Children's memory reports:
The effect of co-witness influence

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Printed in Sweden by Intellecta Infolog
Gothenburg, 2010
ISSN: 1101-718X
ISBN: ISBN 978-91-628-8049-1
ISRN: GU/PSYK/AVH-228-SE

For the e-published version of this thesis go to: http://hdl.handle.net/2077/22205

Abstract

Roos af Hjelmsäter, E. (2010). *Children's memory reports: The effect of co-witness influence*. Department of Psychology, University of Gothenburg, Sweden

Co-witness discussion is relatively frequent, but misinformation in the form of information provided by other witnesses is an under-researched topic. The present thesis investigated how and to what extent children's witness reports were influenced by information from a co-witness. In all four studies, the children were interviewed about a live event they had individually experienced two weeks previously. Some of the children encountered misinformation from a co-witness, and their reports were compared to a control group. In **Study I**, 7 and 12-year old children (N = 174) encountered misinformation from a co-witness whom they met before the interview. The misinformation led the children to add false details to their reports (commission errors), but not to omit true details (omission errors). The children made significantly more errors with respect to a peripheral detail compared to a central one. No differences between the age groups were found. **Study II** investigated the effect of the source of influence (adult vs. child). Before they were interviewed, the children (N = 176, aged 11-12) encountered misinformation via a videotaped interview with a co-witness. This resulted in an increase in both omission and commission errors in the children's reports. Contrary to our expectations, the children were more vulnerable to influence when the co-witness was a peer child, compared to an adult. Moreover, all children who had made a commission error provided additional (incorrect) details when probed for more information. However, true reports were found to be more detailed than false reports. In **Study III**, children (N = 115, aged 10-13) were interviewed together with a co-witness who either provided false details or denied true details. The children were influenced to make omission errors, but not to make commission errors. The effect of influence varied greatly depending on the type of detail. When probing for more details in a subsequent interview, correct reports were found to contain more information than false ones. **Study IV** investigated whether children's recall could be improved by using a self-administered interview protocol (SAI). Immediately after the event, the children (N = 192, aged 11-12) reported their experiences in one of two qualitatively different SAI-forms (SAI-Structured or SAI-Open) or did not report their experiences (control). In an interview two weeks later, children who had previously completed one of the two SAI-forms included more details in their free recall of the event compared to children in the control group. Those who had completed the SAI-Structured form reported the most information. The SAI manipulation did not reduce the children's vulnerability to co-witness influence. Taken together, the results of this thesis show that children are vulnerable to co-witness misinformation and that such influence can result in both omission and commission errors. Therefore, in legal situations, it is crucial that measures are taken to avoid the negative effects of co-witness influence.

Key words: Children's memory, social influence, eyewitnesses, omission and commission errors.

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ISSN: 1101-718X ISBN 978-91-628-8049-1 ISRN: GU/PSYK/AVH-228-SE

Svensk sammanfattning

Vittnesutsagor är den vanligaste, och ofta avgörande, bevisformen i brottmål. Det är därför viktigt att de är både fullständiga och korrekta. Vad ett vittne minns och berättar kan dock påverkas av en mängd olika faktorer. I denna avhandling undersöks en sådan faktor närmare; hur vittnen påverkas av information de får från andra personer. När det gäller barns vittnesmål är utsagorna många gånger korta och knapphändiga i fråga om detaljer. Därför krävs det ofta fler specifika frågor när man intervjuar barn än vuxna. Detta är ett problem eftersom forskning har visat att barn är mer känsliga för påverkan än vuxna, till exempel när det gäller ledande frågor, och det händer att barn ändrar sina svar utifrån vad de tror att den som intervjuar vill höra.

Man kan minnas fel av olika anledningar, och på olika sätt. Vanligast är glömska, till exempel att man glömmer hur en person ser ut, eller att man inte minns vilka som var med vid en viss händelse. Denna typ av fel kallas felaktiga utelämnanden (på engelska omission errors). Men det förekommer också att man ”minns” och berättar saker som inte har hänt, kanske för att man blandat ihop information från olika händelser som liknar varandra. Denna typ av fel kallas felaktiga tillägg (på engelska commission errors). Båda dessa typer av minnesfel kan få allvarliga konsekvenser i rättsliga sammanhang. Om ett vittne inkluderar felaktiga detaljer i sin utsaga kan det leda till att en utredning leds in på fel spår och i värsta fall att en oskyldig person döms. Om vittnet å andra sidan utelämnar information eller förnekar förekomsten av vissa detaljer, kan detta leda till att viktig information förbises, vilket kan förhindra att en utredning kommer vidare. Det är således viktigt att ta hänsyn till båda dessa typer av minnesfel när man studerar ögonvittnens förmåga. Trots detta har de flesta tidigare studier om hur minnet kan påverkas av andra fokuserat på falska tillägg, medan endast ett fåtal studier har undersökt om personer också kan påverkas att utelämna korrekt information. Denna avhandling undersöker båda typerna av minnesfel.

Avhandlingen baseras på fyra experimentella studier där barn i åldrarna 7-13 intervjuades om en händelse de varit med om två veckor tidigare. Innan intervjun fick barnen ta del av ett annat vittnes berättelse och vi undersökte om barnen påverkades av vad denna andra person berättade. Med andra ord: berättade barnen i intervjun som det faktisk var, eller som den andra personen sagt att det var?

Den händelse som barnen var med om var i princip densamma i alla fyra studierna. Den bestod i att varje barn gick ut från skolan och där träffade en man som stod bredvid en bil. Mannen visade några leksaker som han hade med sig i bilen och bad barnet om råd angående vilken av leksakerna han skulle välja som

present till en femåring. Två veckor senare intervjuades varje barn om sitt minne av händelsen. Innan barnen intervjuades fick några av dem ta del av ett annat vittnes berättelse. Vad det andra vittnet sade var i huvudsak korrekt, men utsagan innehöll vissa felaktigheter. Vittnet påstod för vissa barn att detaljer som inte förekommit inom ramen för händelsen faktiskt hade förekommit. Om barnen accepterade och i en senare intervju uppgav denna information, gjorde de ett commission-fel, ett falskt tillägg. För andra barn berättade vittnet att detaljer som hade förekommit under händelsen inte hade förekommit. Om barnen accepterade denna typ av felaktig information, gjorde de ett omission-fel, ett felaktigt utelämnande.

I **Studie I** jämfördes barn från två åldersgrupper (7- och 12-åringar, totalt 174 barn) samt två olika detaljer (en central och en perifer). Innan de intervjuades om händelsen träffade barnen återigen mannen från omgång ett, och han berättade sin version av händelsen. Resultaten visade att informationen från mannen påverkade barnen att göra falska tillägg, men den påverkade dem inte att göra felaktiga utelämnanden. Barnen gjorde färre antal fel angående den centrala detaljen, jämfört med den perifera. Det var inga skillnader mellan yngre och äldre barn.

I **Studie II** fick barnen (176 barn i åldern 11-12 år) innan intervjun se en videoinspelad intervju med ett annat vittne. Det andra vittnet var antingen en vuxen eller ett barn i samma ålder som de deltagande barnen. Resultatet visade att informationen från det andra vittnet påverkade barnen att göra både felaktiga tillägg och utelämnanden men att de var mindre känsliga för påverkan från det vuxna vittnet än från barnet. När de tillfrågades om ytterligare information angående de (sanna eller felaktiga) detaljer de rapporterat visade det sig att alla barn kunde ge mer utförliga beskrivningar av detaljerna i fråga, men att de sanna rapporterna var något mer utförliga än de felaktiga.

I **Studie III** intervjuades barn (115 barn, ålder 10-13 år) tillsammans med en vuxen som bevittnat händelsen samtidigt som barnet. Informationen från det andra vittnet påverkade barnen att göra felaktiga utelämnanden, men inte att göra tillägg. Effekten av påverkan mättes med avseende på fem olika detaljer och resultatet visade att det var stor variation beroende på typ av detalj. Till exempel gjorde barnen mycket få fel när det andra vittnet gav felaktig information angående om det funnits en passagerare i bilen eller inte, medan fler än hälften gjorde fel angående huruvida det funnits en väska i bilens baksäte. I en uppföljande intervju där barnen intervjuades enskilt fann man att barnens sanna utsagor innehöll mer information än de falska.

I **Studie IV** utvärderades effekten av en själv-administrerad intervju (SAI). SAI är ett intervjuformulär där barnen på egen hand skriver ner sitt minne av händelsen. I studien undersöktes om detta kunde hjälpa barnen (192 barn, ålder 11-12 år) att i en senare intervju vara mer detaljerade när de berättade om händelsen samt att bättre stå emot påverkan från andra. Resultatet visade att de barn som använt en SAI mindes fler detaljer om händelsen än barnen i kontrollgruppen. Det var ingen skillnad mellan grupperna med avseende på deras förmåga att stå emot påverkan från ett annat vittne.

Sammantaget visar studierna i denna doktorsavhandling att barn är känsliga för påverkan från andra vittnen. Dessutom visar avhandlingen att påverkan från andra personer kan få barn att göra både felaktiga tillägg och felaktiga utelämnanden. Eftersom båda dessa typer av minnesfel kan ha allvarliga konsekvenser i rättsliga sammanhang, är det viktigt att utredare är medvetna om möjligheten att barn kan begå dessa fel och vilka åtgärder som bör vidtas för att undvika negativa effekter av social påverkan. Vidare visar avhandlingen att hur känsliga barn är för påverkan till stor del beror på vilken typ av detalj det rör sig om. Å ena sidan kan barn vara mycket känsliga för påverkan angående en perifer detalj, men när de å andra sidan berättar om centrala detaljer från en händelse de själva deltagit i, kan deras utsagor i hög grad vara tillförlitliga. Avhandlingen visar också att man med enkla metoder kan hjälpa barn att minnas bättre och berätta mer, t.ex. genom att använda en SAI.

Acknowledgements

This thesis would not have evolved without the influence and help of others. Therefore I would like to thank:

My supervisor Professor Pär Anders Granhag, for welcoming me as a Ph D student and for sharing his knowledge, time, and enthusiasm. But most of all for always believing in me.
Assistant supervisor Associate Professor Leif A. Strömwall, for encouragement and support. It was one of your lectures that got me interested in the topic of forensic psychology in the first time.
The members of CLIP: Professor Pär Anders Granhag, Associate Professor Leif A. Strömwall, Dr Karl Ask, Dr Sara Landström, Dr Lina Leander, Anna Rebelius, Franziska Clemens, Lisa Öhman, Helene Alfredsson, Sara Svedlund, Melanie Kneips, Tuule Soniste, for sharing valuable knowledge of forensic psychology and of academic life. But even more for fun and friendship! Sara, thanks for being my mentor and role model.
My friends and colleagues at the department of psychology, for making work a good place to go to.

Special thanks to all the children who participated in the studies, as well as their parents and teachers. And all of you who have helped me carrying out the studies: Amanda Harde, Anna Rebelius, Björn Sjödén, Erik Adolfsson, Franziska Clemens, Henrik Silfverstolpe, Ida Roos af Hjelmsäter, Jasmina Ericsson, Kristin Andersson, Lilith Edwinsson, Lina Leander, Lisa Öhman, Lukas Johnsson, Malin Karlén, Maria Dellenmark Blom, Maria Harde, Marizela Kljajic, Moa Persson, Ola Nyström, Sara Landström, Sara Svedlund, Sofia Molin, Therese Gunnarsson, Tobias Ekberg, Tove Hasselblad.

My friends and family. To write a thesis is not difficult. What's difficult is to write a thesis *and* keep your friends. That takes special friends and you are! Thank you! Special thanks to Martin for love and support at times when I needed it most.

The research presented in this thesis has been financially supported by the Swedish Council for Working Life and Social Research (FAS).

Emma Roos af Hjelmsäter
Göteborg, April 2010

List of publications

This thesis consists of a summary and the following four papers, which are referred to by roman numerals:

I. Roos af Hjelmsäter, E., Granhag, P.A., Strömwall, L.A., & Memon, A. (2008). The effects of social influence on children's memory reports: The omission and commission error asymmetry. *Scandinavian Journal of Psychology*, *49*, 507-513.

II. Roos af Hjelmsäter, E., Granhag, P.A., & Strömwall, L.A. (2009). Was the stranger alone? On how different sources of social influence affect children's memory reports. *Social Influence, 4*, 155-169.

III. Roos af Hjelmsäter, E., Granhag, P.A., & Strömwall, L.A. (in press). Co-witness influence on children's memory reports: The difference is in the details. *Journal of Applied Social Psychology*.

IV. Roos af Hjelmsäter, E., Strömwall, L.A., & Granhag, P.A. (2010). *The self-administered interview: A way to improve children's eyewitness performance?* Manuscript submitted for publication.

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Introduction

In September 2003, the Swedish foreign minister Anna Lindh was attacked and murdered. As the attack took place in a busy department store, there were many witnesses. The police soon arrived at the scene and immediately began their investigation. Two hours and 29 minutes after the attack a national alarm was sent to all police units. In this alarm the perpetrator was described as male, 180-185 cm tall, well built and having a Scandinavian appearance with ash-coloured hair. This vague description applies to tens of thousands of men in Stockholm. But the alarm also contained another, more specific, piece of information, namely that the perpetrator was wearing a camouflage patterned military jacket. This piece of information was used by the police in their search for the perpetrator, for example when questioning hundreds of potential witnesses outside the mall. However, this particular piece of information turned out to be incorrect. In fact, the tape from one of the surveillance cameras shows that the killer was actually wearing a grey sweater. Regrettably, the incorrect information led the police in the wrong direction, with the result that the immediate search was a complete failure.

How could this incorrect piece of information make its way into the national alarm? To start with, the key witnesses were gathered into a small room immediately after the attack in order to ensure that they did not leave before being questioned. Unfortunately, this provided them with an opportunity to talk to each other. We now know that one witness - who had been standing very close to Anna Lindh - told the other witnesses that the perpetrator had a sort of military appearance and that he was wearing a camouflage patterned military jacket (Granhag, Memon, & Roos af Hjelmsäter, in press). Given the circumstances, it seems likely that other witnesses were influenced by this piece of information. When several witnesses mentioned the perpetrator's military appearance in the subsequent police interviews, the logical conclusion would be that this information was correct. Thus, it is reasonable to assume that the incorrect information in the national alarm was the direct result of co-witness influence.

There were also other forms of social influence at play during the initial investigation. Some of the witnesses were interviewed in such a way that other witnesses could overhear. For example, among the witnesses were a mother and her teenage daughter. The mother was interviewed first, while the daughter waited in the same room. The mother described the perpetrator as follows: "he was not athletic", "his clothes were baggy" and his hair "had once been very short, but then left to grow". The daughter recalled that the perpetrator "was not athletic", had

"baggy clothes" and that "his hair had been short, but was now long". That is, the daughter's description of the perpetrator was almost identical to that of her mother. A likely explanation is that the daughter had been influenced by what she had heard her mother report (Granhag et al., in press).

The example above clearly demonstrates that people can be influenced by information from other witnesses. Moreover, it shows that such influence can have serious consequences. The Anna Lindh example is somewhat atypical in that the victim was a high-profile politician. However, it is typical in two ways: it was witnessed by a number of persons and the witnesses shared their experiences with each other. Surveys of eyewitnesses to real-life criminal events have shown that most crimes are witnessed by several persons and that these witnesses often discuss their experiences with each other (Paterson & Kemp, 2006a; Skagerberg & Wright, 2008). This sets the stage for co-witness influence in many real-life cases.

The present thesis

In spite of the relatively frequent occurrence of co-witness discussion, misinformation in the form of information provided by other witnesses is an under-researched topic (Candel, Memon, & Al-Harazi, 2007). Moreover, children are often considered even more vulnerable to social influences than adults (e.g., Bruck & Ceci, 1999; Ceci & Bruck, 1993). The aim of the present thesis is to investigate how and to what extent children's witness reports are influenced by co-witness information. In order to do so, both cognitive and social psychological knowledge is required. The thesis is organised as follows. First, the term social influence will be introduced and discussed, followed by a review of theories that can be used to explain its effects. Second, I will discuss different types of memory error, with a focus on errors of omission (leaving out accurate information) and commission (including false information). Third, I will address the issue of children's abilities to provide witness reports. I will discuss some factors that have been found to moderate the effects of social influence on children's reports, as well as methods aimed at improving children's recall. Fourth, I will summarize the empirical studies and conclude with a general discussion of the main results.

Social influence on memory reports

Information that originates from another person is often referred to as social influence. Such influence can be encountered in various ways and, accordingly, many different terms have been used in experimental work on this topic. One distinction that can be made is between *suggestibility* and *misinformation effects*. The term suggestibility often refers to situations where people submit to information suggested to them during interviews (e.g., Bruck & Ceci, 1999; Saywitz & Lyon, 2000). Such information can be conveyed in different ways during interviews. For example, early studies by Elizabeth Loftus showed that subtle manipulations such as changing the wording of questions can influence what a witness reports (e.g., Loftus, 1975; Loftus & Zanni, 1975). Biased interviewers, for example interviewers who hold à priori beliefs about the occurrence of certain events, can also influence interviewees to provide certain kinds of information. To illustrate, when children are questioned by a biased interviewer who has false beliefs, they often provide inaccurate reports that are consistent with the interviewer's view (for a review, see Ceci & Bruck, 1995).

Misinformation, on the other hand, usually refers to people reporting erroneous information they have encountered after the event, but before the interview (as in the Anna Lindh case). A witness might encounter information about the event in question from a number of sources, including the media, other witnesses, lawyers, or the police (Sutherland & Hayne, 2001). Several experimental studies have referred to this as *post-event information* (PEI) (e.g., McCloskey & Zaragoza, 1985; Merckelbach, van Roermund, & Candel, 2007; Wright, Loftus, & Hall, 2001). Other studies have explored how reports can be affected if witnesses have the opportunity to discuss the event with co-witnesses prior to the interview, referred to as the *memory conformity* effect (Gabbert, Memon, & Allan, 2003; Wright, Self, & Justice, 2000).

Social influence can also refer to situations in which a person's answers are influenced by the mere presence of others, e.g., the social facilitation effect (Zajonc, 1965), although this will not be discussed in the present thesis. Instead, social influence will hereafter refer to *how information from other persons affects a witness report*. The present thesis focuses on the effects of information from another witness, co-witness influence.

The power of co-witness information

Co-witness information has been defined as "information that one eyewitness might pass to another eyewitness regarding an event that they both observed" (Luus & Wells, 1994, p. 714). Research has shown that information that originates from a co-witness is particularly influential. For example, Paterson and Kemp (2006b) found that participants who had received misinformation via a co-witness (either

via a discussion or through reading sentences supposedly written by another witness) were more likely to report the erroneous information compared to participants who had received misinformation through leading questions or reading a media report. Similarly, Gabbert, Memon, Allan, and Wright (2004) found that misinformation had a greater effect when it was encountered during a discussion with a co-witness, compared to when it was embedded in a written narrative. Thus, it seems clear that information from others can have quite a potent impact on our memory reports. But why do we listen to others, rather than trust our own memory? Are there situations in which we tend to listen more to others? Why do we sometimes report things that did not actually happen? Below, I will provide some theoretical explanations to these questions.

Theoretical framework

Why people are influenced by others

People can be influenced by others in different ways and a common distinction is between three forms of influence: conformity, compliance, and obedience (Kassin, Fein, & Markus, 2010). *Conformity* refers to people changing their behaviour to be consistent with group norms. *Compliance* refers to people yielding to the wishes of others, and *obedience* to when people obey orders from an authority. Although this distinction is not always clear-cut, it illustrates the continuum of social influence (Kassin et al., 2010), that is, that influence may vary in terms of the degree of pressure exerted on an individual.

In addition, there are different reasons as to why people accept information suggested by others. In essence, people may conform to others for two reasons: due to informational influence or normative influence (Deutsch & Gerard, 1955). *Normative influence* means that people accept information because of fear of the negative effects of appearing deviant. In other words, they conform in order to avoid the discomfort of disagreeing with others. *Informational influence* implies that people conform because they believe that others possess more, or more correct, information. Informational influence often leads to private conformity, that is, people come to fully accept the suggested information and actually change their own beliefs. Normative influence, on the other hand, often leads to public conformity, that is, the private belief is retained, and only the overt response is changed. However, normative and informational influences often work in tandem (Granhag, Strömwall, & Billings, 2003). With regard to the magnitude of the effect, Latané (1981) suggested the theory of social impact which specifies the effect of others on the individual. According to this theory, the experienced impact of others is a function of the strength, immediacy, and number of sources acting on the

individual. *Strength* refers to the salience or power of the source, which is usually determined by factors such as the source's status, age, or relation to the target. *Immediacy* refers to the closeness of the source in space or time, while *number* simply refers to how many other persons there are (cf. Asch's classical conformity study, 1951). Thus, the effect of influence is stronger the higher the status of the source, the more immediate the influence, and the greater the number of persons exerting influence.

The theories discussed above are suggested explanations as to *when* and *why* people are influenced by others. Below I will describe two theoretical models that can be used to explain how false memories are formed and how information from others can make its way into memory.

How false memories are formed

A theoretical model that can be used to explain how false memories are formed was introduced by Hyman and Loftus (2002). These authors argued that three processes are involved in the creation of false memories. First, the suggested event must be judged plausible, that is, the person must believe that it is possible that such an event might have taken place. Second, the person must construct an image and a narrative for the suggested event. Third, a source monitoring error (Ackil & Zaragoza, 1995) must be made, that is, the person must mistake the suggested information as originating from the real event. Even if a person believes that the suggested event is plausible and constructs an image of it, he/she might still not think that the event was personally experienced. When the recall of an event is accompanied by a sense of re-experiencing, it is often accepted as a personal memory. However, one might also recall an event that one knows has happened, but without remembering it personally. For example, you might have knowledge of a childhood experience from what your parents told you about it, or from pictures you have seen. This *remember-know distinction* was first suggested by Tulving (1985). Tulving argued that there are two basic forms of awareness associated with memory. *Remembering* includes what Tulving called autonoetic, or self-aware, consciousness and the event being recognized based on a sense of re-experience. *Knowing,* on the other hand, involves awareness of the world without reference to the self (noetic awareness) and instead the event is recognized based on a feeling of familiarity. Hyman, Gilstrap, Decker, and Wilkinson (1998) argued that the remember-know decision can be considered a source monitoring decision in that one has to decide whether the source of the memory is a personal experience or based on external sources (e.g., pictures). The distinction also has a theoretical grounding in the reality monitoring framework (Johnson & Raye, 1981), which deals with how we can tell truthful and imagined events from each other. According to this framework, memories of experienced events differ qualitatively from memories of imagined events. More specifically, memories of real events are likely to contain more perceptual, contextual and affective information.

How information from others is incorporated into memory

Hyman and Loftus' cognitively inspired model has been widely accepted. However, it offers no explanation as to how information from others might influence someone's memory report. Thus, adding a social dimension to the model seems warranted (Granhag et al., in press).

A recent contribution was made by Hartmut Blank (2009), who suggested a model of remembering that can work as an interface between traditional cognitive and social psychology (see Figure 1). According to this model, remembering something includes converting a memory trace into a memory belief. In the process, the accessed memory will be validated by other forms of information. For example, you might have a memory of yesterday's visit to the supermarket, but then you also remember staying late at work, so you realize that the visit to the supermarket must have been the day before.

After the accessed memory has been validated, it might be communicated. According to Blank, which information is communicated depends on costs and benefits. For example, time pressure and conversational norms might influence how much detail is reported.

Information from other people can be incorporated in both the validation and the communication stage. For example, accessed memory information can be validated by comparing it to the report of another person.

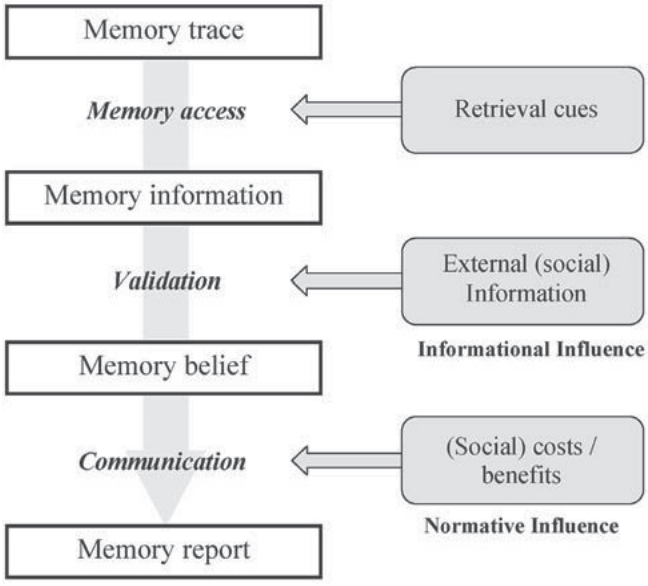

Figure 1. A model of remembering, adapted from Blank (2009).

False memories vs. false reports

Researchers have concluded that it is not always clear whether people report events because they *remember* them, or because they *believe* the event took place (Ost, Granhag, Udell, & Roos af Hjelmsäter, 2008; Sjödén, Granhag, Ost, & Roos af Hjelmsäter, 2009; Smeets, Merckelbach, Horselenberg, & Jelicic, 2005). In studies within the so-called crashing memory paradigm, participants are asked whether they have seen video footage of highly charged public events, like the explosion on a bus during the London terrorist attacks in 2005 (Ost et al., 2007), or the murder of the Swedish foreign minister Anna Lindh (Sjödén et al., 2009). In fact, no such footage exists. Nevertheless, studies within this paradigm have found that between 36 % and 66 % of participants actually reported seeing such footage (Ost et al., 2007). However, these figures reflect participants who answered "yes" to a direct question as to whether they had seen the footage. It is possible that these replies mirrored the participants' knowledge of the event rather than their actual memory of having seen video footage. In order to try to distinguish false memories from false reports, some researchers asked their participants to provide more details about the reported event. For example, in the study concerning the murder of Anna Lindh (Sjödén et al., 2009), 64 % of the participants claimed to have seen a film showing how the perpetrator attacked the foreign minister. However, when subsequently asked for more details about the film (i.e., the actions and appearance of the victim and the perpetrator) it was found that a third of the participants could not provide any details and that another 15 % actually retracted their initial claims. Thus, the proportion of persons who could be said to have a *false memory* was markedly smaller than those who initially made a *false report*. In terms of Hyman and Loftus' model, although many of the participants found the suggestion plausible, only some of them had created a false image of the event.

Different types of memory error

With regard to memory failure, the first thing that often comes to mind is forgetting – for instance failure to remember the name of an acquaintance, or inability to recall the details of the party last week. Another possible mistake is to mix up the details of various events. There are a number of different types of memory error, and one way of categorizing them is into errors of omission (i.e., leaving out true information) and commission (i.e., including false information).

In his book "The Seven Sins of Memory", Daniel Schacter (2001) identifies seven different memory "sins", or types of error; three of which are omission errors and four commission errors. The first omission error described is *transience*, which refers to the decay of information over time. Transience means that information that was once encoded and stored in memory has been lost over time. However,

sometimes omission errors occur because of *absent-mindedness* due to some kind of attentional failure. Such errors can be caused by a lack of attention (to relevant aspects) during the event, which means these aspects were not fully encoded, or a failure to retrieve information at the time when it is needed, often as a result of lack of appropriate cues. The third error of omission is *blocking* – when one fails to retrieve encoded information even when appropriate cues are available. When experiencing blocking, one might have a sense that the information is just out of reach, that it is at the tip of the tongue.

The first of the four commission errors described by Schacter is *misattribution*, which refers to when we misattribute information to the wrong source (source monitoring errors). Commission errors may arise as a result of information that was suggested by another person, for example, memories may be implanted as a result of leading questions in an interview. Schacter refers to such errors as *suggestibility* errors. Our memory can be further skewed by *biases*. For example, stereotypes might influence how we perceive the world, or new knowledge might cause us to reinterpret a past event. Finally, *persistence* is remembering when we actually want to forget, for example, memories of traumatic events that might haunt people for decades.

As illustrated by Schacter's examples, there are many different types of memory error, and both omission and commission errors occur naturally. Both these types of memory error can have serious consequences in legal settings. For example, if a witness falsely adds something to his/her report, this might put the investigator on the wrong track and ultimately even result in the prosecution of an innocent person. On the other hand, if a witness leaves out or falsely denies a correct detail, crucial aspects might be neglected in police investigations, and the case may never reach closure.

The present thesis emphasises both omission and commission errors, although not in the general sense (i.e., that children might forget or add details over time), but specifically as an effect of social influence. That is, can information from another person influence children to add false details to their report, or to omit true details?

Children as witnesses

When children provide free reports they can be highly accurate, but compared to adults they usually include less information (Bull, 1996). In fact, young children's reports are often skeletal and may not provide sufficient information for forensic decision making (Saywitz, 2002). In order to elicit informative statements, more specific questions may therefore be required. The down-side of this strategy is that children are usually more vulnerable to social influence than adults. For example, children have been found to be more vulnerable to leading questions than adults, and pre-school children even more so than school-aged children (e.g., Bruck & Ceci, 1999; Ceci & Bruck, 1993; Roebers & Schneider, 2002).

One might ask why children are vulnerable to social influence. For example; do children accept information from others because of deficiencies in their own memory, or because of compliance with the other person? In order to answer this, one must consider explanations drawn from both cognitive and social aspects of developmental psychology.

Cognitive development

When children reach the age of about two or three, their cognitive development, including language skills, are advanced enough to store episodic memories, and it has been suggested that children can be seen as competent witnesses from about four (Lamb, Sternberg, & Esplin, 1998). As they grow older, children accumulate more experience and knowledge, develop better strategies to encode and retrieve information and their linguistic skills improve (Goodman & Melinder, 2007). Around the age of four to five, children can remember emotion and context. Due to neurological development around six years of age, language becomes more important in children's reasoning and organisation of information. At this age children are able to report events in chronological order. At the age of 10-12, the information storing and communication skills are becoming more adult-like. Generally, older children can also make use of more effective retrieval cues (Granhag, 2005). In brief, memory encoding skills increase with age, and both storage and retrieval failures tend to decline (Brainerd & Ornstein 1991). Thus, children's memory can be expected to be less complete to that of adults, and consequently also more vulnerable to social influence.

In addition to differences in the abilities to encode, store, and retrieve information, there are also other cognitive abilities that might contribute to children's vulnerability to influence. For example, younger children are often less skilled at *source monitoring*, an ability that has been found to contribute to suggestibility (e.g., Ackil & Zaragoza, 1995). Another factor is *theory of mind*, which refers to the ability to understand that the process of creating mental representations is subjective and related to the information available (Ceci,

Crossman, Scullin, Gilstrap, & Huffman, 2002). In other words, a child who has a developed theory of mind has the ability to understand that two persons might have different mental images of an event because of differences in knowledge or experience. Children typically develop a theory of mind around the age of 3-5 (Ceci et al., 2002). Welch-Ross, Diecidue, and Miller (1997) found that there is a negative relation between suggestibility and theory of mind. That is, the better the children (aged 3-5) in their study were at tasks related to theory of mind, the less vulnerable they were to social influences. The authors suggested that when children do not have a fully developed theory of mind, they are unable to consider two different representations of an event. Instead, they must try to merge the two representations (e.g., the original event and the suggested information) into a single view. Thus, the original information may be 'overwritten' by the suggested information. This blending of traces might also explain young children's difficulty with source monitoring, that is, they experience problems disentangling the different sources of information (Ceci et al, 2002).

A third factor is *executive functioning,* which refers to cognitive processes that underlie goal-directed behaviour, such as inhibitory control, planning, suppressing imitative behaviours, and attentional flexibility. These processes allow for the ability to shift behavioural responses when rules are changed, to monitor working memory and to inhibit automatic responses (Roebers & Schneider, 2005; Scullin & Bonner, 2005). Executive function show marked development between the age of 3-5 (Scullin & Bonner, 2005) and has been theoretically related to an inability to discount misinformation (Bruck & Melnyk, 2004). Children with weaker inhibitory control may be less efficient at encoding an event because they are distracted by irrelevant stimuli. At retrieval, they may have difficulties because they fail to inhibit automatic responses. Roebers and Schneider (2005) suggested that a well-developed executive function may allow children to "first stop and think", to compare the suggested information with their own memory before deciding on an answer. Although children's deficiencies in both theory of mind and executive functioning have been linked to suggestibility, the results are somewhat inconsistent (for a review, see Bruck & Melnyk, 2004).

Social development

Children's vulnerability to influence can also be explained by social factors, such as their understanding of the social rules of conversation. Children tend to trust adults as being highly credible and competent sources of information (Ceci & Bruck, 1993). Thus, children might accept the suggested information because of compliance with the adult delivering the false information (Melnyk, Crossman, & Scullin, 2007). Moreover, children (especially young children) have been found to attempt to answer any questions posed by an adult interviewer, even if the questions are bizarre. As an example, when 5-7 year olds were asked questions like "Is milk bigger than water?", "yes" or "no" responses were far more common than "I don't know" responses (Hughes & Grieve, 1980). Additionally, when asked the

same question again, children often change their answers, presumably because they assume that the reason for the repeated question was that their initial response was incorrect (Ceci & Bruck, 1993). As a result of these (mis-) understandings of conversational rules, children sometimes supply information that they believe the adult interviewer desires, rather than information that is consistent with their memory of the event (Ceci & Bruck, 1993). Moreover, children are generally not used to being treated as informants (Lamb et al., 1998). In everyday situations, they are often asked questions to which the adult questioner already knows the answer (e.g. "Do you remember what we talked about last week?"), whereas in forensic interviews, the children are regarded as potential sources of new information. Because they are less accustomed to such a role, child witnesses may be less likely to provide full descriptions of the event in question.

In short, children might accept information from others because of cognitive or social reasons. Most often, however, children's vulnerability to social influence is a result of a combination of cognitive and social mechanisms (Melnyk et al., 2007). As pointed out by Ceci and Bruck (1993), it is likely that these factors interact. That is, cognitive factors might underpin the effectiveness of social factors, and vice versa. For example, when the original memory trace is weak, the child might be more likely to accept information from others, while greater resistance to social influence can be expected when the memory trace is strong (Gobbo, 2000). Or, if the person presenting the new information is perceived as an authority figure, the child might pay more attention to the message, thus promoting greater encoding.

Developmental reversals

The core of research on the developmental patterns of the effects of social influence has shown that younger children are more vulnerable. However, some studies have found the reverse, that is, that older children are more vulnerable to influence than younger children. For example, Candel et al. (2007) examined the effect of co-witness discussion on children's memory reports. Children who had seen different versions of a video event were paired up and asked to discuss the event together before they were individually interviewed. A strong memory conformity effect was found, that is, more than 60 % of the children reported at least one detail from the alternative video (the version the peer child had seen). Although older children had a better memory of the event, the memory conformity effect was, unexpectedly, found to be stronger for older than for younger children. Brainerd, Reyna, and Ceci (2008) recently reviewed the theoretical and empirical literature on developmental differences in suggestibility and offered a possible explanation to such counter-intuitive results. They concluded that knowledge and understanding of the event in question is a good predictor of individual vulnerability to social influence and that false memories stem from meaning connections that are made between events. For example, Ceci, Papierno, and Kulkofsky (2007) showed that *semantic proximity* was a strong predictor of suggestibility. That is, the greater the semantic similarity between the suggested information and the original information, the more likely it

was that the suggestion was accepted. In experiment 1, children were presented with pictures of objects in groups of three and asked to select the one object that did not belong with the other two. These data were then used to calculate the semantic proximity, a measure of the strength of the meaning relationship between one object (e.g., milk) and other objects (e.g., cow, soda, lemon). In experiment 2, children's memory of a picture story was tested. Before the test, the children were exposed to false suggestions (e.g., *milk* had been in the original story, and *soda* was suggested). Results showed that when the suggested object was semantically close to the original object, the suggestion was more likely to be accepted. Moreover, semantic proximity could be used to predict age differences in suggestibility. Specifically, original-suggested object pairs were identified where the semantic relation was stronger for 9-year-olds than for 4-year-olds. As predicted, for these pairs, older children were more likely than younger ones to accept the false suggestions. False memories could thus increase with age, as more and stronger connections are acquired between objects (Brainerd et al., 2008).

Omission and commission errors in children's reports

Previous research on the effects of social influence has mainly focused on commission errors (Candel, Hayne, Strange, & Prevoo, 2009; Merckelbach et al., 2007) and it is now well established that information from others can make children report events or details that they have actually not experienced (e.g., Bruck & Ceci, 1999). For example, Candel et al. (2007) examined the effect of co-witness discussions on children's memory reports. In their study, children watched a video-taped event and were later paired up with a peer child to discuss the event. The children believed that they had watched the same event, while in fact they had been watching different versions of the event. Thus, each version showed some details that could not be seen in the other version. When the children were individually interviewed about the video event, more than 60 % of those who had discussed the event with a peer recalled at least one detail from the other video. In other words, they were influenced by their peer's story to report details that they had actually not seen themselves (Candel et al., 2007).

Omission errors as a result of social influence are a much less researched topic (Candel et al., 2009; Merckelbach et al., 2007), but there are a few studies in which it has been shown that information from others can also make children omit information from their reports. In a study by Pezdek and Roe (1997), an experimenter either touched the children in a specific way, or did not touch them. Later, the experimenter made false suggestions; when no touch had occurred he suggested that it had (which might influence the children to make a commission error), and when a touch had in fact occurred he either suggested a different type

of touch (which might lead to a change error),or that no touch had occurred (which could lead to an omission error). During a separate memory test, children were found to make all three kinds of error. However, it was only the change errors that reached statistical significance. The study by Pezdek and Roe (1997) has been criticised for having low power, as only 16 participants in each condition were used (Wright et al., 2001). However, the results were replicated in a recent study (Candel et al., 2009).

Williams, Wright and Freeman (2002) used a different methodology to induce omission errors. In their study, children (aged 5-6 years) made cakes with "Mrs Flour". The following day the children watched a video showing the same sequence of events they had been exposed to the previous day, but a target scene was omitted. This resulted in significantly fewer reports of the target scene; that is, when the children were interviewed about the event, they claimed that that particular part of the event had not happened.

In summary, research has demonstrated that children are vulnerable to social influence and that it can result in both omission and commission errors. A handful of studies have examined the effects of social influence on both omission and commission errors, to establish whether misinformation is of a different magnitude for previously seen vs. unseen details. The results have been mixed. For example, Wright, Mathews, and Skagerberg (2005) found it easier to influence participants to add false details to their report of an event, than to get them to omit true details. A theoretical explanation for this asymmetric effect is offered by the so-called *discrepancy detection principle* (Loftus, Levidow, & Duensing, 1992). According to this principle, if discrepancies between the original memory and the subsequent misinformation are discovered, misinformation is less likely to have an effect. With respect to omission and commission errors, it has been suggested that achieving false omissions would be more difficult than false additions of details, as the former requires misinformation that clearly contradicts the event, while the latter can be done without a clear contradiction (Merckelbach et al., 2007). However, not all studies have found support for this prediction. For example, Merckelbach et al. (2007) found that the effect of social influence was equally strong for both omission and commission errors.

Factors that moderate children's vulnerability to social influence

There are a number of factors that might moderate the effect of influence on children's reports. For example, the type of event they are reporting about, what type of details the misinformation concerns, and from whom the misinformation

originates. These are all factors of relevance for the empirical studies included in this thesis, and therefore I will discuss each of these issues in greater detail below.

The source of influence

According to the social impact theory (Latané, 1981), social influence depends to a large extent on the strength of the source of the influence, which is decided by the status and competence of the person delivering the message. Along these lines, Ceci, Ross, and Toglia (1987) found that pre-school children were more susceptible to social influence when it was delivered by an adult than by a 7-year old boy. In a similar experiment by Lampinen and Smith (1995), social influence was presented by a 3-year old child (about the same age as the participants), an adult, or an adult introduced as "silly". The rationale for using these three sources was to determine whether young children are capable of distinguishing credible from noncredible information sources. The results revealed that the children were misled by the credible adult, but not by the child or the discredited adult. This implies that it is not the informant's age per se that determines whether children are misled, but that children are able to make judgements of the source in terms of credibility or competence.

The type of event

The type of event used in research on children's vulnerability to social influence has varied. For example, researchers have read false stories to the children (Miles, Powell, & Stokes, 2004), shown them a video (Candel et al., 2007; Cassel, Roebers, & Bjorklund, 1996; Roebers & Schneider, 2002), or had them observe or participate in a live event (Gobbo, 2000; Rudy & Goodman, 1991). Sometimes, experimental research has been criticised for a lack of external validity because the type of events used did not correspond well with the type of situations child witnesses might be involved in (Melnyk et al., 2007). Moreover, it has been pointed out that factors such as salience and meaningfulness are important to consider when discussing children's vulnerability to social influence (Melnyk et al., 2007). For example, research has shown that when reporting about a familiar event, even children as young as 3 years were able to provide fairly accurate reports (e.g., Nelson, 1986). Furthermore, when questioned about a personally relevant event, 4-year olds have been found quite resistant to suggestive interviewing (Goodman, Sharma, Thomas, & Considine, 1995). In addition, Rudy and Goodman (1991) demonstrated that children (aged 4 and 7) who had been active participants in an event were more accurate than children who were passive bystanders. Thus, age differences seem to be moderated by the type of event as well as the type of involvement. In order to avoid underestimating children's witness abilities, it is therefore important to use more ecologically valid events.

The type of target detail

In early studies on how social influence affects memory, the misinformation often concerned rather peripheral details, for example, saying that there was a yield-sign, when it fact it was a stop-sign (Loftus, Miller, & Burns, 1978). In such cases, it is possible that the critical details have not been noticed or thoroughly encoded during the study phase. If so, the misinformation is more likely to be remembered than the original detail and could hence be misattributed to the original event.

More recent findings suggest that by using only peripheral details as the target, the effect of social influence might be inflated. For example, Camilla Gobbo (2000) questioned children (aged 4-8) about a previously experienced painting class in school. During the interview, children were exposed to false suggestions either concerning a central detail that was causally linked with other information or a peripheral detail that was an isolated action with no connection to the event. The results showed that children were less suggestible when the information was central, a finding which is in line with the bulk of research. In general, studies in which discrimination has been made between central and peripheral details have found that the effect of influence on central details is smaller (Dalton & Daneman, 2006; Heath & Erickson, 1998; Wright et al., 2000, Exp. 2) or even insignificant (Wright & Stroud, 1998).

Making a clear distinction between which details are central and which are peripheral can be rather problematic and different definitions have been suggested. For example, centrality has been defined in terms of "thematic and spatial focus" (Wright & Stroud, 1998) or a distinction has been made between activities that were central to the witnessed event and the appearance of background persons or objects (Dalton & Daneman, 2006). In addition, it is difficult to define in advance what is central and what is peripheral information. As Christianson (1992) noted, the issue of centrality is a question of continuum, rather than an absolute distinction.

Improving children's recall and increasing their resistance to influence

As mentioned previously, children's reports are often very brief. To counteract this problem, different methods have been suggested and tested to improve the amount of recalled information as well as the correctness of the information provided. For example, Saywitz and Snyder (1996) developed a procedure called Narrative Elaboration (NE). NE comprises training in which children are taught to organize information into specific categories such as the persons involved, the event setting,

actions, and conversations. In the study, NE was found to result in a 53 % improvement in free recall, without compromising accuracy (Saywitz & Snyder, 1996). Another example of a method designed to improve children's recall is the so-called Event Report Training (ERT), developed by Krackow and Lynn (in press). This method includes teaching children which action components must be stated in order to provide complete event reports. ERT resulted in an increase in the amount of information being reported by 7-8-year olds and also reduced preschoolers' vulnerability to misleading questions.

Although NE and ERT have been found to improve children's correct recall, both these methods are time-consuming and require that an adult is involved in the training of each child. Resources can be sparse in investigative settings, thus there is a need for a more efficient way of improving children's recall. A promising new method for improving eyewitness recall was recently developed in Britain; a recall tool called the Self-Administered Interview (SAI) (Gabbert, Hope, & Fisher, 2009). The SAI is a booklet containing instructions and questions designed to facilitate the recall of a witnessed event. The instructions for recall are based on the Cognitive Interview (Fisher & Geiselman, 1992), and the witness is guided through different stages of the event. Gabbert and her colleagues (2009) showed that participants who had completed the SAI immediately after viewing a target event recalled a significantly larger amount of correct details one week later, compared to participants who did not document their memory after the event. Thus, the results showed that the SAI had clear benefits in helping to obtain a more complete account of the witnessed event. Another benefit of the SAI is that it can be distributed immediately to witnesses. This is important considering that the amount of information that can be recalled decreases with the passage of time (e.g., Kassin, Tubb, Hosch, & Memon, 2001; Wixted & Ebbesen, 1991). Another advantage of using a SAI is that the witnesses report about the event on their own, thus minimising the burden on police resources. Importantly, this also minimizes the risk that information from others will contaminate the first recall. The SAI has been used successfully with adults (Gabbert et al., 2009), but has not yet been tested on child witnesses.

Another potential benefit of the SAI is to "inoculate" witnesses against social influence. If the witnesses' memory of the event can be strengthened by using a SAI, it is also possible that the witness will be better able to resist influences from other persons. This issue, however, still remains to be investigated.

Summary of the empirical studies

Eyewitness evidence is a very important source of information in forensic investigations. Thus it is vital to examine factors that might affect the reliability of witness statements. The empirical studies included in this thesis investigate children's vulnerability to social influence, as well as a number of variables that might moderate these effects.

In order to increase the external validity of the experiments, a personally experienced, live event was used as the target event in all four empirical studies, in which each child individually met and interacted with a previously unknown man outside their school. The man showed the child some toys inside his car and asked the child for advice in choosing one of the toys for a gift. This target event was used for all four studies, with minor variations that will be described below. Two weeks after the target event, the children were interviewed. They were subjected to social influence either immediately before (Studies I, II, and IV) or during the interview (Study III). The social influence was encountered either live (Studies I, III, and IV) or via video (Study II). An overview of the studies is provided in Table 1 below. In the first three studies, the effect of influence was measured with respect to both omission and commission errors. In Study IV, only commission errors were measured. In total, 659 children participated in the studies.

Table 1
Overview of the four empirical studies.

	Phase one			Phase two				
	Event	Inter-vention	Retention interval	Misinformation type	Misinformation source	Interview	Independent Variables	Dependent Variables
Study I	Meeting man with car	-	2 weeks	Live, prior to the interview	Known, active co-witness	Free recall + open and specific questions	Presence of details (yes/no) Misinformation (yes/no) Age (7/12)	Rates of errors
Study II	Meeting man with car	-	2 weeks	Video, prior to the interview	Unknown co-witness	Free recall + open and specific questions	Presence of details (yes/no) Misinformation (yes/no) Source of influence (adult/child)	Rates of errors Number of additional details
Study III	Meeting man with car	-	2 weeks	Live, during the interview	Known, passive co-witness	Yes/No questions + follow-up questions (separate interview)	Presence of details (yes/no) Misinformation (yes/no)	Rates of errors Number of additional details
Study IV	Meeting man with car	SAI	2 weeks	Live, prior to the interview	Known, active co-witness	Free recall + open and specific questions	Misinformation (yes/no) SAI (Structured/Open/None)	Number of details overall Rates of errors

Study I

Previous research on the effects of social influence has mainly focused on commission errors, while there has been very little research on omission errors (Candel et al., 2009). However, these two types of memory errors merit attention, as they can both have serious consequences in legal settings. Another shortcoming in previous research is that the target of the social influence was often a peripheral detail. Thus, Study I investigated the effects of influence with respect to two details that varied in terms of centrality.

Study I had three major aims. The first was to examine children's omission and commission errors. We expected that information from a co-witness would result in an increase in both types of errors. Moreover, in line with the discrepancy detection principle (Loftus et al., 1992) as well as previous empirical research (Wright, Mathews, & Skagerberg, 2005), we expected that the effect would be stronger for commission than for omission errors. The second aim was to investigate the effect on different types of details. In line with previous empirical research (Dalton & Daneman, 2006; Gobbo, 2000; Heath & Erickson, 1998; Wright & Stroud, 1998; Wright et al., 2000, Exp 2), it was expected that the children would make more errors with respect to a peripheral compared to a central detail. The third aim was to explore possible age differences. Thus, we compared the effects of influence on children from two age groups (7 and 12-year olds). Due to developmental differences (Brainerd & Ornstein, 1991; Brainerd, Kingma, & Howe, 1985; Ceci & Bruck, 1993), we predicted that younger children's reports would contain more errors than those of their older counterparts.

Method

Study I consisted of three phases. First, 174 children (aged 7 and 12) participated in the target event. Second, the children were subjected to social influence about the experienced event. Third, the children were interviewed about their memory of the event. Phases two and three took place approximately two weeks after phase one. The event contained two critical details that were varied so that they were either present or absent inside the car. One of the critical details was central and the other was peripheral. The central detail was a person who was sitting in the passenger seat, next to where the toys were, and the peripheral detail was a suitcase placed on the rear seat.

The social influence was encountered live and before the children were interviewed. The children met the man with whom they had interacted two weeks earlier. He stopped them on their way to the interview room and told them his version of what had happened. His version contained erroneous information about one of the critical details. The social influence was in one of two forms: when the

critical detail had been present, the man said that this detail had been absent. If the children accepted this misinformation, they would make an omission error. When the critical detail had been absent, the man said that the detail had been present, and if the children accepted this misinformation, they would make a commission error. During the subsequent interview, the children were first requested to provide a free recall of the target event and then they were asked open-ended and specific questions pertaining to the event.

Results

The children who had been subjected to social influence made more omission and commission errors than those in the control groups. However, the difference was only significant for commission errors. Thus, the social influence resulted in an asymmetric effect, that is, the children were influenced to add details to their reports, but not to omit details. This finding is in line with previous studies, indicating that it is easier to influence people to report an unseen item than to influence them not to report a previously seen item (Wright et al., 2005). The results also fit nicely with the predictions of the discrepancy detection theory (Loftus et al., 1992); people should be more easily influenced to add details to their reports because the co-witness information does not necessarily contradict their memory recollections.

We also found that the children made more errors with respect to the peripheral detail (the suitcase), compared to the central detail (the passenger). Furthermore, we found that the asymmetric effect of influence concerning omission and commission errors was only evident for the peripheral detail. With respect to the central detail, the two types of errors were made to a similar degree.

Unexpectedly, we found that younger children did not make more errors (neither omission nor commission errors) than their older counterparts. We speculated that the type of event we used was easy to remember, even for younger children, which might thus have mitigated against any clear age differences.

Conclusions

It was concluded that the effect of social influence depended on whether the information was aimed at influencing a witness to add details to a report of an event, or to omit details. The effect of social influence also depended on the centrality of the event detail. A suggested explanation for the lack of age differences was the type of event used, namely that the target event was live and the children active participants. When considering the effects of social influence in applied contexts, it is therefore important to separate different kinds of memory errors and to consider what type of detail and event the social influence might have concerned.

Study II

The effects of social influence on memory are often interpreted in cognitive terms, for example, that suggested information is accepted because one's own memory is incomplete. However, it is likely that social as well as cognitive factors contribute to the effects (Granhag et al., 2003; Melnyk et al., 2007). For instance, the perceived credibility of the source of the misinformation might affect the impact of suggested information (Lampinen & Smith, 1995; Latané, 1981). In Study II, the children received co-witness information either from an adult or from a peer child.

In brief, Study II had four major aims. First, to examine the effect of influence on omission and commission errors. In line with the results of Study I, we expected that, since the social influence concerned a central detail, it would result in a similar amount of commission and omission errors. The second aim was to examine whether the effect differed depending on who delivered the misinformation. We hypothesised that the children would be more susceptible to the suggestions of an adult co-witness compared to a child co-witness (Ceci et al., 1987; Lampinen & Smith 1995). The third aim was to examine the extent to which children who falsely added a detail to their report could also provide more detailed descriptions. The rationale for this was to attempt to distinguish false reports from false memories (Ost et al., 2008, Sjödén et al., 2009; Smeets et al., 2005). The fourth and final aim was to explore the extent to which children would make identifications from a target-absent lineup. In line with previous research on children's performance on lineup identifications (Memon & Rose, 2002; Parker & Carranza, 1989; Pozzulo & Lindsay, 1998), we expected that the children would display a relatively high rate of choosing from a target-absent lineup.

Method

Study II consisted of three phases. First, 176 children (aged 11-12) participated in the target event. Second, they were subjected to social influence pertaining to the experienced event. Third, the children were interviewed about their memory of the event. Phases two and three took place approximately two weeks after phase one. The target event was the same as in Study I, except that only one critical detail was used; a person sitting in the passenger seat. This person was present for half of the children and absent for the rest. The misinformation was delivered via a video-taped interview with another witness. This co-witness made an erroneous statement concerning the passenger. For the children where the passenger had in fact been present, the co-witness claimed that he had not been present (possibly leading to omission errors). When the passenger had not been present, the co-witness claimed that he had been present (possibly leading to commission errors). The co-witness in the video was either an adult or a child of the same age as the participating

children. There was also a control group comprising children who did not watch a video. During the subsequent interview, the children were first asked to give a free recall of the target event and then to answer a number of open-ended and specific questions concerning the event. If the children reported a passenger, they were asked for more information about the passenger's appearance and actions. Finally, children who reported a passenger were asked if they could identify the passenger from a lineup (which was in fact target-absent).

Results

Co-witness influence was found to result in an equal number of commission and omission errors. The children who had encountered influence from a peer child made more errors than those who had encountered influence from an adult. Furthermore, it was found that all children who falsely reported having seen a passenger supplied details about this (non-existent) passenger's appearance and actions. However, the children who falsely claimed to have seen a passenger reported significantly fewer details about this person than did the children who had actually seen a passenger. As many as 87 % of the children identified one or several foils in a target-absent lineup identification task.

Conclusions

In this study, where co-witness influence was directed at a central detail in a personally experienced, live event, its effect was found to be fairly low. These findings suggest that it is important to acknowledge what type of event and item the misinformation concerns, as these factors are likely to moderate children's suggestibility. Moreover, the effect of influence was evident in several measures; not only did some children falsely state that there was a passenger in the car, but a number of them also described this non-existent person's appearance and actions, and finally made an identification from a line-up. Such elaborate false statements could obviously have serious legal consequences. Additionally, the results of this and other studies (Kassin & Kiechel, 1996; Ost et al., 2008, Sjödén et al., 2008) indicate that a false report does not necessarily equate a false memory and that asking for a more detailed description could be an appropriate first step in order to detect false reports. However, it is important to note that all children who falsely reported having seen a passenger also provided further details when probed. Thus assessing an elaborate statement as a true memory may be extremely risky.

Study III

In some situations, witnesses overhear co-witnesses' interview statements (e.g., the Anna Lindh case). This kind of situation was mirrored in Study III. When children recount an event, it is possible that adults (e.g., a parent or a co-witness) can be present and thus explicitly or implicitly put pressure on the child (Roebers, Schwarz, & Neumann, 2005).

In Study III the co-witness information was delivered during the actual interview, via an adult co-witness who was interviewed together with the child. The confederate provided incorrect answers and we investigated whether this social influence affected the children's responses. As previous research has demonstrated that the effect of influence can vary greatly depending on the type of detail (e.g., Dalton & Daneman, 2006; Heath & Erickson, 1998; Wright et al., 2000, Exp 2), Study III included five different target details that varied in terms of centrality. Study III had two major aims. The first was to investigate the extent to which children could be influenced to make omission and commission errors about the five details. Since the critical details differed in terms of centrality, we expected the effects of influence to be of different magnitudes. The second aim was to examine possible differences between true and false reports, with respect to the amount of additional information provided. In line with the reality monitoring framework (Johnson & Raye, 1981) as well as previous empirical findings (e.g., Study II), we predicted that the children who had actually seen the critical details would, when asked to elaborate, provide more information than those who had not seen them (but who had made incorrect reports about these critical details).

Method

The study consisted of two phases. In phase one, 115 children (aged 10-13) participated in a live event (the same event as in Studies I and II). The event was identical for all children, with the exception of five critical details, which were varied so that for each child, all five details were either present or absent. The five critical details were as follows: a suitcase on the rear seat of the car, a woman sitting in the passenger seat, the man by the car was wearing a woolly hat, the man spoke briefly on his mobile phone, and he shook the child's hand. A female research assistant accompanied each child during the event. Phase two took place two weeks later. In an interview, children were asked 11 questions requiring yes/no-answers. Half of the children were interviewed together with a confederate (the research assistant from phase one), who either erroneously suggested false details or denied true details. If the child was influenced by the co-witness' answers, he/she would make commission or omission errors, respectively. Afterwards, the child met individually with another researcher who asked him/her

for any additional information regarding the details he/she had reported during the interview.

Results

The results showed that the children were influenced by the confederate's answers to withhold some critical details that had been observed during the event. In other words, the children were influenced to make omission errors. Although children in the confederate condition made more commission errors than those in the control group, the difference did not reach statistical significance. In other words, the confederate's answers did not significantly influence the children to report previously unseen details. Moreover, we found that the effect of influence varied greatly depending on which critical detail it was aimed at. For example, with respect to the passenger, the children made few errors overall, even after co-witness influence. With respect to the handshake, co-witness misinformation resulted in a large increase in omission errors, but only a small (insignificant) increase in commission errors. Also, children in the control groups made many commission errors with respect to the suitcase (54 % made spontaneous commission errors) and omission errors about the hat (50 %).

If the children reported the critical details, they were asked to follow up on their reports with more information about the details they claimed to have seen. In line with previous research (e.g., Study II) and the reality monitoring framework (Johnson & Raye, 1981), we found that children who had actually seen the target details were able to provide significantly more additional information than the children who falsely claimed to have seen the details.

Conclusions

It has been previously established that children can be influenced to add false details to their reports of an event. The present study demonstrated that children –in a highly ecologically valid situation- can also be influenced to deny true (previously seen) details and that the effect on omission errors can (in some situations) be even greater than that on commission errors. Therefore, when evaluating a witness' report it is important to consider the possibility of omission errors as well as that of commission errors, as a result of social influence.

Moreover, the study also makes evident that the degree of vulnerability depends to a large extent on what type of detail the social influence is aimed at. Thus investigative work, as well as future research, should take the type of detail into consideration.

Study IV

In order to obtain the most informative and correct statements, witnesses should be heard as soon as possible after the incident. However, due to constraints in resources and time, this is not always possible. Recent research has shown that using a self-administered interview form (SAI) can significantly improve adult witness' recall of an event, while keeping the demands on police resources to a minimum (Gabbert et al., 2009). Study IV tested the effectiveness of using a SAI on child witnesses. In addition, as previous studies (e.g., Studies I, II, and III in the present thesis) have shown that children are vulnerable to social influence, Study IV investigated whether the SAI could work as an inoculation against the negative effects of social influence.

Directly after participating in the target event, two groups of children reported their memories in a SAI form, while children in a control group did not. Two qualitatively different SAI forms were used. The *SAI-Open* form requested a standard free recall of the event. The *SAI-Structured* form asked for a free recall, and, in addition, asked the children to focus on different aspects of the event, to encourage them to give a more detailed report. Study IV had two major aims. First, to investigate whether children's memory of an experienced event could be enhanced by a SAI. Previous research on the SAI has found that it had a beneficial effect on adult eyewitnesses' reports (Gabbert et al., 2009). Moreover, an early recall opportunity can reduce the amount of forgetting (Butler & Roediger, 2007; Turtle & Yuille, 1994). Thus, we hypothesised that children who had completed a SAI immediately after the event would show enhanced recall two weeks later, compared to the control group. Furthermore, we expected that children in the SAI-Structured condition would report more information than children in the SAI-Open condition. The second aim was to investigate whether a SAI intervention could serve as a protection against the negative effects of influence. We hypothesised that children who had completed a SAI would be better able to resist misleading information compared to those who had not completed a SAI immediately after the event.

Method

The participants were children aged 11-12 (N = 192). The study consisted of four phases. In phase one, the children participated in a live event. In phase two, they recorded their memories in an open SAI, a structured SAI, or did not record their memories (control). In phase three, the children were exposed to social influence about the event, and in phase four they were interviewed. Phase two followed immediately after phase one, and phases three and four took place approximately two weeks later.

The same event was used as in Studies I, II, and III. The event was identical for all children. In the second phase, there were three conditions: SAI-Open, SAI-Structured, and control. Co-witness information was encountered live and prior to the interview. The children met the same man with whom they had interacted two weeks earlier. While the child was waiting to be interviewed, the man came and told the child his version of the event. The man's statement was correct with the exception of four false details that he added to his account (hereafter referred to as critical details). If the children included these details in their reports, they would make commission errors. The interview consisted of a free recall phase, followed by a cued recall phase in which the child was asked open-ended specific questions about the event. The interview also contained specific question concerning the four critical details, and if the children stated that these details were present, they were asked to provide more information concerning each detail.

Results

In line with our prediction, we found that the children who had completed a SAI immediately after the critical event performed better at the interview two weeks later compared to children who had not completed a SAI, as they included more details in their free recall of the event. Moreover, we found that the children in the SAI-Structured condition reported more details about the event than children in the SAI-Open condition. There were no differences in terms of accuracy. Children who had been subjected to social influence made significantly more commission errors than children in the control group. Although children who had completed the SAI-Structured form made fewer errors with respect to the critical details than children in the SAI-Open and control conditions, the difference was not significant. Thus, the SAI manipulation did not reduce children's vulnerability to social influence.

Conclusions

This study further supports to the idea that using a self-administered interview protocol immediately after an event can improve witnesses delayed recall. The study also extends previous research (Gabbert et al., 2009) by demonstrating that children (aged 11-12) were able to successfully use the SAI. Thus, if interviews cannot be held immediately after an event, using a SAI might prove a simple yet effective way of improving the quality of eyewitness' reports, even if the witness is a child. Future studies should further explore the issue of whether a SAI manipulation can reduce children's vulnerability to social influence.

General discussion

The effect of influence

The first main finding of the present thesis is that children were vulnerable to information from co-witnesses. All four studies revealed a significant effect of social influence, that is, the children's reports were in some way influenced by the information they received from a co-witness. The co-witness information was of different types; either encountered live and from a person they had previously met (Studies I, III, and IV) or via video from an unknown co-witness (Study II). They either encountered the influence prior to the interview via a co-witness' short recount of the event (Studies I, II, and IV) or during the interview via a co-witness' answers to the interview questions (Study III). Despite these differences between the studies, co-witness information had a significant effect on the children's reports. The combined evidence demonstrates that children are vulnerable to social influence. Thus, it is important that measures are taken to prevent co-witness discussion, for example by separating witnesses, and interviewing them soon after the event. In many cases it is not possible to ensure that co-witness influence does not occur, therefore investigators should be aware that sometimes information provided by a witness may originate from another person rather than from the actual event.

However, it is also important to acknowledge that the effect of influence was not large in any of the studies, and that most children actually provided highly correct reports. Earlier studies have often used more artificial events, such as picture slides or narratives. Such events may be more difficult for children to remember as they are less easy to understand. In contrast, in the four studies included in this thesis, the children participated actively and individually in a live event. As children have previously been found to have a better memory for events in which they have been active participants (Rudy & Goodman, 1991), and more resistant to suggestions when the event was of personal relevance (Goodman et al., 1995) it seems reasonable to assume that studies in which the target event involves passive observation of an artificial event may underestimate children's capacity as witnesses.

Theoretical reflections

In terms of theory, one could argue that the children in the present studies used the information provided by the co-witness to validate their own memory (Blank,

2009). If the message was considered plausible, they might have started to form an image of the false details suggested (Hyman & Loftus, 2002). The false suggestions in the present studies were all quite plausible, that is, they were in line with the experienced event. The suggestions included details that are often found inside a car (e.g., a passenger or a suitcase), appearance details (e.g., glasses, woolly hat), or actions that are quite common (talking on the phone, handshake). Furthermore, in three of the four studies (Studies I, II, & IV) the false suggestions also contained some additional information (e.g. "the bag was on the back seat, it was my old suitcase"), which might have helped the children to create an image of the false detail. Hence, one explanation as to why the co-witness misinformation had an effect in the current studies could be that it affected processes that, according to Hyman and Loftus (2002), contribute to the creation of false memories. According to Blank (2009), the memory report can also be affected in the communication phase, for example the interviewer's style and questions can signal what is the appropriate information to provide. Although an important observation, it is not a very likely explanation for the present results, as the same interview protocol was used for all conditions in each of the studies (and no interviewer effect found in any of the studies.)

The models of Blank (2009) and Hyman and Loftus (2002) can both be used to explain the present empirical findings. However, neither of them can single-handedly offer an exhaustive explanation for the results. In my view, Blank's model (2009) is useful for explaining why social influence has an effect, that is, how information from others is incorporated into the witness memory. However, in the present studies, the children often reported more information than they had seen or had been suggested to them. For example, in Study II, one child who had not seen a passenger (but had heard another witness state that a man had been sitting in the passenger seat) reported that the passenger was "*wearing jeans, and brown or black shoes. He had short hair and some beard, not big but a small beard. And he had a black coat*." In Study III, one child who had heard another witness claim that there had been a bag inside the car later described the bag as follows: "*It was about this size [shows], and the same material as this [shows]. It was brown. It was closed*." Thus, the children's descriptions went clearly beyond the information that had been suggested to them. Such fabulations are not explained by Blank's model, but Hyman and Loftus' (2002) model can actually explain how false suggestions can develop into more elaborate false reports.

Moreover, Blank's model is important as it makes a distinction between the accessed memory trace and the communicated memory report. The former is what an investigator wants to know, the latter is what he/she will receive. Thus, to be able to make a fair evaluation of a witness statement, an investigator should be aware of the different stages in the process of remembering, as well as factors that might influence memory at each of these stages.

Omission and commission errors

Previous research on the effect of social influence has mostly focused on commission errors, and little attention has been paid to omission errors (Candel et al., 2009). In the studies included in this thesis, the information from the co-witness was either aimed at influencing the children to add false information to their reports or to omit correct information. Thus, the effect of influence was investigated with respect to both omission and commission errors. It is important to make clear that the focus of the present thesis was not to assess the overall amount of omission and commission errors in the children's reports. Instead, we measured the number of errors with respect to a few selected details for which the children had encountered misinformation.

In Study I, we found that children could be influenced to make commission errors, but not omission errors. In Study II, although the overall effect of influence was small, the children were influenced to make both omission and commission errors. It was equally difficult to influence the children to add an unseen detail as it was to influence them to refrain from reporting a detail that they had seen; that is, social influence resulted in an equal number of omission and commission errors. In Study III, we found that the children could be influenced to make omission errors with respect to two of the five critical details. For the remaining three details, the difference was in the predicted direction (more errors after social influence than in the control group), but not large enough to be statistically significant. Although social influence was also found to increase the number of commission errors for almost all the critical details, the effect was not significant. In Study IV, only commission errors were investigated, and we found that children who had been exposed to social influence made significantly more errors than children who had not.

Taken together, all four studies support previous research (e.g., Bruck & Ceci, 1999; Candel et al., 2007) in that children can be influenced to make commission errors, that is, to add false details to their reports of an event. Such false intrusions can obviously have very negative consequences. For example, the investigator might be put on the wrong track, as illustrated by the Anna Lindh case in which investigators initially searched for a man wearing a camouflage type jacket (Granhag et al., in press). In addition, the present thesis also showed that when probed for more information, the children followed up their initial false report by providing more detailed descriptions (Studies II & III) and even identifying persons from a line-up (Study II). Thus, the social influence had quite extensive effects.

The effect of influence on omission errors was less prominent; we found no effect in Study I, a small effect in Study II, and in Study III the effect was significant for two of five critical details. The type of omission influence used in the present studies was rather direct; that is, it was an outright rejection of the presence of the critical details. In Studies I and II, in which the social influence was

introduced before the interview, it was stated, for example, that "I was alone; there was nobody else in the car". In Study III, the confederate denied the presence of the critical detail when the interviewer asked about it. In contrast, previous studies have used quite different methods. For example, in the study by Williams et al. (2002), the participants were given a summary of the event, in which some aspects were left out. That is, instead of actively saying "this and that did not happen", the information was simply omitted from the summary. It was found that leaving information out of a rehearsal of the event decreased the likelihood of the information being reported in a later interview. The studies in the present thesis show that omission errors can be induced using a diversity of methods. Taken together, the findings of the present as well as previous research (Pezdek & Roe, 1997; Candel et al., 2009; Williams et al., 2002) indicate that the possibility of omission errors as a result of social influence should not be overlooked.

To sum up, when evaluating a witness' report, it is important to consider the possibility of omission as well as commission errors as a result of social influence. Regarding the question of whether misinformation has a larger effect on omission than commission errors, the results of the present studies were mixed, as has been the results of previous studies. It seems to me that the discrepancy detection principle might not be very useful for predicting the effects of influence with respect to different types of error. Alternatively, that the discrepancies are not necessarily larger when the misinformation concerns previously seen details.

Moderating factors

Type of detail

In Study I, we found that the effects of social influence were much smaller when it concerned a central compared to a peripheral detail. In Study II, where only a central detail was used, the effect of influence was fairly small. Hence, the results support previous research showing that the effect of social influence seems to depend on whether it is aimed at a central or a peripheral detail (Dalton & Daneman 2006; Heath & Erickson, 1998; Wright et al., 2000, Exp. 2). In Study III, five different critical details were included, and we found that the effect of social influence varied greatly depending on which detail it concerned. Moreover, we found it fairly problematic to predict how certain details in a scenario would be perceived in terms of centrality (for similar problems, see Yuille, Cutshall, & King, 1986, as cited in King & Yuille, 1987). In experimental studies, the centrality could be controlled, for example by choosing the target details from a pilot study. However, in forensic situations the investigator must try to estimate what details were central (most memorable) to a witness. The present findings suggest that this

should be done with caution. As Melnyk et al. (2007) pointed out, event salience is not an absolute; for example, children might focus on other aspects of the event than an adult (or the experimenter would anticipate). Moreover, it is important to be aware of the fact that what is central to an investigator is not necessarily the same as what was central to the witness at the time of the event. To complicate matters further, even a seemingly peripheral detail might be an important piece of information in an investigation. For example, information about the particular features of a car might link a perpetrator to other crimes.

Developmental differences

Age has usually been found to moderate the effects of social influence (e.g., Bruck & Ceci, 1999; Ceci & Bruck, 1993). In Study I, age was included as a factor, but no differences were found between 7 and 12-year olds in terms of the number of errors contained in their reports. This could be due to the fact that the 7-year olds performed particularly well, or that the 12-year olds performed rather poorly. Because of their less developed cognitive abilities, young children are usually considered worse at recalling events from memory. However, most previous studies have used events in which the children are passive observers. For example, the children might have observed a live event, an event was presented on picture slides, or a story read to them. In contrast, in Study I the children actively participated in the target event. It is likely that such an interactive target event is perceived as more coherent and meaningful. Thus, the event might be more salient and therefore easier to remember, even for younger children, which might have mitigated against the detection of age differences (Goodman et al., 1995; Melnyk et al., 2007; Rudy & Goodman, 1991).

On the other hand, research on cognitive development has identified a decline in cognitive efficiency at the onset of puberty (age 11-12) (McGivern, Andersen, Byrd, Mutter, & Reilly, 2002; Blakemore & Choudhury, 2006). A suggested explanation for this *cognitive dip* is that the rapid increase of synaptic connections at this age causes an excess of synapses, which in turn renders the cognitive performance less efficient. The occurrence of such a cognitive dip could explain the lack of difference between 7 and 12-year olds. Moreover, in their recent review, Brainerd et al. (2008) suggested that false memories stem from meaning connections that are made between events. Thus, the older children might have accepted the false suggestions because they had greater knowledge and were able to make more connections between the suggested details and the real event.

Source of influence

Another factor that could moderate the effect of social influence was investigated in Study II, namely the source of the social influence. Contrary to our expectations and in contrast to the findings of previous research (Ceci et al., 1987; Lampinen &

Smith, 1995), we found that the children were more vulnerable to social influence when it was delivered by a peer child than by an adult. One explanation could be that in the present study, the participating children knew that several other children had met the man by the car, whereas no adult witness had been seen at the scene. As a consequence, the children might have been more suspicious towards the adult witness in the video, while the child witness was considered more credible. If so, the results imply that the children judged the credibility of the person delivering the social influence. Thus, our results support the social impact theory (Latané, 1981); social factors seem to be a main contributor to the effects of influence. Moreover, it shows that children judged the strength of the source not only based on the age of the person delivering the message, but that their ground for evaluation was more refined.

False report detection

Previous studies on false reports have found that when the participants were asked to elaborate, many of them were unable to provide any further details (Ost et al., 2008, Sjödén et al., 2009). These results are in line with the ideas of the reality monitoring framework (Johnson & Raye, 1981) and the remember/know distinction (Tulving, 1985); the descriptions of imagined/known events are often less detailed than those of experienced/remembered events. The results of Studies II and III revealed a similar pattern; correct reports contained significantly more information compared to false reports. In other words, detailed reports were more reliable than less detailed ones. Hence, it seems that probing for more details can be a useful strategy when trying to distinguish correct from false reports. However, the children who gave false reports were able to provide at least some additional information. Although the difference is evident on a group level, the problem still remains when trying to assess an individual account.

Improving children's recall and reducing vulnerability to social influence

In Study IV, the Self-Administered Interview form (SAI), a new method of improving children's recall and reducing their vulnerability to social influence was tested. It was found that children who had completed a structured SAI immediately after the event to be remembered recalled more information two weeks later, compared to those who had completed an open SAI form and the control group.

The fact that the structured SAI helped to increase the amount of information recalled is important considering that children's free recall sometimes contain very little information (Bull, 1996). These findings are consistent with previous research on the effectiveness of a SAI (Gabbert et al., 2009) and, in addition, it extends the research on the SAI to include child witnesses. Importantly, the children completed the SAI on their own, without assistance from an adult. If a SAI could be used in forensic settings, it would not only improve children's recall, but would do so without the need for additional investigative resources. Furthermore, as the children in a sense conduct the interview themselves, the risk of influence from a misinformed interviewer is reduced. Using a SAI would also ensure a minimum standard for the initial interview.

With respect to the effects of social influence, we found no significant differences between the three interview form conditions. However, the results were in the predicted direction, with children in the SAI-Structured condition making fewer errors. Thus, future studies should further investigate the possible "inoculation effects" of a SAI.

Limitations and suggestions for future research

Some limitations in the studies included in this thesis stem from the difficulty in mimicking real-life criminal situations in an experimental setting. In all studies, the children knew that they were going to be asked about the event they experienced before they participated. In authentic situations, a witness or a victim does not know that they will be asked about an event that they are about to experience and may therefore not be as attentive during the event or as prepared for the interview. In addition, although the children in the present studies were very excited about the event, it was not emotionally (or physically) frightening or threatening as might be the case in real-life situations. Furthermore, they knew that they were not the only person to experience this event, and that it was staged, therefore they might not have been as motivated to explain it to the interviewer. Moreover, the interviewers followed a structured protocol and in essence, all children were asked the same standardized questions. If the interview questions had been more adjusted to the individual witness and more follow-up questions were asked, it is possible that the interview would have resulted in a more complete and accurate statement. Future research might benefit from using more ecologically valid interview situations.

In the present studies, the children encountered the misinformation immediately before (or during) the memory test. It is therefore possible that the misinformation was reported because it was closer at hand, and thus easier to recall than the original information. Future research should investigate whether the

misinformation effects remain if the interval between misinformation and recall is increased. It is also possible that the effects of misinformation might increase over time. For example, Underwood and Pezdek (1998) found that the source and content of misinformation become less strongly associated as time passes, thus increasing the probability that a subject will be misled, especially if the misinformation originates from a less credible source (see also the *sleeper effect* (Hovland & Weiss, 1952)). Thus, the timing of the misinformation and the recall test should be varied in future studies.

Another limitation of the present studies is that the age span was rather narrow and the children were not very young. Typically, research has found that pre-school children are most vulnerable to social influence. In contrast, in the present studies the children were aged between 7 and 12. These age groups were chosen because the type of event used in the present studies was quite demanding. For example, the children were supposed to individually interact with a stranger, and both the event and the misinformation were complex in nature. However, comparisons with both younger and older participants would be of interest.

There is now a considerable body of research demonstrating that children are vulnerable to social influence. Defining the conditions under which children are more vulnerable is useful in the sense that it facilitates the evaluation of children's witness statements. However, for future research I would encourage a more "positive" approach. By this I mean research that focuses on how to improve children's competencies, rather than on their weaknesses. In other words, how can we achieve more accurate and informative eyewitness statements? Study IV of the present thesis found that use of a self-administered interview resulted in more informative statements from children. Future research should further investigate the effectiveness of a SAI under varying conditions.

Conclusions and legal implications

The main conclusion of this thesis is that child witnesses can be influenced by information provided by co-witnesses. Moreover, that such influence can result in children both adding false details to their reports and denying the presence of correct details. As both these types of error can have serious consequences in legal investigations, it is important that investigators are aware of the possibilities of child witnesses making such errors and that they can stem from a number of sources, for example media reports, prior interviews, or co-witness discussion.

Previous research has put much effort into establishing how best to interview child witnesses in order to achieve more complete reports and to avoid suggestibility effects (e.g., Bull, 2010). The present results suggest that guidelines should be established on how to avoid the detrimental effects of any misinformation that could be encountered prior to the interview. It is crucial that measures be taken to avoid the negative effects of co-witness influence. In this regard I have two recommendations. First, in order to prevent co-witness discussion, investigators should make sure that witnesses do not talk to each other, and measures to this effect should be taken as soon as the first police officers arrive at the scene. Much care is taken to preserve physical evidence (e.g., sealing off the crime scene), and care should similarly be taken to preserve eyewitness evidence. Moreover, when interviews are conducted at the scene, it is important that witnesses do not overhear interviews with others. Second, in the interview situation, investigators should try to establish whether the child was subjected to misinformation prior to the interview. That is, the investigator should ask the witness whether he or she has talked to about the event and to whom.

To end on a positive note, the present thesis also shows that when children are questioned about central details of a personally experienced and relevant event, their reports can be highly accurate. This is particularly true if they have completed a SAI immediately after the event. Thus, children should not be automatically deemed unreliable witnesses.

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