

The suggestibility of child witnesses suspected victims of abuse: an overview between research and psycho-forensic implications

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OPEN ACCESS

Double blind peer review

How to cite this article: Vagni, M., Mariorano, T. & Giostra, V. (2024). The suggestibility of child witnesses suspected victims of abuse: an overview between research and psycho-forensic implications. *Rassegna Italiana di Criminologia*, XVIII, 1, 83-96. <https://doi.org/10.7347/RIC-012024-p83>

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Received: 22.11.2023

Accepted: 02.02.2024

Published: 31.03.2024

Pensa MultiMedia
ISSN 1121-1717 (print)
ISSN 2240-8053 (on line)
[doi10.7347/RIC-012024-p83](https://doi.org/10.7347/RIC-012024-p83)

Abstract

In a forensic context, the suggestibility of child witnesses represents a main factor to be analyzed in relation to testimonial skills because it has implications with other psychological functions, such as memory, language, attention and intelligence. Suggestibility involves both cognitive, emotional and social factors that can intervene to increase or reduce suggestive vulnerability. There are two main models of suggestibility: immediate or interrogative suggestibility and the delayed suggestibility linked to the effect of misinformation on the original memory.

In this review we will present an overview of current literature on suggestibility of children and on the relationship between immediate and delayed suggestibility with the demographic, cognitive, and psycho-social variables that may influence susceptibility to suggestion. Particular attention was paid to studies involving suspected victims of abuse in order to understand the effects of trauma and its consequences, such as the development of post-traumatic stress disorder, on the suggestibility of the child witness.

The main aim of this review is to give a practical guide for forensic experts recommending to follow the indication for an objective evaluation based scientific evidence, such the use of valid instrument for the measurement of the levels of immediate and delayed suggestibility and of basic cognitive abilities (executive functions, attention, memory, language, etc.). Furthermore on the basis of the results this review we aimed to indicate new future research focuses.

Keywords: suggestibility, child, individual differences, misinformation, forensic interview.

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The suggestibility of child witnesses suspected victims of abuse: an overview between research and psycho-forensic implications

Introduction

Scientific studies and the long experience achieved in recent years on the testimony of children suspected victims of abuse highlighted how the way in which are interviewed during their judicial hearing can lead to poor and/or inaccurate testimony which has legal implications in terms of their reliability and testimonial credibility.

Several studies showed even young or preschool children can be capable of giving reliable and accurate testimonies (Lamb et al., 2018). At the same time, the literature clearly highlights how children – like adults too – can be suggestible both by how questions are formulated and by being exposed to post-event information (Grattagliano et al., 2010).

Unfortunately, even today in many cases children continue to be interviewed using suggestive questions, misleading information, repeating the same questions and creating emotional pressure on them (Lamb et al., 2018). These factors can alter the authenticity of children's statements, leading to testimony with distortions and suggestive alterations (Gulotta, 2020).

In cases where a child is a victim-witness, a technical psychological assessment is carried out by an expert on his or her ability to testify. The expert's task is to ascertain the generic and specific skills to testify. It has recently been highlighted that it is central to detect the levels of suggestive vulnerability and to measure how much and how the cognitive and emotional functions can lead a child to resist to internal and external suggestibility (Vagni & Maiorano, 2023).

In preschool children it is increasingly easier to record cognitive and linguistic skills greater than those that could be recorded a few years ago in children of the same age, while the risk of them being suggestible always remains a critical element (Vagni & Maiorano, 2023).

The awareness that testimony requires specific skills has led the field of forensic psychology to identify a more specific assessment that measures children's cognitive abilities, semantic knowledge and recall abilities, to support the clinical evaluation of basic abilities to bear testimony. It is undeniable that today's children are exposed to many more stimuli and forms of learning that facilitate their evolutionary processes, and this leads in the majority of cases to recognizing their adequate generic ability to testify, except in cases where sensory deficits or intellectual and language difficulties emerge.

However, this does not always correspond to a similar ability to resist suggestive vulnerability factors, understood as a specific competence to bear witness.

In this review we will try to explain what suggestibility

is and which social and psychological factors can intervene in making children more vulnerable. The aim is to report the updated contribution of studies on this topic to provide practical indications useful for understanding how children function when faced with suggestive information and what an expert assessment must take into account to provide an expert opinion on the specific suitability for testify about children considering their age, cognitive functions and psychological characteristics.

Theoretical paradigms on suggestibility in the forensic field

Since the 1970s, studies on suggestibility in the forensic field have highlighted an important differentiation between immediate suggestibility and delayed suggestibility (Schooler & Loftus, 1993; Ridley & Gudjonsson, 2013).

We can define immediate suggestibility as the immediate acceptance of the misleading suggestions contained in a leading question, while delayed suggestibility refers to incorporating misleading information into one's memory and, therefore, reporting in a subsequent recollection of the event (Schooler & Loftus, 1993).

The immediate and delayed suggestibility represent the two major paradigms influencing the forensic field. The first is the individual differences approach, which starts from the psycho-social model of interrogative suggestibility (Gudjonsson & Clark, 1986). This approach studies immediate or interrogative suggestibility and examines the factors that determine why individuals respond differently to suggestions within an interrogative context. It starts from the assumption that suggestibility is a characteristic of people (Gudjonsson, 2018) and that it depends on the coping strategies that people can generate and implement when faced with the uncertainty and expectations of a formal interrogation.

The second approach, called experimental, originated from the works of Loftus and coll. (1974, 1992) and focused on understanding the mechanisms underlying delayed suggestibility. In particular, through the study of the effect of post-event information on the memory of the witness, the emphasis is placed on understanding the conditions (for example the similarity between the event and the misleading information or the plausibility of the latter, the credibility of the source) in which suggestive and inducing questions are able to modify the verbal reports of the witness as well as the underlying mechanisms (discrepancy detection) that influence this

process (Davis & Loftus, 2007; Schooler & Loftus, 1993).

Although they start from different theoretical assumptions, the two approaches should not be considered mutually opposed, but rather complementary (Schooler & Loftus, 1993), as the experimental paradigm ignores the way in which individual variables influence suggestibility, while the individual differences approach does not address the mechanisms underlying the incorporation of post-event information into the original memory.

Several studies investigated the relationship between the two different types of suggestibility for to identify the processes involved and to highlight the common and different factors. Some studies highlighted, for example, how both immediate and delayed suggestibility are due to the failure of source monitoring, i.e. the ability to identify the source from which the memory of a certain event comes (Gudjonsson, 2003, 2021; Schooler & Loftus, 1993; Chrobak & Zaragoza, 2013).

According to Gudjonsson (2003, 2022), the main mechanism underlying interrogative suggestibility is poor source monitoring, and more precisely “source confusion”, as suggestive questions lead interviewees to make incorrect attributions of sources based on familiarity through semantic networks, rather than making systematic and accurate source monitoring judgments before responding.

Schooler and Loftus (1993) define this cognitive mechanism as that of “discrepancy detection”. The inability to grasp the discrepancy between what they observed and what was suggested to them through the misleading questions leads interviewees to accept the suggestions and incorporate them into their original memory (Gudjonsson, 2003, 2018, 2021).

Although the failure of source monitoring seems to be at the basis of both types of suggestibility, the results of some studies suggest that there are substantial differences between the two constructs, which in fact appear to be little correlated with each other (Lee, 2004; Gudjonsson et al., 2016; Vagni et al., 2015) and influenced by different psychological variables (Ridley & Gudjonsson, 2013)

The Gudjonsson and Clark’s model of the interrogative suggestibility is psychosocial and refers to the coping strategies that the interviewee can generate and implement when faced with uncertainty and expectation during questioning (Gudjonsson, 2003).

The Gudjonsson and Clark model postulates that three factors must be present for a suggestible response to occur: uncertainty, interpersonal trust and expectation of success. Uncertainty means when the person being questioned does not know with certainty the right answer to give to the question. This happens, for example, when the memory trace is incomplete or non-existent.

Interpersonal trust is another important prerequisite for giving in to suggestion and occurs when the interviewee believes that the interrogator’s intentions are genuine and that the interrogation does not involve tricks or pitfalls (Gudjonsson & Clark, 1986)

The credibility of the source of information is related

to the interpersonal trust component within the Gudjonsson and Clark (1986) model. There is evidence that children are more likely to incorporate misinformation if it is presented by a credible source (Ost et al., 2005).

Finally, the expectation of success, is an essential prerequisite for the occurrence of a suggestive response. Uncertainty and interpersonal trust are necessary conditions, but not sufficient to put a person in a position to give in to a suggestion. In fact, if the interviewed was uncertain about the answer to give to a certain question, he could declare his uncertainty by answering with the phrases “I don’t know”, “I’m not sure” or “I don’t remember” . However, many people are reluctant to express their uncertainty because they believe that: they must provide a clear answer; others expect them to know the answer to that question and to be able to give it.

One effective way of increasing resistance to suggestions to specific questions in both children and adults is to issue a warning prior to the questioning that questions asked would be difficult and ‘tricky’ and they should only give answers to questions that they truly remembered (Warren et al., 1991). This may increase the critical analysis of the specific question and can lower expectations of success (Hekkanen & McEvoy, 2002).

The Gudjonsson and Clark’s model (1986) introduced two new aspects of interrogative suggestibility: the impact of suggestive questions that leads to accept the leading questions (this is Yield score) and the effect of negative feedback, which leads to changing the answers previously given.

According to this model, there are two factors of suggestibility: yielding, which is the tendency to accept leading questions (Yield), and Shift, which is the tendency to change the given answers following negative feedback (Gudjonsson, 1997).

Gudjonsson created a tool for evaluating these two factors: the Gudjonsson Suggestibility Scales in two parallel forms GSS 1 and GSS 2 (Gudjonsson, 1997);-but it is recommended that the GSS 2, which is comprised of a simpler and more neutral story than the GSS 1, should be used for children and people of low intelligence (Gudjonsson, 1997).

The GSS 1 and GSS 2 both contain a short narrative (story), followed by 20 questions, 15 of which are leading questions (Gudjonsson, 1997).

Traditionally, the GSS measures include ‘immediate recall’, delayed recall’ of approximately 50 minutes, Yield 1 (i.e., yielding to leading questions before negative feedback is implemented), Yield 2 (i.e., yielding to leading questions after negative feedback), and Shift (i.e., the number of distinct changes to questions after negative feedback, irrespective of direction).

More recently, delayed suggestibility’ measured at one-week follow-up has been added to the GSS 2 (Vagni et al., 2015; Gudjonsson et al., 2016). It “refers to the extent to which the person incorporates misleading post-event information into their subsequent recollection”

(Gudjonsson, 2018, p. 82). This allows to measure both immediate and delayed suggestibility with a single instrument, which can be very useful in the forensic field.

In the scientific panorama there is growing interest in investigating how children respond to leading questions and in particular what resistance responses they can express (Gudjonsson et al. 2021, 2022; Vagni et al. 2023).

According to the Gudjonsson and Clark model (1986), there are two main types of behavioural response to leading questions and negative feedback: 'suggestible behavioural response' (SBR) and 'resistant behavioural response' (RBP). SBR is referred to as acceptance of leading questions and RBP as resistance to suggestions (Gudjonsson, 2003).

When asked leading questions interviewees can yield to the suggestion in three main ways: (a) they can reject the suggestion simply saying 'no' (NO answers); b) they can admit they 'don't know' (DK answers); c) they can give a direct explanation by saying for example that what is suggested was not mentioned or didn't happen (DE answers). These three main types of resistant response to leading questions on Yield 1 and Yield 2 (DK, DE, and NO answers) can be readily measured by the GSS scales (Gudjonsson, 1997; 2003).

The Resistant Behavioural Responses (RBR) is a model based on source monitoring framework (SMF; Johnson et al. 1993), that refers to cognitive processes involved in making attributions about the origins of mental experiences (Johnson et al., 1993). According to this model it is possible to hypothesize that people with high ability of source monitoring of information could refuse the leading question by providing Direct Explanations (DE answers) and not just saying No.

According to this model, a study of Gudjonsson et al. (2022), showed that NO, DE e DK answers are different and independent response style that have different effects on resistance to leading questions because of they are driven by different cognitive processes.

Many studies are concerned with DK answers, such as RBR in children (e.g. Earhart et al., 2014; Waterman & Blades, 2011). DK answers may be appropriate and helpful, but nevertheless could indicate a problem with 'source monitoring' because of a failure to identify the discrepancy between what they observed and that subsequently suggested to them by the interviewer. Literature showed how younger children have difficult answering "don't know" and declaring their uncertainty, probably due to their poorer understanding of unanswerable questions and greater expectation that they must provide either 'yes' or 'no' answers (Ceci & Bruck 1993). The ability to give DK answers grows with age (Waterman & Blades, 2011; Gudjonsson et al. 2022) and that suggests that it presents a natural development of cognitive functioning (Roberts, 2002).

Few studies, however, have focused on DE answers in children (Gudjonsson et al., 2022; Vagni et al., 2023). In a recent study, DE answers showed the most consistent and robust challenge to leading questions and

interrogative pressure and unlike the other RBRs were correlated saliently with both IQ and immediate recall (Gudjonsson et al., 2022).

These findings suggest that DE answers are driven by different processes and mechanism than DK and NO answers. In particular, DE answers require that the children recognize the discrepancy between what was observed and that suggested and can articulate an appropriate explanatory resistant response, showing effective strategic source monitoring and control processes (Koriat et al., 2001). Because they require more complex cognitive skills, DE answers are used more by older children (Gudjonsson et al., 2022; Vagni et al. 2023).

The relationship between suggestibility and other socio-psychological variables

According the literature, both immediate and delayed suggestibility can be influenced by individual, cognitive or emotional characteristics, but also by social factors. However psychosocial factors would have a greater influence on immediate suggestibility rather than delayed suggestibility (Vagni & Maiorano, 2023).

Several studies have investigated the relationship between different variables and immediate suggestibility, measured by the GSS, to understand the factors that can lead people to reject or accept leading questions; other studies have focused on the relationship with delayed suggestibility according to the experimental approach proposed by Loftus (Eisen et al. 2013; Ridley & Gudjonsson, 2013). For a long time the two models of suggestibility deriving from two different paradigms were studied separately and sometimes the results even appeared divergent from each other. Only a few studies have examined both constructs through the additional innovative procedure added in the administration of the GSS (Vagni et al. 2015; Gudjonsson et al., 2016; 2020, 2021, 2022).

According to Gudjonsson (2018) suggestibility is not a personality trait but a psychological characteristic which can be influenced by various factors.

The variables of greatest interest that can influence immediate and delayed suggestibility in children will be analyzed below, in order to present an exhaustive reconnaissance review of the factors that can increase or decrease suggestibility, trying to build a compass that guides the expert in the evaluation of the children involved as eyewitness or victims in forensic context.

Demographic variables

In order to demographic variables, the literature supports that they are not consistent predictors of suggestibility in children as evidenced by research examining race, socio-economic status, and gender (Bruck & Melnyk 2004; Hritz et al., 2015; Klemfuss & Olaguez, 2020). In particular, in order to immediate and delayed

suggestibility in children measured through the GSS (Gudjonsson et al., 2016) emerged only very weak effects of gender on Yield 1 and 2, but no effect on Shift and delayed suggestibility.

Age

The analysis of the relationship between age and suggestibility represents a very important aspect in the study of children's suggestibility (Caso et al., 2013; Goodman et al., 2014). Some studies showed that younger children are generally significantly more vulnerable to misleading questions and the misinformation effect than older children (Ceci et al., 2007; Goodman et al., 2014). There could be three possible explanations behind this trend. Firstly, according to the hypothesis that younger children have weaker memory traces of an event than older children, remembering events worse, and therefore could be less resistant to suggestive factors (Goodman et al., 2014). Furthermore, as supported by Bruck and Ceci (2015), the second reason is to be found in the fact that younger children are probably more influenced by social pressure, the lack of social support and the presence of authoritarian figures (see Caso et al., 2013). In support of this thesis, the study by Vagni et al. (2023) highlighted how children from 12 years old can learn to reject leading questions more while their vulnerability to criticism and social pressure tends to remain constant.

The third explanation refers that younger children have fewer language skills and less developed cognitive abilities than older children, and therefore cognitive immaturity can impact the ability to complete the tasks required during an interview (Arterberry, 2022). According to Hirtz et al. (2015), it can be argued that chronological age emerges as a strong predictor of suggestibility in several studies (Ceci et al., 2007), but it has not always been demonstrated that suggestibility decreases with increasing age. Several studies have shown that older children, and often also adults, may be more suggestible than younger children (Brainerd et al., 2008). According to Gudjonsson (2003) the effect of age seems to have a negative impact up to the age of 12 on immediate suggestibility, while subsequently the performance of children over the age of 12 is similar to that of adults. Lee (2004) found that age predicts immediate suggestibility, but not delayed suggestibility. This effect also emerged in the study by Gudjonsson et al. (2016). Gonzalves et al. (2022) highlighted that generally with age children's memory performance tends to increase and suggestibility to decrease (Eisen et al., 2007), however the effects of age can be influenced by cognitive, social and contextual factors such as background knowledge (Brainerd et al., 2008), embarrassment (Saywitz et al., 1991), familiarity (Cordón et al., 2016) and distress (Chae et al., 2018) which can increase, take out or even reverse the effects of age. Increasing age favors more resistant responses such as

direct explanation (Gudjonsson et al., 2022; Vagni et al., 2023).

Memory

The relationship between suggestibility and memory is complex, and as suggested by Ridley and Gudjonsson (2013) the impact of memory on the both immediate and delayed suggestibility is different, and the literature underline that there is no clear association between memory and suggestibility in children (Bruck & Melnyk, 2004; Klemfuss & Olaguez, 2020). Several studies on adults showed that poor memory is more associated with immediate suggestibility, and specifically with accepting the leading questions, and that people with limited memory capacity are more suggestible than those with normal capacity (Ridley & Gudjonsson, 2013). Different considerations can be put forward on the association between memory and delayed suggestibility. According to Schooler and Loftus (1993) delayed suggestibility and memory are positively associated in a complex way, and therefore a good memory can increase levels of suggestibility since suggestions are also recalled more easily. Furthermore, according to the authors, even poor memory can facilitate the incorporation of post event information especially those presented more recently and those more accessible during the recall phase. However some specific studies on delayed suggestibility and memory in adults have highlighted a negative relationship between poor memory skills and the construction of induced false memories (Zhou et al. 2010). Others studies have not detected any association between memory and delayed suggestibility (Eisen et al. 2013). Furthermore, no clear results emerge from studies that have analyzed the relationship between suggestibility and memory in children (Klemfuss, 2015; Melinder et al., 2005). Given the different findings of the studies, it seems to be good practice in forensic research and evaluation to always take into consideration the relationship between memory and suggestibility (Vagni et al., 2021).

The relationship between memory and suggestibility also involves the source monitoring ability. The Source Monitoring model Framework (Johnson et al., 1993) describes the process of distinguishing between information stored in memory from what has been heard by others or what has happened dreamed or imagined. This ability allows you to discriminate between the actual perception of an event and the imagined version of a memory. Source monitoring errors can lead to the production of memory distortions, confabulations and false memories. Source monitoring includes also reality monitoring which concerns the ability to discriminate events external, i.e. based on perceptual memories, from internal memories, i.e. imagined and the result of inventions and/or cognitive inferences (Nahari, 2018). The witness can be exposed new information suggested by others and undergo the reconstructive process of memory, for which it will have to be able to distinguish which

information is present in his original memory and which were introduced from a different source. The ability of source monitoring increases with age (Sugrue et al., 2009). Therefore, younger child witnesses could not have the cognitive skills necessary to engage in processing that allows them to distinguish between different sources (Earhart & Roberts, 2014). Furthermore the production of confabulations seems to be associated with memories of events experienced as confused and this happens when there is a difficulty in source monitoring (Vagni & Maiorano, 2023).

A new tool for measuring autobiographical narrative skills in children was recently validated (Vagni & Maiorano, 2023; Vagni, Giostra & Simione, 2024). The CRAM test (Children Recalling Autobiographical Memory) measures the ability to report the where, when, what, who and how for each personal event with respect to retrospective and prospective memory. The theoretical model of autobiographical memory of reference is that of Conway and colleagues (Conway et al., 2008).

The results highlighted how high autobiographical narrative skills had a protective effect with respect to immediate suggestibility, according to the study by Kulkofsky and Klemfuss (2008), but not with respect to delayed suggestibility. These results confirmed how the cognitive mechanisms linked to the two forms of suggestibility are different and independent.

Intelligence

Intelligence is associated with the development and maturity of various cognitive abilities but does not always predict adequate memory capacity and resistance to suggestibility factors. Intellectual deficits tend to favor a greater production of distortions and fabrications especially in tasks of recalling semantically learned events, but only in cases of severe cognitive delay is it associated with greater suggestive vulnerability (Vagni et al., 2021)

Although research showed that children with disabilities intellectuals were more inclined to make errors when asked suggestive questions and misleading compared to normally developing children (London et al., 2013). However the results of recent studies did not always were in this direction. According to Klemfuss & Olaguez (2020) the intelligence, and in particular verbal intelligence, is associated with suggestibility.

Gudjonsson (2003) and examined the relationship between immediate suggestibility and IQ, found that lower intelligence quotients were positively correlated with interrogative suggestibility. In particular this emerged for yield score that, unlike the shift, would seem to be more associated with cognitive factors. However, in a more recent study, Gudjonsson and Young (2010) found only a very weak correlation between intelligence and GSS (Gudjonsson, 2013).

In some studies children with moderate intellectual disabilities were more suggestible than children with normal intelligence matched by age (Milne et al., 2013;

Henry and Gudjonsson, 2007; Giostra and Vagni, 2024), while children with mild disabilities who did not present differences when compared with the control group (Brown et al. 2012; Robinson & McGuire, 2006). Some studies, however, indicated that there are often no differences between children with intellectual disability and children with typical development in relation to performance on open-ended questions (Bruck & Melnyk, 2004; Hritz et al., 2015).

Children with intellectual disabilities may be accustomed to experiencing failures in their performance and this can avoid high expectations of success which in the paradigm of interrogative suggestibility can favor greater vulnerability. At the same time, these children may have low source monitoring skills, experiencing uncertainty and low confidence in their own abilities, leading them to accept leading questions and misinformation.

The results of the various studies seem to highlight how in the forensic field the simple evaluation of cognitive abilities cannot be considered sufficient to evaluate testimonial skills. It is therefore necessary to verify the child's tendency to yield the suggestive questions, to resist socio-emotional pressures, and to reject misinformation from the original memory.

Language

Language skills are another important cognitive factor related to children's memory and suggestibility in forensic contexts. In order to understand the relationship between language and suggestibility, we report the results of a recent literature review conducted by Perez et al., (2022) who examined studies on memory, suggestibility and testimony in developmental age over the last thirty years to identify the models that explain how language skills influence children's memory of events and suggestibility. This meta-analysis highlighted that language skills are an important predictor of memory and suggestibility of child witnesses. In particular, specific domains of language in children are correlated differently with memory and suggestibility. From this meta-analysis it emerged that linguistic skills are more consistently correlated with children's accuracy during free recall. Higher linguistic skills could decrease the tendency to change the responses after negative feedback, while comprehension linguistic skills are more correlated with children's production of accurate responses to direct and non-suggestive questions. The narrative skills also were instead associated with both increases and decreases in children's levels of suggestibility depending on the type of narrative.

Perez et al. (2022) highlighted that it is not possible to draw clear conclusions regarding the relationship between general language skills and the effect of negative criticism in children. Comprehension and expressive difficulties could make children more vulnerable to changing their responses following negative criticism (Melinder et al., 2005). Therefore, in light of this meta

analysis, we suggest that great care must be taken with children who present difficulties in linguistic production and comprehension, since a negative criticism or even the simple repetition of a question, could affect the ability to confirm own answers, without changing them. Finally, with respect to general linguistic abilities, it emerged that in relation to the susceptibility of children to misinformation, those help mitigate the effects of the suggestions provided by the interviewers, but are not related to the resistance of children to nonverbal suggestions (Roebbers & Schneider, 2005).

Executive functions

The executive functions are mental process that involve: the ability to process, maintain and control selectively information in order to perform a task, the skill planning and programming of actions to achieve a goal, ability to inhibit an action, problem solving, self-control, selective and sustained attention, attentional shifting, self-monitoring and error detection, the inhibition of automatic responses and abilities decision-making (Vicari & Di Vara, 2017). According to Arterberry (2022) executive functions influence suggestibility, and in particular are implicated in the ability to inhibit the tendency to say “yes” to a leading question. Furthermore, Chae and colleagues (2018) argue that deficits in executive functions can influence children’s vulnerability to interviewer pressure to leading questions (Karpinski & Scullin, 2009). In light of these considerations, it could therefore be stated that children with deficit executive functions could showed a tendency to respond quickly and without thinking to questions, and who are more likely to be influenced by social pressure during forensic interviews, answering each question affirmatively showing to be compliant to the interviewer. On the contrary children with well-developed executive functions are able to avoid responding impulsively, since the ability to inhibit responses the time necessary to reflect on the discrepancy between an interviewer’s suggestions and their own memory of an event, and allows them reasoning and reject suggestions. However, as Klemfuss and Olaguez (2020) argue, the results on the relationship between executive functions and suggestibility are not univocal. For example, some studies (Karpinski & Scullin, 2009; McCrory et al., 2007) demonstrated that the executive function predict resistance to suggestibility in children, while other found results did not support the hypothesis that children with poor functioning executives are more suggestible, and in particular Caprin et al. (2016) in a sample of children, found significant negative correlation only between yield, shift and total suggestibility (GSS2) with digit span score unlike other executive functions.

Theory of mind

Theory of Mind (ToM) can be defined as the cognitive ability to reason about mental states and worthy

others and understand that others can have states different from one’s own. This skill generally acquired within five years of age (Astington, 1993). Theory of mind involves the acquisition of awareness that the mind guides knowledge, beliefs and desires which guide actions. This skill allows us to consider that people can have beliefs and desires different from ours and that ours could be erroneous and false (Hughes & Devine, 2015). As supported by Vagni and Maiorano (2023) on the level of evolutionary development, among the necessary skills that allow in the forensic context to be able to give testimony, the development of a theory of mind represents for children a guide in understanding that others may not know what happened in relation to the event for which they are interviewed (Arterberry, 2022). Therefore, capacity to understanding false beliefs can be particularly relevant in an interview context, particularly when questions are asked misleading (Arterberry, 2022). According to London and colleagues (2013), children with competence to understand the existence of false beliefs in others, can be able reject a false suggestion made by an interviewer and consequently be less suggestible. Several studies analyzed the relationship between suggestibility and theory of mind, founding mixed results, which showed that there is a complex relationship between the two variables and that it is conditioned by other cognitive factors, such as executive functions and source monitoring, and situational factors, such as pressure during an interview (London et al. 2013; Klemfuss & Olaguez, 2020; Vagni & Maiorano, 2023). This complex relationship, as Vagni and Maiorano (2023) suggested, can be better understood by summarizing the results of several studies as analyzed by Klemfuss and Olaguez (2020). In fact, Melinder and colleagues (2006) found a negative association between ToM and interrogative suggestibility which however it was no longer significant after controlling for the two variable age and executive functions. However in the study by Bright-Paul and coll. (2008) emerged that the ToM predicted resistance to suggestions even controlling the age variable. Karpinski and Scullin (2009) also showed that, controlling for age, children with better executive function were overall less suggestible during the suggestive interview e that after negative feedback older children and with a theory of mind more developed were less suggestible, while another study (Klemfuss et al., 2016) found no association between ToM and interrogative suggestibility among children.

Anxiety and depression

Witnesses and victims of a crime can develop negative emotional states, such as anxiety during the event, in the investigation phase, when they are heard to give their statements, or during the trial in the courts (Vagni & Maiorano, 2023). It is important to define the concept of anxiety, dividing into “trait”, which refers to the personality structure and which indicates a person’s

general anxious expression, and “state” which refers to the anxiety felt at a given moment and in a specific situation. Ridley and Gudjonsson (2013) highlighted that high trait anxiety is associated with a greater vulnerability both to the leading questions and negative feedback (Gudjonsson, 1988; McGroarty & Thompson, 2013), while on the contrary high levels of state anxiety are associated with lower levels of delayed suggestibility (Ridley & Gudjonsson, 2013).

Drake (2014) conducted a study that aimed to investigate the role of trait anxiety in the relationship between the reported experience of negative life events and interrogative suggestibility. The study found that negative life events evaluated negatively increased the acceptance to the leading questions and social pressures. Furthermore, the trait anxiety moderated the effect of this negative life events intensity rating on Yield 1 scores.

Some studies conducted on children showed that children between the ages of 8 and 11 who had high levels of state and trait anxiety were more inaccurate when answering misleading questions compared to children with low levels (Almerigogna et al., 2007).

Furthermore, Vagni and Maiorano (2023) underline that among the emotional factors that can influence suggestibility, in addition to anxiety, particular attention must be paid to depression, which according to some studies on adults would increase the levels of immediate suggestibility (Drake, 2011; McGroarty & Thomson, 2013). A recent study (Vagni et al., 2022) showed that while anxiety does not seem to assume predictive power on suggestibility, the effect of depression seems to be significant on Yield 1 but even more significantly on Total Suggestibility and Yield 2.

Coping strategies

The witness's coping strategies are connected to the “general cognitive set” that guides the evaluation of the situation and which affects the choice of coping strategy that can facilitate suggested behavior or help the witness to reject suggestions (Gudjonsson, 2003). Mixed results have emerged in studies on analysis of the relationship between coping strategies and suggestibility involving adult participants. Gudjonsson (1988) found that participants who used avoidant coping strategies were suggestible. Forrester and colleagues (2001) found that coping strategies were not predictors of suggestibility. On the contrary, Howard and Hong (2002) found that the use of an emotional coping strategy made people suggestible. In a more recent study (Bain et al., 2015) a relationship was found between emotion-focused coping and GSS scores (Yield 1, Yield 2 and Total Suggestibility). In relation to delayed suggestibility, Zhu et al. (2010) instead found that false memories were positively correlated with active coping style, but negatively correlated with negative coping, unlike the results obtained by Gudjonsson (1988).

Only one study (Maiorano & Vagni, 2020) dealt with

understanding in children the relationship between immediate and delayed suggestibility measured through the GSS2 and coping styles measured through the Coping Inventory for Stressful Situations (CISS) (Endler & Parker, 1999). The results highlighted that coping strategies were not related to delayed suggestibility, while avoidance-oriented coping positively correlated with immediate suggestibility. Furthermore, avoidance-oriented coping emerged as the only significant predictive model for shift and total suggestibility, and the distraction subscale emerged as the only predictor for yield 1 and yield 2. Therefore, the results of this study highlighted how the use of distraction and avoidance strategies reduces the protective effect of immediate recall and increases immediate suggestibility. The study also showed that both in children and adults – given the convergence of the results with the study by Bain and colleagues (2015) – the use of avoidance coping strategies leads to an immediate increase in levels of suggestibility. Furthermore, in line with other studies, avoidance coping strategies specifically increase both the shift and the total suggestibility score (Gudjonsson 1988, 2018), confirming that avoidance is linked to social and interpersonal pressure factors.

Self-esteem

According to the literature on eyewitness testimony, low self-esteem can affect levels of suggestibility (Hooper et al. 2016; Ridley & Gudjonsson, 2013) but however in agreement with Hooper et al. (2016) although the results of some studies indicate that low levels of self-esteem are associated with high levels of immediate suggestibility, this relationship has not always been found in all studies (Bain et al., 2015; Drake et al., 2008). Specifically, to explain the relationship between self-esteem and suggestibility, it is necessary to focus on the mechanism by which low self-esteem acting on the negative cognitive evaluation of oneself during a forensic interview, and this could happen in particular after negative feedback from the interviewer, could increase the tendency to accept suggestions (Ridley & Gudjonsson, 2013).

The literature review showed unambiguous results regarding the relationship between immediate suggestibility and self-esteem both in children and adults; while the results relating to delayed suggestibility appeared more mixed. This could be due to the fact that misinformation mainly refers to cognitive and memory abilities rather than psychological characteristics.

Trauma and suggestibility

To understand how trauma influences suggestibility, it is necessary to highlight that trauma-related psychopathology can produce serious short- and long-term consequences on the cognitive, emotional and relational functioning of children and adolescents. Melinder and colleagues (2020) showed that post-traumatic symptoms in witnesses were associated with

memory deficits in both children and adolescents (Chae et al., 2011; Eisen et al., 2007). Early traumatic experiences can produce deficits in several areas: regulation emotional, executive functions (attention, learning, problem solving and working memory), autobiographical memory and narrative skills (Ford & Greene, 2017), which we remember are the psychological functions that are evaluated in the minor witness alleged victim of sexual abuse, in order to evaluate their ability to testify in court (Vagni & Maiorano, 2023).

The consequences of trauma-related psychopathology on the cognitive and emotional functions of children and adolescents may influence immediate and delayed suggestibility. A history of maltreatment in relation to age and psychopathology represent potential individual difference factors that could influence the suggestibility of the witness (Goldfarb et al., 2018).

The literature suggests that the results of studies that have focused on the analysis of the effects of trauma on memory and suggestibility have found mixed results. According to some studies, children with post-traumatic stress disorder tend to show poor and imprecise memory performance, as well as high levels of suggestibility (Chae et al., 2014), while in other studies no significant relationship was found as shown for example in the study by Eisen et al. (2007).

Chae and colleagues (2011) found instead that the presence of abuse did not significantly predict children's memory errors and suggestibility if considered as single variable or in interaction with age, but the presence of high dissociation symptoms was associated with the increase of memory errors. Exposure to trauma during childhood can predispose a child to develop high levels of dissociation (Eisen et al., 2007) that is associated with memory problems and greater suggestibility in children and adolescents (Benedan et al., 2018; Chae et al., 2011). Regarding the model of interrogative suggestibility, some studies on samples of adults have analyzed the relationship between immediate suggestibility and negative life events (Drake et al., 2008; Drake, 2011), finding that the tendency to be influenced by negative criticism was linked with exposure to traumatic experiences. Gudjonsson (2003) also highlighted that dissociation can lead to increased levels of immediate suggestibility, particularly in the yield and total suggestibility scores. Furthermore, high levels of dissociation can predict high suggestibility (Dorahy et al., 2015; Hébert et al., 2016) and the association between PTSD and the development of dissociation symptoms can lead child witnesses to be more vulnerable to interrogative suggestibility because it increases their uncertainty and the tendency to satisfy external expectations.

Several studies (Gudjonsson et al., 2020; 2022; Vagni et al., 2015, 2017, 2018) have analyzed the impact of post-traumatic stress disorder on the components of immediate suggestibility and delayed suggestibility. Vagni and colleagues (2018) highlighted that the suggestive interview can represent a condition of high stress,

especially in a forensic context, leading to an increase in levels of suggestibility in child witnesses who present vulnerability linked to a traumatic experience.

Gudjonsson et al. (2020) in another study on a sample of children and adolescent witnesses suspected victims of abuse with a history of reported sexual abuse found that symptoms of trauma significantly increased delayed suggestibility and also found that reporting a sexual abuse is more strongly associated with immediate suggestibility than with delayed suggestibility (Vagni et al., 2015).

Also Vagni et al. (2022) found that children and adolescents with high levels of PTSD showed significant vulnerability also and above all in terms of delayed suggestibility and that the use of dissociative defenses can increase levels of both immediate and delayed suggestibility.

Two other studies have explored the model of interrogative suggestibility also analyzing the qualitative pattern of resistant responses to suggestive questions about suspected victims of abuse (Gudjonsson et al., 2021, 2022) found that children who were suspected victims showed greater difficulty answering "no" to questions after negative feedback.

Vagni et al., (2021) instead analyzed the relationship between traumatic symptoms, fabrications, distortions, immediate and delayed suggestibility, also considering the effect of intelligence, age and memory in a sample of children and adolescents suspected victims of abuse, and the results highlighted that PTSD increased the levels of immediate and delayed suggestibility, but had no effect on immediate recall and that, furthermore, it affected the production of a greater amount of distorted and fabricated information in delayed recall.

We could conclude on the basis of those results that trauma has a significant impact on levels of immediate suggestibility, leading child victims both to give in to suggestive questions and not to tolerate the negative feedback provided at the end of the first suggestive interview, and both in terms of delayed suggestibility (Vagni & Maiorano, 2023). It's important in the case of children with post-traumatic stress symptoms and post-traumatic dissociation to verify the impact of PTSD on immediate and delayed suggestibility. However the presence of PTSD cannot be interpreted as direct confirmation that violence has occurred.

Children suggestibility and forensic implications

The suggestibility of the witness concerns both individual and cognitive characteristics internal to the subject that are stable over time, and social and relational aspects connected to the interaction with the interviewer (Gudjonsson, 2018). Therefore, both social and specific cognitive processes can contribute to producing suggestive effects on the witness in the legal context (Bruck & Ceci, 2015).

According to Gudjonsson (2018), the suggestibility

does not appear as a real personality trait, but as a personal characteristic or tendency that may be more frequently associated with some psychological variables rather than others. Some particular internal conditions, such as having developed traumatic symptoms (Gudjonsson et al., 2020; Vagni et al., 2020, 2021), can increase the levels of both immediate and delayed suggestibility. Even some external conditions, and in particular being subjected to an interrogation (Gudjonsson, 2018) or having the role of witness in the forensic field for children (Vagni et al., 2018), represent conditions where people or witnesses may be more vulnerable to interrogative suggestibility factors and to the effect of post-event information.

Many studies have involved children of different ages in order to detect their vulnerability both to suggestive questions and to post-event information, demonstrating how younger children have a greater tendency to incorporate in their original memory suggestive elements (Loftus et al., 1990).

According to several authors (Ridley & Gudjonsson, 2013; Gudjonsson, 2018), vulnerability to misleading information also refers to difficulties in source monitoring (Johnson et al., 1993). This could explain, how younger children, who do not yet have full developmental abilities to recognize the source of information, may be more vulnerable.

A witness can be exposed to suggestive sources from the first moment of exposure to the crime, and this can be related to several factors: a) emotional states experienced at the time of the event, which affect the accuracy and quality of the memory trace. A fragmented, confused memory trace could more inclined to receive and incorporate more coherent and linear misinformation; b) Prejudices or personal cognitive beliefs, this may for example lead the witness to believe that the offender has some somatic, racial, expressive or physiognomic characteristics, which may not find objective confirmation. c) Co-suggestion factors: if there are multiple witnesses or victims, their interaction can lead them to exchange mutual memories (Grattagliano et al., 2022). d) External sources of suggestion, such as the mass media, the thoughts on what happened by sources considered authoritative or emotionally important (parents, family members, etc.), who try to attribute meaning and reconstruction of what happened. e) Questions and comments from those who collect the revelation. Suggestive questions, repetition of questions, verbal comments and non-verbal messages to what the witness reports both in official settings (judicial hearings) and in informal settings are among the most frequent and incisive factors of suggestibility to which witnesses (including children) are exposed right from the scene of their first revelation.

Sources of suggestion which in any case can concern any witness: anyone who suffers or witnesses a crime tends to talk about it, thus exposing themselves to the effects of suggestive questions, repetitions of questions, reactions and external comments which suggest that the answers

provided may not be clear or credible, feedback or comments that can alter the original memory, reactions of credibility/disbelief to what has been narrated, attribution of meaning by third parties, completion of memories with information deemed more coherent, relevant or clear, etc. All this represents the risk of alteration of the original memory which can contaminate any testimony. In the case of children, this risk seems to be higher, since they appear less capable both of rejecting the suggestibility factors involved in the listening phases and/or in the questions asked of them, and of maintaining accuracy in distinguishing the original information from the posthumous ones. However, suggestibility, being an individual characteristic, does not depend only on age and this may imply that some children may be able to reject sources of suggestion as well as or better than an adult. This refers to individual variability. This is a characteristic which, therefore, must be measured in a specific and targeted way on each minor subjected to expert assessment.

In fact, there is no perfect witness who has no suggestibility. The standardization of instruments that measure suggestibility indicates that the subject capable of resisting is not the one who rejects all suggestions, but rejects the majority of them (Gudjonsson et al., 2016). This suggests that the evaluation of suggestibility cannot be limited to a simple numerical value, but implies having to evaluate multiple psychological factors and how they interact with each other in the individual case. It is not sufficient to claim, for example, that the child was exposed to multiple listening sessions to indicate that he was influenced; it is necessary to evaluate whether and what post-event information or questions actually altered the original memory.

The expert's evaluation must be based on objective scientific evidence, such as the measurement of the levels of immediate and delayed suggestibility, basic cognitive abilities (executive functions, attention, memory, language, etc.) and how they intervene to guarantee resistance or vulnerability. It is also necessary to evaluate the presence of other clinical conditions such as anxiety, depression, post-traumatic stress disorder or other clinical disorders to verify their impact on autobiographical memory processes and on the ability to manage suggestibility factors (Vagni & Maiorano, 2023).

In the forensic context it therefore becomes central to evaluate how a child manages the factors involved in listening or in a suggestive interview, and to what degree the child manages to remain anchored to the original trace or at contrary to incorporate post-event information.

If, on the one hand, we can include many scientific studies that have detected mechanisms linked to both interrogative, immediate and delayed suggestibility in children, in some cases also involving minor victims of abuse and/or mistreatment (McWilliams et al., 2021). However, there are few contributions that have simultaneously measured the suggestive vulnerability to suggestive questions and misinformation of children in a

forensic context that sees them as real witnesses and at the same time suspected victims of abuse.

According to some recent studies (Gudjonsson, 2021; 2022; Vagni, et al., 2023), it appears important not to limit the evaluation only to the suggestibility score, but also to consider his resistant responses. Some responses, such as Direct Explanation, indicate a greater degree of resistance and source monitoring to guarantee that the child's ability to reject suggestions is maintained over time. The ability to provide "Direct Explanation" and "Don't Know" answers are linked to the age and degree of cognitive maturity of the child.

Some individual and psychological variables may be linked to having been exposed to negative life events and having developed as a result some emotional and behavioral manifestations compatible with their state of victimization (Vagni et al., 2020; Gudjonsson et al., 2020; 2021). The psychological reactions to the negative life experiences can affect the skills to manage the internal and external suggestive factors (Gudjonsson et al., 2022). Some studies have highlighted how in children and adolescents having been victims of emotional neglect or sexual abuse leads to low performance in memory tasks, which would tend to appear poor and inaccurate, and this would increase their tendency to give in to suggestive questions (Chae et al., 2011, 2014; McGroarty & Thomson, 2013).

The expert will therefore have to evaluate both internal characteristics and external situations by describing the description of their interaction specific to the individual situation and not by axioms or prejudices.

Conclusion

The overview of the scientific literature presented above highlighted that children's suggestibility is a complex process linked to social factors but also to psychological characteristics. Some socio-demographic factors, such as age, and some individual characteristics can lead the child to be more vulnerable. The intersection of multiple emotional, cognitive and social factors can lead to various scenarios: a) children capable of rejecting both suggestive questions and social pressures during the interview and the misinformation effect; b) children vulnerable to both suggestive interviews and misleading information which leads them to alter the original memory; c) children resistant to the factors of immediate suggestibility but inclined to accept the misinformation effect; d) children who are suggestible by the leading questions and socio-emotional pressures during the interview but who manage to maintain their original memory accurate and unaltered after the suggestive interview; e) children who accept suggestive questions but resist socio-emotional pressures, and vice versa.

The expert's task is to evaluate the child's vulnerability to both immediate and delayed suggestibility factors. It is also the task of the witness expert to indicate and explain

how which cognitive, emotional and social factors can increase the child's suggestive vulnerability or, on the contrary, guarantee resistance.

Factors such as intelligence, linguistic abilities, autobiographical narrative skills, attention, executive functions, emotionality, expectations of success, insecurity, etc. should be evaluated by the expert and related to the individual tendency to suggestibility.

The centrality that the evaluation of suggestibility has in cases of childhood testimony suggests that the measurement procedure must be objective and the interpretation of the results based on scientific studies.

However, it is necessary to highlight how the tools for measuring immediate and delayed suggestibility are based on a learning task and not on autobiographical memory. The results of the learning task should be associated with the narrative autobiographical skills. It appears important to increase studies in this field which deal with child witnesses and which link autobiographical memory, resistance to suggestive questions and the effect of post-event information.

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