Chapter #27

HOW DOES PRIOR KNOWLEDGE AFFECT CHILDREN'S MEMORY AND SUGGESTIBILITY?

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ABSTRACT
In this review chapter, we analyzed various studies focused on the effect of prior knowledge on children's memory and suggestibility. Specifically, three types of knowledge are considered: *social knowledge*, *script knowledge* and *semantic knowledge*. Social knowledge benefits memory when the actions performed by another person fit into children's knowledge, but it is also probably that children accept false suggestions consistent with that knowledge. Script knowledge is only beneficial for memory when the repeated event occurs always in the same way, but when some details change across repetitions, children could become confused and not be able to distinguish the particular detail in each repetition of the event. Semantic knowledge benefits episodic memory and makes more probably to reject false suggestions, unless the suggestion were repeated many times, in this case the beneficial effect of semantic knowledge disappears. Findings from studies are extrapolated to the forensic field, and limitations of the studies analyzed are discussed.

Keywords: prior knowledge, children, memory, suggestibility.

1. INTRODUCTION

Every year an increasing number of children are involved in criminal cases, mainly in cases of alleged sexual abuse. Under these circumstances, young children must testify about the alleged actions supposedly carried out by another person, usually a familiar adult (e.g., a parent, a close relative, a teacher). Very often, the child's testimony is the only evidence against the suspect, and the case has to be judged based on the credibility of the statement of the minors. For that reason, it is important to obtain a reliable and complete statement from children involved in legal cases.

Due to the relevance of this topic in the forensic field, research has focused on understanding the benefits and harms of factors that affect the accuracy of children's testimony and their vulnerability to suggestions. There are individual differences that could be responsible, along with age, for memory and suggestibility in young children, such as narrative style, intelligence, prior knowledge, theory of mind, etc. (for a review, see Klemfuss & Olaguez, 2018). Specifically, in this chapter, we focus on one of those factors, namely, the effect of prior knowledge on children's memory and suggestibility.

1.1. Prior knowledge

Bartlett (1932) claimed that everything we remember is highly affected by the knowledge schemas that we already have, which are continually being updated from personal experiences of recurrent situations. Initially, children's schemas are not well developed, and they have rigid schemas of events. However, these schemas develop progressively with

experience and acquisition of new knowledge, they become more abstract (Hudson, Fivush, & Kuebli, 1992; Nelson, 1978) and contribute to the encoding, retention, and retrieval of information of the events that we experience.

Thus, knowledge schemas are intuitively thought to support accurate memories of episodic details, they help children make inferences to understand situations, process discrepant information between past and present experiences in an elaborate way, and children can use schemas as a framework for retrieving their experiences (Goodman, 1980; Schank & Abelson, 1977). However, schemas can also impair memory for episodic information, distorting what children have actually perceived. For example, children may believe that something happened because it fits into their schema of the situation, but in reality, it did not happen (Hudson & Nelson, 1983). Additionally, it is thought that knowledge schemas could protect children from external suggestions: when someone tries to suggest false information inconsistent with the schema, children elaborately process it and may reject it later (Hudson, 1986). However, when false suggestive information is consistent with the schema, it is more difficult to reject it, and children may incorporate it in subsequent reports (Leichtman & Ceci, 1995). Therefore, there seems to be a double effect of knowledge on children's memory and suggestibility: it improves or impairs memory, and it facilitates or makes difficult the acceptance of suggestions.

In this chapter we focus on three types of knowledge that could be relevant in some cases in the forensic field (Ceci & Bruck, 1995): (a) social knowledge (i.e., stereotypes), (b) script knowledge, and (c) semantic knowledge.

Social knowledge refers to knowledge schemas about people and their behavior, it is what we know as *stereotypes*, whereas script and semantic knowledge are related to knowledge about situations or events. In the case of *script knowledge*, it is a knowledge schema formed from recurrent situations that could become a routine and it includes a sequence of actions (e.g., the restaurant script), while *semantic knowledge* is a more general event representation or general knowledge about a situation or event (e.g., what a person knows about restaurants in general, regardless of whether or not that person has been to a restaurant).

These three types of knowledge could be relevant in sexual abuse cases because they may influence children's memory, and in consequence, their statements. To assess the testimony of an alleged victim of sexual abuse, the forensic psychologist has to know what has happened, and for this, he or she needs to obtain information about the alleged perpetrator, what he did and what the child did, and how both carried out those actions, how many times the abuse occurred (if it has occurred more than once), when and where occurred, etc. Therefore, the minor must provide the psychologist with very specific information about the alleged facts. Thus, when talking about the perpetrator of the alleged abuse and the actions he took, the child's social knowledge could influence his or her memory and, in that sense, if the child has a negative stereotype about the alleged adult ("that person does bad things"), his or her memory could be skewed by attributing more negative actions to the adult than they actually were, or transforming positive actions that occurred into negative ones, or even attributing new negative actions to the adult. Additionally, if the alleged abuse occurred multiple times and became part of a routine, then the child's script knowledge could be influencing his or her statement. In these cases, child is often questioned about a specific episode of the repeated abuse (sometimes about the last or first occurrence, other times about the episode that he or she better remember) and the child may confuse details from one episode with details from a different episode.

Lastly, it should be noted that young children are expected to lack knowledge of a sexual nature unless they have been victims of the alleged abuse. Therefore, any detail contained in the child's statement about the alleged abuse is believed to come from the child's direct experience, not from his or her prior knowledge (i.e., his or her semantic knowledge about sex). However, some of the details and actions contained in the child's statement could come from a variety of informal and formal sources of suggestion (e.g., parent and professional questionings). Thus, a forensic psychologist must be very careful when analysing the statement of a minor: the professional must examine whether the minor had sexual (semantic) knowledge before the abuse was disclosed and carefully analyse the possible sources of suggestion to which the minor could have been exposed during the process, because from those sources the child could have obtained semantic knowledge about sex. Furthermore, simultaneously, the professional has to take into account the other two types of knowledge (stereotypes and scripts) that could be also influencing the child's testimony.

The results of studies interested in how these three types of knowledge affect children's memory and suggestibility are analyzed below. The authors who have address this issue have included participants whose ages ranged from 3 to 11 years in their studies.

2. SOCIAL KNOWLEDGE: STEREOTYPES

The term *social knowledge* refers to the schemas that people have about others and their typical characteristics of personality and behaviour. In the forensic field, in most cases, children have to testify about the actions performed by another person. Sometimes, that person is a stranger adult. How children speak about these actions can be affected by their social knowledge about the person involved in the crime. Sometimes, social knowledge changes after the child has interacted with the adult. This could happen when the child discloses the alleged abuse, and someone transmits to the child a negative characterization of the defendant and/or of the actions performed by him or her. This stereotype induction can have a powerful negative effect on the accuracy of children's statements because naïve children may incorporate that negative stereotype in their subsequent reports regardless of what truly happened (Ceci & Bruck, 1995).

In the studies reviewed, social knowledge was manipulated through a story with a stereotyped description of the protagonist (a stranger adult). A negative stereotype was induced in only half of the participants (Cordón, Silberkleit, & Goodman, 2016; Elischberger, 2005), or a negative, a positive, or a neutral stereotype was induced in all participants (Greenhoot, 2000; Leichtman & Ceci, 1995; Memon, Holliday, & Hill, 2006). After providing the description, an event took place or a story was read, and children between 3 and 6 years old observed the protagonist performing a set of actions or listened to a narration about the protagonist, respectively. Later, participants received suggestive information[2] through suggestive questions. Last, in all the studies, children completed a final memory interview for the event observed or story heard.

The results showed that the stereotype induced did not affect the overall memory about the event or the story. In fact, stereotype only affected children's memory when stereotype information was specifically evaluated. Thus, the protagonist's actions consistent with the stereotype induced had a greater probability of being remembered and reported than the inconsistent ones. Thus, social knowledge (i.e., stereotype) seemed to guide and bias the children's attention towards the protagonist's behaviour consistent with the stereotype (Ceci & Bruck, 1995; Leichtman & Ceci, 1995). Moreover, if participant's knowledge was manipulated again (as in Greenhoot's study, 2000), the recall of actions in a subsequent

memory interview was modified as a function of the second stereotype induction. Thus, if children had received positive knowledge in both interviews, they provided more positive than negative information in the second memory test. However, if they received positive knowledge in the first interview but negative knowledge in the second interview (suggestive), their recall for the actions was modified according to the suggestion received, and they provided more negative than positive information in the second interview. The inverse pattern was also true. Regarding suggestibility, the results showed that children who received a stereotype, especially younger children (3 and 4 y-o), committed more intrusions and made more inferences than children who did not receive it. These results were heightened when children were exposed to a suggestive interview that introduced false suggestions consistent with the stereotype given to them.

From these studies, four conclusions can be reached: (1) prior social knowledge has no effect on the overall memory of an event; (2) children with positive or negative prior social knowledge about a person are more likely to provide information of actions consistent with that knowledge when their memory is tested; (3) prior social knowledge is detrimental when false suggestions about actions consistent with that knowledge are given because children are more likely to accept them and may even embellish their reports with inferences based on that social knowledge; and (4) when children have prior social knowledge and a stereotype is subsequently given, the children revise and modify their recall of the actions and report actions consistent with their new social knowledge.

Concern for social knowledge in real cases arises when a young child is going to testify. What the minor relates when she or he reveals the alleged abuse will probably be influenced by her or his social knowledge about the abuser; but it is also very likely that after the disclosure of sexual abuse, the child receives stereotypical negative information about the alleged abuser through biased questions from a concerned parent or professionals. The modification of the child's knowledge about the alleged abuser could be very harmful because, as indicated above, his or her testimony would be most likely consistent with the recently induced negative bias.

It should be noted that in none of the studies described was the protagonist familiar[3] with the children, nor did they directly interact with him. The children only observed or listened to a narration about the actions performed by the protagonist. However, in cases of sexual abuse, the adult is usually a familiar adult, and he or she directly interacts with the child. Therefore, more research is needed to examine the effect of children's prior social knowledge when children have to recall a situation in which there has been direct interaction between them and a close adult.

Next, studies interested in how script knowledge affects memory and suggestibility in children are described below.

3. SCRIPT KNOWLEDGE

We often live experiences that consist of a typical sequence of actions, which are part of script schemas (e.g., visit the doctor, go to a restaurant, etc.). These scripts are an abstract knowledge structure hierarchically organized that reflects our understanding of the temporal and causal sequence of actions that typically occurs in some contexts (Schank & Abelson, 1977). For example, the script "go to the restaurant" is hierarchically organized, so that, the event comprises a series of general or abstract *activities* (e.g., order the food), which in turn comprises a series of specific *actions* (e.g., the waiter arrives, and we order the drink, we order an appetizer, we order the main dish, and we order the dessert), and those actions are

carried out on objects (e.g., we order some *water* to the waiter, we order *meat*, we order a *cheesecake*, etc.). Every time we go to a restaurant some of the actions or objects could change (i.e., *variable details*: we call the waiter instead of waiting for him to come to our table, we order *fish* instead *meat*, etc.); whereas others remain unchanged (i.e., *fixed details*: in a restaurant we always order some food). Thus, the events that repeat over time tend to include some variations, and those variations are expected because it is unusual that we experience the event always in the same way.

We all generate scripts because they make it easier for us to remember what usually happens in certain situations and contexts and help us to generate an episodic representation of our experiences (Schank & Abelson, 1977). Young children also generate scripts, although at the beginning they have rigid event scripts and they represent their scripts rather in terms of actions and objects than abstract or general activities (Hudson et al., 1992). In fact, research shows that there are developmental differences in the children's organization of the event's knowledge and suggests that young children are very often dependent on the scripts of the events they experience when they try to remember an autobiographical event, causing them to confuse different instances of the same event (Hudson et al., 1992).

The studies reviewed in this section are characterized by the fact that script knowledge is generated during the study itself, that is, by repeating sessions, participants generate a script about what usually happens in the sessions and what is the sequence of actions and objects expected during the course of the sessions.

In this line, to understand the process of script acquisition, Farrar and Goodman (1990, Exp. 1) carried out a study where participants (4 and 7 years old) repeated a set of games during three sessions (called "script visit") and in another different session there were changes in the activities (called "episodic visit"[4]). That "episodic visit" could be the first or the last session in the study. One week after the last session, children were interviewed about the sessions with a *free recall* test and a *contextual recall* test[5]. The overall recall of the event was higher for the script visit than for the episodic visit, and 7 y-o children remembered more activities than 4 y-o children. Regarding the episodic visit, younger children made more inference mistakes than older children because they based their recall on script knowledge instead of their episodic or contextual memory of the visit. However, these mistakes were reduced when the episodic visit was the last session of the four sessions.

Therefore, these results seemed to indicate that script knowledge was beneficial for memory because it improved the overall memory of the event. That is, memory performance was greater when children had this type of knowledge. Additionally, young children seemed to draw on that knowledge to describe their experiences. However, script knowledge could also impair young children's memory, especially when some details varied in different replays of the event. In that situation, young children had serious difficulties in determining in which of the specific instances of the event the change occurred. As we previously pointed out, in some criminal cases forensic interviews are about events that occurred repeatedly (e.g., repeated sexual abuse), and when children testify, they are questioned for details from a specific instance of the repeated experience (usually about the last time the abuse occurred). As we mentioned above, children have difficulties to distinguish between instances of the event, and due to its relevance to the forensic field, subsequent studies have continued to focus on the effect of script on memory and, furthermore, on the acceptance of suggestion.

In the studies described below, participants usually carried out a set of activities in which (a) details were *different* in each repetition or (b) there were *fixed* and *variable* details through the sessions. It is interesting to establish this distinction because in real cases of alleged sexual abuse repeated over time, it may happen that some details about the abuse are always the same (e.g., the abuse always occurs in the home of the minor, is committed by the

same aggressor, etc.), but other details vary (e.g., where the abuse occurs –bedroom or bathroom-, or when the abuse occurs –daily days in the afternoon and weekends in the morning-, etc.). Exceptionally it could also happen that the details are different for each of the times the abuse occurs.

The studies analyzed include two groups of participants. One group repeated an event in at least four sessions (script knowledge group), and the other group experienced the event only in one session (episodic experience group). After the last session (or the unique session), all children completed a delayed suggestive interview about the target session (i.e., one of the experienced sessions for the script group and the single experienced session for the episodic group). Suggested details could come from an instance other than the target session. For example, in the target session children were sitting on a *cardboard*, but the suggested detail indicated that children were sitting on a *rubber mat.* Actually, children were sitting on a *rubber mat* in a different session than the target session. Moreover, in some cases, the detail could be completely new ("children sat on a *bed"*, although in none of the sessions did the children sit on a *bed*). Finally, all participants completed a final memory interview (*free recall test, cued recall test,* and/or *yes-no questions*[6]) about the target session. Next, we describe in two blocks the results found in the studies: (3.1) studies that used different details in each repetition, and (3.2) studies with fixed and variable details throughout the sessions.

3.1. Different details in each repetition

In these studies (e.g., Connolly & Price, 2006; Powell & Roberts, 2002; Powell, Roberts, Thomson, & Ceci, 2007; Price, Connolly, & Gordon, 2016), the same central activities were included in all sessions, but for the children who participated in the repeated experience, the instances of the activities were different in each session (e.g., child sat on "x", "x" in one session was a *cardboard*, in others a *rubber mat*, a *garbage bag*, or a *white sheet*). Although the specific details were different in the sessions, however, children could develop a script of the typical sequence of activities that were part of the repeated experience in the sessions. This type of repetition attempted to determine whether children with a repeated experience could accurately identify a specific detail from one of the sessions (i.e., the target session) because in legal cases, children must. Across the studies reviewed, the ages of the participants ranged from 3 to 8 years.

The results demonstrated that when details changed in each session for the script knowledge group, overall correct recall was higher for children with a unique experience (i.e., episodic experience) in short delay conditions (suggestion was provided three days or one week after the last session) compared to children with repeated experience and long delays (three or four weeks). Furthermore, children with repeated experience (i.e., script knowledge) also committed more mistakes because they could not distinguish between details from specific sessions. Lastly, suggestion was more frequently accepted after a long delay (three or four weeks after the last session) and when it was consistent with children's knowledge or it was related to a detail that could be part of a different session from the target session (e.g., the detail suggested was "children sat on a *rubber mat*", when in the target session they sat on a *white sheet*).

If we examine these results more closely, when a victim suffers a sexual abuse that varies over time, it could be expected that his or her memory for a concrete occurrence will be very poor and the victim could easily confuse the instances of the repeated experience. Moreover, the delay between the occurrence of the abuse and the forensic interview can be long in real cases. Thus, it seems that having a script knowledge about the event does not prevent the acceptance of suggestion consistent with that knowledge, but rather the opposite, the minor would be especially vulnerable to suggestion when it is consistent with his or her

script of the abuse. However, it is necessary to point out that we found certain problems in generalizing the results of these studies to real cases, since in the most typical cases of abuse, it unusual for the details related to the abuse to change systematically from one replay to the next, but rather certain details may change (i.e., variable details), but the core of the details remain unchanged (i.e., fixed details) throughout the replays.

3.2. Fixed and variable details in all sessions

In this case (e.g., Danby, Sharman, Brubacher, & Powell, 2019; Connolly & Lindsay, 2001; Powell, Roberts, Ceci, & Hembrooke , 1999; Roberts & Powell, 2007), central activities were the same in all sessions, but for participants in the repeated experience condition, the instance of the critical detail could be the same (fixed detail: the child always sat on a *cardboard*) or different (variable detail: the child sat once on a *rubber mat*, other times on a *white sheet*, others on a *newspaper*, etc.). Thus, children could develop a script of what typically happened in these sessions, although some details might not always be the same. Across the reviewed studies, the ages of the participants ranged from 3 to 9 years.

When memory for activities was analysed, the recall of the fixed details was higher for children with repeated experience than for children with a unique experience. However, for the variable details, results were inconsistent because sometimes a higher recall was found in the unique experience group than in the repeated experience group, whereas other times there was no difference between both groups. Additionally, when the delay between the last session and the suggestive interview was short (three days), recall of both types of details (fixed and variable) was greater compared with a long delay condition (three weeks). Nevertheless, false fixed details were more accepted by children with a unique experience than repeated experience, but the opposite result was true for false variable details. Furthermore, both false fixed and false variable details were more accepted after a long delay (three weeks after the last session) than a short delay (three days).

Therefore, in this procedure, it seems that having script knowledge was beneficious when in a repeated session there were fixed details because these were part of the script and were well remembered. Indeed, children were more likely to reject the suggestion of false fixed details because they realized that those details did not belong to their script. However, this script knowledge was not very helpful in sessions with variable details because those details were not part of the script and children could be confusing the real origin of the details, which made children more vulnerable to suggestions about these details, especially when suggestions were consistent with their scripted knowledge.

The problem arises in the legal field, since professionals do not know whether alleged repeated abuse has fixed or variable instances, and they cannot know how that abuse supposedly occurred until the child discloses it. Therefore, professionals need to be careful with children's testimony because what children tell them could be part of an instance of the repeated event or a mix of various instances. However, it should be noted that in real cases of abuse repeated over time, fixed and variable details do not appear decontextualized. In fact, the variable details of continued abuse over time depend on the space-time context in which the abuse occurs, often leading to additional variations in the sequence of victim-abuser interaction. For example, whether the abuse occurs in the child's room, the child and the adult may be lying in bed, but if on another occasion the abuse occurs in the bathroom at the time of the shower, the position and interaction between them must be different. Therefore, it is necessary research that delves into the variation of the details but placing them contextually in the development of the sequence of the general activities and specific actions and objects of the script.

4. SEMANTIC KNOWLEDGE

Last, in this section, we refer to research that assesses children's memory and suggestibility for an episodic event when their performance could be affected by semantic knowledge. In the studies reviewed, children participated individually in an episodic event and had prior semantic knowledge to a greater or lesser extent about the event. Next, participants completed two interviews.

Taking advantage of the fact that the children were going to undergo a medical check-up, Ornstein and colleagues (Ornstein, Gordon, & Larus, 1992; Ornstein et al., 2006) interviewed them about the checkup in two moments (immediate recall and delayed recall). In these studies, children could have a script of what usually occurs during medical check-ups. However, unlike in the studies of script knowledge, Ornstein and colleagues did not create that script knowledge through event repetitions, but it is spontaneously acquired by children's extra-experimental experience, so they considered it semantic knowledge rather than script knowledge. The results showed that correct recall was higher in older children (6 –7 y-o) than in younger children (3–5 y-o), and it was greater in immediate interviews (i.e., after the event) than in delayed interviews (one or three weeks in one study, three or six months in the other). Moreover, older children were more prone to reject suggestions than younger children, mainly in immediate interviews. Therefore, it seems that older children benefited from their semantic knowledge of doctor visits; thus, they had better memory performance for the event (episodic memory) and were more resistant to suggestions about details and actions that had not happened.

On the other hand, Otgaar, Candel, Scoboria, & Merckelbach (2010) tried to find if prior semantic knowledge had any influence on false memories, for which they used the classic procedure of false memories implantation (e.g., Ceci, Huffman, Smith, & Loftus, 1994; Ceci, Loftus, Leichtman, & Bruck, 1994). In their study, participants (7 and 11 y-o) were interviewed twice about true events (i.e., events that occurred when children were 4 y-o) and false events that they never experienced. Regarding false events, children could have prior *low* (e.g., a rectal enema) or *high* (e.g., fingers being caught in a mousetrap) semantic knowledge. The results revealed that for true events the recall increased with the interview repetition, whereas the "recall" of false events remained similar for both interviews, although in the second interview a higher number of participants mentioned the false event spontaneously. Furthermore, for false events, children with high semantic knowledge about the false event (i.e., mousetrap) were more likely to create false memories in comparison with children with low semantic knowledge (i.e., rectal enema). Indeed, having high semantic knowledge made children more prone to embellish their reports.

Last, in the study conducted by Peláez, Pérez-Mata, and Diges (2019), 4 years old participants were divided in two groups, one group was presented with semantic knowledge about an unknown object (i.e., the object was shown to participants, but they did not directly manipulate the object), and another group of participants had an episodic experience with the unknown object (i.e., they were allowed to directly manipulate the object). Then, children were suggestively asked about true and false actions carried out with the object in two interviews separated by a week each other. The results showed that for "true actions", in the first interview, children with episodic experience could embellish more their reports than children with only semantic knowledge (note that for these participants the action was false because they were not given the chance to manipulate the object). However, this difference disappeared in the second interview because both groups provided the same amount of details for the "true actions". Regarding false actions for both groups, the acceptance of suggestion was higher in the second interview than in the first interview, and the embellishment of the

participants' reports was greater in the second interview than in the first interview, although similar for both groups. Therefore, question repetition was harmful because children were provided with semantic knowledge through those questions, and children used that knowledge to artificially embellish their reports. Consequently, reports from children who had experienced the event and children who had not were very similar in semantic details, and it became difficult to distinguish them from each other.

In summary, the results obtained by the studies reviewed seemed to indicate that semantic knowledge benefited the recall of episodic events. However, the influence of semantic knowledge on suggestibility was not clear. Sometimes, its influence was positive because semantic knowledge made it easier to reject false details about the event (Ornstein et al., 1992; Ornstein et al., 2006). However, semantic knowledge was not always helpful, especially when suggestive interviews were conducted and children were questioned repeatedly about false details or events (Otgaar et al., 2010; Peláez et al., 2019).

In real cases, the problem arises when children have been interviewed repeatedly. In that situation, when the interviewer asks the minor suggestive questions about the alleged abuse, the interviewer actually provides semantic knowledge about the abuse. Knowledge that the minor did not have until that moment but that when the minor acquired it, he or she could apparently include it "spontaneously" in his or her subsequent statements. Obviously, a victim is also not immune to the suggestion of the interviewer. Thus, both children with episodic experience (i.e., a victim) and those without episodic experience (i.e., not a victim) could add semantic information to their statements. Consequently, the statements of both children could be very similar, characterized by semantic information, and even the victim's statement could lose its episodic richness. Clearly, more research is needed to investigate the influence of semantic knowledge on children with or without episodic experience subjected to repeated suggestive interviews, as occurs in real cases.

5. CONCLUSIONS

Different types of prior knowledge affect memory and suggestibility in children. First, social knowledge has influence on children's memory about the actions performed by another person, in that sense if children have a positive stereotype they will remember more positive actions, whereas if they have a negative stereotype, they will remember more negative actions (Cordón et al., 2016; Elischberger, 2005). Indeed, if they are exposed to a suggestive interview, they will probably accept suggestions consistent with their social knowledge and incorporate them into their subsequent reports (Elischberger, 2005; Leitchman & Ceci, 1995). And, more important, if that prior social knowledge is modified after the event takes place, the children's memory may be affected, and children would modify their memory to fit that new social knowledge, usually a negative stereotype (Ceci & Bruck, 1995; Greenhoot, 2000).

Second, script knowledge is only beneficial when the event takes place always in the same way because then children are able to develop a script of what usually happens and remember well the event details (Farrar & Goodman, 1990). However, in real life repeated events have some changes in each repetition. When this happens and there are variable details in the instances, the script knowledge impairs children's memory because it is difficult to them distinguish between details from different instances of the event (e.g., Connolly & Price, 2006; Powell et al., 1999). Moreover, in this situation, children are more likely to accept suggestion about details that varies in different instances, especially when that suggestion is consistent with the script (e.g., Connolly & Lindsay, 2001; Roberts & Powell, 2007).

And, lastly, semantic knowledge appears to benefit the recall of episodic events and makes it easier reject suggestions (e.g., Ornstein et al., 1992). However, when suggestion is repeated over time, that benefit disappears and children accept that false information (Otgaar et al., 2010; Peláez et al., 2019).

However, as noted, more research is needed because some procedures interested in the influence of knowledge on memory and suggestibility have serious limitations to be generalized to real cases. Thus, research should be especially focused on:

- Changes in social knowledge (stereotypes) after children participate in the event instead before their participation, because in real cases the induction of a negative stereotype about the alleged abuser frequently occurs after the child discloses the abuse.
- The variation of the details in repeated events, considering the context in which the general activities and specific actions and objects of the script take place.
- The use of repeated suggestive interviews to compare the performance of children (a) with only semantic knowledge about an event; (b) with only episodic experience; and (c) with both semantic knowledge and episodic experience. This design would simulate different situations that could happen in real cases, and it would allow us to examine whether repeated questioning differentially affects semantic knowledge, episodic memory, and suggestibility.

REFERENCES

Bartlett, F. C. (1932). *Remembering: A study in experimental and social psychology*. Cambridge University Press.

Ceci, S. J., & Bruck, M. (1995). *Jeopardy in the courtroom. A scientific analysis of children's testimony*. American Psychological Association.

Ceci, S. J., Huffman, M., Smith, E., & Loftus, E. (1994). Repeatedly thinking about non-events: Source misattributions among preschoolers. *Consciousness & Cognition, 3*, 388-407. https://doi.org/10.1006/ccog.1994.1022

Ceci, S.J., Loftus, E., Leichtman, M., & Bruck, M. (1994). The possible role of source misattributions in the creation of false beliefs among preschoolers. *International Journal of Clinical and Experimental Hypnosis*, *42*(4), 304-320. http://dx.doi.org/10.1080/00207149408409361

Connolly, D. A., & Lindsay, D. S. (2001). The influence of suggestions on children's reports of a unique experience versus an instance of a repeated experience. *Applied Cognitive Psychology, 15*(2), 205-223. https://doi.org/10.1002/1099-0720(200103/04)15:2%3c205::AID-ACP698%3e3.0.CO;2-F

Connolly, D. A., & Price, H. L. (2006). Children's suggestibility for an instance of a repeated event versus a unique event: The effect of degree of association between variable details. *Journal of Experimental Child Psychology, 93*(3), 207-223. https://doi.org/10.1016/j.jecp.2005.06.004

Cordón, I. M., Silberkleit, G., & Goodman, G. S. (2016). Getting to know you: Familiarity, stereotypes, and children's eyewitness memory. *Behavioral sciences & the Law, 34*(1), 74-94. https://doi.org/10.1002/bsl.2233

Danby, M. C., Sharman, S. J., Brubacher, S. P., & Powell, M. B. (2019). The effects of episode similarity on children's reports of a repeated event. *Memory, 27*(4), 561-567. https://doi.org/10.1080/09658211.2018.1529798

Elischberger, H. B. (2005). The effects of prior knowledge on children's memory and suggestibility. *Journal of Experimental Child Psychology, 92*(3), 247-275. https://doi.org/10.1016/j.jecp.2005.05.002

Farrar, M.J., & Goodman, G.S. (1990). Developmental differences in the relation between scripts and episodic memory: Do they exist? In R. Fivush y J.A. Hudson (Eds.). *Knowing and remembering in young children* (pp. 30-64). Cambridge University Press.

Goodman, G.S. (1980). Picture memory: How the action schema affects retention. *Cognitive Psychology, 12*(4), 473-495. https://doi.org/10.1016/0010-0285(80)90017-1

Greenhoot, A. F. (2000). Remembering and understanding: The effects of changes in underlying knowledge on children's recollections. *Child Development, 71*(5), 1309-1328. https://doi.org/10.1111/1467-8624.00230

Hudson, J. (1986). Memories are made of this: General event knowledge and development of autobiographic memory. In K. Nelson (Ed.), *Event knowledge: Structure and function in development* (pp. 97-118). Erlbaum.

Hudson, J., Fivush, R., & Kuebli, J. (1992). Scripts and episodes: The development of event memory. *Applied Cognitive Psychology, 6*(6), 483-505. https://doi.org/10.1002/acp.2350060604

Hudson, J., & Nelson, K. (1983). Effect of script structure on children's story recall. *Developmental Psychology, 19*(4), 625-635. https://doi.org/10.1037/0012-1649.19.4.625

Klemfuss, J.Z., & Olaguez, A.P. (2018). Individual differences in children's suggestibility: An updated review. *Journal of Child Sexual Abuse*, *29*(2), 158-182. https://doi.org/10.1080/10538712.2018.1508108

Leichtman, M.D., & Ceci, S.J. (1995). The effects of stereotypes and suggestions on preschooler's reports. *Developmental Psychology, 31*(4), 568-578. https://doi.org/10.1037/0012-1649.31.4.568

Memon, A., Holliday, R., & Hill, C. (2006). Pre-event stereotypes and misinformation effects in young children. *Memory, 14*(1), 104-114. https://doi.org/10.1080/09658210500152641

Nelson, K. (1978). How young children represent knowledge of their world in and out of language. In R. S. Seigler (Ed.), *Children's thinking: What develops?* (pp. 255-273). Erlbaum.

Ornstein, P. A., Baker-Ward, L., Gordon, B. N., Pelphrey, K. A., Tyler, C. S., & Gramzow, E. (2006). The influence of prior knowledge and repeated questioning on children's long-term retention of the details of a pediatric examination. *Developmental psychology*, *42*(2), 332-344. https://doi.org/10.1037/0012-1649.42.2.332

Ornstein, P. A., Gordon, B. N., & Larus, D. M. (1992). Children's memory for a personally experienced event: Implications for testimony. *Applied Cognitive Psychology*, *6*(1), 49-60. https://doi.org/10.1002/acp.2350060103

Otgaar, H., Candel, I., Scoboria, A., & Merckelbach, H. (2010). Script knowledge enhances the development of children's false memories. *Acta Psychologica*, *133*(1), 57–63. https://doi.org/10.1016/j.actpsy.2009.09.002

Peláez, M., Pérez-Mata, N., & Diges, M. (2019). Influencia del conocimiento previo y la repetición de entrevistas: Memoria y sugestión en una muestra de preescolares [Influence of prior knowledge and repetition of interviews: Memory and suggestion in a sample of preschoolers]. *Revista Colombia Forense*, *6*, 1-23. https://doi.org/10.16925/2145-649.2019.01.02

Powell, M. B., & Roberts, K. P. (2002). The effect of repeated experience on children's suggestibility across two question types. *Applied Cognitive Psychology, 16*(4), 367-386. https://doi.org/10.1002/acp.801

Powell, M. B., Roberts, K. P., Ceci, S. J., & Hembrooke, H. (1999). The effects of repeated experience on children's suggestibility. *Developmental Psychology, 35*(6), 1462-1477. https://doi.org/10.1037/0012-1649.35.6.1462

Powell, M. B., Roberts, K. P., Thomson, D. M., & Ceci, S. J. (2007). The impact of experienced versus non-experienced suggestions on children's recall of repeated events. *Applied Cognitive Psychology, 21*(5), 649-667. https://doi.org/10.1002/acp.1299

Price, H. L., Connolly, D. A., & Gordon, H. M. (2016). Children who experienced a repeated event only appear less accurate in a second interview than those who experienced a unique event. *Law and Human Behavior, 40*(4), 362. https://doi.org/10.1037/lhb0000194

Roberts, K. P., & Powell, M. B. (2007). The roles of prior experience and the timing of misinformation presentation on young children's event memories. *Child Development, 78*(4), 1137-1152. https://doi.org/10.1111/j.1467-8624.2007.01057.x

Schank, R.C., & Abelson, R.P. (1977). *Scripts, plans, goals and understanding*. Lawrence Erlbaum Associates.

ACKNOWLEDGEMENTS

This work was supported by the transfer knowledge Project 088501 – "*Witness Evidence Assessment. Experimental Forensic Psychology Unit"* (Foundation of Universidad Autónoma de Madrid - FUAM) co-directed by the second and third authors.

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FOOTNOTES

[1] This work is part of the first author's doctoral thesis project.
[2] In Greenhoot's study (2000) participants receive a memory test, and then a second knowledge manipulation was carried out that consisted of the induction of a new negative or positive stereotype, and then, the participants' memory was tested again.
[3] In the study by Cordón et al. (2016) the protagonist was familiar for some participants. Familiarity improved children's memory performance (children gave more correct responses and committed fewer commission errors) regardless of whether they had social knowledge about the protagonist or not.
[4] Authors referred to this condition as "*episodic visit*" because they examined how participants recalled a specific event that deviated from the repeated event (i.e., the *script event*).
[5] The *free recall* test was conducted in a different room from the game sessions and children were asked to report what they did in the games. However, the *contextual recall* was conducted in the same room where the children played the games, and the interviewer showed the children the game table (without the animal toys and props used during the prior sessions) and asked them to describe in order what happened at that table.
[6] The pattern of results was similar in the three memory tasks; therefore, we describe the results together.