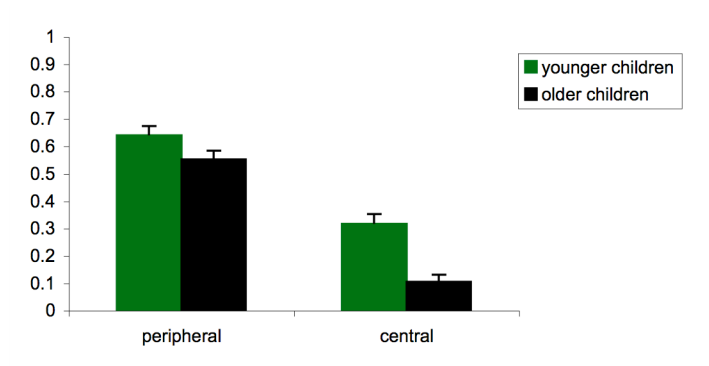
Eighty-two primary school children participated in this study. There were 2 age groups. Mean age of the younger group ( $n = 41$ ) was 6.39 years ( $SD = 0.49$ ), while that of the older group ( $n = 41$ ) was 11.39 years ( $SD = 0.49$ ). There were 17 boys and 24 girls in the younger group. The older group consisted of 16 boys and 25 girls. There was no reliable gender difference between the two groups [ $\chi^2(1) < 1.0$ ]. Children participated in the experiment after parents and teachers had given their written informed consent. The standing ethical committee of our faculty approved the study. Children were tested individually and received a small present in return for their participation.

### **Material and Procedure**

Children watched an emotional fragment of the Dutch child movie "Ciske de Rat" (*Ciske the Rat*, Pieters, 1984). This fragment shows a fight between two boys. One of them falls into the water and almost drowns. He ends up in the hospital. The duration of the fragment is about 4 min. Children were instructed to watch the fragment carefully. During a 5 min filler task they made a drawing. Next, 24 questions were asked about the fragment. These questions comprised 2 categories. More specifically, half of items pertained to real details of the fragment and intended to test children's memory for the fragment (e.g., "Where did Ciske wake up?"). Moreover, they were asked to disguise the purpose of the test. These questions were scored as follows. One point was assigned for each correct answer. A total memory score (range: 0-1) was obtained by summing across memory items and dividing this sum by 12. The other half of the questions was suggestive or misleading. These questions referred to peripheral information (6 items; e.g., "Is Ciske's cap brown or red?") or to central information (6 items; e.g., "The other boy hits Ciske's face, didn't he?"). Two independent adults judged whether questions referred to peripheral or central details of the story. The inter-rater agreement ( $\kappa$ ) was 0.75 (inconsistencies between the two judges were solved by a third judge). One point was assigned for yielding to a suggestive question. Thus, a peripheral suggestive index (range: 0 – 6) and a central suggestive index (range: 0 – 6) was obtained. Next, peripheral and central suggestibility scores were expressed as proportions, with higher scores indicating higher levels of suggestibility. Total suggestibility score was obtained by summing peripheral and central suggestibility scores.

## Results and Discussion

Mean memory scores for younger and older children were 0.87 (SD = 0.09) and 0.96 (SD = 0.06), respectively,  $t(80) = 5.09$ ;  $p < .001$ . Mean peripheral and central suggestibility scores for the younger children were 0.74 (SD = 0.22) and 0.54 (SD = 0.24), respectively. For the older children, these means were 0.55 (SD = 0.21) and 0.11 (SD = 0.16), respectively. Overall, suggestibility scores were lower than those found in Study 1, indicating that, relative to auditory presentation, visual-auditory presentation of stimuli makes children more immune against misleading information. Suggestibility data were analyzed using a 2 (age: young vs. old)  $\times$  2 (detail: peripheral vs. central) ANOVA with the first factor being a between-subjects factor and the second being a within-subjects factor. Younger children had higher suggestibility scores than older children,  $F(1,80) = 66.03$ ;  $p < .001$ . As well, suggestibility was higher for peripheral than for central details,  $F(1,80) = 166.61$ ;  $p < .001$ . In addition, a significant interaction was found between age and detail,  $F(1,80) = 23.43$ ;  $p < .001$ , indicating that the difference between peripheral and central suggestibility scores was more pronounced in older children (Figure 2). Spearman correlation between memory score and total suggestibility score was modest but significant,  $r = -.23$ ;  $p < .05$ ].



**Figure 2: Mean peripheral and central suggestibility score for younger ( $n = 41$ ) and older ( $n = 41$ ) children.**

## General Discussion

Using two different types of stimulus presentation (auditory, visual-auditory), we found that 6/7-year old children are more suggestible than 10/11-year old children. Our results also show that overall, children are more susceptible to misleading information about peripheral than about central details. However, the difference between peripheral and central suggestibility was found to increase with age, due to the fact that older children are less prone to assent to false information about central details.

That younger children are more suggestible than older children has been documented in many previous studies (e.g., Quas, Goodman, Bidrose, Pipe, Craw & Ablin, 1999; Candell et al., 2000; Roebbers & Schneider, 2000; Ornstein, Gordon & Larus, 1992; but see Rudy & Goodman, 1991). For example, Candell et al. (2000) used the Bonn Test of Statement Suggestibility for measuring individual differences in children's suggestibility. In their study, 6-year olds obtained higher suggestibility scores than 7- and 10-year olds. Also, 7-year olds' suggestibility

scores were higher than those of 10-year olds. Likewise, Quas and co-workers (1999) asked children suggestive questions about a fictitious operation that they never experienced. The majority of children aged 3-5, but only 1 of the 12 children aged 9-14, affirmed this fictitious event. Accordingly, Ceci and Bruck (1993) conclude in their thorough review that in the majority of the studies that involve comparison of preschoolers with older children or adults, preschoolers were the most suggestible group.

To the best of our knowledge, only a few studies have investigated the relationship between age and susceptibility to misleading information about peripheral and central details. As described earlier, this previous work has produced mixed results. The current findings are straightforward in showing that children are more susceptible to suggestions about peripheral details than about central details. The attentional narrowing hypothesis (Christianson, 1992) might account for this finding. According to this hypothesis, people focus their attention on the central details when they are confronted with a salient event. As a result, memory for central details would be good, whereas memory for peripheral details would be relatively poor. Obviously, when memory is poor, testimonies will be more prone to suggestive influences. Perhaps, then, older children are more effective in concentrating on the central details of the event than are younger children. Our finding that there is a significant negative correlation between memory and suggestibility supports this idea. After all, an increased attentional control should lead to better memory performance and, therefore, reduced suggestibility (see below).

The difference between peripheral and central suggestibility increases with age because older children are less susceptible to misleading information about central details. Thus in study 1, younger children yielded to 80% of the peripheral questions and to 66% of the central questions, whereas for older children these false assent rates were 59% and 19%, respectively. A highly similar pattern was observed in study 2. One explanation for this pattern might be age differences in memory ability. Young children forget faster than older children (e.g., Brainerd, Reyna, Howe & Kingma, 1990). Studies (e.g., Candel et al., 2000) indicate that poor memory performance is a good predictor of heightened suggestibility. This principle is known as "discrepancy detection" (Schooler & Loftus, 1986). In the words of Schooler and Loftus (1986, p.107-108) "recollections are the most likely to change if a person does not immediately detect discrepancies between post-event suggestions and memory for the original event." The inability to detect these discrepancies might result in remembering items that were merely suggested. This phenomenon is referred to as the source misattribution effect (e.g., Zaragoza & Lane, 1994). Ackil and Zaragoza (1995) showed that the magnitude of this effect varies with age such that young children make more source confusions than older children who, in turn, make more confusions than college students.

One limitation of the current studies is that they did not involve the complete spectrum of age groups. Parametric work that systematically tests age differences in suggestibility would be very informative attempts to develop standardized tools for measuring individual differences in suggestibility. Another limitation of



our studies is that we did not employ self-relevant stories. Perhaps, the difference between peripheral and central details becomes less when children are involved in self-relevant events of the type studied by Saywitz and co-workers (i.e., medical treatment; e.g., Saywitz et al., 1991). However, on the basis of the attentional narrowing hypothesis, one could also argue that peripheral versus central differences become more pronounced in the case of self-relevant events. Clearly, this issue warrants further study.

A final limitation of our work, and for that matter many other studies in this area, is that we do not know to what extent suggestibility scores reflect false reports rather than false memories (McNally, 2003). While this issue is clearly important from a theoretical point of view, it doesn't matter much in a forensic context. All that counts during forensic interviews is what children report.

To sum up, then, the current findings show that as children grow older, their susceptibility to misleading information about central details decreases. For peripheral information this age-related reduction in suggestibility is much less clear. Although peripheral information (e.g., license numbers, type of car, color of shirt) seems of secondary importance on first sight, it might be relevant to forensic examiners. When they ask children leading questions about such details, there is a fair chance that even the older ones will accept the suggestion.

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