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The gestural misinformation effect in child investigative interviewing

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Abstract

To elicit uncontaminated memories from children, is the highest priority for investigative interviewers in criminal and legal proceedings. Police interviewers rarely rely on fully acceptable questioning techniques and defence lawyers may use inappropriate approaches on child eyewitnesses and victims, in an attempt to diminish their testimony. Despite various detailed guidelines and legal rules, on how to interview children in legal settings in Switzerland and the UK, the instructions mostly focus on question types and lack any references towards the influence of potential gestures by interviewers. The main aim of this thesis was to find out if gestures are commonly used in investigative interviews; and how they can influence children's eyewitness statements and ultimately corrupt their memory. The thesis focused on two countries: Switzerland and England. Whilst there are a couple of studies that have investigated the influence of gestures in child interviews in England (Broaders & Goldin-Meadow, 2010; Kirk, Gurney, Edwards, & Dodimead, 2015), to our knowledge, no studies have been conducted in other countries, including Switzerland. Study 1 included interviews with Swiss police child interviewers, evaluating their guidelines and practices in regard to investigative child interviews. Study 2 investigated, whether investigative interviewers in Italy produced hand gestures when interviewing children. The Study found that interviewers produced a wide range of iconic gestures. Study 3 built on this and investigated whether misleading gestures during interviews could affect the correct responses of adults. It was found that the misleading gestures led to a decrease in correct responses and most participants were misled by at least one of the gestures. Study 4 then tested the gestural misinformation effect in children of three age groups. Results showed that the misleading gestures affected participants' responses and led to a decrease in accuracy in children's testimonies. Finally, Study 5 tested the gestural misinformation effect in children in England and Switzerland, in two delay conditions and between two age groups for a mock robbery video. Results confirmed the robustness of the gestural misinformation effect, irrespective of age, country or delay. Overall, it was concluded that gestures seem to be a common behaviour by interviewers and can negatively impact accurate eyewitness testimony of children. The findings have significant implications, demonstrating that non-verbal behaviour in form of gestures can alter children's memory and thus, corrupt forensic investigations in police interviews.

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Declaration

I, the author, confirm that the Thesis is my own work. I am aware of the University's Guidance on the Use of Unfair Means (www.sheffield.ac.uk/ssid/unfair-means). This work has not been previously been presented for an award at this, or any other, university.

1. CHAPTER ONE

1.1 Introduction

The highest priority of investigative child interviewers is to elicit uncontaminated memories from children. Police interviewers rarely rely on fully acceptable questioning techniques, and defence lawyers may use inappropriate approaches towards child eyewitnesses and victims, in a deliberate attempt to diminish their testimony.

The aim of this thesis was to find out, if gestures are commonly used in investigative interviews; and whether they can influence children's eyewitness statements. This thesis focuses on two countries: Switzerland and England. Despite detailed guidelines and legal rules on how to interview children in legal settings in both countries, the guidelines mostly focus on question types and they lack any references to the influence of potential gestures by interviewers. There are two prominent studies that have investigated the influence of gestures in child interviews in England (Broaders & Goldin-Meadow, 2010; Kirk, Gurney, Edwards, & Dodimead, 2015), but to our knowledge, no studies have been conducted in continental Europe.

Since the experimental studies in chapter 3 and 4 included participants in Switzerland, it was important to know the background of child interviewing guidelines in that country. Therefore, a preliminary survey (Chapter 2), was conducted in Switzerland, which consisted of interviews with two police officers about the guidelines and protocols regarding Switzerland's police child interviews. The Swiss guidelines were then compared to the guidelines in the UK. The focus was on the protocols included in these guidelines and to find out whether they contained information regarding non-verbal communication; specifically, on gestures delivered by the interviewers.

The second study (Study 2, Chapter 3) investigated, whether child interviewers actually use gestures when interviewing children. Seventy-one child interviews with children ages 4 and 6, carried out by 40 psychologists in Italy were analysed and evaluated, to gather information about what gestures were used, their nature, quantity, and if there were any differences in gestures between the two age groups.

Chapter 3 includes two experimental studies (Study 3 and Study 4), which were carried in the light of the analysis of the interviews in Chapter 3, as well as recent findings regarding the misleading effect of gestures in investigative interviews, in both adults (Gurney et al., 2013) and children (Broaders & Goldin-Meadow, 2010; Kirk, Gurney, Edwards, & Dodimead, 2015).

Study 3 was conducted as a pilot study with adults, to evaluate the effect of an interviewer's misleading gestures on their recall of a video clip. This was to rehearse the gestures and determine the procedure for the children study. Study 4 investigated the gestural misinformation effect in child interviews with children (aged 6 to 13 years) in Switzerland. In Study 4 misleading gestures were used by the interviewer, to find out if there was an effect on the accuracy of answers, in two groups (gesture versus no gesture). Further, age differences in children's performance in their eyewitness memory were analysed, between three age groups (6-8 years, 9-11 years and 12-13 years). Study 4 also investigated whether children would incorporate the misleading information from gestures into their statements, and if so, which gestures were the most influential in negatively affecting the children's testimonies.

Study 5 was carried out with children in two different age groups, in both Switzerland and the UK. It was based on the findings of Study 4 and investigated the gestural misinformation with regard to international generalisability and by including two age- and delay groups. The delay condition included a delay between watching the stimulus (short film clip) and the interview,

containing the misleading gestures, to find out, if longer delays (1 week) between the event and the interview would lead to a stronger misinformation effect than the immediate questioning used in previous studies

Chapter 6 describes the conclusions from the thesis.

The present chapter, Chapter 1 starts by describing the current status of child abuse and the evaluation of child interviewing procedures and guidelines worldwide. Following this introduction, Chapter 1 incorporates a literature review on child eyewitness testimony, which includes both the attitudes and beliefs of forensic interviewers and the nature of retrieving information from children.

The research on child eyewitnesses has demonstrated that children can give accurate accounts of past events; as long as they are interviewed appropriately (Goodman & Melinder, 2007). However, there are many factors that can corrupt children's memory and subsequent reports. The literature review of this thesis will explore the main findings in regard to children's memory, interviewing techniques and research findings on the effect of misleading information in child interviews.

1.2 Evidence of child abuse

Child abuse is a worldwide problem, and the UK and Switzerland are no exception. Child abuse is difficult to measure accurately, as most abuse is not reported, detected or prosecuted. It is a crime that is often only witnessed by the victim and the abuser (Crime Survey for England and Wales, 2019). Two surveys (Finkelhor, 1994; Pereda, Guilera, Forns, & Gómez-Benito, 2009), have reviewed child sexual abuse internationally, in large, non-clinical adult populations of

various countries (including Australia, Canada, China, El Salvador, Finland, Great Britain, Israel, Jordan, Malaysia, Morocco, New Zealand, Norway, Portugal, Singapore, South Africa, Spain, Sweden, Switzerland, Turkey and the United States), and found similar rates comparable to North American research, demonstrating similar frequencies and distributions of child victimisation, especially for girls.

In 2009, a study by the Swiss Paediatric Society (Swiss-paediatrics.org, 2019), accumulated data from 20 of Switzerland's biggest paediatrics institutions, The Paediatric Society found that nearly three hundred children were physically violated, over two hundred were sexually abused, two hundred children were neglected and over hundred were mentally ill-treated. More than half of the children were younger than six years of age. As there was data missing from children's hospitals in 2009, the analysis was revised in 2015, with the latest review published in 2017. The proportion of abused children increased by ten percent from 2016 to 2017, with about one in six children being younger than one year and almost fifty percent of children younger than six years. Forty-four percent of the abused children were boys and fifty six percent were girls.

In England and Wales, up to a tenth of adults experienced psychological abuse, suffered physical or sexual abuse or witnessed domestic violence in the home during childhood (ONS Crime Survey for England and Wales, 2016). The exact numbers of abuse are difficult to obtain; they are taken from surveys conducted with the general public; data collected by the criminal justice systems and child protection agencies, as well as organisations supporting victims of sexual abuse (Jay, Evans, Frank & Sharpling (2018). Even though these estimates are difficult to obtain, Jay et al. (2018) of the Independent Inquiry into Child Sexual Abuse argued that more accurate numbers are required, as they provide a basis for policy making and inform the research.

1.3 Children's memory

Memory is a component in both adult and child forensic interviews. An understanding of children's memory for stressful and traumatic events, such as sexual abuse, is important for an applied setting, such as predicting the accuracy and reliability of children's legal testimonies (Goodman, Hirschman, Hepps & Rudy, 1991; Holliday et al., 2002; Vagni, Maiorano, Pajardi & Gudjonsson, 2015). In all forensic interviews, interviewers have to retrieve as much information as possible, without interfering in the memory process, by using inappropriate techniques (Fisher & Schreiber, 2017; Orbach et al., 2000; Roberts & Powell, 2001) (e.g. suggestive- or leading questions, or adding clues in form of non-verbal suggestions) and at the same time, ensure the child's wellbeing. Thus, the principal aim of a forensic interview with alleged child victims is to acquire truthful, accurate and reliable accounts that are permissible in court and can enhance the investigative process (Lamb, Orbach Hershkovitz, Esplin & Horowitz, 2007). The memory of a witnessed or experienced event is the foundation of a forensic interview, and investigators rely heavily upon it (Brown et al., 2013; Goodman & Melinder, 2007; Ornstein et al., 2006; Roberts & Powell, 2001). However, memory processes are often not the only factor when children fail to disclose details of witnessed events or abuse. Rather, non-disclosure is mostly associated with inadequate verbal skills, lack of understanding of legal terms, the process of an investigation and personal reasons not to reveal the abuse (Pipe, Lamb, Orbach & Cederborg, 2007). On the other hand, supportive behaviour by an interviewer has been found to reduce children's reluctance to describe details of alleged experienced abusive events (Blasbalg, Hershkowitz, & Karni-Visel, 2018). Nonetheless, memory is one of the key factors that interviewers rely on to obtain forensic details about a witnessed event or abuse allegation.

1.3.1 Episodic memory

The human memory system is usually divided into three connected systems: the sensory-, the short-term- and the long-term memory system (Schacter & Tulving, 1994). Memory can further be divided into short-term-memory for auditory and visual memory and them into the articulatory and acoustic memory. The specific memory definitions (Schacter & Tulving, 1994; Schacter, Wagner, & Buckner, 2000; Sherry & Schacter, 1987; Squire, 1987) vary between researchers. One aspect that plays an important part in children's memory, is episodic memory. Episodic memory receives and stores information on autobiographical occurrences (Tulving, 1972) and consists of encoding, storing and recalling of information associated with an experienced event (Ghetti, Schaaf, Qin, & Goodman, 2004). Episodic memory is referred to as an explicit memory system, which is characterised by the understanding of time when an event took place. The episodic memory store is vulnerable to interference, due to the special type of input and potential change of content, when retrieved information is inspected retrospectively (Ghetti et al., 2004; Melinder, Endestad & Magnussen, 2006). Every time episodic memory is retrieved, information is added or changed. For a permanent memory to be generated, the corresponding information first has to go through three consecutive memory systems: the sensory system, the short-term store (also known as working memory) and the long-term system (Tulving, 1972). In the sensory phase, no processing of information takes place; information either decays or inputs are transferred to the short-term store, where the information is simultaneously maintained and processed at any given time. The capacity limit increases during childhood and in adults, the short-term system can hold about 7±2 chunks of information at any given time (Cowan, Nugent, Elliott, Ponomarev & Saults, 1999). Memory that is specific to eyewitness testimonies includes the encoding of either a victim experience or a witnessed criminal act (Thorley, Dewhurst, Abel & Knott, 2016). Episodic memory is of importance in situations relevant to eyewitness testimony, where encoding happens when a

person witnesses or experiences a criminal act (Ghetti et al., 2004). Many variables, such as the duration of exposure, or observation conditions influence the success of encoding in eyewitness testimony. Due to the reconstructive nature of memory for a witnessed event, the initially encoded and stored information is vulnerable to processes of change in the recalling phase, especially, if suggestive techniques are utilised (Alexander, Goodman, Schaaf, Edelstein, Quas & Shaver 2002; Lorsbach, Katz & Cupak, 1998; Roberts & Powell, 2005).

1.3.2 Cognitive inhibition

Cognitive inhibition is classified as a mental process that is linked to the control and inhibition of action sequences (Ruffman, Rustin, Garnham & Parkin, 2001) and an executive process that helps individuals to ignore irrelevant stimuli (Melinder et al., 2006). Since cognitive inhibition assists memory retrieval, by suppressing instant responses, individuals are able to focus and search their memory and provide well-considered answers, instead of incorporating suggestive information added by someone else (Alexander, Goodman, Schaaf, Edelstein, Quas & Shaver 2002; Lorsbach, Katz & Cupak, 1998; Roberts & Powell, 2005). It may be that children with better developed cognitive inhibition capacities show a stronger resistance to suggestions. In one study, cognitive inhibition was related to children's false alarms to questions regarding a video-taped event (Ruffman et al., 2001). Inhibition was specifically related to children's ability to avoid false alarms. Similar results were also reported in a study testing children's memory for two versions of a video, where cognitive inhibition correlated with the resistance to misleading questions (Melinder et al., 2006) and a study involving a stressful target event (Alexander, Goodman, Schaaf, Edelstein, Quas & Shaver, 2002). Alexander et al. (2002) found that cognitive inhibition significantly predicted children's memory errors and suggestibility through misleading questions for an inoculation, even when age was controlled for. These findings indicate that cognitive inhibition is a distinctive predictor of children's memory errors

and plays an important part in false memories for witnessed events; at least in paradigms with suggestive questions.

1.3.3 Source monitoring

Source monitoring refers to the ability to distinguish between memories and different events. It includes the process of making attributions for the origins of memories, knowledge and believes. Source, in this case, refers mainly to the origins, or source of information and expressions of this memory (Chrobak & Zaragoza, 2013; Johnson, Hashtroudi & Lindsay, 1993; Ruffman et al., 2001). Suggestibility is driven by the central cognitive mechanism of detecting discrepancy and errors in source monitoring (Chrobak & Zaragoza, 2013). Therefore, asking children whether they misremember seeing suggested information is a question about children's ability to monitor the source of their memory (Ackil & Zaragoza, 1995). Children's source monitoring is mainly affected by two factors: their age and the similarity of different events (Roberts & Blades, 1999). Several studies have shown that younger children are more prone to inaccurate information recall when experiencing highly similar events (Ackil & Zaragoza, 1995; Melinder et al., 2006; Ruffman et al., 2001). Also, children can mix up memories that they have experienced with inaccurate or misleading information that is provided afterwards; in form of narrative or non-verbal suggestions (Ackil & Zaragoza, 1995; Melinder et al., 2006; Roberts & Blades, 1999; Zhu et al., 2012). Children may have difficulty identifying the source of their memories, which makes them vulnerable to incorporate information from sources, other than themselves (Zajac & Brown, 2018). To remember a specific detail of a repeated event may also be difficult for children (Roberts & Powell, 2001; Zajac & Brown, 2018). Even when information from events can be unambiguously identified, a child, especially, may still have difficulty discriminating the information from other, similar events, they have experienced (Powell & Thomson, 1996).

Further, children, compared to adults, are more likely to be asked leading questions in forensic interviewing (Ackil & Zaragoza, 1995), which in turn can make children attribute their knowledge to this potentially suggestive source (Zajac & Brown, 2018).

1.3.4 Source misattribution

Another aspect of memory interference is source misattribution. Source misattribution refers to the confusion regarding the origin of a post-event item (Gudjonsson, Vagni, Maiorano, & Pajardi, 2016; Volpini et al., 2016), similar to source monitoring described above. It is a form of interference, where similar, misleading information interferes with someone's ability to remember the original event (Chrobak & Zaragoza, 2013; Loftus & Hoffman, 1989). Thus, source misattribution is a weakened or impaired memory in the context of exposure to misinformation and the inability of source monitoring.

Most developmental studies of source monitoring have investigated the processes by which children discriminate between actual, perceived- and imagined events (Roberts & Blades, 1999; Roberts & Powell, 2001). Roberts and Blades (1999) conducted two experiments, with children aged 4 and 10 years, who watched two related events; a live event and a video target. Half of the participants watched an additional video that was similar to the live event, whereas the other half watched a video that was dissimilar. When the children were questioned about the events one week later, the children who watched the similar events confused details of them more than the children in the dissimilar condition. They reported more inaccurate information, when asked for free recall as well as when asked focused questions. Therefore, similar events may lead children to remember the content, but not the source of their experiences. Roberts and Powell (2001) reviewed the research regarding children's reports on sexual abuse. They reported that children's testimonies can be contaminated by various factors, which can cause a

source misattribution (also called source confusion), for example, discussions with parents and teachers before the investigative interview, stories children have seen on TV or heard in stories and even dreams. They reported that source confusion might be more common in repeated child abuse cases and argued that the type of question asked is responsible for suggestibility issues; not only the type of events (e.g. single versus repeated, similar versus dissimilar).

1.3.5 Memory for emotional events

One aspect of the research about investigative child interviewing is concerned with the question of how well children of different ages are able to recall emotional events, such as trauma and abuse (Brubacher et al., 2019). Adults often have the ability to talk about their past without difficulty (Peterson, 2015), but children need to learn how to communicate their past experiences, to make them comprehensive to the listener/interviewer (Brubacher, Peterson, La Rooy, Dickinson & Poole, 2019; Sales, Fivush, & Peterson, 2003).

Researchers have shown that children, as young as 3 years of age are able to understand and recall events that were personally meaningful to them, especially situations that have resulted in an emotional reaction (Goodman et al., 1991; Gordon & Larus, 1992). Gordon and Larus (1992) investigated children's memory of a personally experienced event. A sample of 3- and 6-year-old children were sent to the doctor for a physical examination and questioned about the features of the check-up immediately after and after delay intervals of 1- and 3 weeks. They found that both the younger and older age group were able to give accurate accounts of the check-up immediately after the examination. However, the performance of the 3-year-olds decreased over time, whilst the 6-year-olds remained constant. Further, the older age group delivered more extensive responses to open-ended questions than the younger age group. Similar results were found when children were questioned about their memory on a stressful

event after delays of a few days and up to a year after (Goodman, Hirschman, Hepps & Rudy, 1991). Correct free recall of the event was unaffected by age; however, specific or misleading questions were age-related. Consistent with these results were the findings that older children's reports were completer and more accurate, compared to younger children (Goodman, Bottoms, Rudy, Davis & Schwartz-Kenney, 2001).

When children describe abuse in forensic interviews, many children do not mention the emotional impact of the abuse (Ahern & Lyon, 2013) and often, they even do not seem to be visually upset (Sayfan, Mitchell, Goodman, Eisen & Qin, 2008). However, the lack of children's emotional statements does not necessarily reflect the emotional impact of the abuse and the resulting trauma. An analysis of videotaped forensic interviews with children, showed that most children displayed neutral emotions during disclosure of abuse (Sayfan et al., 2008). This could compromise the perceived credibility of children's allegations, as juries and judges might attribute neutral emotions to an absence of abuse. Most children keep the emotional content of abuse brief and infrequent (Sales et al., 2003; Walton, Harris, & Davidson, 2009) and omission has been found to relate to children's reluctance to provide substantive information regarding experienced abuse in Scottish criminal court trials (Andrews, Ahern, & Lamb, 2017). A study investigating children's narratives of positive and negative experiences found that children might focus on different aspects of events with different emotional value (Fivush, Hazzard, Sales, Sarfati, & Brown, 2003). In Fivush et al., the children's overall amount of information provided, was the same for both positive and negative experienced events, but the contents and coherence of children's narratives differed: children depicted greater detail and more information about objects and people for positive accounts, and more coherent, internal state language for the negative events.

Field work has shown that abused children use a sophisticated range of emotional content,

when describing their feelings about the maltreatment they have experienced, if they are asked appropriately (Lyon, Scurich, Choi, Handmaker & Blank, 2012). Lyon et al. found that in court and forensic interviews, children stating their abuse, were quite capable of describing their emotional reactions, as long as they were specifically asked about how it made them feel.

Children's lack of emotional responses in sexual abuse cases, may be due to reluctances to discuss abuse, rather than an age-associated inability (Ahern & Lyon, 2013; Sayfan et al., 2008). Repeated abuse exposure might also contribute to children's reluctance to disclose emotional information (Sayfan et al. 2008). Children learn from a young age, that negative emotional expressions can cause both harm to themselves, as well as to others. Abused children may adopt coping strategies and hide negative affective displays (Shipman & Zeman, 2001). Lawyers often ask option-posing questions, instead of 'how' questions, which leads to less evaluative content and it has been suggested that asking children more questions, such as 'how did you feel?', will lead to more productive, evaluative information (Lyon, et al., 2012).

1.4 Interviewing children

Investigative child interviews aim to elicit accurate, detailed and coherent testimonies of events (Benson & Powell, 2015). Practitioners are required to be sensitive to children's developmental capabilities and vulnerabilities (Zajac & Brown, 2018). However, investigative interviews are ones in which children are required to participate, even though they may not be well adapted to their developing cognitive skills and abilities. Originally designed to function with adults in mind, children may be poorly equipped with its demands and objectivities (Andrews, Ahern, & Lamb, 2017; Segovia & Crossman, 2012). However, police conducted child interviews are, when well conducted, founded on ethical, sensitive and age-appropriate practices (Milne, Shaw

& Bull, 2007). The primary purpose of such an interview, is to assess what happened; and if something did happen, who did what to whom (Milne & Powell, 2010).

To answer the investigative questions, police interviewers need to collect this information from the victim or witness. Therefore, the interviewing process is the most important task for a police investigator (Myers, Saywitz & Goodman, 1996; Oxburgh, Myklebust & Grant, 2010; Roberts & Powell, 2001). There are several aspects of cognitive development that are relevant to child eyewitness testimony and need to be considered when trying to achieve best practice in child witness and victim interviewing (Lamb, 1996; Zajac & Brown, 2018). Memory development, attention, prior knowledge, memory strength and memory storage are all examples of the underlying cognitive factors that need to be considered (Orbach et al. 2000). Children's testimonies can often be quite skeletal and even contradictory, which may ultimately enhance doubts about their competence (Poole & Lamb, 1998).

In the past thirty years, researchers have systematically investigated the relationship between interviewing conditions and the quantity and quality of information retrieved from child witnesses, in both forensic and clinical settings (e.g., Lamb, 1996; Lamb & Fauchier, 2001; Goodman, Bottoms, Rudy, Davies & Schwartz-Kenney & Rudy, 2001; Orbach et al. 2000; Krähenbühl & Blades, 2006; Righarts, O'Neill & Zajac, 2013; Waterman & Blades, 2011). The focus on the competency of young witnesses has been centred on three topics: recall (Bauer, Larkina, & Doydum, 2012), language skills (Snow, Powell, & Sanger, 2012) and suggestibility (Bruck & Ceci, 1999; Ceci & Bruck, 1993; Lamb et al., 2009; Righarts, O'Neill, & Zajac, 2013; Volpini, Melis, Petralia, & Rosenberg, 2016). Researchers are still investigating the extent to which variations in children's capacities to remember situations and events, express themselves in a clear and concise manner, distinguish reality from fantasy, as well as truth from falsehood, and resist suggestion (Brubacher et al., 2019; Brubacher, Malloy, Lamb

& Roberts, 2013; Lamb, Sternberg & Esplin, 1994; Peterson, 2011). In sexual abuse cases of children, the child victims are often the only available source of information (Lamb et al., 1998) and their statements therefore play a crucial role in successive legal proceedings (Quas, Thompson & Clarke-Stewart, 2005). Researchers have shown that that children can deliver quantitatively and qualitatively competent testimonies, if they are interviewed in a correct way (Lamb & Fauchier, 2001), but even when interviewed correctly, age differences in child testimonies have been reported (Goodman & Reed, 1986; Gudjonsson, Vagni, Maiorano, & Pajardi, 2016).

1.4.1 Questions effect on retrieving information from children

1.4.1.1 Interview question types

In general, pre-school children are competent in answering wh-questions (i.e. 'What did he wear?' 'Where were you?' 'When did it happen?'), even stating if they do not know the answer to a question (Waterman, Blades, & Spencer, 2004). On the other hand, they are less competent, when asked option-posing questions, such as Yes/No queries (Lamb et al., 2009). Generally, younger children tend to respond more to option-posing and suggestive questions, than to open-ended questions (which may be linked to their language abilities) which makes it difficult to interview young children (Davis & Bottoms, 2002; Goodman & Melinder, 2007; Imhoff & Baker-Ward, 1999; Lamb & Fauchier, 2001).

1.4.1.2 Open-ended questions and free recall

There is a strong consensus on the superiority of open-ended and free recall questions (Brown & Lamb, 2015; Oxburgh, Mykleburg & Grant, 2010; Saywitz, Lyon & Goodman, 2017). Open-ended questions and free recall elicit more reliable, elaborative and spontaneous recalls about

experienced and witnessed events (Brubacher et al., 2019; Cederborg et al., 2013; Lamb & Fauchier, 2001). Even though interviewers are advised to use mainly open-ended prompts (Brubacher et al., 2019; Lamb & Fauchier, 2001), they usually fall short on this recommendation (Benson & Powell, 2015). This may be related to children's responses being too brief in response to open questions. Interviewers must then find a way to elicit more details from children, without switching to directive or leading questions, which have been found to decrease accuracy (Goodman & Melinder, 2007; Gudjonsson et al., 2016; Vagni, Maiorano, Pajardi, & Gudjonsson, 2015). The more an interviewer hints towards a specific answer, the more likely children are to report information based on the suggestion (Goodman & Melinder, 2007). Therefore, interviewer guidelines and protocols, such as the National Institute of Child Health and Human Development (NICHD), (Lamb, La Rooy, Malloy & Katz, 2011) and the Achieving Best Evidence guidelines (ABE) (Ministry of Justice, 2011) strongly recommend the use of open questions, to avoid interfering, or leading children's responses.

There are various typologies of open questions in the research literature and there are still remaining discrepancies amongst researchers about how to best describe types of interview questions (Oxburgh, Myklebust & Grant, 2010). The NICHD structured protocol (Lamb et al., 2011), contains two types of open-ended prompts; invitations and directives. Invitations are more general, lacking any cues (e.g. 'Tell me all about what happened'), whilst directives are follow-up questions about details, the child has provided previously (e.g. 'Tell me more about [detail provided by the child]') and include wh-prompts, such as who, what, where, when and why. The ABE does also recommend open-ended questions, especially in the beginning of an interview. However, compared to the NICHD (Lamb et al., 2011), the ABE (Ministry of Justice, 2011) also mentions the risks of 'why' questions, as they tend to promote the feeling

of blame and argues that these types of questions do not help the witness or the memory process.

A recent study (Ahern, Andrews, Stolzenberg & Lyon, 2018) evaluated the productivity differences of wh-prompts in real, forensic child interviews in England. Ahern et al. found that 'what' and 'how' happened prompts were more productive than any of the other wh-prompts, in both the rapport and substantive phase of the interviews. Younger children (in two age groups of 4-8- and 9-13-year olds) provided fewer details overall, however, they demonstrated the same patterns of providing more words and details in response to most open-ended questions. The overall consensus on the superiority of open questions, has been supported and endorsed by research reviews (Lamb et al., 2011) and studies in several countries (Korkman, Santtila, & Sandnabba, 2006; Myklebust & Bjørklund, 2009) all indicating that 'open' questions elicit the longest and most detailed responses by children.

1.4.1.3 Leading questions

Whilst open-ended questions, such as 'can you tell me what happened?' activate recollection memory, a conscious and controlled process that demands attention and involves slow search processes; specific questions, such as 'did he touch you?', are linked to recognition memory, which uses a familiarity process and involves fast processes, with the feeling that an event was previously experienced without recollection (Gillund & Shiffrin, 1984). As mentioned in sections 1.2.3 and 1.2.4, specific or leading questions have been found to decrease accuracy of children's responses (Lamb, Hershkowitz, Orbach & Esplin, 2011). Recommendations regarding appropriate questioning techniques, such as the ABE (Ministry of Justice, 2011) and the NICHD protocol (Lamb et al., 2011) stress that open prompts should always be used, until children's recollection is exhausted (Otgaar et al., 2019; Saywitz et al., 2017).

1.4.1.4 Repeated questions

The ABE guidelines (Ministry of Justice, 2011) include specific recommendations regarding repeated questions, advising interviewers not to repeat questions word for word, but instead rephrase them. Yet, forensic interviewers often repeat questions for clarification, to challenge children's previous responses, or even for no apparent reason (Andrews & Lamb, 2013), though research has shown that repeated questions often lead to contradictive statements (Lamb & Fauchier, 2001), or a change of answers, as a willingness to comply (Volpini et al., 2016).

Andrews and Lamb (2014) examined transcripts of police interviews with children, who had allegedly been victims of sexual abuse for the occurrence of repeated questions and found that police officers often still use repeated questions; despite research demonstrating that repeated questions can be problematic, on the grounds that children may change details in their accounts and thus, respond in an inconsistent manner (Krähenbühl & Blades, 2006; Lamb & Fauchier, 2001). In an experimental study, Krähenbühl and Blades (2006) found that children's response accuracy to unanswerable questions declined with the repetition of questions. Further, children changed their answers to a quarter of the repeated questions. Volpini and colleagues (2016) have found the same effect and argued that repeated questions by an interviewer communicate the message that children should change their previous answer.

A study investigating real-life child interviews, demonstrated that on average, interviewers asked three repeated questions per interview, with over 50% of them for clarification purposes (Andrews & Lamb, 2014). However, the rest of these questions were repeated, to either challenge the children's previous responses, or for no apparent reason. Although children's subsequent responses only contradicted themselves in slightly over 10% in these cases, the combination of repeated questions and suggestive prompts were more likely to elicit

contradictions, demonstrating that closed-ended- or leading, repeated questions can negatively affect the consistency of children's responses.

1.4.1.5 Suggestibility

Suggestibility is a critical factor to consider in child interviews, as it can influence their performance, as shown in sections (1.3.1. and 1.3.2). Most notably, studies have shown that eyewitnesses' responses can be skewed by the manipulation of a question's phrasing (Goodman & Melinder, 2007; Gudjonsson et al., 2016; Lamb, Hershkowitz, Orbach & Esplin, 2011; Lamb et al., 2009; Loftus, 1975; Vagni, Maiorano, Pajardi, & Gudjonsson, 2015). Suggestions, in the form of inaccurate post-event information during questioning, can become entangled with the original, encoded memory and form an incorrect representation of children's perception of an event (Loftus, 2005).

It has been found that repeated questions during an interview, can suggest to children that they should change their given answer (Volpini et al., 2016). Further, research has demonstrated that younger children show a higher risk of suggestibility to false suggestions regarding a staged event (Roberts & Powell, 2005), a video target (Ackil & Zaragoza, 1995), inoculations (Alexander et al., 2002) and verbal stories (Gudjonsson et al., 2016). Due to children's vulnerability for suggestive interference, child interviews have to consider various factors that could potentially affect suggestibility (Zajac & Brown, 2018).

Vagni, et al. (2015) examined children suspected of being victims of sexual abuse and a control group and found that the suspected victims had higher suggestibility scores in several measures of the Gudjonsson suggestibility scale, namely Shift (shifting answers after negative feedback) and Yield 2 (level of suggestibility after negative feedback). Vagni et al. argued that trauma

related psychopathology in children might be associated with poorer memory and an increase in suggestibility, due to poorer encoding, increased distraction and poorer coping skills with interviews per se, as well as leading questions. Hence, adverse life events might predispose a child to be more suggestible. Although there are individual differences in suggestibility of children of all ages, overall, younger children tend to be more suggestible than older children (Saywitz et al., 2014). Young children expect adults to be more knowledgeable and are ultimately more suggestible, when interviewed by adults than when questioned by other children (Ceci, Ross & Toglia, 1987). Due to children's higher vulnerability for suggestibility, it is therefore important that interviewers avoid leading techniques (Saywitz et al., 2014; Zajac & Brown, 2018).

1.4.1.6 Interview recommendations

Both empirical findings and professional consensus have led researchers to formulate recommendations regarding interview practices, ones that are believed to improve the informativeness of children's accounts. These recommendations include the ABE (Ministry of Justice, 2011) and the NICHD (Lamb et al., 2011) protocols.

Despite agreements on some aspects of interviewing, such as the positive effects of open-ended question types (Lamb et al., 2011; Oxburgh, Mykleburg & Grant, 2010) and the need to inform children about 'don't know' responses (Waterman, Blades & Spencer, 2004), theory and practice often differ. Researchers have found that many investigators, contrary to expert recommendations, frequently use focused and leading questions, and seldom offer open-ended questions in their interviews with children (Andrews & Lamb, 2013; Benson & Powell, 2015; Lamb et al., 1996; Lamb et al., 2009; Lyon, 2014).

Lamb and Fauchier (2001) investigated the effects of question type on self-contradictions by children and found that even experienced forensic interviewers, who questioned children regarding allegations of sexual abuse in a day-care centre, relied heavily on focused/leading questions to elicit information, instead of using open-ended questions. The riskiness of this approach was demonstrated by Lamb and Fauchier's analysis of contradictory details given by the interviewed children. In the interviews, the children contradicted essential details that they had provided earlier, either in the same interview, or in preceding interviews. The most important finding was that all of nearly 200 contradictory details reported in the study, emerged in response to focused questions. None of the information given by the children contradicted an earlier detail in response to an open-ended question. Moreover, four-fifths of the contradictory details occurred in the same interview, suggesting that repeated interviewing was not the main problem per se; but rather that the problem was repeated questioning using focused questions.

1.5 Interview formats

Researchers have shown that poor interviewing techniques by the police or lawyers can influence the quality and reliability of children's testimonies (Brubacher et al., 2019; Cederborg et al., 2013). They can further lead to false memories and inconsistent statements (Zajac & Brown, 2018). To retrieve accurate and detailed information about a crime, forensic interviewers need to adopt effective techniques, including pre-interview procedures such as rapport building and using questions that are based on the recommendations of the manuals and procedures, designed for the investigative interviewing of children (Brown et al., 2013; Rivard & Schreiber Compo, 2017).

1.5.1 Child interviewing guidelines in the UK

Most aspects of current interviewing procedures are based on psychological and linguistic knowledge, experimental research and field studies of investigative interviews (La Rooy, Heydon, Korkman & Myklebust, 2015). In England and Wales, the first official guidelines for children (as well as other vulnerable witnesses) was released in 1992 (Home Office, 1992) as the Memorandum of Good Practice (MOGP). This document was designed to provide guidelines for interviews with children aged 14 years and younger, involved in allegations of violent abuse, and children aged 17 years and younger, involved in cases of sexual abuse. The Memorandum of Good Practice was extended and republished in 2001, as Achieving Best Evidence (ABE) (Home Office, 2001) and recently revised in 2011 (Ministry of Justice, 2011).

The ABE guidelines contain recommendation for child witnesses and interviewees up to the age of 17 years, to all cases of alleged abuse. The Achieving Best Evidence guidelines contain nearly 250 pages on how to conduct interviews, including planning, rapport phase, interviewing techniques, types of questions, witness support, court procedures and special measures. The guidelines state that child interviews should always be video recorded, including a close up recording of the witness and a wide-angle lens to capture the whole room. They also mention active listening and non-verbal behaviour by the interviewer, such as being friendly and approachable. Further, they recommend an appropriate distance between the interviewer and the interviewee. It is advised that the interviewer sits at a 120-degree angle (a ‘ten to two’ angle), instead of a face-to-face orientation, to avoid the implication of a confrontation and to promote a relaxed atmosphere in the interview. The guidelines also suggest that the interviewer speaks in a relaxed manner and avoids interruptions of the interviewee. However, the ABE guidelines do not refer to the use of gestures by the interviewers.

1.5.2 The NICHD Interview protocol (USA)

The NICHD (Lamb et al., 2011) Investigative Interview Protocol is a structured interview protocol, designed by researchers, to convert empirical findings and knowledge to effective guidelines in the legal field (see section 1.4). The interview manual displays an easy-to-follow, step-by-step guide, which interviewers can follow, starting with an introduction by the interviewer, an explanation of true and false responses, the importance of 'don't know' replies, a rapport building phase, training in episodic memory, the substantive interview phase and the closing phase. The protocol stresses the usage of open-ended questions until details of the allegations are still missing or unclear. More open requests have been found to elicit more elaborate and accurate replies by children (Lamb et al., 2007; 2018). Further, the application of the revised NICHD protocol, in both the transitional phase at the end of the rapport building, as well as the substantive phase of interviews, led interviewers to ask proportionally more less-specific and more open questions (as discussed in section 1.4.1), which are linked to richer responses by the children (Lamb et al., 2018). This implies that following child interviewing guidelines seem to have a positive effect on children's testimonies.

1.5.3 Structure of interviews

Interviews differ from normal conversations in that they usually consist of a question-answer format and serve a specific function. Structured interview protocols have been developed to increase adherence to evidence-based practices and to accommodate children's comfort, by introducing the child to the situation, providing legal knowledge and focus their attention (Saywitz et al., 2017). The structure of interviews has been highlighted in both the ABE (Ministry of Justice, 2011) and the NICHD (Lamb et al., 2011), with emphasis on pre-interviewing stages, a rapport phase, the actual interview and closure.

The ABE guidelines (Ministry of Justice, 2011) include recommendations towards the planning and preparation of an interview, the actual interview, a witness support stage, witnesses in court and special measures. Within the ABE, there are also guidelines regarding the cognitive interview, covering rapport, active listening and non-verbal behaviour by the interviewer, questioning and closure of the interview. The NICHD (Lamb et al., 2011) on the other hand, recommends an introductory phase, rapport, training episodic memory, the substantive phase, breaks and closure.

1.5.4 Rapport building

Rapport building is considered the foundation of effective interviewing of witnesses and victims (Abbe & Brandon, 2013). As being interviewed by a police officer can be a tense and stressful experience, even for adults, and may be even more so for children (Almerigogna et al., 2008). Hence, gaining the trust of the child and building a good interviewer/interviewee relationship, is an important step in forensic child interviewing. Rapport enables interviewed witnesses (or suspects) to supply information more freely (Walsh & Bull, 2012) and contribute to the quality of children's accounts (Ministry of Justice, 2011). Roberts, Lamb and Sternberg (2004) explored the effects of styles of rapport building, on the quality of children's accounts of experienced events, such as length, informativeness and accuracy. Especially open-ended rapport building procedures, including open questions regarding information the children have already provided, allow children to choose what information to provide and signal to them that they are the experts (as compared to the interviewer). Open-ended rapport building procedures elicited more accurate accounts and better resistance to misleading questions by children regarding a staged event than children in the direct rapport-building condition (Roberts, Lamb & Sternberg, 2004).

Since children may be reluctant to provide accounts that are sensitive or embarrassing in nature (as discussed in section 1.3.5) (London, Bruck, Ceci & Shuman, 2005; Saywitz, Goodman, Nicholas & Moan, 1991; Sjöberg & Lindblad, 2002), rapport building might reduce anxiety or discomfort and encourage children to open up and provide lengthier and more detailed information about their abuse. Further, rapport can reduce children's resistance to suggestion (Roberts, Lamb & Sternberg, 2004; Tobey & Goodman, 1992), because children may feel more comfortable to resist suggestions by a person, who seems warmer and more approachable to them (Hershowitz et al., 2014), as will be discussed in section 1.5.6.

The rapport phase usually consists of questions and conversations between the interviewer and the child, establishing comfort and a friendly connection. Although laboratory studies do not often include the introduction and practice of narratives during the rapport phase, field- and laboratory research using official guidelines, such as the ABE (Ministry of Justice, 2011), or NICHD structured interviews (Lamb et al., 2011), include episodic memory training and aim to maximise children's comfort before they start the investigative stage. Children can be sufficiently trained and guided to deliver lengthy narratives of experienced events (Hershkowitz, 2009; Roberts, Lamb, & Sternberg, 2004). Both the ABE (Ministry of Justice, 2011) and NICHD guidelines (Lamb et al., 2011) provide clear instructions to the interviewer; about how to first explore children's likes and dislikes, for example hobbies, favourite animal, etc., and subsequently use episodic memory training, to familiarise them with open-ended questions (see section 1.4.2), to demonstrate the level of detail that is expected of them (Orbach et al., 2000). Further, rapport building provides rehearsal in using desirable retrieval strategies. Information provided in response to open-ended questions is more accurate than information gathered in direct questions (Lamb & Fauchier, 2001; Roberts & Blades, 1999). Hence,

children's practice of recalling information in the rapport phase might encourage them to use this strategy throughout an interview (Roberts et al., 2004).

1.5.5 Language abilities

Children's language abilities are an important factor to consider during child interviews. Especially younger children tend to provide fewer words to questions and provide less details than do older children (Ahern, Andrews, Stolzenberg, & Lyon, 2018). It has been suggested that interviewers should pay attention to the child's language abilities before they conduct the interview and include narrative practice exercises (Saywitz et al., 2017). Information regarding children's language levels could be observed in their informal conversations with familiar adults before the main interview. This information can later help the interviewer to choose the appropriate language and frame questions based on the developmental level of the child and protect him or her from impatience (Nurcombe, 1986). Five minutes of narrative practice, including open-ended questions about neutral events during the pre-interviewing stage are often sufficient to elicit more detailed and accurate information from children (Saywitz et al., 2017). Additionally, it is crucial to phrase questions in a way, which children can understand. Researchers advise against long questions, involving complex grammar and sophisticated vocabulary and avoiding legal terms (Saywitz & Camparo, 2014). Interviewers are advised to use a simple language style, clarifying terms in advance and asking children to explain difficult words, before using them (Saywitz et al., 2017). Therefore, interviewers need to match their language to the child's comprehension, to create an optimal communication throughout the interview. Due to the same reason, it might be possible however, that interviewers may use hand gestures for the same reason; to assist a child's comprehension of the information.

1.5.6 Supportive comments

Social support can be defined by various behaviour and has been a research topic across disciplines, including communications, sociology and psychology (Carter, Bottoms, & Levine, 1996). Supportive interviewer behaviour, such as smiling, open-body posture, etc. convey emotional warmth, foster the feeling of well-being of a child, and can enhance children's cooperation, and reduce their reluctance during forensic interviews (Brubacher et al., 2019). Further, supportive behaviour has been found to even reduce reluctance to describe details of their alleged experienced abusive events (Blasbalg, Hershkowitz, & Karni-Visel, 2018). In contrast, a lack of emotional support by an interviewer has been found to increase children's anxiety in mock forensic interviews (Davis & Bottoms, 2002).

Child interviews have shown that supportive behaviour by the interviewer, during the substantive phase, predicted an increase in overall informativeness (Blasbalg et al., 2018). Goodman, Hirschman, Hepps and Rudy (1991) interviewed children about a routine vaccination in a medical clinic 2 and 4 weeks after their visit. Their interview protocol incorporated free recall, misleading and specific questions. In the experimental group, the interviewer acted supportive, which included regularly complimenting children for their answers (irrespective of their correctness), smiling and handing out snacks, while in the control group the behaviour was neutral. Following the delay, the 3-4-year olds and 5-7-year olds provided more free-recall information in supportive conditions, than in neutral conditions. The same supportive behaviour also reduced the younger children's response errors to misleading questions and suggestions that abuse had occurred after the 4-week delay. Interviewer support was also associated with a higher total amount of information provided one year after a witnessed event and more accurate reporting overall (Saywitz, Wells, Larson & Hobbs, 2019), and the number of unsupportive interviewer accounts were negatively related with the number

of details provided by children in Canada (Lewy et al., 2015). It has been suggested that supportive, non-intimidating manner by interviewers maximise the accuracy of children's reports and help guard against false reports (Davis & Bottoms, 2002).

Based on these findings, the NICHD (Lamb, La Rooy, Malloy & Katz, 2011) Investigative Interview Protocol was revised to promote more supporting interviewing (Hershkowitz, Lamb & Katz, 2014; Hershkowitz, Lamb, Katz & Malloy, 2013), and includes adjustments, which also highlight rapport building and supportive behaviour. Hence, child-interviewing guidelines seem to be open to new research discoveries; which is an important factor to consider for the application of this thesis' findings.

1.5.7 Effects of delay

Another vital factor to consider in child interviews is delay (Waterman & Blades, 2013). The time lapse between the witnessed event and the testimony can be important, with longer delays affecting children's' ability to provide accurate responses. Although children are able to recall personal, salient events, such as a highly stressful, natural disaster like Hurricane Andrew, even after several years (Fivush, McDermott Sales, Goldberg, Bahrick, & Parker, 2004), their recall generally includes less details and becomes less accurate after longer delays (La Rooy, Pipe, & Murray, 2007; Rooy et al., 2018). Therefore, it has been recommended that interviews should always be conducted as soon as possible after the alleged offence, or witnessed crime, by professional interviewers, who add as little information as possible, whilst simultaneously encourage children to provide as much evidence as possible (Lamb, Orbach, Hershkowitz, Esplin & Horowitz, 2008). Immediate recall and questioning assume that memory is still strong and the longer the delay between a witnessed event and the recall, the higher the risk of contamination of the memory is. Immediate recall was found to be negatively correlated with

suggestibility in a study of children between three and six years of age. Low scores of immediate recall of a presented story with illustrations were correlated with high scores of suggestibility, and high scores of immediate recall were related to low scores of suggestibility (Volpini, Melis, Petralia, & Rosenberg, 2016b). At the current date, no specific information exists on how delay affects the influence of gestures during child interviews. Considering the recommendations by Lamb et al. (2008), mentioned above, it could be presumed that hand gestures, like verbal information may be more persuasive in a delayed interview condition. So far, no research study has compared the influence of gestures in immediate versus delayed interviewing conditions. Hence, the current thesis considered this gap in research and investigated the research question, if a delay between showing a video and interviewing children with misleading gestures will affect children's ability to provide accurate responses, compared to a non-delayed, immediate interview in Chapter 5.

1.5.8 Transcripts

Whilst police interviews with children are generally videotaped, the main attention of professionals and researchers alike is focused on the written transcript of what was discussed in the interview room. Transcripts hold an important position in forensic child interviews (Brubacher, Peterson, La Rooy, Dickinson & Poole, 2019), as they preserve the reported evidence and can be referred to in court. However, transcripts mainly refer to the questions asked and the children's responses and do not include information regarding body language or gestures used by the interviewer and interviewee (Broaders & Goldin-Meadow, 2010). They are therefore flawed, by not containing any information regarding interviewer behaviour or information that has been communicated non-verbally between the interviewer and the child. Whilst interview transcripts may be easier to acquire for researchers, due to the possibility of anonymising the content, they do not provide any evidence of gestures, which may have been

used by the interviewer or the child, therefore, in the current thesis, transcripts were not considered and the focus was set on video-recorded interview material as well as personally conducted interviews.

1.5.9 Summary

Extensive research practice has, over decades, provided a myriad of recommendations and cautions regarding child-interviewing techniques. These findings have subsequently been incorporated into official guidelines, across different countries, such as the NICHD protocol, which is mainly followed in the United States, and the ABE guidelines, used in the United Kingdom. However, the topic of non-verbal behaviour, including gestures, produced by interviewers has so far been ignored.

2. CHAPTER TWO

Swiss guidelines and procedures regarding child interviewing

2.1 Introduction

Research investigating child interviewing guidelines, has so far, mainly considered English-speaking countries. To our knowledge, there is no publication to this date, which has analysed child interviewing guidelines of other European countries, including Switzerland and their official police procedures in child interviews. Switzerland's child interviewing procedures are of importance to this thesis, due to experiments (Chapter 4 and 5) conducted with children in Switzerland. Chapter 1 provided an overview of child interviewing guidelines in English-speaking countries; however, Switzerland might adopt different procedures and until now, nothing is known regarding general child interviewing guidelines in Switzerland. Whilst larger international guidelines may have influenced the Swiss police's child interviewing procedures, it is unknown, how aware the police interviewers are of any of the areas discussed in Chapter 1. Since the focus of this thesis was to investigate misleading gestures in child interviews in both England and Switzerland, it was important to gather background information on the status of child interviewing guidelines in both countries. Whilst England's guidelines were covered in Chapter 1, Switzerland's child interviewing guidelines and procedures are covered in the current chapter.

2.2 Swiss background of children's testimonies

Parliamentary and governmental law regulates the legal guidelines of child interviewing in Switzerland. How practitioners are required to work has been developed by the chief prosecution and the district attorney's office and now contain mandatory regulations and

guidelines. The children's survey (active since 2011 across Switzerland), is regulated by the Swiss Code of Criminal Procedure and Victim Support Act (VCA; Opferhilfegesetz, OHG, 2007). Previous to this date, each canton had its own code of criminal procedure.

2.3 Method

2.3.1 Participants

Two experienced female police child interviewers were interviewed for this study; representing the two largest police forces in Switzerland and the German speaking area, namely Zurich and Bern. Both participants have been working as police child interviewers for several years.

2.3.2 Design

An exploratory, qualitative research design was chosen. A semi-structured interview was conducted with both participants, within their respective police station.

2.3.3 Procedure

Contacted Agencies

Switzerland consists of 26 cantons and 11 of these were contacted by the researcher. The cantons were chosen in regard to language proficiency by the researcher (Switzerland has four official languages: German, French, Italian and Romansh), availability of information online, and officially listed divisions concerned with child interviewing. Some cantons listed a number of police stations online, without clear descriptions of their divisions; hence, a number of cities and towns were contacted. Further information was gathered through a psychologist working at University of St Gallen, who delivers training courses for district attorneys and other forensic

professionals, involved in forensic interviewing (Kinderschutz Switzerland) and the Kantonspolizei St Gallen, who provided written information regarding their interview procedures.

2.4 Findings

2.4.1 Divisions for sexual delinquencies and child protection

Every canton has specially trained officers for the interviewing of children. However, in smaller police corps (i.e. Appenzell Ausserrhoden) there are no independent divisions to interview children, and children may be referred to the specialist divisions in larger cities. Larger divisions, such as Zurich and Bern, employ 20 and 16 police officers respectively.

2.4.2 Guidelines by the individual cantons

The previously outlined general guidelines of the Swiss Code of Criminal Procedure and Victim Support Act are legally binding for all Swiss police interviews, questioning children under 18 years of age. However, there are slight differences in proceedings between police divisions in different cantons. Of the contacted cantons (Aarau, Bern, Graubünden, Basel-Stadt, Basel-Land, Appenzell Ausserrhoden, Appenzell Innerrhoden, Thurgau, Schwyz, Zurich and St Gallen), three police divisions conducting child interviews, agreed to elaborate on the general guidelines and provide information regarding their division-specific proceedings. One police division provided written information only, and two divisions agreed to proceed with an interview, with two of their child interviewers. An overview of the findings is provided below. Specific differences between the two divisions are marked by the name of the city.

The researcher visited two police forces, (Zurich and Bern) and interviewed a total of two experienced staff members, who, on a daily basis, conduct interviews with children in child sexual-and domestic abuse cases.

Victims of serious sexual offenses and abuses 3-18 years of age should be interviewed using video recordings, by a specially trained police officer, as well as in the presence of a specially trained child and youth psychologist. The main interview takes place in an interview room, equipped with two cameras and microphones (video interview room) (focused and complete recording). The interview is transferred onto two screens in a technical room, where the psychologist and another police officer (called a specialist, and who is responsible for the technology) are present.

The interview is, whenever possible, held between the interviewer and the child (the victim is entitled to one person accompanying him or her in the interrogation room, if so desired by the victim). The psychologist then writes a report of the video interview (about the behaviour of the interviewed child). During the recorded interview, a short protocol is drawn up by the police, including word-by-word statements that are relevant. The DVDs of the complete interview and the two reports are then sent to the public prosecutor and are treated as evidence. The statements are protected through official secrecy.

According to the Victim Assistance Act, a victim has the right to be interviewed by a same-sex person. In the canton of Zurich, children of both sexes up to the age of about 12 years, are generally interviewed by female police officers and boys from about 12 years by male police officers. Research on this topic (Lamb & Garretson, 2003) has shown mixed results on the advantages of same-sex interviewers: it has been found that girls of all ages provided more information in response to direct questions asked by a female, rather than a male interviewer,

whereas boys did not respond differently between the genders. However, older girls provided more information in response to option-posing questions, provided by male interviewers and younger children provided more information in regard to suggestive questions asked by the opposite gender interviewer (Lamb & Garretson, 2003).

The survey is designed as follows: First, a so-called preliminary interview, with the victim and the parents or guardians is conducted in a common room, where the entire process is explained. Then, in the interview room, the legal issues are explained to the victim, which is followed by questions about personal circumstances and the case itself. The questions are formulated to be appropriate to the age of the child and also to take into consider his or her mental state.

The number of questions vary accordingly to the importance of the matter and are individually tailored to the scope and circumstances of the case, which should be clarified in the initial interview. Young children's ability to concentrate is limited in time (Kortesluoma, Hentinen, & Nikkonen, 2003). Despite police officers being aware of this, it was reported that each video interview lasts for about 60-90 minutes. Victims who have learning disabilities are also video interviewed.

2.4.3 Code of criminal procedure

The official guidelines for Swiss police officers conducting child interviews are regulated by the Strafprozessordnung (Code of Criminal Procedure). The guidelines describe four measures that have to be followed, to ensure the protection of the normal child witness, and two additional measures for interviewing children with mental disorders. Article 154, titled 'Special measures for the protection of child witnesses' includes all official formulations on how to conduct child interviews within the Swiss legal system.

1. The victim is considered a child when he or she is less than 18 years at the date of the hearing or line-up.

2. The first hearing of the child must take place as soon as possible, after the report of the crime.

3. The authority may exclude the confidant (e.g. mother) from the proceedings, if they might exercise a decisive influence over the child.

4. If it is apparent that the hearing or the confrontation of the child could lead to severe psychological distress, the following rules apply:

a) A confrontation with the accused person may only be ordered, if the child specifically requests the confrontation, or the claim of the accused person to be heard, cannot be guaranteed any other way.

b) Generally, the child may not be questioned more than twice during the entire process.

c) A second interview will only take place, when the parties could not exercise their rights at the first interview, or this is unavoidable in the interests of the investigation, or of the child. Wherever possible, the second interview will be carried out by the same person, as in the first.

d) Interrogations are carried out in the presence of a specialist, or by an investigation officer, who is trained for this purpose, or an appropriate investigator. The hearings are recorded with image and sound. Using video-recordings of investigative child interviews has been strongly supported by a recent study, arguing that video recordings allow an interview to be revisited for information that might have been missed (Congdon, Novack & Goldin-Meadow, 2018).

e) The parties exercise their rights through the interviewer.

f) The interviewer and the specialist keep any particular observations in a report.

2.4.4 Cantonal victim's assistant office

The federal law on assistance to victims of crime (Victims Assistance Act), has been in force since 1993. Victims of violence are entitled to financial support and advice. The Cantonal Victims Assistance Office is responsible for the implementation of the Victims Assistance Act in each canton and include the assessment of applications for financial services and the financing and supervision of the recognized victims counselling centres.

2.5 General information regarding Swiss child interviewing police forces

2.5.1 Pre-Interview

2.5.1.1 Policy

Both of the two visited forces required police officers to comply with the Swiss code of criminal procedure on interviewing child witnesses and victims. Both forces also mentioned that the specialist skills required by police interviewers should be refreshed and maintained, through obligatory training courses and practical application on the job.

2.5.1.2 Police Teams

Zurich's police division for sexual delinquencies and child protection consists of about 20 trained police officers that each have at least two years' experience as uniformed officers. The cantonal police are responsible for the more serious crimes. All officers of this department are

responsible for conducting interviews. There is a lack of officers as well as a lack of stand-of-the-art video equipment. There is a 24-hours-on-call-service for sexual abuse of children. Additionally, there are specially trained child interview police officers in almost all police departments. Police officers are also required to be on-call service, in case an interview is necessary during the night. There is always at least one male- and one female police officer on call-duty.

Bern's police division for sexual delinquencies and child protection consists of 16 trained police officers, who conduct child interviews. They also must have completed the police academy and have at least two years' experience as uniformed officers.

2.5.2 Hospital

In Zurich, a specialised police officer will accompany the victim and its family to the hospital for the tests and initial taking of evidence. Medical doctors are responsible for collecting DNA and other evidence. Often, a short questioning of the child will be conducted by the police officer in the hospital.

Until recently, victims and their families had the option to visit the children's hospital, if there was a suspicion of child abuse, without the involvement of the police. Hence, there was no law that forced them to report a sexual abuse crime to the police, if they did not want to. Even today, there are conflicting statements regarding who has to report suspected abuse, and to whom. Child abuse in Switzerland can also be reported to the Kindesschutzbehörde (child protection authority), who are responsible for the protection of individuals, who are unable to support themselves, such as children or mentally ill patients. Only recently, since January 2019, professionals, who are in close contact with children, such as teachers and physical educators

have an obligation to notify suspected child abuse to the Kindesschutzbehörde. Medical doctors are now allowed to report suspected abuse to the same institution; however, they are not forced to do so by law. Before 2019, medical and legal professionals, including medical doctors and lawyers, were ordered to obey confidentiality, and were only allowed to report cases of a criminal offence. If victims or their families do contact the police before visiting a hospital, one specialised police officer will accompany them for the tests and initial taking of evidence. If the crime is acute, it is of importance to send the child to the hospital, to collect evidence in form of body fluids, injuries and DNA testing.

The most important questions are asked by the police officer (i.e. about the offender), however, not too many. This is mostly based on the psychological and physical state of the child. The parents are usually instructed to tell the child about the upcoming police interview and let them know, how it will be conducted. However, they are advised not to talk to them about the case, to avoid interference.

2.5.3 Planning

Both interviewed police investigators reported planning interviews, to improve the manner of questioning and summarising, however, no details were given about the nature of the planning, due to the lack of clear planning guidelines and uniqueness of each case.

2.6 Police Child Interviews in Switzerland

2.6.1 Zurich & Bern

Victims of serious sexual offenses and abuses 3-18 years of age are videotaped by a specially trained police officer, as well as in the presence of a specially trained child and a youth

psychologist. The interview is arranged according to its urgency. There are no interviews conducted at night; only during normal office hours. The interview should be conducted as soon as possible, after the evidence collection in the hospital and is usually arranged on the next day. The interviews usually last for 60-90 minutes, but they can also be shorter.

The first step for the interviewers is to inform themselves about the case, usually through the mother (or another caregiver) of the child. Questions are concerned with the child itself. Then, the interviewers will talk to the child, introducing themselves, asking the child about neutral topics, such as how they got there, where they go to school, with whom they live. These questions are to build up trust and rapport. This will be conducted outside the interview room, in a waiting room. Generally, parents are not allowed in the interview room.

The next step includes legal information and introduction of all the people involved in the interview. They will show the child both the interview room and the technical room. The child will then be informed about legal issues, their rights and duties (for example, that they should not lie, that they do not have to make a statement, if they do not want to). Every interview starts with an open question. For example, 'Do you know why you are here?' or 'What did you tell your mum/dad/caretaker?'. No suggestive questions should be asked. It is crucial to build trust with the child. The child does not have to answer any questions related to his/her privacy, if he/she does not want to. Further, the victim does not have to make a statement against his/her parents. The child will be informed, that they can talk about everything.

Who accompanies the child, is individually based on each case. If one of the parents (or both) is the suspect, the child receives another caregiver to accompany them. In cases where the mother might be using the child to make a statement/accusation against her ex-partner, the mother should not be allowed to accompany the child to the interview. Generally, parents are

not allowed in the interview room. However, if the child wishes to be accompanied by a parent, he/she has the right to.

The interviewed police officers believed that children open up more and provide more detailed descriptions of the crime, if the parents were not present. This might be related to the assumed shame of a child having to detail abuse in front of their parents. This has been supported by research, which found that children, who expressed shame required more prompts before they disclosed abuse than children who did not express shame (Hamilton, Brubacher & Powell, 2016). Some researchers have suggested that whenever possible, interviews with a child should be conducted without the presence of a caretaker or an adult with an interest to the case (Jones & McQuiston, 1988; Lamb et al., 1994). Others have argued that isolating children is unsupported by empirical literature and may be counterproductive, by causing more stress that inhibits children's testimonies (Moston & Engelberg, 1992). To our knowledge, there are no research findings supporting the assumption that children are more open to disclose abuse during police interviews, if parents are not present. Nevertheless, Saywitz and Camparo (1998) argued that especially young children might display separation anxiety in unfamiliar situations and proposed that interviewers could arrange for a familiar person to be sitting behind the child during the interview but being instructed not to intervene in the interview process.

Before, during and after the police interviews, children are never to be confronted with the suspect/offender. This is mainly based on the risk of witness intimidation and the protection of any further possible psychological damage (Dedel, 2016).

At the end of the interview, the interviewer informs the child that they will leave the room to go talk to the technician in the observation room. The child is waiting in the interview room. This is to make sure with the technician that nothing was left out of forgotten. If required, the

technician will inform the interviewer, to return to the interview room and ask additional questions.

Normally, police officers will not tell the child directly that they should not lie, but rather ask them, if they know the difference between a lie and the truth. Children are also told to say, if they do not know the answer to a question.

Usually only two interviews are allowed. In some cases, there may be a third interview at court. The whole interview process is regulated by the Strafprozessordnung (code of criminal procedure). After these procedures, a report/file will be written. Lastly, the district attorney will be contacted and presented with the evidence.

2.6.2 Bern

As well as following the code of criminal procedures, the interview process is also listed and organised in form of a specialised checklist, developed by a lawyer and the interviewer team in Bern. The process is not so much arranged as a set of guidelines, but rather as a checklist, to keep track of the process.

2.6.3 Establishing rapport

2.6.3.1 Zurich

Every interview starts with an open question: For example, ‘Do you know why you are here?’, or ‘What did you tell your mum?’. No suggestive questions should be asked at this or any other point of the interview. Some children just reply with ‘yes’ or ‘no’ to these establishing questions, so there is a need for a follow up with direct questions on occasions.

2.6.4 Free narrative account

A full free narrative account by the child is usually wanted, but not always achieved. Hence, if there is a lack of information in the free narrative account, interviewers will follow up with direct questions.

2.7 Questioning of children

2.7.1 Structure

Bern's checklist contains something of a structure for the interview; however, no information was given about the specifics of the checklist points. No specific information was given about the interview structure in Zurich, due to the interviewers not following a specific checklist.

2.7.2 Questions

The forensic interviewer is responsible for the type of questions he/she chooses to ask. The Swiss provisions are formulated in a general manner, without specific operational instructions, although they are in agreement with other professional recommendations. No suggestive questions should be asked, and the focus should be on open questions. The first questions should always be of open nature, often asking the child why they are there and to state everything that happened.

2.7.3 Special considerations

There are no special considerations concerning children with special needs, on top of the two measures described in the code of criminal procedures.

2.7.4 Recapping

When the interviewers decide that they have completed the interviewing process, they will leave the interviewing room and consult their colleague in the video room to make sure they did not forget to ask any specific questions. During this time, they leave the child alone, however, beforehand, they inform the child about their absence.

2.7.5 Closure

No specific closure procedures are followed by both police agencies in terms of recapping, as there are no guidelines regarding the summary or closure of an interview in the Strafprozessordnung. However, at the end of the interviews, child victims are referred to victim-help groups (see section 1.7.4).

2.7.6 Supervision

There are no general guidelines about supervision of interviewers, but new team members might be supervised or observed by a more experienced officer in the technical room during their first conducted interview.

2.8 Facilities

2.8.1 Storage

No statement was made about the storage of videotaped interviews; however, every interview is sent to the district attorney after completion.

2.8.2 Interview rooms

The main interview takes place in an interview room, equipped with two cameras and microphones (video interview room) and is videotaped in both a focused and a complete recording. The interview is transferred onto two screens in a technical room, where a child psychologist and another policeman/woman (called a specialist) are present. The specialist is responsible for the technology ensures the recording is complete.

2.8.3 Audio and visual quality

No information was available on the specific quality of the videotaped interviews. However, it was mentioned that there was a strong need for more modern and better equipment in both the Bern and Zurich police forces.

2.9 Translators

If the main police interviewer identifies that a child's language skills are not sufficient in the German language, a translator has to be present during the whole pre-interview and interview process.

2.10 Training

1.10.1 Police Service

The training for police officers for conducting interviews with children is delivered in the Swiss Police Institute in Lucerne. The training course lasts for several days and consists of training units, analysing real video interviews, either brought by the participating officers, or by the course administrators. To be allowed to conduct child interviews, police officers have to have

attended at least the first two-day long course at the Police Institute [Bern]. In Zurich, police officers are allowed to conduct child interviews before they have attended the course, provided that they are working in the division for sexual delinquencies and child protection.

The police officers who were interviewed, mentioned that their training did not include any references to academic research. Nevertheless, the police forces seem to incorporate the same main structure of a child interview, as described in the NICHD protocol (Lamb et al., 2011), or the ABE guidelines (Ministry of Justice, 2011); acknowledging children's memory and capacities, as well as the application of techniques that improve the children's ability to discuss the witnessed or experienced criminal events (La Rooy et al., 2015).

2.11 Additional guidance

In the canton of Bern, an additional forensic advisory service exists (Fil rouge), that was developed as guidance for professionals suspecting child abuse.

2.11.1 Fil rouge

Fil rouge is an interdisciplinary, free advisory service for professionals in the canton Bern. Fil rouge child protection services involve professionals, such as child- and youth psychiatrists, child guidance counsellors, child- and youth psychologists, paediatric services, child protection services and social services, justice, police and victim support. It offers advice to professionals, who are in contact with children, youth and families in the context of their professional activities.

A consultation with Fil rouge child protection provides clarity on how to proceed. Individuals, who have permission to contact Fil rouge are professional personnel, who are working with

children and youths, such as teachers, medical doctors, therapists, government members, social workers, educational consultants, children's home workers and day-care workers.

2.12 Summary

International child interviewing recommendations by professional bodies, share significant consensus on how memory works (Lamb et al., 2007; 2011). Procedural differences usually occur due to individual legal restrictions (La Rooy et al., 2015). The Code of Criminal Procedure in Switzerland embodies a legal protocol that includes a state-determined and recognised order, lacking any references towards research findings. Compared to the Achieving Best Evidence (ABE) guidelines in the UK, as discussed in section 1.5.1, which contain numerous recommendations regarding recent empirical research, it is unknown, how much of the Swiss procedures have been influenced by psychological research. However, it needs to be emphasised that the police officers admitted that they were not following academic research findings, regarding best practices in child interviewing. This implies that the Swiss police is, at the current stand, unaware of gesture research.

Switzerland's official guidelines regarding child interviews are comparatively brief compared to the UK. Their main nature is to provide legal instructions regarding the interview settings and procedures. Beyond the procedural instructions, there are no recommendations in the Swiss guidelines about appropriate or inappropriate question types, rapport building topics or interviewing techniques, which are considered extensively in guidelines in the UK (Lamb, Orbach, Hershkowitz, Esplin, & Horowitz, 2008; Lamb et al., 2011) and other countries, such as Sweden (Cederborg, Alm, Lima da Silva Nises, & Lamb, 2013) and the Netherlands (Otgaar et al., 2019). However, according to the Swiss police officers who were interviewed, the interviewers do follow procedures, such as rapport building and using open-ended questions at

the beginning of interviews; and as discussed in sections 1.5.4 and 1.4.1.2, this approach has been shown to be effective for eliciting children's testimonies (Ahern, Andrews, Stolzenberg & Lyon, 2018; Brubacher et al., 2019; Cederborg et al., 2013; Lamb & Fauchier, 2001; Lamb et al., 2018). Further, Swiss guidelines seem to focus mainly on acquiring truthful and reliable accounts that will be permissible in court, which has been identified as the primary purpose of an interview (Lamb, Orbach, Hershkovitz, Esplin & Horowitz, 2007).

Studies have also supported the notion that interviews should be conducted as soon as possible (Zajac & Brown, 2018), as recommended by the Swiss guidelines, since delay leads to less accurate information over time. However, immediate interviewing is not always feasible, due to office hours, hospital appointments and potential delays between the actual event and reporting of it to the police. Further to this, it has been recommended that interviewers may schedule interviews for times when children are most alert (Brubacher, Peterson, La Rooy, Dickinson & Poole, 2019).

There are limitations regarding the representativeness of the two police agencies interviewed. Due to smaller cantons lacking specific child investigative interviewing departments, there might be qualitative differences in the interviewing practices. Further, due to the lack of detailed guidelines, regarding questioning techniques, there may be individual differences across interviewers and cantons (especially across the four different languages, spoken in Switzerland). However, the two agencies which were contacted, represent the two biggest child interviewing departments in Switzerland, and also handle cases from smaller cantons.

In summary, Swiss police follow procedures, such as rapport building, open-questions and the avoidance of suggestive questions, and as discussed in section 1.4.1.2 and 1.4.1.3, these approaches have repeatedly shown to be effective for eliciting children's testimonies (Ahern,

Andrews, Stolzenberg & Lyon, 2018; Brubacher et al., 2019; Cederborg et al., 2013; Lamb & Fauchier, 2001; Lamb et al., 2018). The guidelines also demonstrate, that children might be questioned by several people, when they visit the hospital, including police officers, doctors and parents, which puts them at risk of receiving leading or suggestive information, in form of questions and gestures. However, Swiss guidelines completely lack any references to gesture, even though recent research (Broaders & Goldin-Meadow, 2010; Kirk et al., 2015) has demonstrated the effect of gestures in interviews with children (see section 1.6.2). Similar to guidelines in the UK, gestures seem to be ignored and officers are not made aware of the potential effects of gestures per se. However, to this date, it is unknown, whether interviewers actually produce gestures, when they interview children. The studies that follow in this thesis, examine the presence of gestures in interviews and examine, whether gestures can mislead child witnesses and elicit false responses regarding witnessed events. To our knowledge, no studies have ever been conducted, to find out, whether investigative interviewers naturally use gestures, when they interview children; especially when they have not received specific instructions regarding non-verbal behaviour, or to avoid hand gestures. Hence, Study 2 in the next chapter, represents the first ever study investigating the occurrence of gestures by forensic interviewers.

To fully understand the conversational impact of non-verbal behaviour by forensic interviewers, gestures first need to be understood in terms of their nature, quality and purpose. Hand gestures can be classified into specific categories, each representing a general definition of movements, including semantic and non-semantic information transfer. The following section will discuss the various types of gestures and their differences; in communicating information intentionally or accompanying speech spontaneously. Following the description of gestures, Chapter 3 introduces Study 2, which investigated the natural occurrence of gestures by interviewers in investigative child interviews conducted in Italy.

2.13 Gestures in child interviewing

When people communicate, for example in talking to each other, they move their hands- they gesture. Gesturing is a cross-cultural and robust phenomenon, found across the world in all ages and talks (Church, Ayman-Nolley & Mahootian, 2004). Gesturing has even been found in people blind from birth (Iverson & Goldin-Meadow, 1998). Gesture may accompany speech or even substitute for it, and usually serve a communicative function (Hostetter, 2011) The most prominent gestures to speakers, as well as listeners, are the forms that can substitute speech (McNeill, 1985).

Situations can often be interpreted in a number of different ways. Meanings can be communicated through a wide variety of channels (Leathers & Eaves, 2015). However, non-verbal communication is not always beneficial. The misinformation effect has been described as the alteration (usually for the worse) of reported information, that occurs after receiving misleading information (Loftus, 2005), such as forensically relevant details about individuals, objects and events and the context of events (who, when, where). As children represent a large population of forensic interviewees, it is of great importance to consider the potential communicative influence gestures can have on their understanding of questions, memory and subsequent testimonies.

2.14 Gestures in child development

Children's gestures, as in adults, are non-verbal body movements that express thought or feelings (Kendon, 2004). Gestures play an important part in children's development, as symbolic gestures emerge almost at the same time or even before the spoken 25-word milestone (Capone & McGregor, 2004; Goodwyn & Acredolo, 1998). Children who are in the early stages of their language acquisition produce gestures to better themselves in expressing

thoughts or feelings, since gestures occur several months before their first word (Goldin-Meadow, 2003). Children's first gestures and words are similar in content (Bates & Dick, 2002; Goodwyn & Acredolo, 1998), which underlies the importance of prelinguistic communication in form of gestures in children's speech development. Research has repeatedly demonstrated the importance of gesture production in predicting children's vocabulary skills and learning stage. It was found that children's use of gestures predicts their spatial strategies (Ehrlich, Levine & Goldin-Meadow, 2006) and general communication skills (Crais, Watson & Baranek, 2009). It has further been proposed that the children's use of gestures might reduce their cognitive load, place less demand on their working memory and facilitates encoding of information into their long-term memory (Capone & McGregor, 2004).

Even though the current thesis is not investigating children's own gestures in forensic child interviews, it is important to consider how significant gestures can be to their understanding of the communicated information, provided by a forensic interviewer. The importance of children's use of gestures in their own language development suggests that gestures produced by adults hold a similarly significant value to children's understanding of a conversation.

2.15 Classifications of gestures

As research on non-verbal behaviour is so diverse, it proves difficult to find a gesture classification scheme that incorporates all the various aspects of their nature. Gestures come in numerous forms and even though a universally accepted gesture definition has not been established to this date; several researchers (Ekman & Friesen, 1992; Kendon, 1997; McNeill, 1992) have provided some well-established gesture classifications or categories, of which the most common types of gestures are defined below.

2.15.1 Symbolic gestures

Symbolic gestures, also known as emblematic gestures, or emblems (Ekman & Friesen, 1992) are hand gestures, which are within the full awareness of speakers and are produced purposefully, to carry a representation, which is often well recognised (Krauss, Chen & Gottesman, 2001); for example, 'sleeping' being represented by tilting the head sideward and using either one or two hands supporting it from the side, mimicking a pillow. Other examples are 'hello', or a 'thumbs up', which can convey a symbol, which is fully comprehensive, even in the absence of speech (Gurney, 2011; Kraus et al., 2001). Whilst some of the symbolic gestures are culturally specific, many messages are emblematic across cultures, however, with different gestures being used in each (Levenson, Ekman, Friesen & Wallace, 1992). Emblematic gestures are produced explicitly in conjunction with speech, whilst co-speech gestures are naturally occurring within the narrative flow of speech. Although there are disagreements over the exact definition of the subcategories described above and their belonging to either the emblematic or co-speech group, some gestures are produced with intent and others are produced outside of the speaker's (or listeners for that matter) awareness. The current thesis' focus is mostly on co-speech gestures, due to their ability to transfer information outside the speaker's and listener's awareness, and their risk of being overlooked during the transfer of video recorded interviews to written transcripts in real life police interviews.

2.15.2 Non-symbolic gestures

Non-symbolic gestures refer to gestures that do not use symbols or specific signs. They can have semantic meaning, but mostly, they are used in combination with speech, to communicate certain features of the spoken part. Generally speaking, non-symbolic gestures would not make much sense without speech, so they are integrally linked to the spoken message. These gestures

hold importance to the current thesis; in Chapter 3, forensic child interviews were evaluated for the occurrence of non-symbolic gestures and Chapter 4 and 5 used non-symbolic, misleading gestures to investigate the gestural misinformation effect in children.

2.15.3 Mixed-syntax gestures

These types of gestures are used in reference to the speech content, often adding information to the spoken words. An example would be to describe a person as 'crazy', by using the index finger spinning next to the head; without actually using the term within the spoken language (Goldin-Meadow, 2005). Other examples refer to propositional gestures (Hinrichs & Polanyi, 1986), which refer to symbolic space. One example would be a person describing the size of something they are referring to within the speech as 'this big', or where they would place a specific furniture (Gurney, 2011). Mixed syntax gestures are used with reference to the speech information and produced alongside of it (described as co-speech gestures in section 2.15.4), however, in comparison, these gestures are produced explicitly and intentionally, to communicate meaning independently.

2.15.4 Co-speech gesture

Whilst the aforementioned gestures are explicitly used alongside speech, co-speech gestures are produced more implicitly and subtly, and speakers might often not even realise that they are using them. Their meaning is only clear through the co-production of the speech and they would not convey clear information in the absence of the speech (Cassel, 2000). Co-speech gestures have also been named 'gesticulations' (Kendon, 1983), or 'conversational gestures' (Rauscher, Krauss & Chen, 1996). Co-speech gestures can be broken down into finer

categories, with all of them representing gestures that convey information spontaneously, alongside speech.

2.15.5 Iconic gestures

Iconic gestures embody representational meanings of actions or objects and convey semantic meaning during speech. They are arguably the most omnipresent form of gestures and hold valuable communicative content in terms of pictorial representations of semantic information in dialog. For example, a speaker might run her fingers through her hair, whilst saying 'I combed my hair' or moving her index and middle fingers in a rapid forward and backward movement, whilst describing a person running away (McNeill, 1992). Iconic gestures tend to complement the information shared in speech, however, they can also add supplementary information, such as spinning an index finger around the head, whilst talking about someone else's hair, implying that the person had curly hair. Thus, iconic gestures are produced to represent both actions and objects visually and add additional information to the content shared through speech. In child development, these gestures occur from around 13 to 20 months of age (Thal & Bates, 1988), several months after children tend to use basic deictic gestures to point to objects, they are interested in.

2.15.6 Metaphoric gestures

Whilst iconic gestures represent physical or objective information about speech content, metaphoric gestures, as the name implies, correspond to metaphorical concepts, which are often subjective in nature (Cassel, 2000). A speaker might talk about last week and use his

hand in a backwards motion towards his shoulder, to depict the concept more abstract. (Krauss et al., 2000).

2.15.7 Deictic gestures

Deictic gestures, or pointing gestures, are movements that include pointing a finger or hand in a direction. They can be classified as both concrete or abstract and especially children use them often in the beginning stages of their language development to refer to deictic words, such as 'this', 'that', 'here' or 'there'. These gestures are mainly used to specify objects, persons, directions or locations, but can also point to abstract or imaginary things (Krauss et al., 2001). A speaker may point towards a building, accompanying the sentence 'the building right there', or ask someone to close the door, by pointing towards it at the same time. Deictic gestures are important to children's development, as they represent their first gestures after reaching and showing objects. Children are producing these gestures at a very young age, usually around 9-12 months.

2.15.8 Beat and self-adapter gestures

Beat gestures, also called motor gestures (Krauss et al., 2001), or batons (Ekman & Friesen, 1972) are relatively simple, repetitive, rhythmic movements. They hold no semantic communicative value to the accompanying speech, but rather are used to stress important aspects of it. Self-adapter gestures on the other hand, are simply hand movements to adjust oneself, for example, scratching an ear or rolling up sleeves; which are completely detached from the content of speech. Even though they are considered gestures per se, they are not of much significance to the topic of forensic interviews or this thesis, as they hold no meaningful

or representational value, which will be of much importance when considering the influence of misleading gestures, in section 2.16.2.

2.16 Gestures and children

2.16.1 Gestures enhancing event recall

Gestures, per se, hold a value in both child and adult communication, as demonstrated above. When children talk about memories and past experiences, they also engage in nonverbal behaviour. This nonverbal behaviour can occur spontaneously or by instruction (Stevanovi & Salmon, 2005). Researchers have noted the importance of spontaneous and instructed nonverbal gesture in communication (e.g., Alibali, Heath, & Myers, 2001; Goldin-Meadow, 2002a, b; Kelly & Church, 1998; McNeil, 1992) and instructed learning (e.g., Liwag & Stein, 1995). In a study investigating the role of gesture in bilingual communication, gestures were found to enhance native English- and Spanish speaking children's understanding of a mathematics instruction video (Church, Ayman-Nolley & Mahootian, 2004). A speech-plus-gesture instructional video improved children's understanding of a math problem by 50%, compared to the speech-only video, showing that gestures hold a strong, communicative value. Gestures not only enhanced learning in the non-native speaking children, when speech is inaccessible, due to a language barrier, but also when the speech is fully understood (as in the native English-speaking children), suggesting that gestures are an integrated part of the natural communication process (Church et al., 2004; Stevanovi & Salmon, 2005). However, gestures may not always be helpful to children, especially when used incorrectly, for example in forensic interviews. Through misleading gestures, incorrect information can be transferred, which is classified as the gestural misinformation effect, which will be discussed in the next section.

2.16.2 The gestural misinformation effect

In general, the misinformation effect describes the event, when misleading post-event information impairs or alters memory (Gurney, Pine & Wiseman, 2010; Lehman et al., 2010). The alteration or impairment of memory can refer to weakening or clouding, as well as a general failure of memory (Holliday, Reyna & Hayes, 2002). Researchers have identified a number of factors that can add to the impairment of memory. Reviews of studies demonstrate that people can and do accept misinformation and adopt it as their own memory, when they did not have an original memory in the first place. (Ackil & Zaragoza, 1995; Hyman, Husband & Billings, 2019; Loftus, 2019). Further, it appears more, that misinformation can also impair an accessible original memory (Chan & LaPaglia, 2013). Because in real-life scenarios, leading, or misleading suggestions are often presented alongside open prompts and accurate descriptions of the witnessed event (Orbach et al., 2010; Otgaar et al., 2019), by a person presumed to be knowledgeable and credible, child witnesses may be likely to accept them as true (Zajac & Brown, 2018).

Children might be more prone to incorporate suggested information into their own testimonies, compared to adults, solely because they feel pressured to go along with the person (often a police officer, researcher, or adult in general) who suggested it (Blasbalg et al., 2018). This concept was supported by a study that found that children were more likely to incorporate and report misleading suggestions provided by adults, than a seven-year-old child, suggesting that children's inclination to report misinformation is linked to the perceived authority of the person who suggested it (Ceci, Ross & Toglia, 1987). Nevertheless, children, as well as adults are prone to the misinformation effect, as the typical eyewitness status quo requires that eyewitnesses must discriminate between memories derived from similar sources (as discussed

in section 1.3.3), since the witnessed event and the suggested information, both refer to the same set of events and they often occur in a brief time-frame (Ackil & Zaragoza, 1995).

The majority of research in the area of children's eyewitness suggestibility are laboratory experiments of the misinformation effect. Based on an experimental paradigm, first developed and executed by Loftus (1975) and Loftus and Palmer (1974) in adult studies, the most commonly used methodology is to let children watch an event and present them with either leading or misleading information afterwards that contradicts certain aspects of the event.

Until recently, misinformation studies have only employed verbal paradigms, for example with an experimenter reading a summary of a previously watched video to children, containing suggested information. The children are then asked to help the experimenters to decide, which information was present (true), by answering a set of questions. It has been found that children's exposure to misleading information, let them to claim that they have actually seen some of the suggested items, which showed that the children came to believe that they actually remembered seeing the event details, when in fact, they were only suggested to them (Ackil & Zaragoza, 1995).

Corresponding to the general misinformation effect described above, a gestural misinformation effect has been introduced; where instead of misleading questions, misleading gestures are presented to eyewitnesses, after witnessing an event, leading to similar inaccuracies in the reporting of an event by both children (Broaders & Goldin-Meadow, 2010; Kirk, Gurney, Edwards & Dodimead, 2015) and by adults (Gurney, Pine & Wiseman, 2013). Although verbal suggestibility and misleading questioning of children in forensic interviews has been investigated in the past (see section 1.4.1.5 & 1.4.1.3); hand gesturing has received much less attention. However, in recent years, child interviewing research has started to consider non-

verbal behaviour, both from the interviewees (Congdon, Novack & Goldin-Meadow, 2018; Katz, Hershkowitz, Malloy, Lamb, Atabaki & Spindler, 2011) and interviewers (Broaders & Goldin-Meadow, 2010; Gurney et al., 2013; Kirk et al., 2015). These studies have highlighted the importance of non-verbal behaviour and indicate that current child interviewing guidelines (Lamb et al., 2009; Sternberg, Lamb, Davies, & Westcott, 2001) have so far neglected an important aspect of interaction in interviews. To date, only a couple of studies have investigated the concept of a gestural misinformation effect, but all of them have come to similar conclusions (Broaders and Goldin-Meadow, 2010; Gurney et al., 2013; Kirk et al., 2015).

Broaders and Goldin-Meadow (2010) examined how gestures by an interviewer add information during investigative interviews with child eyewitnesses. Broaders and Goldin-Meadow wanted to find out whether gestures can serve as a source of information, and if the misinformation, communicated by the gestures, could lead a child witnesses to report incorrect information. School children aged 5-6 years watched a live demonstration by a musician in their classrooms. The children were then questioned several times over a 12-week period, with the first interview being conducted two weeks after the event. Each interview involved different question types that were accompanied by misleading gestures (gestures that represented non-occurring information) and questions that were asked on their own. Broaders and Goldin-Meadow tested three dimensions of questions: Occurring versus non-occurring details, specific versus open-ended questions and questions asked with- and without a gesture. In the non-occurring details questions, the researchers were interested to find out, if a misleading gesture, accompanying an open-ended question, would turn the question into a specific one by adding information to the information delivered in speech.

The children's responses were counted as 'affirming' when they contained information the question or gesture was designed to elicit. For example, a child's response to the speech-alone

question ‘Where did the musician hurt himself?’ or the accompanying gesture of patting the hip was counted as affirming, if the child said the musician to have hurt himself. Broaders and Goldin-Meadow found that children gave more affirming responses for questions referring to occurred events than for questions about non-occurred events. However, importantly, children gave more affirming answers to open-ended questions, including a misleading gesture than ones without a gesture. Three-quarters of the children affirmed at least one of the misleading-gesture suggestions. Children mentioned details, which were communicated by the misleading gestures in their free-recall more than the details that have been mentioned in the speech-alone conditions. Thus, Broaders and Goldin-Meadow found evidence that misleading gestures affect responses in the same way, and to a similar extent that misleading questions (speech) do. These results add to existing knowledge and are in line with research that described the influential effect of specific/direct questions in forensic interviews (Lamb & Fauchier, 2001), (see section 1.4.1.3).

The effects of gestural misinformation on children’s testimonies have also been shown in studies with adults, involving their memory for a previously shown crime video (Gurney et al., 2013). In two studies, adult participants watched a CCTV-style video, depicting a confrontation between two individuals in a dark alleyway (Gurney et al., Study 1) and an office theft (Gurney et al., Study 2) and were then interviewed via a video-recording of an actor, dressed as a police officer. The videos were edited, so that participants were asked the same questions in two conditions: the accurate condition, when the interviewer used an accurate gesture, and the misleading condition, when the interviewer used a misleading gesture. Participants were then asked to write down their answers. In Gurney et al., Study 1, participants’ memory was indeed distorted in the misleading gesture condition. Study 2 included misleading gestures of details that were not shown in the video. Gurney et al. wanted to find out if gestures could not only

distort a memory, but also implant specific memories (for example, gesturing a piece of jewellery, a hat or a beard) that were completely absent from the video). Gurney et al. gave the participants multiple choice answers to choose from. The results again demonstrated a misleading gesture effect, with nearly a third of the participants reporting details, which were conveyed by the gestures. Therefore, it was found that gestures can act as a form of misinformation and negatively affect eyewitnesses' responses, even when questioned over video, without interacting with the interviewer; and even if they included details that were absent in the video.

Gurney et al. Study 3 then considered whether these results would also apply to a live interview, with participants answering freely to the interviewer's questions, in a more naturalistic situation. Again, participants were more likely to give a response congruent to the gesture, than participants in the control group (17% and 7% respectively). Thus, Gurney et al. demonstrated that gestures can also affect adult eyewitness testimonies in a live, face-to-face interview, even when interviewed immediately after watching a target video, when memory trace is considered strong. Consequently, adding support to the gestural misinformation effect, which has already been found in interviews with children (Broaders & Goldin-Meadow, 2010).

In another child study, Kirk, Gurney, Edwards and Dodimead (2015) tested the robustness of the gestural misinformation effect under conditions that would normally buffer children against verbal suggestibility, namely strength of memory trace, age and verbal abilities. Participants included two age groups, one of them being much younger children than the children in Broaders and Goldin-Meadow's (2010) study, including age groups of 2-4 years of age and 6-9 years of age. Similar to the two previously described research studies, the children watched a target video and were randomly allocated to either an accurate, or misleading gesture condition and were interviewed immediately after (including a distractor task). The questions

and gestures were similar to Gurney et al., (2013), with gestures describing accessories, body parts and actions. Younger children were misled more often, with 14 out of 15 being misled on at least one question, compared to 11 out of 14 in the older age group, however, all the children appeared to be equally vulnerable to the misleading gestures. Additionally, it was found that children's baseline accuracy of the event, as well as verbal language ability did not protect children from being misled by the gestures. Children of all ages seemed to be vulnerable to the gestural misinformation effect and even incorporated the misleading information into their post-interview narrative of the event.

The findings of Broaders and Goldin-Meadow, (2010), Gurney et al., (2013) and Kirk et al., (2015) suggest that the gestural misinformation effect is robust and even resilient to factors that are known to buffer the effect of verbal suggestibility. Although these studies provided strong evidence for the influential effect of misleading gestures in both children and adults, they have not led to a large number of follow-up studies. Especially in children, the gestural misinformation effect has serious implications, potentially corrupting the reports of child witnesses and victims. Many more variables and age groups need to be tested, to strengthen these former research findings. Therefore, the following studies were conducted to investigate this topic within several paradigms, to add substantial knowledge to the research area.

The goal of this thesis was to conduct the most comprehensive set of studies on the influence of misleading gestures in forensic child interviewing, in both England and Switzerland. To do so, it was necessary to not only conduct experiments based on the findings of previous publications, but also to focus on the underpinnings of gestures, in form of police guidelines (as examined in the current chapter), as well as forensic interviewers' use of gestures, which so far, have not been examined within this research area. The main research questions of this thesis are: Are gestures a common behaviour by interviewers and can they negatively impact

accurate eyewitness testimony of children? Hence, it is essential to investigate, if interviewers use gestures during child interviews. Chapter 3 includes a first-ever analysis of interviewers' gestures in mock forensic child interviews, conducted by psychologists.

3. CHAPTER THREE

An analysis of interviewers' gestures in mock forensic child interviews conducted by psychologists

3.1 Introduction

Children, like adults, are commonly witnesses or victims to crimes and are often required to provide statements, which serve as important information in police investigations (Brubacher, Malloy, Lamb, & Roberts, 2013; Brubacher, Peterson, La Rooy, Dickinson, & Poole, 2019; Goodman & Reed, 1986). When children are interviewed as eyewitnesses or victims by legal and social service professionals, such as police officers, social workers or attorneys, they are required to participate in an interaction with which they are not familiar with. In their day to day lives, conversations with unfamiliar adults are atypical and can cause stress (Teoh & Lamb, 2013). Further, children's inadequate language abilities, lack of understanding legal terms and personal reasons are also associated with non-disclosure of information. Therefore, children may not always provide detailed or complete accounts of witnessed events or alleged abuse.

The quality of an investigative interview is dependent on a variety of factors; on the child's side, there are concerns about their memory and suggestibility (Bruck & Ceci, 1999; Finnilä, Mahlberg, Santtila, Sandnabba & Niemi, 2003; Goodman & Reed, 1986; Lehman, McKinley, Thompson, Leonard, Liebman & Rothrock, 2010; Thorley, Dewhurst, Abel & Knott, 2016), whilst on the interviewer's side there are concerns about interviewer attributes (Almerigogna, Ost, Akehurst, & Fluck, 2008; Wright, Memon, Skagerberg, & Gabbert, 2009; Wright, Powell & Ridge, 2007), status and/or familiarity of the interviewer (Goodman, Sharma, Thomas & Considine, 1995), interviewer friendliness (Almerigogna et al., 2008; Sondhi & Gupta, 2005)

and social support demonstrated by the interviewer (Blasbalg, Hershkowitz, Lamb & Karni-Visel, 2018.; Bjorklund et al., 2000; Davis & Bottoms, 2002). Due to the reconstructive nature of memory for a witnessed event, the initially stored information is vulnerable to alteration in the recalling phase, especially if suggestive techniques, such as leading/suggestive interviewer behaviour are used (Alexander, Goodman, Schaaf, Edelstein, Quas & Shaver 2002; Lorsbach, Katz & Cupak, 1998; Roberts & Powell, 2005). Child interviewers have to consider various factors that could interfere with children's susceptibility to suggestibility (Zajac & Brown, 2018).

With that in mind, investigative child interviews should therefore, always be free from bias and misleading information (Hritz et al., 2015; Volpini, Melis, Petralia, & Rosenberg, 2016). However, it has been repeatedly found that inappropriate techniques during the interviews, for example option-posing questions, such as yes/no queries or suggestive questions can negatively affect children's accuracy of a witnessed target event (Davis & Bottoms, 2002; Goodman & Melinder, 2007; Imhoff & Baker-Ward, 1999; Lamb & Fauchier, 2001). Nevertheless, if interviewed correctly, children can provide accurate accounts of witnessed events (Goodman & Melinder, 2007).

Question types have been heavily studied in the past and have led interviewing manuals, guidelines and protocols (as reviewed in chapter 1, section 1.5), such as the Memorandum of Good Practice (Home Office, 1992), the republished and recently revised version, 'Achieving Best Evidence' (ABE) (Ministry of Justice, 2011) and the NICHD (National Institute of Child Health and Human Development) Investigative Interview Protocol. But none of the guides include any recognition of, or guidelines about non-verbal behaviour, in the form of gestures, even though it has been claimed that gestures and speech are both parts of a common

psychological structure, with gestures being not fundamentally different to speech (McNeill, 1985).

Gestures play a pivotal part in children's language development. Seeing iconic gestures (referential symbols, depicting actions, objects, events or people), while encoding events has been found to facilitate children's memory of the information of the event that has been highlighted by the gesture (Aussems & Kita, 2019; So, Sim Chen-Hui & Low Wei-Shan, 2012). Children use gestures to practice ideas and communicate information that underlie the words or sentences that they are not yet able to express in speech (Goldin-Meadow & Alibadi, 2013). Gestures produced by adults also play an important part in children's language learning. Parents gesture often, when interacting with their children, and most of these gestures co-occur with their speech (Acredolo & Goodwyn, 1988). Also, it has been demonstrated that children recalled more words when they encoded them with iconic gestures, compared to words encoded alone (So et al., 2012). Particular gestures, like number gestures, help children in facilitating mental processes, for example, in math problems (Brooks, Barner, Frank, & Goldin-Meadow, 2018). Even young children from the age of two years, are able to understand both conventional and unconventional number gestures (Nicoladis, Marentette, Pika, & Barbosa, 2018). This suggests that iconic gestures enhance memory recall (So et al., 2012). Younger children's developing language skills (Snow, Powell, & Sanger, 2012; So et al., 2012) might encourage interviewers to also utilise gestures, to elucidate particular information, for example, when asking children about human anatomy, such as references to facial features, like the nose, mouth, teeth, lips, forehead or hair, or to body parts, such as chest, waist and shoulders. Further, interviewers might be tempted to use iconic gestures to accompany words, or number gestures to accompany numbers, especially if they believe that younger children might have trouble

understanding numbers. However, when used during investigative interviews, these iconic gestures, may become suggestive.

Although the suggestibility of children in response to inappropriate questioning has been studied in the past, the role of gestures during investigative interviews has mainly been ignored. Only recently have researchers conducted studies to investigate the potentially misleading effect of interviewers' gestures on children's eyewitness reports (Broaders & Goldin-Meadow, 2010; Kirk, Gurney, Edwards, & Dodimead, 2015), as discussed in Chapter 1, section 1.6.2.

In a study investigating the informative effect of gestures in delayed, repeated child interviews, Broaders and Goldin-Meadow (2010) found that open-ended questions, which were accompanied by misleading gestures, transformed into leading queries; and that children were as strongly misled by the gestures, as when asked direct, suggestive questions. Therefore, Broaders and Goldin-Meadow found evidence for a misleading gesture effect in the same way and to the same extent as misleading questions do. In the most recent study investigating the effect of gestures in child interviews, Kirk, Gurney, Edwards and Dodimead tested misleading gestures in conditions that normally protect children against verbal suggestive information: memory trace, age and verbal abilities. Their pre-school and school children showed the same gestural misinformation effect, even in an immediate interview condition. The results from these two studies demonstrated that both accuracy and validity of children's eyewitness reports are vulnerable to non-verbal influence from the interviewer.

Even though these studies provided a great deal of information on the risks of misleading gestures, it is still unknown whether gestures are common in child interviews. Therefore, in Study 1, the aim was to find out, if a) interviewers utilise gestures; b) what gestures they use and c) if there are differences in the type and quantity of gestures used for different child age

groups. It was not feasible to gain access to authentic, videotaped police child interviews due to legal restrictions, however, as a result of a collaboration with researchers from Åbo University in Finland; videotaped, investigative child interviews were obtained, where psychologists acted as interviewers, questioning children about a witnessed event in their school.

3.1.1 Gestures

People produce iconic gestures when they speak (McNeill, 1985). Iconic gestures are symbolic representations of events, objects and people; for example, gestures can depict what people do (e.g. reading, boxing, sleeping), or how they look like (e.g. height, body shape, hairstyle), as well as describing specific items (e.g. hammer, book, pistol).

The instinctive gestures that individuals produce when they talk have been studied in the context of child development (Stevanovi & Salmon, 2005). Gestures include both body and facial movements, which can be produced spontaneously or planned (Leathers & Eaves, 2015). Gestures (Kendon, 1997) include movements by the arms or hands that accompany acts of speaking. Gestures occur during speech and develop together with speech in children. Gestures occur synchronised with linguistic components and have the same semantic and pragmatic functions as spoken information (McNeill, 1985). Facial expressions tend to express more information of an emotional nature (Ekman & Friesen, 1969).

Several gesture classifications schemes have been proposed. These differ based on the associated research supporting them (Feyereisen, 2006; McNeill, 1992, 2005; So et al., 2012). While each scheme has its own special practicality, they are similar in the sense that they regard the same arm or hand movements as gestures, and differ only in their categorisation of those strategies (McNeill, 1992). Broadly defined, gestures can be divided between symbolic and

non-symbolic. Non-symbolic gestures can further be expanded into iconic, metaphoric, dietetic gestures, and beat/self-adapter gestures (McNeill, 1992). In the current Chapter, the gesture classification theme by McNeill (1992) was applied as a basis of identifying the main categories. Its premise is that it does not require overly fine distinctions and that it attempts to identify the types of gestures that appear in narratives. This gesture classification scheme proved to be the most applicable, as the main categories serve as a foundation, which are flexible enough to allow subcategories of gestures, identified within forensic interviews.

McNeill (1992) classified gestures that accompanied story telling speech into four categories; iconic, metaphoric, deictic (pointing) and beat gestures. Other researchers proposed the same categories but named them differently (e.g. physiographics instead of iconic, or batons instead of beats). Whilst iconic gestures are classified as meaningful and carry semantic meaning, beat gestures are non-meaningful and do not carry semantic information, but they serve a meta-cognitive function, by accentuating the parts of a speech that a speaker wants to emphasise (Feyereisen, 2006; So et al., 2012).

The importance and complexity of non-verbal communication, such as gestures, has been found in the communication of vulnerable populations, such as patients with acquired brain injury (Stans, Dalemans, Roentgen, Smeets & Beurskens, 2018). In a qualitative study, Stans et al. found that using gestures, helped patients to express themselves. Although this sample differed from healthy children, there might be similarities to young children's language abilities, because children with developing language skills, might rely more heavily on the assistance of gestures to communicate. This in turn may lead interviewers to also rely on the assistance of gestures, when interviewing younger children, to mirror their behaviour. Researchers have found that parents employ different strategies when showing their children gestures, to guide them in a problem solving task; the parents adapted their gestures to their

children's age and skill level and younger children elicited more gestures from their parents, than did older children (Vallotton, Fusaro, Hayden, Decker & Gutowski, 2015).

When children start to speak with a fuller narrative, gestures may help them to structure their linguistic abilities (Cartmill, Demir & Goldin-Meadow, 2012). Recent studies (Congdon, Novack, & Goldin-Meadow, 2018; Goldin-Meadow & Alibadi, 2013) have shown that spontaneous gestures play an important role in children's language development and that it is valuable to consider not only what people say with words, but also with their gestures (Broaders & Goldin-Meadow, 2010; Kirk, Gurney, Edwards, & Dodimead, 2015).

The susceptibility of child eyewitnesses to verbal suggestions has been investigated several times and shown that leading questions can lead to inaccuracies in responses (Bruck & Ceci, 1999; Thorley, 2013; Volpini et al., 2016). But little attention has been paid to non-verbal suggestions, in the form of leading or misleading gestures. An interviewer's non-verbal behaviour, such as gestures during an interview, can communicate misleading information and cause inaccuracies in interviewees' testimonies and can corrupt legal proceedings (Broaders & Goldin-Meadow, 2010; Kirk et al., 2015).

Some recent studies on best practices in child interviewing have considered rapport building (Ahern, Andrews, Stolzenberg, & Lyon, 2018; Price, Ahern, & Lamb, 2016; Wright & Powell, 2007) and question types (Ahern et al., 2018; Anderson, Anderson, & Gilgun, 2014), but no studies in the area of investigative interviewing have so far been conducted to examine interviewers' spontaneous gestures to children, while those children are being interviewed. Most experiments, investigating the process of investigative child interviews, involve a methodology that video tapes only the interviewees to record their responses, and interviewers' non-verbal behaviours have been ignored. Videos of child interviews in the past, were observed for question types, but not for any gestures conveyed by the interviewer. One study highlighted

that video technology allows the discovery of phenomena, such as gestures, that otherwise go unnoticed (Congdon et al., 2018). The researchers argued that interviewers are not always aware that they gesture, and interviewees are not always aware that they observe gestures. Further, they proposed that gestures can easily be missed, if they are not in the researcher's focus and more importantly, can affect the social interaction and communicative context of an interview. Therefore, the objectives of Study 2 were to investigate, if child interviewers produce accompanying gestures when interviewing children, and if so, to identify the nature and extent of these gestures.

3.2 Method

3.2.1 Participants

Seventy-one video-taped child interviews were analysed. These video-taped interviews were provided by Pompedda and Santtila (2016). In the original study by Pompedda and Santtila, 40 qualified psychologists (37 women and 3 men), with a mean age of 27 years, SD= 2.24, participated in an experiment as interviewers.

The aim of Pompedda and Santtila's (2016) study was to evaluate, if avatar-interviewing training sessions and subsequent feedback regarding interview questions, would improve real child interviews. Four to five-year-olds were recruited from two kindergartens and 6-7-year-olds from two primary schools in Italy. The schools and kindergartens were contacted by email and subsequently agreed to participate. Initially, 40 interviewers and 80 children were recruited, but two interviewers dropped out, which resulted in four children being removed from the sample so that 76 children were interviewed. Of these 76 interviews, four videos were removed by Pompedda and Santtila, due to technical problems, leaving 72 interviews. Two of

these videos contained the same, duplicate interview, therefore, a total of 71 videos were evaluated in Study 2.

Each interviewer conducted six simulated interviews via a software [Empowering Interviewer Training (EIT ®)] with an avatar of a child simulation within a training session, before conducting actual child interviews. During the avatar training sessions, an operator listened to each question by the interviewer and categorised it (e.g., as an option-posing question), after which a response algorithm in the software was activated. The software then launched a suitable video clip with the avatar's response. The interviewers were randomly divided into two groups: a control group (N=20) and a feedback group (N=20). While the procedure of the avatar-interviews was identical for both the control and feedback groups, feedback was only provided to the feedback group, after each avatar interview.

The procedure was as follows: The interviewers completed a training session with the avatars and were then provided with the NICHD protocol (Lamb et al., 2011), including guidelines on what questions should be asked and which ones should be avoided. One week after the first training session, the interviewers received preliminary information regarding the main interviews with real children and completed the interviews in the school/kindergarten of the children.

After the first interview with a child the interviewers left the room and reported, what they thought happened during the events that the children were being questioned about. The researcher then reminded the interviewers to think back to the avatar trainings and what they had learned, and the same steps were repeated with a second child.

In the avatar training sessions, the interviewers asked the avatar a question and the avatar responded with a response, shown in a video clip. The interviewers in the feedback group stated, if they concluded that abuse has either been present or not. Further, they were asked to give a detailed account of what they thought had happened, based on the answers by the avatar. The feedback group received verbal feedback from the researchers about the correctness, of what they thought had happened. The feedback group also received information about their progress and their questioning style. The researchers provided feedback on four questions the interviewers asked during their avatar interviews; two recommended questions and two not recommended questions.

At no point in Pompedda and Santtila's (2016) study was there any mention of non-verbal gestures. The researchers and the interviewers never discussed non-verbal communication in any way. The interviewers had had no previous contact or training sessions with real children.

In Pompedda and Santtila's study, the children were randomly divided into two groups. Half of the participants took part in a mock event called 'the pirate game' ($n_{kindergarten}$ = 16, mean age 56 months, SD=9.57; n_{school} = 22, mean age 84 months, SD=7.57). The other half took part in a mock event called 'the paw patrol game' ($n_{kindergarten}$ = 16, mean age 55 months, SD=10.22; n_{school} = 22, mean age 85 months, SD=3.50). The board of research ethics at Åbo University approved the original study and the board of research ethics at the Department of Psychology, University of Sheffield approved the current study.

3.2.2 Design

Study 2 analysed the gestures in the videotaped interviews from Pompedda and Santtila's (2016) study. There were two groups of children aged 4-5 years and 6-7 years. Each interviewer

conducted two interviews with the children. Due to a confidentiality agreement between the researchers of the original study and the current researcher, it was not possible to get permission for a second coding by another rater. In Study 2, only the researcher was allowed to watch the child interviews, and therefore, no second rater could be included. However, 15 out of 71 interviews were analysed twice by the researcher, to evaluate test-retest agreement. The mean time duration between the first and second time the transcripts were coded was 14 months. Test-retest agreement was 94%, which was an indication of the consistency of the coding.

3.2.3 Hypothesis

No specific hypotheses were made, due to the exploratory nature of evaluating the interviews. The research questions were the following:

1. Do interviewers gesture?
2. What type of gestures do interviewers produce most?
3. Does gesture behaviour vary between/within interviewers?
    a. Were there any differences in gestures produced between interviewer feedback groups?
    b. Were there any differences in the number of gestures produced between children's age groups?
    c. Do gesture proportions change by interview?
    d. Is there consistency between the first and second interview (repeated measures)?

3.2.4 Mock Events

The mock events in Pompedda and Santtila (2016) were conducted under the supervision of Pompedda in Italy. Two research assistants staged two different mock events in the schools of

the children (the pirate game and the paw patrol game). The mock events were based on previous mock events presented in Roberts, Lamb, and Sternberg (1999). Events were constructed to include active involvement of children, to increase the ecological validity (Powell & Thomson, 1997). The events included dressing and undressing situations, innocuous touching between both adult/child and child/child pairs, a secret, and the insertion of a biscuit in the mouth. These activities were used successfully in previous studies; for example, dressing up (Roberts, Lamb, & Sternberg, 2004), innocuous touching (Davis & Bottoms, 2002), offering food (Finnilä et al., 2003), and involving a secret (Roberts et al., 1999).

The novel part of these two mock events, was the direct insertion of food (i.e. a biscuit was inserted into the child's mouth). The children's parents were asked about possible allergies and the permission to provide a biscuit during the mock event. Allergic children received an appropriate version of the biscuit (e.g. gluten free). Each group of children received the same type of biscuit; the actors offered the biscuit to children by handing it directly to the mouth. Some children grabbed the biscuit, while others just opened their mouths. All the children took the biscuit after being offered one.

The 'secret' part of the mock events was connected to the consumption of the cookie, where all children were told that they have been good and were thanked for their participation. The children were told that for this reason, they would receive a biscuit, however, not to tell anyone, as this would be a secret between them, because the actor and children were normally not allowed to eat biscuits at that time of the day. Each of the mock events lasted about eight minutes per child and was videotaped. The structure of the two events was similar, with some differences about the main character and some actions, for example, the children having to run in a circle instead of singing a song. The mock events took place a week before the interviews, were staged in the school and lasted about 8 minutes each.

3.2.5 Interviews

In Pompedda and Santtila (2016) the interviewers were instructed to interview each child for a total of 30 minutes maximum and to perform a rapport building phase as part of it, of about 8 minutes in length. The interviewers received protocols for the interview introduction and the rapport building adapted from the NICHD protocol (Lamb et al., 2011). All the interviewers received instructions about best practices in child interviewing. These instructions were also taken from the NICHD protocol. The instructions to the interviewers included information about rapport building, in which they were told to follow a list of questions including an introduction (for example 'What is your name?'), ground rules ('Before we start, I want to be sure you understand how important it is, to tell the truth') and then rapport building ('What is your favourite food?'). The interviewers were also instructed to consider potential stress of the participants, to keep the conversation focused on the witnessed event, not to show any aggressive emotions, to be supportive and to try using a 'funnel structured' interview style, with more open questions in the beginning of the interview and more direct questions at the end. Children were not informed or instructed about the nature of gestures at all.

3.2.6 Categorisation of gestures

The interviews were evaluated for the occurrence of gestures, and for the number and type of gestures. The main categories were symbolic and non-symbolic gestures. Non-symbolic gestures were further categorised into semantic and non-semantic gestures. The semantic gestures category consisted of Iconic, Metaphoric and Deictic gestures, whilst the non-semantic category included Beat, Self-adapter, Support and physical contact gestures. The non-symbolic gestures were further categorised into themes, depicting information specific to the interview setting. A gesture could, therefore, be categorised into a) a non-symbolic main category, a semantic category (i.e. iconic), as well as a theme, for example, a gesture depicting

an ear. This gesture would be considered non-symbolic, semantic, iconic and ‘referring to body part’. The following categories were used:

- Symbolic gestures
- Non-symbolic gestures (semantic)
    - Iconic
    - Metaphoric
    - Deictic
- Non-symbolic gestures (non-semantic)
    - Beat
    - Self-adapter
    - Support
    - Physical contact

Gestures were also classified into themes, which emerged through a deeper evaluation of the main gesture categories, providing a more detailed description of the gestures provided by the interviewers. The themes that were recorded were:

- Gestures with numbers
- Gestures referring to body parts
- Gestures referring to clothes or accessories
- Non-meaningful gestures (self-adapter, support gestures)
- Gestures indicating height
- Gestures referring to an action or an object
- Support

- Physical contact

Examples of these gesture themes are given in section 3.8 below.

3.8 Gesture themes

Gestures were counted as being semantic (also referred to as meaningful), if they contained information which expressed information about people, objects or events specific to the interviews. Semantic gestures hold communicative value and have the power to be suggestive regarding their content. Examples of semantic gestures were gestures in the form of hand movements, e.g. outlining a circle with the index fingers when asking a child about sitting in a circle, or a gesture describing an eyepatch by holding the palm of a hand over one's eye when asking about a pirate. These gestures might have not been misleading in the context of the given interviews, but they contained specific information which could be suggestive in some circumstances. Non-semantic gestures on the other hand, (as described in 2.15.8) are gestures that have no meaningful significance to the speech content. These are often used to either emphasize certain points during speech (beat); include bodily movements, such as scratching, tapping or fidgeting with clothes (self-adapters); offer a form of support for the child, such as handing a tissue or offering the hand to the child (support); and physical contact of any form with the child, for example touching their wrist (physical contact). Non-semantic gestures hold no semantic meaning (Freedman, O'Hanlon, Oltman & Witkin, 1972) and could not be used to mislead an interviewee.

The interviewers, who conducted the interviews were not interviewed about their gesture decisions, nor were they made aware, to observe their production of them. The gesture themes included both semantic and non-semantic, co-speech gestures. The semantic gestures were broken down into more specific categories, such as iconic gestures referring to specific objects or actions and the non-meaningful gestures broken down into beat, self-adapter, support and physical contact gestures, which are all listed below.

3.8.1 Symbolic gestures category

Symbolic gestures, as described in section (2.15.1) are purposefully produced by the speaker and well within their awareness. The gesture embodies a symbol, such as the 'OK' sign, or a thumbs up (Kendon, 1995). These gestures are mostly used in the absence of speech but can also accompany conversations. The most important feature of these gestures is that they are produced with a clear message to the listener and are within the awareness of both the speaker and the listener.

3.8.2 Non-symbolic gestures categories

Non-symbolic gestures (introduced in more detail in section 2.15.5-2.15.7) include all gestures that cannot be classified as symbolic and are mostly produced without the speaker realising (Kendon, 1995). They are produced as co-speech gestures and carry information in a less 'obvious' manner than the symbolic gestures, described above. The main feature of these gestures is that they are produced spontaneously, accompanying the speech without disrupting the natural flow. This gesture category can be broken down into finer classifications, which are described below.

3.8.3 Semantic gestures categories

Iconic, meaningful gestures

Iconic gestures are often utilised to support communication (McNeill, 1985). Such gestures can be expected in the form of synonymous gestures, given by the interviewer, to highlight specific objects or actions whilst asking questions. Gestures were classified as iconic and meaningful, if they referred to either an object, to an action, to general information, or if they could be used to substitute and/or support given information. Iconic gestures hold communicative value, for example, referring to a person (the interviewer themselves or the child), an object (for example, a piece of paper, by outlining a square), as well as actions (for example, mimicking running or walking, by moving index and middle finger in rapid movements, facing down). Each gesture was analysed independently, meaning that one gesture involving a body part might have been counted as iconic, because of the context of the question, and the communicative nature of it, such as touching the hip, whilst referring to a belt verbally, whilst a similar gesture (touching ear) involving a body part, would have been counted as non-semantic/self-adapting, because the researcher happened to scratch their ear, without the gesture being linked to the interview per se. In some circumstances, gestures were counted in several categories and themes, when an interviewer pointed (deictic) towards a specific body part, such as an eye (iconic). Therefore, the gesture would have been non-symbolic; both deictic (pointing towards something) and iconic (referring to an iconic theme, without being mentioned verbally).

Iconic gestures referring to numbers

Gestures that contained any information regarding numbers, such as the age of the child, were recorded in this category. Most gestures which referred to numbers were indicated by interviewers holding up their fingers to a child, for example to ask the child how old they were.

Such cases were also counted as potentially misleading gestures, as they could include suggestive information about the child's age.

Iconic gestures referring to body parts

These were gestures that pointed towards a body part or touched the body parts of the interviewer. For example, interviewers touching their hair, putting their hand on their chest, pointing towards their face and touching their forehead. Gestures referring to body parts can potentially hold suggestive information, especially in abuse cases. If an interviewer asks a child a non-suggestive question, for example 'did the person touch you?' accompanied with a gesture referring to a body part, the question becomes suggestive, because the gesture holds information regarding the body part, even without the wording of the question being leading in nature. One interviewer used a deictic gesture to point towards her head. Such a gesture would be counted both referring to a body part and being deictic in nature (Interview Number 15).

Iconic gestures referring to clothes and accessories

Gestures that referred to clothes or accessories were included in this category. Gestures were used to describe for example an eyepatch (interviewer holding a flat hand over one eye), or a belt (interviewer rotating hands around or touching the waist area). Other gestures included an interviewer indicating a hat, by touching their index and middle finger and thumb on top of their head.

Iconic gestures referring to an action or an object

Gestures that referred to an action or to an object were included in this category. For example, the interviewer making circular movements with their hand, indicating a circle, referring to a

sheet of paper or a letter by indicating a square or by making a scribbling gesture to suggest 'writing'. Interviewers also used gestures to indicate a box, or a texture-like item, by rubbing three fingers together. Another gesture in this category was the indication of 'little', by holding the index finger above the thumb, closely together, or a gesture referring to swimming; moving arms from a position in front of the chest outwards, in a circular motion. One interviewer used the action or object gestures to indicate 'no' and 'be silent', by moving the index finger from side to side and doing a 'ssshh' gesture, by placing an index finger on her mouth. Another gesture indicated 'last week', by doing a backwards gesture with a flat hand, towards the side of the head. Not all gestures in this category were clear, for example, one interviewer gestured towards her side, indicating an object, however, it was not clear to what exact object she was referring. Many of the gestures included in this category were coded into either an object, or an action.

Deictic gestures (Pointing)

Deictic gestures, also known as pointing gestures (see full description in section 2.15.7), are pointing movements. Gestures classified as deictic, included any form of pointing; either the interviewer pointing at them self, or at the child or to somewhere in the room. In some interviews, the interviewer pointed to their left side, as if to describe something in the room, downwards, or in a general direction, away from themselves. In others, they pointed towards their own head, hair, or towards their chest with one finger, or put their hand on their chest, referring to themselves. Interviewers also pointed towards the child or to the table. In other instances, the interviewers pointed towards the inner side of their hand or their mouth and teeth. Whilst some of the deictic gestures were utilised to support their questions, as when they were talking about themselves and put a hand on their chest, other gestures were counted in one of the themes as well, when those gestures contained leading, non-verbal information regarding

a body part, such as the mouth or teeth. For example, when interviewers touched their lips when asking children about food consumption.

Deictic gestures referring to height

Every gesture that referred to the height of a person was included in this category. Gestures were recorded when the interviewer showed, for example, a horizontal, flat hand to their side, approximately at the level of their head.

Metaphoric gestures

Metaphoric gestures, as described in section (2.15.6) refer to gestures with an abstract, subjective meaning. One example was the interviewer rubbing her fingers together, as when describing a texture.

3.2.7.4 Non-semantic gestures categories

Beat gestures

Beat gestures, as described in section 2.15.8 in Chapter 2, included repetitive, rhythmic gestures. For example, interviewers would swing their wrists repeatedly, during talking.

Self-adapter gestures

Self-adapter gestures, as described in section 2.15.8 in Chapter 2 included hand movements, such as rolling up sleeves, adjusting a watch, or scratching an ear.

Support and physical contact

This category included gestures that were given by the interviewer to offer support to the child. Gestures included interviewers shaking hands with a child, offering their hand to a child or holding a child's hand. Every movement that involved physical contact with the child was included in this theme. The support and physical contact gestures were of a different kind from other non-semantic gestures, as they did not represent characteristics that made them suitable for beat or self-adapting gestures. Their nature was supportive, rather than communicative. They were included in the overall gesture classification but labelled as gestures that focused on the interaction with a child, rather than as gestures produced for a communicating meaning.

3.3 Results

Do interviewers gesture?

The first and main research question was concerned, if interviewers produce gestures when interviewing children. The results show that the majority of interviewers did use gestures. Of the total 36 interviewers, 32 used gestures in their interviews. In other words, 89 % of the interviewers did use gestures during their interviews. Interviewers used gestures in 53 of the 71 interviews (i.e. in 74.6 % of the interviews). The gestures were used during rapport building, questioning, or both. Interviewers used a total of 319 gestures, with a mean of 4.45 gestures per interview.

What type of gestures do interviewers produce the most?

All 319 gestures were first classified into symbolic and non-symbolic gestures, with the non-symbolic gesture category consisting of both semantic and non-semantic gestures. Symbolic gestures were produced 11 times, in 7 interviews. The non-symbolic gestures were produced at a much higher rate, including iconic gestures, which were produced 143 times, deictic gestures, which were produced 46 times and metaphoric gestures, which were produced 15 times. Non-semantic gestures were also counted. Beat gestures, were produced 80 times, self-adapters 10 times, support gestures 10 times and physical contact with the child 6 times.

Semantic gestures, consisting of iconic, metaphoric and deictic gestures, were further classified into themes, as described in section 3.2.7.3.

Gestures referring to a body parts were counted 110 times, gestures referring to actions or objects 43 times, gestures referring to numbers 23 times, gestures referring to clothes or accessories 7 times, and gestures referring to height 2 times.

Beat gestures were often produced in a repeated manner, which made the decision to count them as either multiple gestures, or one continuous gesture more challenging. Therefore, the quantity of beat gestures can only be used as an approximate value and it is important to note that the categorisation might differ between raters.

Does gesture behaviour vary between/within interviewers?

As stated before, the majority of interviewers did produce gestures when interviewing children. Gesture behaviour did vary between interviewers and these variations were further investigated to see if there were differences between the two interviewer feedback groups, as well as

children's age groups. Further, it was investigated, if gesture proportions varied between and within interviewers.

Were there any differences in gestures produced between interviewer feedback groups?

As mentioned in section 3.2.1, interviewers belonged to either a feedback or a no-feedback group. Even though the feedback did not involve any information regarding gestures, it was still evaluated, if there were any differences in gestures produced by the interviewers between the feedback groups. Interviewers in the no-feedback group produced a mean of 3.4 gestures (SD=5.03), and interviewers in the feedback group produced a mean of 5.3 gestures (SD=6.94). A t-test revealed no significant difference in the mean number of gestures between the feedback groups: $t(69) = -1.25$, $p=.22$. Therefore, the feedback the interviewers received, did not affect their gesture behaviour.

Were there any differences in the number of gestures produced between age groups?

As there were two age groups of children interviewed, it was considered, whether there were differences in the number of gestures shown between the age groups and if certain categories of gestures were produced more often in one of the age groups. Younger children received more gestures than the older children, however, there was no significant difference between the mean number of gestures used in interviews with the 4-year-olds (Mean=5.54, SD=7.34) and the 6-year olds (Mean=3.81, SD=5.34): $t(69) = 1.14$, $p= .26$, Cohen's $d =0.46$. All children received gestures in over 70% of the interviews.

Do the gesture proportions change by interview?

Gesture proportions differed between interviewers, from no gestures, to a maximum of 27 gestures per interview. The statistics of gestures included a median of 2 gestures (SD=6.23) with a variance of 38.8. No gestures were counted in 19 interviews and one gesture in 16 interviews. The higher numbers of gestures, including 16 gestures and more were counted once each. Therefore, the gesture proportions varied greatly between the interviews.

Is there consistency between first and second interview (repeated measures)

Of the total of 36 interviewers, 35 conducted two interviews. It was investigated, if gesture behaviour varied within each interview. Interviewers produced a total of 182 gestures in the first interviews (Total of 35 interviews) (Mean=5.2, SD=7.26), and 137 gestures in the second interviews (Total of 36 interviews) (Mean=3.8, SD=4.99). A t-test revealed no significant differences in the mean number of gestures produced within each interview: [$t(69) = .94$, $p=.35$]. Therefore, there seems to be consistency in the gesture production in the first and second interview and the gesture production does not change by interview.

Additionally, to the main research questions, gestures were also analysed in regard to themes, that emerged through the analysis of the main gesture categories. The following section includes tables and figures of the gestures recorded, as well as detailed findings regarding gesture themes and differences in gesture behaviour between age groups.

FIGURE 1 NUMBER OF GESTURES PRODUCED BY THE INTERVIEWERS IN THE SEMANTIC CATEGORY

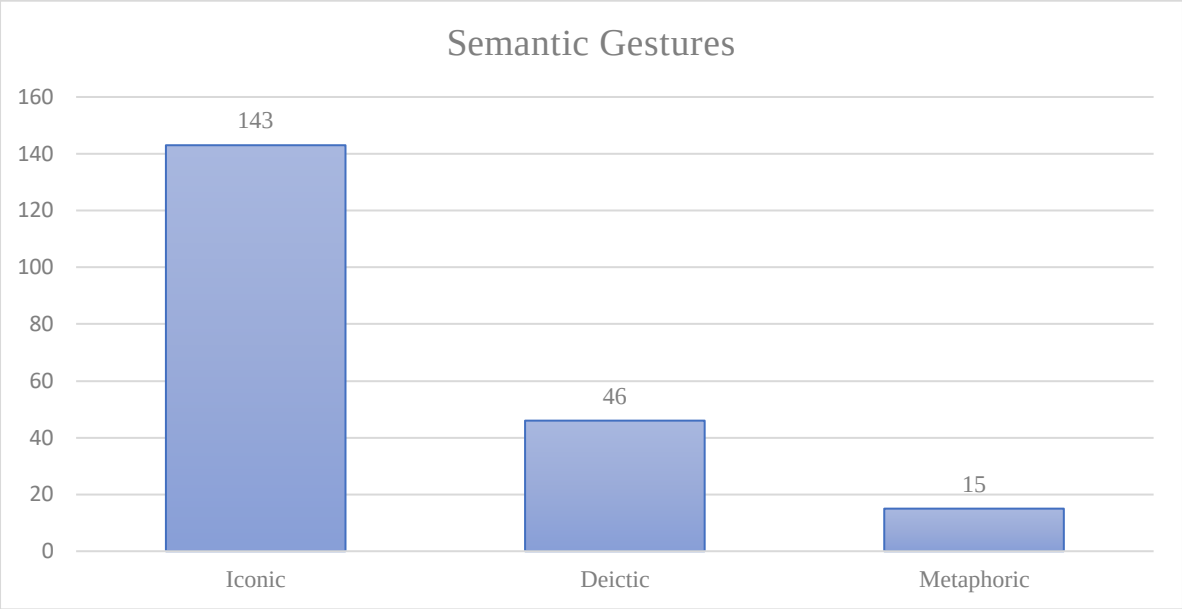

FIGURE 2 NUMBER OF GESTURES PRODUCED BY THE INTERVIEWERS IN THE NON-SEMANTIC CATEGORY

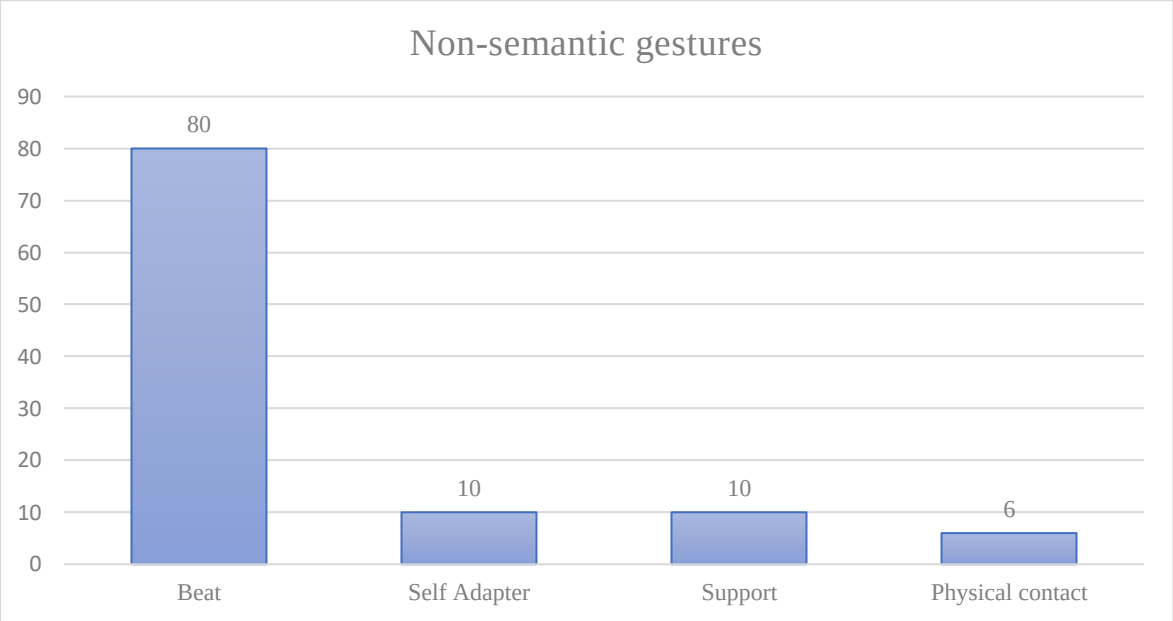

FIGURE 1 NUMBER OF GESTURES PRODUCED BY THE INTERVIEWERS IN EACH THEME

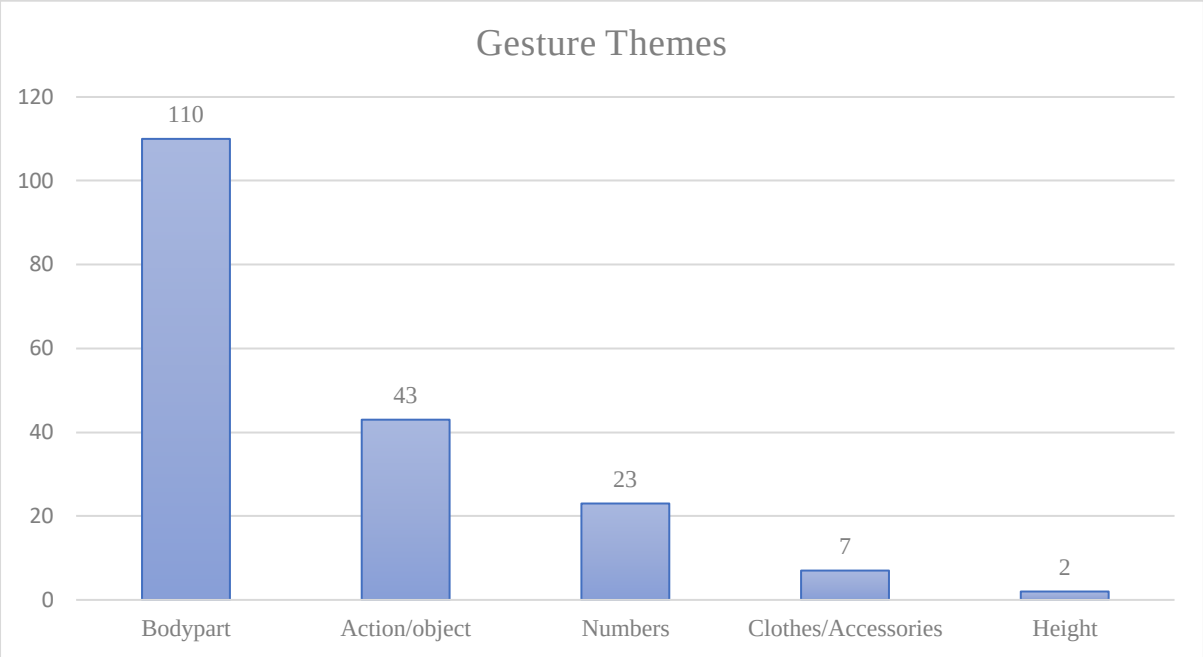

TABLE 1 MEAN AND STANDARD DEVIATION FOR THE NUMBER OF TIMES EACH GESTURE THEME WAS PRODUCED BY THE INTERVIEWERS

Gesture	4-year-olds (n=28)			6-year-olds (n=43)			All (n=71)		
	N	mean	SD	N	mean	SD	N	mean	SD
Body parts	63	2.25	3.38	47	1.09	1.31	110	1.55	2.40
Action/object	15	0.54	1.23	28	0.65	1.48	43	0.61	1.22
Deictic	33	1.18	2.67	13	0.30	0.60	46	0.58	1.50
Clothing/accessories	5	0.18	0.61	2	0.05	0.30	7	0.10	0.45
Numbers	21	0.75	1.08	2	0.05	0.21	23	0.32	0.77

Height	0	0.00	0.00	2	0.05	0.21	2	0.03	0.17
Support	10	0.36	1.06	0	0.00	0.00	10	0.14	0.69
Physical contact	6	0.21	0.79	0	0.00	0.00	6	0.08	0.50

Symbolic gestures

Symbolic gestures were recorded a total of 11 times, in 7 interviews (Mean=.15, SD=.52). Interviewers only produced symbolic gestures in the 4-year-old group (Mean=.39, SD=.79). A t-test revealed a significant difference between age groups: [t(69) = 2.64, p=.01].

Non-symbolic gestures

Semantic categories

Iconic

Iconic gestures were recorded a total of 143 times, with an average of 2.01 gestures per interview. Iconic gestures were the most commonly used gestures by interviewers. The younger children received more iconic gestures by the interviewers. The 4-year olds received a mean of 3 gestures (SD=4.05), compared to the 6-year olds, who received a mean of 1.37 gestures (SD=1.48). A t-test showed a significant difference between age groups: [t(69) = 2.04, p= .050].

Deictic

There was a total of 46 recorded pointing gestures in the 71 interviews, with an average of 0.58 pointing gestures per interview. Interviewers used pointing gestures in 19 of the interviews. There was no significant difference in the number of pointing gestures used with the 4-year-olds (Mean=1.18, SD=2.67) and the 6-year-olds (Mean=0.30, SD=.60), [t(69) = 1.71, p=0.1].

Metaphoric

A total of 15 metaphoric gestures were recorded, with an average of 0.21 gestures per interview. There was no significant difference in the number of metaphoric gestures used with the 4-year-olds (Mean=0.14, SD=0.45) and the 6-year-olds (Mean=0.26, SD=0.45), [t(69) = -.518, p=.61].

Non-semantic categories

Beat

Beat gestures were recorded 80 times, with a mean of 1.13 gestures per interview, in 25 interviews. There was no significant difference in the number of beat gestures used with the 4-year-olds (Mean=.61, SD=1.07) and the 6-year-olds (Mean=1.47, SD=2.94), [t(69) = -1.75, p=.09].

Self-Adapter

Self-adapting gestures were recorded 10 times, with a mean of 0.14 per interview. There was no significant difference in the number of self-adapter gestures used with the 4-year-olds (Mean=.04, SD=.19) and the 6-year-olds (Mean=.21, SD=.86), [t(69) = -1.28, p=.21].

Support

Support gestures were noted in four interviews, with a total of 10 gestures. Gestures were recorded into this category since they all had the purpose to make a bond with the child and offering them support during the interview, or keep them interested, engaged or calm. Supportive behaviour was only recorded in the younger age group (Mean=.36, SD=1.06) and no supportive behaviour was found in the older age group: [t(69) = 1.78, p=.09].

Physical contact with the child

Six gestures were counted, from three interviews with the 4-year-old children (Mean=.21, SD=.79). Examples included interviewers touching the child (age 4) on the wrist, mouth or chin and putting hands on top the child hands to offer support. In another interview (age 4), the interviewer shook hands with the child to say hello. No physical contact between the child and the interviewer was recorded in the older age group: [t(69) = 1.44, p=.16].

Gesture themes

Gestures referring to body parts

In the 71 interviews, a total of 110 gestures were in this category, with an average of 1.8 gestures per interview. Gestures referring to body parts embodied 34.5 % of all gestures and were the most commonly used gestures of all the categories. Interviewers used gestures that referred to the interviewer's hair, head, face, eyes, nose, cheeks, forehead, temples, teeth, mouth, chin, chest, waist, shoulders and general body. Interviewers used gestures referring to these body parts in 42 of the interviews. The younger age group received more gestures

referring to body parts (Mean=2.25, SD=3.38) than the older age group (Mean=1.09, SD=1.31), however, the difference was not significant, [t(69) = 1.727, p=.09].

Gestures referring to an action or an object

A total of 43 gestures were recorded in the 71 interviews in this category, with a mean of 0.61 gestures per interview and were used in 19 interviews. No significant differences were found between the age groups. The younger age group received fewer of these gestures (Mean=0.54, SD=1.23) than the older age group (Mean=0.65, SD=1.48), but the difference was not significant: [t(69) = -0.343, p=.73].

Gestures referring to numbers

There were 23 gestures in 14 interviews that included information about numbers, with an average of 0.4 gestures for all interviews (N=71). The 4-year-olds received significantly more number gestures (mean=0.75, SD=1.08) than the 6-year-olds (Mean=0.05, SD=0.21), [t(69) = 3.42, p=0.002].

Gestures referring to clothes and accessories

In the 71 interviews, there was a total of 7 gestures referring to clothes (with an average of 0.1 gestures per interview). There were instances when gestures referring to body parts overlapped with this category, for example when interviewers put their hand over their eye to simulate an eyepatch, which was then recorded in both categories, due to touching a body part and also referring to an accessory at the same time. Interviewers used gestures referring to clothing or accessories in 4 interviews (5.6%). The younger age group received 5 gestures (Mean=.18,

SD=.61) and the older age group 2 gestures (Mean=.05, SD=.30) in this category. A t-test showed no significant differences: [t(69) = 1.06, p=.30].

Gestures referring to height

Gestures that referred to the height of a person were included in this category. Height gestures were used twice, in two separate interviews. Both interviewers used this gesture to indicate different heights, one lower and one higher, which accompanied their question about how tall the person was. Both of these gestures were shown to the older age group (Mean=.05, SD=.21) and no height gestures were shown to the younger age group: [t(69) = -1.43, p=.16].

3.4 Discussion

Do interviewers gesture?

The analysis of the interviews showed that gestures were used by most interviewers and patterns of topics emerged. In terms of the first research question, if interviewers use gestures, the answer is yes in the majority of cases. Interviewers produced both symbolic and non-symbolic gestures. While many of the interviewers used their hands in non-semantic gesturing, involving beat gestures (as described in section 2.1.1), when they were communicating, most interviewers produced gestures, which can be allocated to specific semantic gesture categories, mostly iconic or deictic gestures. These were very specific gestures, referring to the objects and actions the interviewers were describing, or questioning the children about. This non-verbal behaviour was consistent with past studies, which have shown that people use gestures when communicating (Congdon et al., 2018; McNeill, 1985; So, Sim Chen-Hui, & Low Wei-

Shan, 2012). Therefore, our results indicated that such gesture behaviour seems to apply to interview contexts as well. These findings are of immense value to the area of non-verbal behaviour in forensic child interviews and provide a foundation for every study conducted on the influence of gestures in such interviews. It is believed that no study has ever been conducted, investigating the gesture behaviour of forensic interviewers. The findings of the current study provide a detailed examination of the gestures recorded, as well as a foundation for future research.

What type of gestures do interviewers produce most?

Interviewers produced an array of gestures, including symbolic and non-symbolic gestures. Symbolic gestures were only produced 11 times; comparably little to the non-symbolic gesture categories, which were produced over 300 times. Non-symbolic gestures were produced frequently, in the majority of interviews. From the non-symbolic, semantic gesture categories (as discussed in Chapter 2), several themes emerged, including gestures referring to body parts, actions and objects, numbers, clothes and accessories and indicating height. The final three themes emerged from non-semantic categories and included supportive behaviour, self-adapter gestures and having physical contact with the child (in descending order). These gesture themes will be discussed in more detail below.

McNeill (1985) argued that iconic gestures could be identified without any references made to the accompanying speech. The current study demonstrated that iconic gestures were indeed produced by the interviewers, both either accompanied by questions referring to the semantic meaning of them, or without. Therefore, our iconic categories of gestures could both be representative of the information (when used with the accompanying speech), as well as potentially suggestive (when used without the accompanying speech). Most of the recorded

gestures were classified as semantic/meaningful, as they described either objects or actions, which were linked to the activities conducted with the children. Such gestures are used and understood by children, as part of their language development (Acredolo & Goodwyn, 1988). The non-verbal behaviour of the interviewers was also in accordance with past descriptions of gesture behaviour (Leathers & Eaves, 2015). It was found that iconic gestures, involving emblematic representations of events, objects and people, were used frequently by the interviewers, as defined by McNeill (1995).

In the semantic gesture category, interviewers produced iconic gestures the most. This is not surprising, as it has been stated that most gestures are iconic in nature (McNeill, 1992). This was followed by deictic and metaphoric gestures. In the non-semantic category, beat gestures were recorded frequently. All these gestures are reported to be quite common in communication (McNeill, 1995). Even though beat gestures were produced quite frequently, they are of less importance to the current thesis, as they do not hold any semantic information and there is no risk of them communicating potentially misleading information to the listener.

Does gesture behaviour vary between/within interviewers?

As discussed above, most interviewers did produce gestures, during their interviews. The results showed that gesture behaviour did vary between interviewers, however, not in all categories. Not all interviewers produced gestures and for the interviewers who did, there were large variations of the number of gestures produced.

Were there any differences in the number of gestures produced between interviewer feedback groups?

Interviewers were assigned to either a feedback or no feedback group. The results showed that feedback had no influence in the number of gestures produced by the interviewers. This is not surprising, as interviewers did not receive any feedback regarding non-verbal behaviour or were ever introduced to the concept throughout the original study. For future studies, it would be valuable to conduct experiments with forensic child interviewers, informing them about gestures and investigate, if training or feedback in regard to gestures would affect gesture behaviour overall.

Were there any differences in the number of gestures produced between age groups?

There were differences in the number of produced gestures by interviewers between the children's age groups. The most frequently produced iconic gestures, were significantly more produced with the younger children and so were symbolic gestures. Within the gesture themes, the most produced gestures were in reference to body parts. Interviewers used them more often within the younger age group, compared to the older age group, however, there was no significant difference between groups. Interviewers also used significantly more gestures referring to numbers in the younger age group.

These findings might be an indication that interviewers used gestures for clarification, considering children's language development. Younger children's developing language skills (Snow et al., 2012; So et al., 2012) might encourage interviewers to also utilise gestures, to elucidate certain information, for example, references to facial features, such as nose, mouth, teeth, lips, forehead or hair, or body features, such as chest, waist and shoulders. This is similar to findings from previous research, which has shown that parents frequently gesture when talking to their children (Acredolo & Goodwyn, 1988; Hoff-Ginsberg & Shatz, 1982; Goldin-Meadow & Alibali, 2013). Interviewers might do so too, to facilitate children's comprehension by providing non-verbal support to their speech, similar to parents. Further, it supports the

claims by Congdon, Novack and Goldin-Meadow (2018), that gestures are indeed widely produced by interviewers.

The second most commonly used gesture theme were gestures that referred to actions or objects. Interviewers produced such gestures, in reference to e.g. circles or screens, outlining their shape or using a 'scribble' gesture, referring to writing. There was no difference in the number of such gestures between the age groups.

The third most commonly used gesture theme was gestures referring to numbers. Interviewers used such gestures in reference to age or lists. For example, one interviewer asked the child about her age and when the child did not answer, the interviewer showed her 1, 2 and then 3 fingers. In another interview, the interviewer referred back to the child's favourite subjects in school by listing them with her fingers. Younger children often use their fingers to show their age, or understand numbers in general (Croker, 2012; Nicoladis et al., 2018). Children at four years of age have developed a basic understanding of numbers and are able to count to 10 and often show their age with their hands. At that age, they count on their fingers (Croker, 2012). Previous studies have found that encouraging children to gesture during a math problem, can help them improve on the task (Broaders, Cook, Mitchell, & Goldin-Meadow, 2007; Brooks et al., 2018) and that children can interpret both conventional (one to one correspondence between fingers and quantities) and unconventional gestures (holding up two hands, showing fingers on both hands) between 2 and 5 years of age (Nicoladis et al., 2018). Interviewers may be tempted to assist the child, either by showing them numbers with their fingers, whilst asking them about their age, or to mirror the child's gesture, to show their comprehension of the child's age, or as a way of making sure that the child stated their correct age.

It is not uncommon for adults to assume that younger children need more support during a

forensic interview and this was also demonstrated in studies investigating supportive behaviour by interviewers, in regards to children's reluctance to report abuse (Blasbalg, Hershkowitz, & Karni-Visel, 2018) and parents' use of gestures in guiding younger children's problem solving skills (Vallotton et al., 2015). As younger children are still quite unfamiliar with numbers (Congdon et al., 2018; Goldin-Meadow & Alibali, 2013; Goldin-Meadow et al., 2014), interviewers might be tempted to assist them. Study 2 indeed showed that the interviewers used significantly more gestures referring to numbers for the younger age group, compared to the older group. However, showing children numbers, accompanying questions about their age, or replicating the number the child showed, could potentially have a negative, suggestive influence on children's statements. There is a lack of research into the influence of numerical gestures during child interviews and more research should be conducted on this topic.

The fourth most frequently used gestures were ones that included references to clothing and accessories. Gestures referring to clothes and accessories are of importance in forensic interviews, as they communicate information regarding a person's appearance, which might be used for identification purposes. Investigative interviewers often ask witnesses questions regarding a person's appearance, such as 'what was he wearing?' (Geiselman & Fisher, 2014). Appropriate descriptions of clothing by the witness can therefore be of importance. In the current study, the interviewers used gestures, referring to belts, eye-patches and hats, which were all accessories linked to the mock event. Such gestures hold communicative value and could potentially be suggestive.

The lowest counts for representational gestures were for gestures referring to height. In one of the interviews, where the interviewer indicated the height of the person she described, the gesture was subsequently replicated by the child, who indicated a taller height, above his head.

Gestures, such as height gestures may prompt children to use the same gesture to communicate this information.

Additionally, to the meaningful and representational gestures discussed above, there was evidence of non-semantic gestures, in form of supportive behaviour by the interviewer. As discussed in the introduction (section 3.1), interviewers' attitudes (Almerigogna et al., 2008; Wright et al., 2009; Wright & Powell, 2007), friendliness (Almerigogna et al., 2008; Sondhi & Gupta, 2005) and support (Davis & Bottoms, 2002), have all been found to have an influence in child interviews. Supportive behaviour in the form of gestures was found in four interviews, and in all cases with the younger children. This behaviour might be linked to keeping the younger children engaged. In one of the interviews, where four supportive gestures were observed, the child was distracted and passive. Supportive behaviour in such a case might have been an attempt to keep the child engaged and keep the interview focused.

Do the gesture proportions change by interview?

Gesture proportions varied greatly between the interviews, with some interviewers not using any gestures, to interviewers using up to 27 gestures in one interview. At the current stage, it is unknown why some interviewers produce gestures frequently and others do not. The findings suggest that evaluating, whether interviewers produce gestures (in the current study, the majority did) is not enough; interviewers who gesture, might differ significantly in the frequency of their gestures and more research needs to be conducted to find out why.

Is there consistency between first and second interview (repeated measures)

Of the total of 36 interviewers, 35 conducted two interviews. Out of the 53 interviews, which contained gestures produced by the interviewers, all interviewers conducted interviews twice, with two different children. No significant differences were found between the number of gestures in the first and the second interview. This suggests that individual interviewers seem to be relatively stable across different interviewees/interviews. Gesture behaviour could be linked to a variety of factors, including interviewers' personalities and communicative behaviour. Our findings suggest that gesture behaviour does not change within an interviewer, even when interviewing different children. Hence, if an interviewer produces gestures, he or she does so, regardless of whom the interviewer is questioning. However, this should be investigated further, with interviewers conducting more than just two interviews. Larger studies could shed light on the question, if gesture behaviour is linked to interviewer's individual characteristics, or an interplay between interviewer and interviewee characteristics.

Until now, there have been no research findings about forensic interviewers' gesture behaviour- an area that needs to be studied further. The findings of the current study are of great significance and value to the area of investigative child interviewing and provide evidence that generally speaking, forensic interviewers instinctively produce gestures when interviewing children. Hence, the subsequent studies conducted within this thesis are based on the findings of the current study, which indicates that forensic child interviewers do have a tendency to produce gestures during an interview, which raises the possibility of suggestive non-verbal content by interviewers in real life interviews. Thus, the current findings, to our knowledge, provide the first ever evidence of the occurrence of gestures within forensic child interviews.

As a general consensus, it is crucial to conduct investigative child interviews free from bias and misleading information (Hritz et al., 2015). However, in real life, that may not always be

the case. False information may be transferred through non-verbal behaviour in form of gestures. Recent studies that have investigated the gestural misinformation effect, have found that non-verbal gestures can mislead children's testimonies (Broaders & Goldin-Meadow, 2010), even when interviewed immediately after witnessing an event (Gurney et al., 2013; Kirk et al., 2015). These studies utilised open-ended questions accompanied by misleading gestures, which included types referring to body parts, clothing, accessories, actions and directions (Kirk et al., 2015); attributes (hairstyle), actions, objects and shapes (Gurney et al., 2013); and actions, body parts, objects and accessories (Broaders & Goldin-Meadow, 2010). The gestures observed in Study 2 were of a similar type and included references to body parts, numbers, actions, objects, pointing and height. Interviewers used these gestures in three-quarters of the interviews, including predominantly meaningful gestures that referred to semantic information, either given by the interviewers in the form of questions, or in repetition of a child's statement.

The findings of Study 2 are informative in many aspects. They confirm that interviewers do use hand gestures when interviewing children, and that the majority of these gestures can be categorised into distinct types. However, it is unknown, if interviewers themselves are aware of these gestures. As the interviews were conducted for a separate study, which was not linked to this thesis, and because the guidelines did not involve any information about gestures in child interviews, it is unknown, whether the interviewers were aware of body language, non-verbal cues and hand gestures. Further research needs to consider, whether the interviewers would have changed their behaviour, if they had received training or advice about gestures prior to the interview.

Nevertheless, any gesture that is given during a child interview could potentially contain misleading information and ultimately taint the reliability of their statements. Study 2 demonstrated that interviewers do indeed produce gestures when they interview children.

Studies 3 and 4 (Chapter 3) built on this finding and examined whether gestures could mislead during interviews. Chapter 4 includes two studies, in which we tested the gestural misinformation effect in both adults (Study 3) and children (Study 4). Most research on the gestural misinformation effect has been conducted in the UK, with English speakers, and to find out if the gestural misinformation effect also applied to interviews conducted in another language, we conducted Studies 3 and 4 with German speakers. The following studies are the first ever experiments conducted on the gestural misinformation effect in the German language and within Switzerland.

4. CHAPTER FOUR

The current chapter includes two experimental studies, investigating the effect of misleading gestures on interviews with adults (Study 3) and children (Study 4). Study 3 was a pilot study conducted with adults in Switzerland, investigating misleading gestures on participants' memory for a video, shown immediately before questioning. Study 4 (section 3.5) was conducted following Study 3, with children of three age groups in Switzerland, using the same video and adjusted questions/gestures, based on the findings of Study 3.

Study 3

Pilot study on the effect of misleading gestures by the interviewer with adults

4.1 Introduction

When people communicate, for example in talking to each other, they move their hands - they gesture. As discussed in Chapter 1, gesturing is a cross-cultural and robust phenomenon, found across the world in all ages and cultures (Stevanovi & Salmon, 2005). Gesturing has also been found in people blind from birth (Goldin-Meadow, 2002a). Gesture may accompany speech or may substitute for it. The most prominent gestures to speakers, as well as listeners, are the forms that can substitute for speech (Alibali, Heath, & Myers, 2001). As shown in Study 2, gestures are common in adult-child interactions and the interviewers made frequent use of iconic gestures, referring to clothing, accessories, body parts and actions.

Situations can often be interpreted in a number of ways and information can be communicated through different channels (Leathers & Eaves, 2015). Information can be communicated through gestures and can further be influenced by interviewers' beliefs, attitudes and prior knowledge (Almerigogna, Ost, Akehurst, & Fluck, 2008; Wright, Memon, Skagerberg, & Gabbert, 2009; Sondhi & Gupta, 2005; Wright, Powell & Ridge, 2007. In child interviewing research, forensic investigations rely on children's abilities to appropriately recall information about the witnessed event during questioning (Bruck & Ceci, 1999, 2004; Finnilä, Mahlberg, Santtila, Sandnabba & Niemi, 2003; Goodmant & Reedt, 1986; Lehman, McKinley, Thompson, Leonard, Liebman & Rothrock, 2010). Exposure to verbal suggestive interviewing techniques can affect the accuracy of eyewitness testimonies (Okado & Stark, 2005; Roebers & Schneider, 2000). Suggestibility by interviewers is relevant to the police interviewing of both adults and children and can be classified as a potential risk factor or vulnerability when obtaining witness statements of events (Gudjonsson, Vagni, Maiorano, & Pajardi, 2016; Roebers & Schneider, 2000; Volpini, Melis, Petralia, & Rosenberg, 2016).

Suggestive verbal questions can be influential in affecting adults' memory (Roebers & Schneider, 2000) and children's memory in interviews (Alexander, Goodman, Schaaf, Edelstein, Quas & Shaver, 2002; Bruck & Melnyck, 2004; Hritz et al., 2015; Lamb & Fauchier, 2001; Roebers & Schneider, 2000). But the influence of gestures in investigative interviews has only been investigated in a handful of studies (see Chapter 2, section 2.16.2).

When children talk to others about memories and past experiences, they observe as well as engage in nonverbal behaviour (Congdon, Novack, & Goldin-Meadow, 2018). The nonverbal behaviour can occur spontaneously or by instruction (Stevanovi & Salmon, 2005). Researchers have noted the importance of spontaneous and instructed nonverbal gesture in communication and educational settings in children (see Chapter 2, section 2.16.2) (Alibali, Heath, & Myers,

2001; Goldin-Meadow, 2002; Liwag & Stein, 1995; Kelly & Church, 1998; McNeil, 1992). Seeing gestures helps children to encode events, by facilitating their memory of the information communicated through the gesture (Aussems & Kita, 2019; So, Sim Chen-Hui & Low Wei-Shan, 2012). Parents, as well as other adults often gesture, when they communicate with children and most of these gestures co-occur with their speech (Acredolo & Goodwyn, 1988) and gestures, accompanying words, have been found to increase children's words recalls, compared to speech alone (So et al., 2012). Although gestures seem to have been recognised in educational research by now, in forensic settings they have largely been ignored (as demonstrated in Chapter 2).

In terms of suggestibility, as discussed above, the majority of forensic research focuses on the influential effect of specific/direct questions in investigative interviews and guidelines have been developed, which mostly make recommendations regarding the use of open-ended questions in child interviews (Chapter 1, section 1.4.1.2). Even though it is recommended that interviewers should mainly rely on open-ended and free recall questions (Brown & Lamb, 2015; Oxburgh, Mykleburg & Grant, 2010; Saywitz, Lyon & Goodman, 2017) there is always the possibility that interviewers use accompanying gestures, which could in turn communicate information on their own, due to the natural instinct of individuals to move their hands and gesture (Church, Ayman-Nolley & Mahootian, 2004).

4.1.1 Non-verbal gestures

Gestures embody concepts in the form of universal representations (Church, Ayman-Nolley & Mahootian, 2004). Social communication often embodies non-verbal behaviour (Krauss, Chen & Chawla, 1996) and has led to a debate about whether gestures in general, can singularly convey a large portion of communicative load. It is still largely unknown if nonverbal

suggestions, both accurate and misleading, can be as influential as those made verbally (Gurney, 2015) but recent research studies with children suggests that it does (Broaders & Goldin-Meadow, 2010; Kirk et al., 2015). The influence of accurate, non-verbal gestures has been mainly investigated in developmental research situations (Vallotton, Fusaro, Hayden, Decker, & Gutowski, 2015) and it was found that adult's gestures support children's learning in problem solving tasks and that adults adapt their gestures to their child's age and skill level (Goldin-Meadow & Singer, 2003).

As discussed in Chapter 2, when gesturing is used synonymously with speech it helps the listener to comprehend and encode the information (Goldin-Meadow & Alibali, 2013). In educational settings, teachers can use gestures to be more effective in communication, assessment of children's knowledge and the teaching of abstract concepts in both language and mathematics (Kelly, Manning & Rodak, 2008). Further, when gestures accompany speech instructions in a non-native language, not spoken to by the children, the participants' learning increased two-fold (Church et al., 2004). Encouraging children to gesture can improve their understanding of educational concepts in mental representations (Brooks et al., 2018) in cognition and learning (Broaders et al., 2007; Goldin-Meadow & Singer, 2003). A meta-analysis (Hostetter, 2011) showed that gestures provided an advantage to communication, if used correctly, in a non-misleading way.

In suggestibility research, speech is the main source of misleading influence, when witnesses and victims misremember details of an event (Ackil & Zaragoza, 1995; Loftus & Hoffman, 1989; Roebers & Schneider, 2000). Researchers have also considered other forms of misleading influence, such as manipulated images and photographs (Wade, Green & Nash, 2010), or nonverbal behaviour in form of hand gestures or body postures (Davis & Bottoms, 2002). Misinformation can also be communicated through nonverbal gestures, and corrupt

individuals' eyewitness testimonies, leading to inaccuracies and false statements in an eyewitnesses' long term recall of events, both in adults (Gurney, Pine, & Wiseman, 2013) and in children (Broaders & Goldin-Meadow, 2010; Kirk, Gurney, Edwards, & Dodimead, 2015). This gestural misinformation effect is discussed in Chapter 2, section 2.16.2.

Broaders and Goldin-Meadow (as discussed in Chapter 2, in section 2.16.2) (2010) examined how gestures by an interviewer, add information during investigative interviews with child eyewitnesses. The results showed that children communicated details that were conveyed by the gestures; thus, they incorporated the misleading, non-verbal information into their memory of the witnessed event. This effect of misleading gestures was found to be as strong as the effect of misleading questions. Children gave just as many false answers to open-ended questions, accompanied by misleading gestures, as when asked specific, misleading questions. Broaders and Goldin-Meadow therefore provided good evidence that children's eyewitness testimonies are vulnerable to non-verbal suggestion.

Broaders and Goldin-Meadow (2010) conducted interviews some time (two weeks or three months) after the witnessed event, so the misleading effect could be attributed to memory decay of the event, which facilitated the interference by the more recent misleading information (Holliday, Reyna & Hayes, 2002). According to memory interference theory, weaker memories are less resistant to suggestibility than stronger memories (Brown, 1958) and it may be possible that children's memory traces of the event had decayed during the delay between the event and the interview, in which case immediate interviewing might lessen the gestural misinformation effect. However subsequent research has provided evidence against this notion. Gurney et al., (2013) found that almost one third of their adult participants still reported details, conveyed by gestures (shown on video) even when interviewed immediately after the event, when memory was still presumed to be strong. This was further supported by Kirk et al., (2015) who found a

robust gestural misinformation effect in child interviews, despite factors that normally buffer children from verbal suggestions, namely strength of memory trace, greater age and greater language skills. In other words, children were misled by the gestures, even when interviewed immediately after the event and regardless of their age and verbal ability. Therefore, Chapter 3 included studies that tested the influence of misleading gestures in immediate conditions as well, however, adding to the existing research, in terms of incorporating older age groups and a culturally different setting, namely Switzerland.

In line with research that has described the influential effect of specific/direct questions in forensic interviews, (see Chapter 1) (Lamb & Fauchier, 2001; Roebers & Schneider, 2000); Broaders & Goldin-Meadow (2010) also showed that children produced more affirming responses for specific- rather than open-ended questions. Thus, it has been found that misleading non-verbal gestures can influence the interviews in the same way and to the same extent, that misleading verbal questions do. Age differences have been found in verbal suggestibility, with pre-school children being the most vulnerable, but verbal suggestibility levels remain high throughout childhood (Bruck & Ceci, 2004; Bruck & Melnyk, 2004). However, there is a clear gap in research, testing non-verbal suggestibility beyond the English culture and language.

Memory skills develop gradually during the preschool years (Melinder Endestad & Magnussen, 2006), both with respect to the ability to discriminate between external sources of information -for example, who said what (Lindsay, Johnson & Kwon, 1991) -and the ability to discriminate between external and internal sources, e.g. distinguishing between what is imagined and what is said (Foly, Johnson & Raye, 1983). In particular, if sources are similar (Lindsay et al., 1991), or if memory testing is delayed (Parker, 1995), young children perform less well than older children in responding to both verbal nonsuggestive and verbal suggestive

questions. Hence, it is important to test the influence of misleading gestures in several age groups, to identify any age differences in vulnerability to suggestibility.

In both Study 3 and 4 the event was shown in a video. In suggestibility research a video target is the most commonly used target event in child studies (Bruck & Melnyk, 2004). To assess whether the video and gestures were appropriate, a pilot study was conducted with native German speakers in Switzerland. This was Study 3.

To rehearse and practice the gestures for Study 3, 12 adult non-native-, but quite proficient German speakers were interviewed about a video event in England. Several different misleading gestures were presented, to evaluate, which gestures felt the most natural and had the strongest communicative value, in terms of the target video. Since non-native German speakers might react differently to gestures than native German speakers (e.g., by relying more heavily on the gestural information, due to any potential language deficiencies in a non-native group), their responses were not analysed. However, these preliminary interviews provided practice in utilising the gestures, and led to the choice of gestures used in Study 3.

The reason for Study 3 was to test the chosen misleading gestures in an experimental context, and further, to find out if these gestures had a misleading effect. In other words, Study 3 provided an opportunity to evaluate the procedure and gestures that were going to be used in later studies.

4.2 Method

4.2.1 Participants

Eighteen adults (13 females and 5 males) participated in Study 3. Their ages ranged from 20 to 71 years, with a mean age of 40.44 years (SD= 15.66). The participants were recruited in Zurich, Switzerland through word of mouth and private networks. No payment was given to participants, and the researcher visited the participants in their home. The participants were all native German speakers. Participants gave signed consent to take part in the experiment and ethical approval was given by the Department of Psychology's Ethical Committee at Sheffield University.

4.2.2 Method

Participants watched the video on a 13-inch laptop in a quiet room. Participants were randomly allocated to one of six question type groups, each containing the 8 experimental questions in different order. Four of the experimental questions were accompanied by misleading gestures (gesture condition) and four were given without any gestures (neutral condition). The 8 experimental questions were placed amongst filler questions, consisting of wh-questions (e.g. 'Where did the video take place?'). The filler questions were the same and in the same position for all groups.

A video extract around 2 minutes in length, from a German family TV movie was selected on the basis that it had to fulfil strict criteria for the study. The video included gestures identified in Study 2, an interaction between an adult and a child, as well as an adult touching a child in a neutral way. Although the video was in public circulation on the video-sharing site YouTube at the time of the experiment, it is very unlikely that the participants had seen it before. The original comedy was a small-scale production, only shown on a German TV channel around 12 years prior to the current study. The chosen video clip featured a mother, her son (age 8)

and her female friend having a picnic in the park. The mother is having a blind date with a man, who is going to arrive later. The women discuss how the mother will recognise the man. The mother explains to her friend, that they will both be holding the same flower so that they can recognize each other. The man arrives and introduces himself to the mother and her friend and hands his flower to the mother. The mother calls to her son and introduces him to the man. The son wants to play football with the man. The man says that he has not played sports for years. Nevertheless, the man agrees to play football with the boy, and they walk off to play. The mother and her friend join them soon after and the video ends with the man tripping during the game and then saying that he is not keen on playing football. The characters and the storyline have a positive attitude and the story was expected to appeal to both adults and children.

4.2.3 Procedure

Participants were asked to watch the video carefully. The video was shown on a computer screen. Participants were informed, that they would be questioned about the video afterwards. After watching the video participants were interviewed individually in a quiet room. The participant sat at a table diagonally facing the experimenter. A total of 16 questions were asked.

The participants were asked eight experimental questions about the video. Four of the questions were accompanied by a misleading gesture and the other four were asked without any gestures. Each participant was allocated to one of six randomisation groups, receiving a different order of four misleading gesture questions and four no-gesture questions to remove order effects. The experimental questions (both with gestures and without gestures) were counterbalanced in each of the six groups and distributed throughout the interview, so that there were always a filler and/or questions without gestures in between the questions with gestures, to make the gestures less apparent.

The gestures shown to the participants were chosen based on the gesture types that were identified in Study 2, adapted to fit the video's story line and characteristics of the protagonists. Study 2 revealed that interviewers used iconic gestures most often. These iconic gestures had strong links to the activities, the children were questioned about. Such gestures have the ability to carry semantic information, which in turn can mislead the interviewees. Therefore, for Chapter 4, it was decided to produce iconic, misleading gestures that contained false information, specific to the video, referring to clothes, accessories, actions and body parts. For example, in the misleading gesture condition, participants were asked 'What did the woman do, who was sitting on the ground?' plus a gesture that depicts drinking (spreading thumb and little finger away from hand and raising hand to mouth, pivoting it towards the mouth). In the accurate, no-gesture condition, the experimenter asked the question without any gestures. The remaining eight of the 16 questions were the filler questions., The filler questions were not scored or analysed. For a full list of the experimental questions and the accompanying gestures, see Table 2. At the end of the interview participants were thanked for taking part and were debriefed.

TABLE 2 MISLEADING GESTURES PRESENTED IN THE INTERVIEW, THE ACCOMPANYING QUESTIONS AND CORRECT ANSWERS

	Question	**Misleading Gesture**	**Correct answer**
1.	What did the man wear?	'Gloves' gesture	Jacket, trousers, shirt (no gloves)
2.	What was the woman, sitting on the ground doing?	'Drinking' gesture	Eating
3.	Before the man and the boy played football, where did the man softly punch the boy?	Punching 'arm' gesture	Chest

4.	Where did the man stroke the boy?	Stroke over ‘cheek’	Hair
5.	Where did the man pinch the boy?	Pinching ‘chin’ gesture	Cheek
6.	What was the mothers’ friend’s hairstyle?	Sweeping hand along jawline gesture (indicating short hair)	Long, curly
7.	Did the mother wear jewellery?	‘Necklace’ gestures (gesturing ‘v’ down chest)	No
8.	Before he played football, what did the man do with his jacket?	‘Throwing away’ gesture	Folded it up and placed it on the grass

4.2.4 Scoring participants’ responses

Participants’ responses to the questions during the interview were scored as either correct or incorrect. Responses were defined as correct, if the participant provided either the only correct response (‘Where did the man softly punch the boy?’ - correct Answer: ‘Chest’) or provided more correct details than false ones (‘What was the mother wearing?’ – correct answer: ‘Brown jacket, skirt, jumper’ - incorrect answer: ‘Coat, skirt, yellow t-shirt’). In cases where there were more correct details than false ones (e.g. clothes described correctly, however if an essential detail was wrong (e.g., different type of clothing, accessories not worn) the response was scored as incorrect.

Participants’ incorrect responses were scored to identify responses that were congruent with the misleading gesture. For example, in the misleading gesture condition, if a participant was asked the question, ‘Where did the man pinch the boy?’ and the question had been accompanied by a misleading gesture ‘pinching chin’, and the participant responded ‘chin’, the reply was scored as a replication response of the misleading gesture and calculated as an index of gestural misinformation.

4.3 Results

Eleven out of the 18 participants (61%), were misled by at least one gesture. The mean number of correct answers, out of four, was 2.44 in the gesture condition and 2.83 in the no-gesture condition (see table 4). A paired sample t-test showed that there was no difference between conditions, [t(17) = 1.115, p= .27].

TABLE 3 MEAN AND (SD) SCORES OF CORRECT, INCORRECT AND 'DON'T KNOW' (DK) RESPONSES IN BOTH GESTURE CONDITIONS

Gesture condition			**No-Gesture condition**		
Correct	Incorrect	DK	Correct	Incorrect	DK
2.44 (1.15)	.94 (.99)	.61 (.92)	2.83 (.92)	.67 (.91)	.50 (.71)

Participants gave slightly more 'don't know' responses in the gesture condition (M=.61, SD=.92) than in the no-gesture condition (M=.50, SD=.71), however, a t-test showed there was no significant difference between 'don't know' responses in the gesture condition and the no-gesture condition, [t(17) =0.62, p = 0.54].

Eleven out of 18 participants incorporated information from the misleading gesture they had seen. Five out of the 8 misleading gestures misled participants. The gestures which misled the most, were 'cheek', 'arm' and 'necklace'. The 'cheek' gestures elicited five replicated responses, 'arm' elicited four such responses, and 'necklace' elicited three such responses. 'Drinking' elicited two replicated responses and 'short hair' had one replicated response. The gestures 'gloves', 'chin' and 'throw' did not elicit any replicated responses. Interestingly, in a

former study (Gurney, 2013) a ‘gloves’ gesture also failed to elicit an uptake of the information by the participants. In the current study, this might be linked to the season the scene was set in, as well as the minority of people wearing gloves on non-wintery days.

No order effect was found for the six different randomisation groups. The order of the questions and accompanying gestures did not affect participants’ responses.

FIGURE 3 NUMBER OF TIMES EACH MISLEADING GESTURE ELICITED A FALSE RESPONSE

4.4 Discussion

The results showed that nearly two-thirds of the participants were misled by at least one gesture. Although there was no significant difference between the misleading gesture and no-gesture conditions, participants’ mean correct responses were slightly lower in the gesture conditions than in the no-gesture condition. Eleven of the participants incorporated information

from the gestures into their responses, reporting false details, synonymous with the misleading gestures that they had seen.

The gestures used in Study 3 were prominent, iconic gestures (as described in Chapter 2 and 3), which could substitute or add to the meaning of the speech information and were based on the content of the video clip. As participants were sometimes misled by the questions accompanied by gestures, Study 3 provided some evidence that gestures could substitute the meaning of speech (Alibali, Heath, & Myers, 2001) and that information can be transferred through various channels including non-verbal ones (Leathers & Eaves, 2015).

Although there was only limited evidence for the influence of misleading information in Study 3, the decrease of correct answers in the gesture condition indicated a possible negative effect of suggestive content, similar to the lower accuracy of eyewitness testimonies in verbal misinformation studies (Okado & Stark, 2005; Roebers & Schneider, 2000). Similar to a gestural misinformation study also testing adults (Gurney et al., 2013), some gestures were more misleading than others. In other words, not all gestures had a similar suggestive effect. Study 3 demonstrated that the materials and procedure did generate a lower accuracy rate in the misleading condition, and therefore the same procedure was used with a sample of children in Study 4.

Study 4

The Gestural Misinformation Effect in Child Interviews in Switzerland

4.5 Introduction

Study 4 was conducted to find out, whether misleading gestures during an interview would significantly affect children's accuracy in responses to a witnessed video clip. The video clip and gestures were the same as the ones used in Study 3. The age groups were chosen, based on published studies with children and the study was carried out in Switzerland. Children in Switzerland do not go to school until about 6-7 years of age.

Previous studies only included very young children: 2-4-year-olds in Kirk et al., (2015) and 5-6-year-olds in Broaders and Goldin-Meadow, (2010), Study 4 extended the age range, to investigate older children's vulnerability to suggestive gestures. There were three age groups (6-9 years, 10-11 years and 12-13 years). The analysis of Study 2 (Chapter 3), showed that many of the younger children (age 4) paid less attention to the questions, asked by the interviewers than the older (age 6) children and often looked away (see discussion in Chapter 3). The younger children sometimes focused on the room, or details around them, instead of on the interviewer. Therefore, Study 4 only included school children over 6 years of age, to ensure they would focus on the interviews and the gestures shown by the interviewer.

4.6 Method

4.6.1 Participants

A total of 108 children participated, of whom 32 were between 6 and 9 years old (youngest age group) (M= 7.78 years, SD= 1.10), 40 were between 10 and 11 years (middle group) (M=10.63

years, SD= .544) and 36 were between 12 and 13 years (oldest group) (M=12.14 years, SD= .35). The children were tested in five school classes in two schools in Switzerland, with one first grade, one second grade, two fifth grade and two sixth grade classes. They were recruited through the social media account of a pedagogical higher education group of schoolteachers in Greater Zurich and through recommendations. The children were ethnically diverse. The mean age of the children (64 male, 44 female) was 10.28 years (SD= 1.88) years. All the children were randomly allocated to one of six question-order groups, each containing the experimental, eight questions, of which four were asked accompanied by misleading gestures (gesture condition) and four were asked without any gestures (neutral condition). The six different question order groups were set up to eliminate any question order effects. The eight experimental questions were placed between filler questions, which stayed the same in all six groups.

4.6.2 Materials

The video was the same as in study 3 (see description of the video in section 4.2.2) The video was shown via a classroom projector to groups of children in their classrooms.

4.6.3 Procedure

The teachers and school principal were provided with the video clip and the questions in advance, to receive authorisation/consent for the experiment. Children were instructed to watch the video carefully, as it was shown on a projector screen in their classroom, in dimmed lighting to provide an environment, suitable for concentration and focus. The children were advised, not to talk with each other about the content, until the experiment was finished, and everyone

had taken part. The children were informed beforehand, that they would be questioned about the video.

After watching the video, children were individually interviewed in a quiet area of the school. The children were seated at a table diagonally, at a 120% angle, indirectly facing the experimenter. This seating arrangement was chosen to reflect the recommendations by the Achieving Best Evidence Guidelines (Ministry of Justice, 2011), described in Chapter 1, section 1.5.1; to promote a relaxed atmosphere and avoiding the implication of a confrontation.

The children were interviewed individually and were asked the eight experimental questions, of which four were accompanied by a misleading gesture and the other four were asked without any gestures. Each child was allocated to one of six randomisation groups, with each group receiving a random order of four misleading gesture questions and four no-gesture questions, to limit potential order effects. The remaining eight questions were the filler questions. For a full list of experimental questions and the accompanying gestures, see table 3. Children were thanked and received either a vintage postage stamp (younger children) or a chocolate stick (older children) for their participation.

4.6.4 Coding children's responses

Children's responses to the questions during the interview were coded as either correct or incorrect, or 'don't know', as in Study 3. Children's incorrect responses were coded to identify responses that were congruent with the misleading gesture (see section 3.2.4).

4.7 Results

Of the total sample of 108 children, 95 were misled by at least one gesture (88% of all participants). A 2x2 mixed measures ANOVA, with a within-subject factor of condition (gesture, no-gesture) and a between-subjects factor of age-group (young, middle, old) was conducted to investigate, if there was an effect of gesture condition on the correct answers between age groups.

The ANOVA revealed a main effect of condition, ($F(1,105)=8.71$, $p=.004$, $\eta\rho^2=.077$), children provided more correct answers in the no-gesture condition (2.76, SD= 0.96), than children in the gesture condition M= 2.35, SD= 0.95), therefore, revealing that the misleading gestures lowered the accuracy of children's correct responses.

There was a main effect of age group ($F(1,105)= 4.87$, $p=.009$, $\eta\rho^2=.085$) on children's ability to answer questions correctly overall; a post-hoc test using an LSD showed significant differences between the oldest group (M=2.67, SD=.86) and the middle group (M=2.10, SD=.93), (p=.004), as well as between the oldest and the youngest age group (p=.02), with the older group performing better than the middle group and young group. The youngest- (M=2.31, SD=1.00) and the middle group (M=2.10, SD=.93) did not differ in their ability to answer questions correctly overall (p=.59).

There was no effect of gesture condition on 'don't know' responses, however, children provided more 'don't know' responses in the gesture condition (M-.31, SD=.50), compared to the no-gesture condition (M=.20, SD=.49), ($F(1, 165)=3.41$, $p=.67$, $\eta\rho^2=.03$).

There was no condition (gesture, no-gesture) x group (young, middle, old) interaction between age groups and gesture condition ($F(1,105)=0.46$, $p=.63$, $\eta\rho^2=.009$).

There was no order of questions effect found.

TABLE 4 MEAN AND (SD) SCORES OF CORRECT, INCORRECT AND 'DON'T KNOW' (DK) RESPONSES IN BOTH GESTURE CONDITIONS, BETWEEN AGE GROUPS

	Gesture condition			**No-Gesture condition**		
	Correct	Incorrect	DK	Correct	Incorrect	DK
Young	2.31 (1.00)	1.37 (.91)	.25 (.51)	2.63 (1.18)	1.28 (1.25)	.09 (.30)
Middle	2.10 (.93)	1.60 (.93)	.30 (.46)	2.68 (.92)	1.05 (.96)	.27 (.51)
Old	2.67 (.86)	.97 (.77)	.36 (.54)	2.97 (.74)	.83 (.65)	.22 (.59)

In the gesture condition, 68 children (63%) gave answers, which matched the misleading gestures. Also, in the no-gesture condition, 29 children (27%) gave answers that matched with the gestures spontaneously. Hence, in the gesture condition, twice as many children produced responses that may have been prompted by the gesture.

To investigate, whether some gestures were more misleading than others, a score was made of the number of times that children were misled by each gesture (see Figure 5).

FIGURE 5 NUMBER OF TIMES EACH MISLEADING GESTURE ELICITED A FALSE RESPONSE

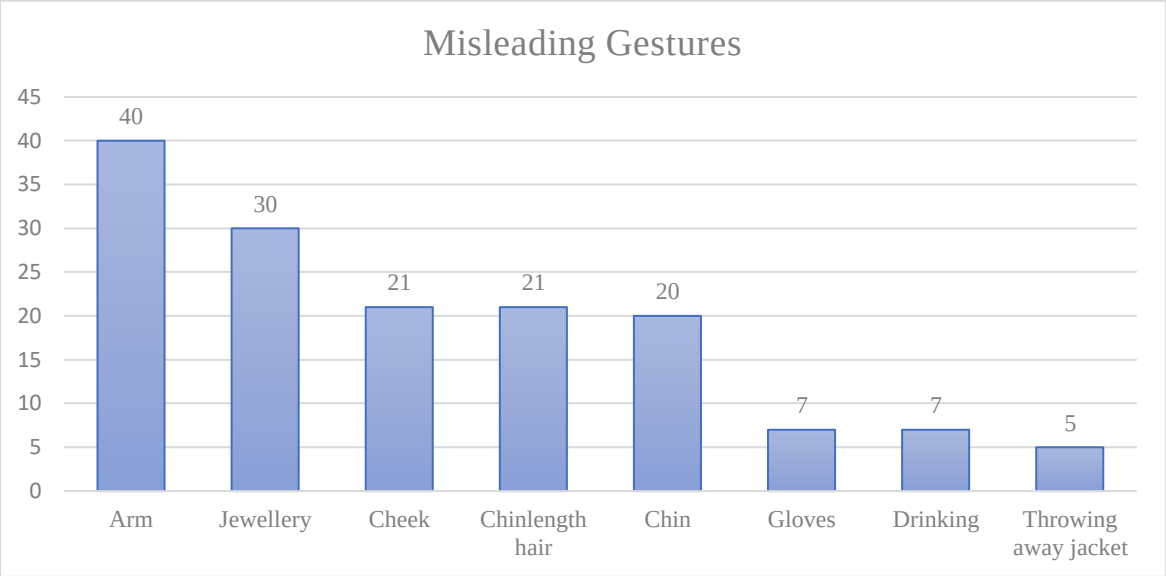

Fig. 5 The number of times children were misled by individual gestures during questioning. (number of children = 54 for gestures 1-4, and 54 for gestures 5-8).

FIGURE 6 NUMBER OF TIMES CHILDREN WERE MISLEAD BY NUMBER OF GESTURES PER INTERVIEW

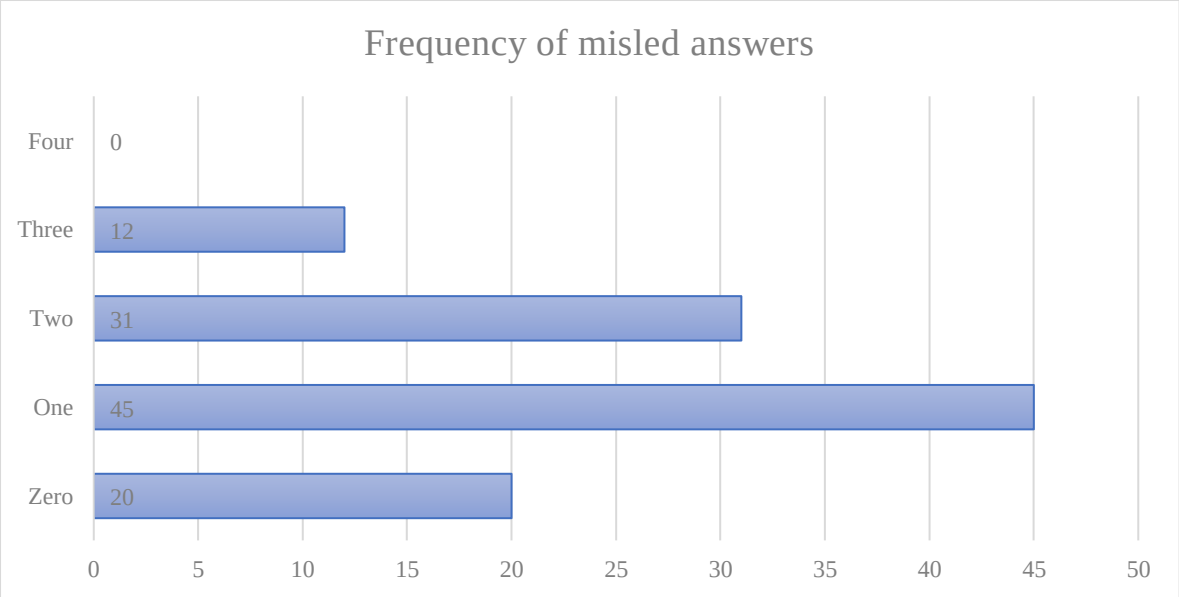

Figure 6 Frequencies of how many times children were misled by number of gestures (0-4) per interview (Total N=108).

Out of four misleading gestures presented in each interview, most children were misled by one gesture (N=45, 41.7%), followed by two gestures (N=31, 28.7%). Children were not misled by gestures in 20 cases (18.5%). In 12 cases, children were misled by 3 gestures (11.1%) and none of the children were misled by all four gestures.

Every gesture misled at least a few of the children. The gestures that had greatest influence were the 'arm' and 'jewellery' gestures (see Figure 5). The gestures 'cheek', 'chin length hair' and 'chin' each misled the children in about 20 interviews, and the gestures 'gloves', 'drinking' and 'throwing away jacket' misled the children the least.

4.8 Discussion

Study 4 demonstrated the negative influence of misleading gestures in child eyewitness interviews and provide more evidence for the robustness of the gestural misinformation effect, reported in previous research (Broaders and Goldin-Meadow, 2010; Kirk, Gurney, Edwards & Dodimead, 2015). The gestural misinformation effect was tested in an immediate questioning condition, when memory is still presumed strong. Overall, the children's susceptibility to suggestibility was high. The children in all three ages groups were misled by gestures accompanying the questions and provided less correct responses than in the no-gesture condition, thus revealing that misleading gestures negatively affect children's accuracy in investigative interviews. Most children were misled by one gesture, followed by two gestures, out of the four misleading gestures presented. None of the children were misled by all four gestures. This suggests that children definitely show a vulnerability to misleading gestures, however, children who are misled by gestures, might not necessarily be misled by any gesture presented to them. Some misleading gestures are more suggestive than others. At the current stage, it is unknown, why some gestures are more misleading than others, it can be suggested

however, that gestures referring to body parts, and physical appearance of the characters seem to be more misleading than gestures referring to actions.

In some cases, children referred to the gestures verbally when giving their responses, which implied that they had already incorporated the gestures into their memory. There were significant differences between the three age groups in children's ability to provide correct responses overall; with the older group providing more correct responses than the middle and young group. However, no effect of age was found in the gesture condition. All children were affected by the misleading gestures, irrespective of their age. This supports Kirk et al. (2015), where no significant age differences in non-verbal influence was found in children between the ages of 2-4 and 7-9; suggesting that the gestural misinformation effect is not lessened in older children. In the current study, the age groups were older: the youngest group was in the same age range (6-9) as Kirk et al.'s older age group and the two other groups were even older. The study's findings suggest that the gestural misinformation effect can be found in children of all ages.

The study's findings are contradictory to previous reports of age as a factor of the misinformation effect (Holliday, Reyna & Hayes, 2002) and former studies, which found that older children usually outperform younger children in oral suggestibility (Goodman & Reed, 1986; Lehman et al., 2010), however, the age groups of these studies were centred around much younger, pre-school children than our participants (3-4 and 6 years of age) and used verbal misinformation paradigms. Higher immediate suggestibility effects have been found in younger children (in three age groups between 7-9, 10-12 and 13-16 years of age) (Gudjonsson et al., 2016). Similar trajectories of developmental trends have been found in pre-school children, of correct answers in response to suggestive questions, in 3- and 6-year old children (Melinder, Endestad & Magnussen, 2006). In a study involving misleading questions to test

suggestibility (Alexander, Goodman, Schaaf, Edelstein, Quas & Shaver, 2002), the authors suggested that age alone does not account for all the variance in children's memory; and that there are a variety of potential factors, such as individual differences in attachment and cognitive inhibition. Such factors might indicate that this is the case for the non-verbal misinformation effect as well. Also, the lack of age differences in the gestural misinformation effect might be linked to the removal of language ability as a factor. Since children of all school-aged years are able to understand gestures, they might affect them similarly.

As research on verbal suggestibility has reported that memory increases with age (Holliday et al., 2002) and that older children are superior in regard to suggestive questioning than younger children (Goodman, Bottoms, Rudy, Davis & Schwartz-Kenney, 2001; Goodman, Hirschman, Hepps & Rudy, 1991) the results of the current study suggest that gestures embody an independent influence on suggestibility, regardless of age. Findings of adult studies also seem to support this notion, demonstrating a clear gestural misinformation effect, even in adults (Gurney, 2013).

The false information conveyed by the interviewer's gestures, sometimes infiltrated children's memory of the event and emerged in children's verbal answers to the questions, demonstrating that children are susceptible to non-verbal influence. Gestures embody an important channel for communication in children (Congdon, Novack, & Goldin-Meadow, 2018; Leathers & Eaves, 2015). Since children's verbal abilities are still developing, gestures provide children with a way to interact with others, and as Hostetter (2011) found that they children benefit from combined speech/gesture communication and are highly sensitive to information conveyed by such communication. In educational settings, gestures support children's learning (Breckinridge et al., 2004; Goldin-Meadow & Singer, 2003) and encouraging children to gesture supports mental representations (Brooks et al., 2018). Also, accurate gestures have been

found to facilitate children's verbal recall (Kirk et al., 2015). Thus, encoding communicative information within a non-verbal paradigm might intensify the encoding of a false memory. The results of Study 4 demonstrate the potential risk of misleading gestures in real forensic investigations.

There is a clear lack of studies investigating cultural differences in non-verbal suggestibility research. To our knowledge, no study has ever been conducted on the gestural misinformation effect outside the UK. Study 4 was the first ever study to test the influence of misleading gestures in another culture and the results demonstrated that the gestural misinformation effect also applied in a different country, culture and language. Children's sensitivity to gesture communication led to their suggestibility, because the misleading gestures elicited contaminated memory for the event, in a non-UK sample. Future research will need to consider other cultures and languages, to establish whether the gestural misinformation effect is truly universal.

In summary, children were misled by the information conveyed by the misleading gestures, which resulted in less accurate responses to the questions. Considering the combined recent and current findings that support a gestural misinformation effect in children of various ages (Broaders and Goldin-Meadow, 2010; Kirk, Gurney, Edwards & Dodimead, 2015) the concept of speech as the main source of influence in misremembering (Ackil & Zaragoza, 1995; Loftus & Hoffman, 1989; Roebers & Schneider, 2000) may need to be re-evaluated when non-verbal behaviour is present (Davis & Bottoms, 2002), as is the case when interviewers use gestures during child interviews.

Our results suggested that misleading gestures play an important role in children's eyewitness testimony and should definitely be explored further. We can assume that children are

vulnerable to misleading gestures, even when interviewed immediately after an event. Moreover, the developmental changes associated with qualitative differences in children's testimonies might not be applicable to non-verbal suggestions.

Although the gestural misinformation effect has been found in previous children and adults' studies, to our knowledge, no gestural misinformation study has ever been conducted with children being interviewed specifically about a crime video. Study 5 was similar to Study 4, but children were asked to watch a video event that depicted a crime, and children were interviewed about what happened in the video after different periods of time, with interviews that took place straight after seeing the video, or after a delay.

Further, although Study 4 has established that the gestural misinformation effect exists beyond the English culture and language, no direct comparison has ever been made between two different countries and languages. Therefore, Study 5 built on the current findings and was set to explore the direct comparison of the gestural misinformation effect in children from both England and Switzerland.

Finally, since stronger memories are more resistant to suggestibility than weaker memories (Gordon & Larus, 1992; Holliday et al., 2002), the findings of Study 4 suggested that the gestural misinformation effect is powerful, with the ability to disrupt even the most recent memories, which are considered strong. Study 5 (Chapter 5) was conducted to investigate the gestural misinformation effect in children of two age groups, in both immediate and delayed interviewing conditions.

5. CHAPTER FIVE

Study 5: The gestural misinformation effect in delayed interviewing conditions with children

5.1 Introduction

As discussed in Chapter 1, the ability for a child to testify within an investigative interview relies on appropriate techniques being used by the interviewer (Orbach et al., 2000; Roberts & Powell, 2001). An assessment of Swiss guidelines on child interviewing (Chapter 2) showed that none of the guidelines included references to gestures, or recommendations to use or avoid them. As Chapter 3 (Study 2) showed, the use of gestures by interviewers in child interviews is not uncommon. The interviewers frequently made use of gestures, especially iconic gestures, referring to clothes, accessories and body parts. After testing and practising misleading gestures on an adult sample in Study 3, Study 4 found a gestural misinformation effect in Swiss children's reports when misleading gestures accompanied questioning about a witnessed video.

The findings of Study 4 supported the notion that meaning can be communicated through various means (Leathers & Eaves, 2015) and were in line with previous research, which found that suggestive content can be transferred by questions (Gudjonsson, Vagni, Mariorano & Pajardi, 2016; Loftus, 2005; Zajac & Brown, 2018) and by gestures (Broaders & Goldin-Meadow, 2010; Kirk et al., 2015) and can affect the accuracy of adult (Gurney et al., 2013) and child witnesses (Broaders & Goldin-Meadow, 2010; Kirk et al., 2015).

In oral suggestibility research, the theory of trace strength proposes that having an interval between the event and the delivered misinformation increases suggestibility due to the 'recency

advantage' of the misleading information over the witnessed event (Hritz et al., 2015; Reyna, Corbin, Weldon & Brainerd, 2016). Children can also confuse memories that they have experienced with inaccurate or misleading information that is provided afterwards, in form of narrative or non-verbal suggestions (Ackil & Zaragoza, 1995; Melinder et al., 2006; Roberts & Blades, 1999; Zhu et al., 2012). Every information from a source other than the children, is therefore, a risk to the accuracy of children's testimonies (Zajac & Brown, 2018).

Misleading verbal suggestions have been found to have continuing effects on children's testimony; in delayed, repeated interviews (Roberts & Blades, 1999). The only study that has investigated the gestural misinformation effect in delayed interviews found support for it. Broaders and Goldin-Meadow (2010) demonstrated that children between 5-6 years of age gave more affirming answers to open-ended questions which included misleading gestures, compared to questions without gestures, in delayed, repeated interviews. Kirk et al. (2015) tested children of two age groups (2-4 and 6-9 years of age), in conditions that would normally buffer children against verbal suggestibility, namely a strong memory trace, age (with older children being better to resist suggestive information) and verbal abilities (reporting more details in the free recall and higher scores in the Adaptive Language Inventory) and also found a strong gestural misinformation effect, even in immediate interviews and found that both age groups were equally vulnerable to the misleading gestures. It is possible that the gestural misinformation effect might affect children of all ages. However, if strength of memory trace acts as a buffer against verbal suggestibility, it might be assumed that a delayed interview condition would increase children's suggestibility and increase the gestural misinformation effect.

Previous studies have used both a live event (Broaders & Goldin-Meadow, 2010) and a target video (Kirk et al., 2015). Both studies found the gestural misinformation effect for children

between the ages of 2 and 9, for both the live and the video events. For Study 5, a video paradigm was utilised, similar to Chapter 4. However, to increase the ecological validity of the current study, a more forensically relevant video, depicting a non-violent mock crime of a break-in and burglary was shown. This is the first research on the gestural misinformation effect in children, which has incorporated a delayed interview condition, a mock crime video and a cross-international sample.

The findings of Study 4 supported the robustness of the gestural misinformation effect in several age groups and suggested that even after immediate interviewing, children were significantly more mislead by suggestive gestures than without. Study 4 demonstrated that the misleading effect of gestures continues through childhood and can decrease children's accuracy. It is still unknown however, if a delay between a witnessed event and the interviewing would increase the gestural misinformation effect and whether the accuracy of children of all ages would be similarly affected. Considering memory trace theory discussed above, the influence of misleading gestures should affect older memories even more, compared to recent memory (Burgwyn-Bailes, Baker-Ward, Gordon & Ornstein, 2001; Rooy, Pipe, & Murray, 2007; Waterman & Blades, 2013). Therefore, the current study tested children's correct responses in both an immediate and a delayed interview condition.

The gestures utilised for the current study, were based on the findings of Study 2 (Chapter 3), where clear patterns of gesture themes by real interviewers emerged. Study 5 included iconic gestures referring to body parts (e.g. beard, hair style), numbers (e.g. how many people were shown in the video), clothes and accessories (e.g. hoodie, scarf, backpack), as well as actions and objects (e.g. 'how did the robbers get into the flat?' – accompanied by a 'hammer' gesture) to reflect naturalistic non-verbal behaviour by interviewers.

Children from both the UK and Switzerland were included. Previous research has, so far, never directly compared children from different countries. Gestures are culturally synonymous (Stevanovi & Salmon, 2005), and as found in Study 4, children in Switzerland demonstrated the gestural misinformation effect. Therefore, it was expected that both the UK and Swiss children would show similar effects in response to misleading gestures.

Study 5 investigated the effect of misleading gestures on children's eyewitness responses with several between-subject conditions, namely age (7-9, 10-12 years), delay (no-delay, 1-week delay) and country (England, Switzerland). It was predicted that the misleading gestures would significantly affect children's correct responses overall (H1). With reference to the effect of gestural misinformation in immediate interview conditions, it was expected that the effect would be greater in the delayed condition (H2). With reference to age and following the findings of Chapter 4, it was expected that all children would provide less accurate responses in the gesture condition. No prediction was made regarding age differences (H3). It was predicted that children from both countries would be similarly affected by the misleading gestures, (H4).

5.2 Method

5.2.1 Participants

A total of 173 children participated, 88 were between 7-9 years of age (M=7.7, SD=.62), (young age group), and 85 were between 10-12 years of age (M=10.7, SD=.71), (old age group). The children were tested in two schools in the North East of England (English sample) and one school in Zurich (Swiss sample). The children were a random sample of children available in the schools at the time of testing. The schools were visited one class at a time,

including, two first grades, three third grades, one fifth grade and two sixth grade classes. The schools were contacted through private and professional contacts via email. The participants were ethnically diverse. The mean age of the participants (83 male, 90 female) was 9.2 years (SD= 1.68). The total participant group consisted of 100 English participants and 73 Swiss participants. The English participants consisted of 48 males and 52 females and the Swiss participants consisted of 35 males and 38 females.

Ethical approval was given by the Ethics Committee of the Department of Psychology, University of Sheffield. The Head of each school gave permission to test in their schools and the parents of the children gave informed consent for their children to take part. Parents were asked for informed consent for the experiment for each child. Children who did not return the signed consent forms from their parents or caregivers were excluded from the study. Children were asked if they were willing to participate on the day of the study. Children who did not want to participate would have been excluded, however, all children gave their verbal consent to take part.

5.2.2 Design

Study 4 used a mixed measures design, including a within-subjects measure of condition (gesture, no-gesture) and three independent variables, namely age group (young, old), delay group (delay, no-delay) and country (England, Switzerland).

5.2.3 Materials

A short video was especially made for Study 5. The video featured a mock robbery in a private flat. The video showed three robbers (two males and one female) coming up a staircase and

breaking into a flat with a screwdriver. After breaking open the lock with the screwdriver and before entering the flat, one of the robbers remained outside in the hallway, guarding the entrance, while the two other robbers entered the flat, heading into the living room, where the main robber stole jewellery from a couch table and put it into a plastic bag, that he had brought along. The video ended with the two robbers leaving the living room. The video was edited with a time stamp, to look more realistic and to give the impression of being filmed by several CCTV security cameras. The video was recorded with an iPhone 6S, with a resolution of 326ppi. The video was shown to the children on a classroom beamer and was one minute in duration.

5.2.4 Procedure

Children viewed a video in groups, in their own classroom and then completed the interview individually, immediately after (non-delayed condition) or a week later (delayed condition). At the interview, the children were randomly allocated to one of the six question groups, each containing four misleading gestures and four neutral questions, lacking any gestures.

All children were randomly allocated to one of six question type groups, each containing the experimental, eight questions, from which four were asked accompanied by misleading gestures (gesture condition) and four without any gestures (neutral condition). The eight experimental questions were placed between filler questions, which stayed the same in all six groups. The filler questions included open-ended (e.g. ‘Can you tell me what happened in the video?’) and direct questions (‘Was it day or nighttime?’). The experimental questions were direct questions (e.g. ‘How many people were in the video?’). The participants were further randomly allocated into either a non-delayed group (immediately interviewed after watching the video) or a delayed group (interviewed 1 week later).

Children were first instructed to carefully watch the video that was shown on a projector screen in their classroom and advised, not to discuss any of the content with anyone else, until the experiment was finished, and each child was interviewed. The children were focused on the screen and the lights were turned down for the screening. They were all informed beforehand that they will be questioned about the video. No further instructions were provided, except to inform them to say 'I don't know' if they did not know the answer to a question. Children were interviewed individually in a quiet area of the school. The children were seated at a table at an approximately 120 degrees angle, indirectly facing the experimenter. This setting arrangement was chosen, based on research findings, discussed in chapter 1, where it was found that placing children directly opposite interviewers, could be intimidating for children.

Each child was allocated to one of six question-order groups, receiving a random order of four misleading gesture questions and four no-gesture questions. For example, in the misleading gesture condition, a child was asked 'What did the man, who stayed outside the flat look like?' plus a gesture that depicted a beard (moving thumb and other fingers in a circular motion from the upper lip towards the chin). In the accurate, no-gesture condition, the experimenter asked the questions without any accompanying gestures. The remaining twelve filler questions were asking, for example, if the people in the video talked to each other, or about the colour of the sofa in the living room. For a full list of experimental questions and the accompanying gestures, see Table 5. After the interview children were thanked for taking part and received a debriefing about the study.

TABLE 5 MISLEADING GESTURES PRESENTED IN THE INTERVIEW, THE ACCOMPANYING QUESTIONS AND CORRECT ANSWERS

	Question	Misleading Gesture	Correct answer
1.	Did the people carry anything, when entering the flat?	'Backpack' gesture	Plastic shopping bag
2.	Was the woman wearing any accessories?	'Scarf' gesture	Hat
3.	How did the man who stayed outside the flat look like?	'Beard' gesture	Ginger hair, no beard
4.	How did the people get into the flat?	'Hammer' gesture	Screwdriver
5.	How many people were in the video?	"Counting to 4' gesture	3
6.	How did the woman's hair look like?	'Short hair' gesture	Long, dark-brown, wavy
7.	What was the man wearing, who went inside the flat?	'Hat' gesture	Scarf, Shirt, Jeans
8.	What was the man doing, who stayed outside the flat?	'Looking at watch' gesture	Be on the lookout

5.2.5 Gestures

A total of eight gestures were used in the experiment. The gestures were based on investigative questions about physical attributes (a persons' look and clothes), actions (what people did in the video) and numbers (how many people were in the video). The following question-gesture combinations were used:

1. How did the people get into the flat? (Hammer gesture, depicting a forward and backward motion with a closed hand.

2. Was the woman wearing anything else? (This was a follow-up question to children describing what the woman wore) (Scarf/Necklace gesture, moving hand from left to right shoulder).

3. What did the man, who stayed outside the flat look like? (Beard gesture, circular motion with index finger and thumb, starting on top lip and joining underneath the chin).

4. Did the people carry anything when entering the flat? (Backpack gesture, simulating handles of bag on both shoulders, with closed hands).

5. What was the man wearing, who stole the items inside the flat? (Hoodie/Hat gesture, thumb, index and middle finger touching in front of forehead).

6. How many people were in the video? (counting from 1 to 4 with one hand).

7. Can you describe the woman's hair? (moving the outer side of flat hand from ear to chin, indicating short hair).

8. What was the man who stayed outside the flat doing? (Watch gesture, turning wrist towards body and looking at wrist).

The remaining filler questions were following:

1. What happened in the video?

2. Was it day or night-time?

3. How was the woman dressed?

4. What colour was the door of the flat?

5. What flat number was on the door?

6. What kind of furniture was in the flat?

7. Were there any paintings on the wall?

8. What colour was the sofa in the flat?

9. Did the robbers talk to each other?

10. How old was the woman in the video?

11. What did the robbers steal?

12. Do you remember anything else?

5.2.6 Scoring

Children's responses to the 8 experimental questions asked during the interview, were scored as either correct or incorrect. Answers to questions were scored as correct, if the child gave an appropriate response. Appropriate responses were defined as correct, if the child provided either the correct response (e.g. 'How many people were in the video?' – Answer: 'Three') or if the child provided all the correct details (e.g. 'What did the man, who stayed outside the flat look like?' – Correct answer: 'Ginger hair, young, black jacket' – incorrect answer: 'Brown hair, trousers, coat'). In cases when there were more correct details than incorrect ones (e.g. the clothes were described correctly, but the robber being described as wearing a hat which he was not), the response was scored as incorrect. 'Don't know' responses also included no answers given and were also counted.

Children's incorrect responses were scored to identify responses that were congruent with the misleading gesture. For example, in the misleading gesture condition, a child was asked 'Did

they carry anything, when they entered the flat?', it was accompanied by a 'backpack gesture. If the subsequent answer was 'a backpack' the reply was scored as a replication answer of the misleading gesture.

5.3 Results

Tables 6-9 summarize the children's correct responses for the experimental questions for condition, age group, delay and country.

5.3.1 Gesture condition

A 2x2x2x2 mixed measures ANOVA, with a within-subject factor of condition (gesture/no-gesture) and between-subjects factors of age group (young/old), delay group (delay/no delay) and country (England/Switzerland) revealed a main effect of condition ($F(1,165)=53.02$, $p<.001$, $\eta\rho^2=.243$); children provided more correct answers in the no-gesture condition ($M=2.68$, $SD=1.14$) than in the gesture condition ($M= 1.98$, $SD=1.15$).

5.3.2 Age groups

There was a main effect of age group ($F(1,165)=15.87$, $p<.001$, $\eta\rho^2=.088$), on children's ability to answer questions correctly, as the younger children performed less well ($M = 1.74$, $SD=1.13$) than the older group ($M = 2.22$, $SD=1.05$). There was no interaction between age groups and gesture conditions ($F(1, 165)=.11$, $p=.74$, $\eta\rho^2=.001$).

TABLE 6 MEAN AND (SD) FOR CORRECT RESPONSES, INCORRECT RESPONSES AND 'DON'T KNOW' (DK) RESPONSES, IN BOTH GESTURE CONDITIONS, FOR BOTH AGE GROUPS

	N	**Gesture condition**			**No-Gesture condition**		
		Correct	Incorrect	DK	Correct	Incorrect	DK
Young	88	1.74 (1.13)	1.59 (1.15)	.67 (.85)	2.43 (1.19)	.89 (.96)	.65 (.92)
Old	85	2.22 (1.05)	1.40 (1.05)	.39 (.67)	2.94 (1.03)	.68 (.80)	.39 (.72)
Total	173	1.98 (1.11)	1.50 (1.10)	.53 (.78)	2.68 (1.14)	.79 (.89)	.52 (.84)

5.3.3 Delay versus no-delay

In the no-delay group (n=89), 71 children (41%) were misled by at least one of the gestures. In the delay group (n=84) 70 children (40%) were misled by at least one gesture. There was an effect of delay on children's correct responses ($F(1,165)=13.11$, $p<.001$, $\eta\rho^2=.074$), the children in the delay condition performed less well (M=1.81, SD=1.05) than the children in the no-delay condition (M=2.13, SD=1.16). There was no interaction between delay and gesture conditions ($F1,165)=.07$, $p=.79$, $\eta\rho^2=.000$).

TABLE 7 MEAN CORRECT RESPONSES AND (SD) IN BOTH GESTURE CONDITIONS FOR BOTH DELAY CONDITIONS

	N	**Gesture condition**			**No-Gesture condition**		
		Correct	Incorrect	DK	Correct	Incorrect	DK
Delay	84	1.81 (1.05)	1.49 (1.07)	.71 (.93)	2.49 (1.18)	.82 (.91)	.67 (.91)
No delay	89	2.13 (1.16)	1.51 (1.14)	.36 (.57)	2.87 (1.08)	.75 (.88)	.38 (.75)
Total	173	1.98 (1.11)	1.50 (1.10)	.53 (.78)	2.68 (1.14)	.79 (.89)	.52 (.84)

5.3.4 Country

There was no main effect of country ($F(1,165)=3.02$, $p=.084$, $\eta\rho^2=.018$). There was a condition x group interaction ($F1,165)=16.46$, $p=.001$, $\eta\rho^2=.09$), as the UK children performed better in the gesture condition, but Swiss children performed better in the no-gesture condition.

TABLE 8 MEAN CORRECT RESPONSES AND (SD) IN EACH CONDITION AND EACH COUNTRY

	N	**Gesture condition**			**No-Gesture condition**		
		Correct	Incorrect	DK	Correct	Incorrect	DK
England	100	2.08 (1.07)	1.42 (1.06)	.51 (.76)	2.41 (1.07)	1.02 (.91)	.59 (.92)
Switzerland	73	1.84 (1.17)	1.60 (1.16)	.56 (.82)	3.05 (1.13)	.47 (.76)	.42 (.70)
Total	173	1.98 (1.11)	1.50 (1.10)	.53 (.78)	2.68 (1.14)	.79 (.89)	.52 (.84)

5.3.5 Group interactions

There was no condition (gesture, no-gesture) x groups (age and delay) interaction ($F(1,165)=.280$, $p=.60$, $\eta\rho^2=.002$), There was no condition (gesture, no-gesture) x groups (age and country) interaction ($F(1,165)=.101$, $p=.75$, $\eta\rho^2=.001$), and no condition (gesture, no-gesture) x groups (delay and country) interaction ($F(1,165)=.002$, $p=.96$, $\eta\rho^2=.000$).

5.3.6 Effect of type of gesture

To investigate, whether certain gestures were more misleading than others, the number of times that children were misled by each gesture was calculated (see Figure 7). Further, the frequencies of each misleading gesture eliciting a false response between countries was calculated (see Figure 8).

FIGURE 7 NUMBER OF TIMES EACH MISLEADING GESTURE ELICITED A FALSE RESPONSE

Fig. 7: The number of times children were misled by each gesture during questioning

FIGURE 8 NUMBER OF TIMES EACH MISLEADING GESTURE ELICITED A FALSE RESPONSE PER COUNTRY

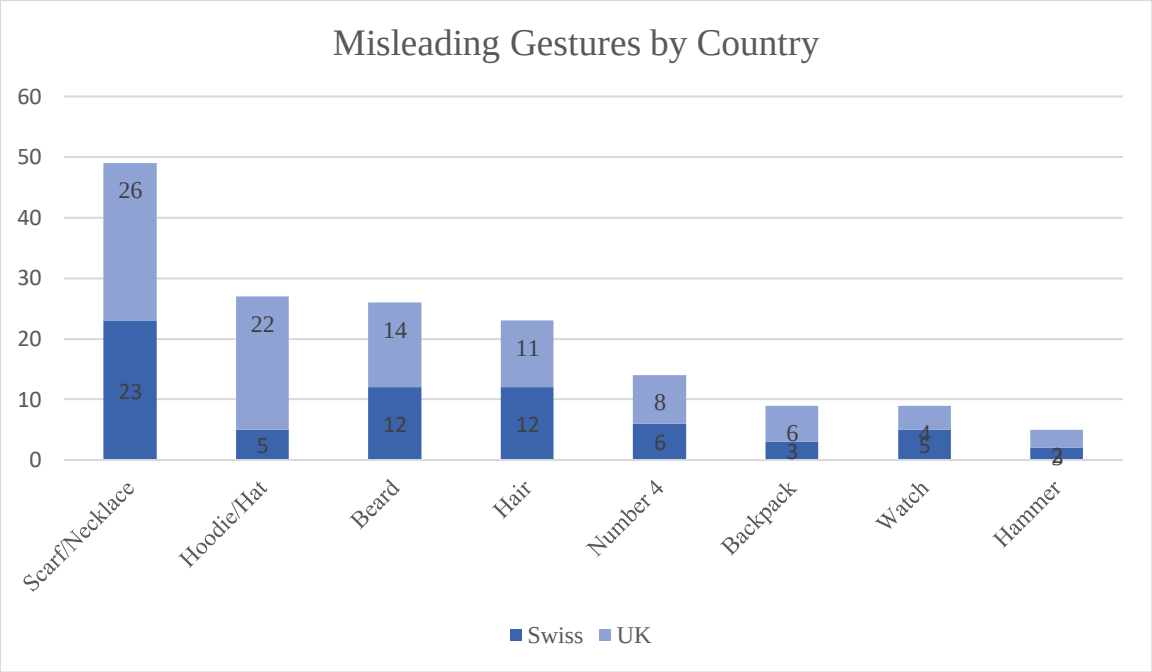

Fig. 8: The number of times Swiss versus UK children were misled by each gesture during questioning

Every gesture misled a minimum of 5 children, the gestures that had the most influence were the ‘scarf‘, ‘hoodie’ and ‘beard’ gestures (see Figure 7). The ‘backpack’, ‘watch’ and ‘hammer’ gesture misled the children the least. The frequencies of misleading gestures eliciting a false response was relatively equal between countries. Only the gesture ‘hoodie/hat’ elicited over four-times more false responses by UK children, compared to Swiss children.

5.3.7 Exact gesture uptake

To investigate, whether particular gestures were taken up more than others, the number of times that children gave responses that were synonymous with the misleading gestures was calculated (see Figure 9). In the gesture condition, 113 children (65%) gave answers, which matched the misleading gestures. In the no-gesture condition 30 children (17%) gave answers that matched with the gestures. Hence, in the gesture condition, almost four times as many children produced responses that may have been prompted by the gesture.

FIGURE 9 EXACT GESTURE UPTAKE

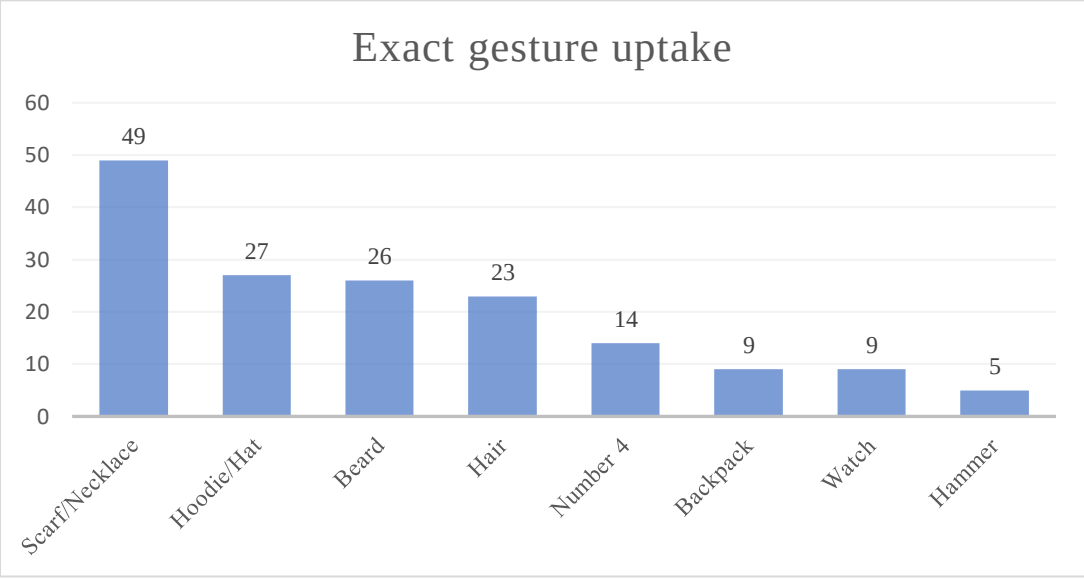

Fig. 9: The number of times children gave responses synonymous to the misleading gestures.

5.4 Discussion

Study 5 investigated whether misleading gestures during an interview affected children's accuracy in answering questions correctly. It further investigated, whether children's correct responses would be affected by age, delay and country of residence. The results of Study 5 supported Study 4, demonstrating that gestures may act as a form of misinformation and affect children's eyewitness responses. Over four-fifths of the children were misled by at least one of the gestures, therefore demonstrating the misinformation effect of deceptive gestures in interviews with children. Consistent with prior research (Broaders and Goldin-Meadow, 2010; Kirk, Gurney, Edwards & Dodimead, 2015) and theories that stress the negative effects of post-event misleading verbal information (Bruck & Melnyk, 2004; Goodman, Hirschman, Hepps & Rudy, 1991; Gudjonsson et al., 2016; Loftus & Hoffman, 1989; Loftus, 2005; Roberts & Blades, 1999; Roberts & Powell, 2005; Zajac & Brown, 2018), Study 5 demonstrated the negative influence of misleading gestures in child interviews, reducing children's accuracy in answering questions correctly, therefore supporting hypothesis 1.

All children were affected by the gestural misinformation effect, irrespective of their age. This indicates that the gestural misinformation effect is not affected by age, hence children of all ages are at risk of being misled by misleading gestures (H3). The results are contradictory to previous reports of age as a factor on the verbal misinformation effect (Holliday, Reyna & Hayes, 2002) and former studies, which found that older children usually outperform younger children in oral suggestibility (Goodman & Reed, 1986; Lehman et al., 2010), however, they support a recent study, on the gestural misinformation effect, where no significant age differences in non-verbal influence was found in children between the ages of 2-4 and 7-9 (Kirk et al., 2015).

Children's correct responses overall, were poorer in the delayed condition, demonstrating that a delayed interview negatively affects children's accuracy in answering questions correctly. However, delay did not affect children's correct responses to questions accompanied by misleading gestures. Children were negatively affected by gestures, irrespective of an interview delay (H2).

In several cases children provided exact verbal replications of the gestures conveyed by the interviewer, which demonstrated that the children may have already incorporated the misleading information into their memory. This supports previous research, which found a robust gestural misinformation effect in both adults (Gurney et al., 2013) and children (Broaders & Goldin-Meadow, 2010; Kirk et al., 2015).

Like Study 4, where age had no effect on the gesture condition, Study 5 also, found no age differences in the gesture condition. This suggests that the gestural misinformation effect is a robust factor, which increases suggestibility in individuals, irrespective of age; at least during childhood.

Delay between an event and an interview has been found to affect children's memories for a witnessed event (Goodman, Hirschman, Hepps & Rudy, 1991; Gudjonsson et al., 2016; Waterman & Blades, 2013). The results of Study 5 supported these findings, as it was found that children provided significantly poorer correct responses when interviewed a week after they have watched the video, compared to immediate interviews. After a delay, children's memory traces for the event are likely to have deteriorated and be more difficult to retrieve. However, the gesture condition did not affect children's correct responses between the delay conditions. Our results showed that a delay of one week between watching the target video and being questioned with misleading gestures, did not increase the gestural misinformation effect.

Study 5 showed no differences in children's ability to provide correct responses between the UK and Switzerland. However, we found an effect of gestures on country of residence; indicating that children in Switzerland were more affected by the misleading gestures than the UK children, even though both groups showed lower scores in the gesture condition, compared to the no-gesture condition. The effect of country stands in contrast to previous research and our hypothesis (H4), since gestures represent a culturally synonymous concept (Stevanovi & Salmon, 2005), which might be expected to affect children from various cultural backgrounds in a similar way. Since children of both countries watched the same video and received the same gestures, it is unclear why the Swiss children were more affected by the gestures. It seems that Swiss children were stronger in providing correct responses, when interviewed without the gestures, however, they react stronger to misleading gestures than their UK counterparts. More research needs to be conducted, to investigate this cultural effect further, to find out if misleading gestures affect children in some cultures more than others. Nonetheless, Study 5 was the first experiment to demonstrate the gestural misinformation effect in a non-English speaking culture.

In Study 5 different gestures had different effects. The 'scarf' gesture generated the highest number of incorrect responses. The four most misleading gestures all related to physical attributes or accessories of the robbers in the video. These may be important factors in real life eyewitness testimony when eyewitnesses may have to describe what an offender looked like or what an offender was wearing (Vrij, Hope & Fisher, 2014). Study 2 demonstrated that interviewers tend to use gestures referring to body parts, clothes and accessories (See Chapter 3) and that these types of gestures were the fourth most common gestures used by interviewers, adding ecological validity to our findings. Hence, we may assume that such gestures could be

used in actual interviews, potentially skewing eyewitnesses' responses, if such gestures are of misleading nature.

While Study 5 adds further insight into gestural misinformation in child interviews, some considerations about the methodology should be made. The participating children were questioned about an event shown on video, which is in contrast to police interviews, that question children about a real experienced event.

Even though researchers have identified speech as the main source of influence, when eyewitnesses misremember event details (Ackil & Zaragoza, 1995; Loftus & Hoffman, 1989; Roebers & Schneider, 2000), the results of Study 5 support the importance of non-verbal effects, such as body posture (Davis & Bottoms, 2002) and other gestures (Broaders & Goldin-Meadow, 2010; Gurney et al., 2013; Kirk et al.,, 2015). The results of Study 5 also add further evidence that gestures are a relevant part of forensic conversations and can carry semantic information, salient enough to produce a robust misinformation effect in children of different ages, in both immediate and delayed interview conditions, and across different countries. Hence, gestures deserve more consideration in official interviewing guidelines.

In summary, this study demonstrates the negative effects of misleading gestures in skewing memory and responses of children for a mock crime video, in both immediate and delayed interviewing conditions. It adds to the substantial and robust evidence of the effect of post-event suggestive verbal influence (Gudjonsson, Vagni, Mariorano & Pajardi, 2016; Loftus, 2005; Zajac & Brown, 2018), as well as the relatively newly investigated gestural misinformation effect (Broaders & Goldin-Meadow, 2010; Gurney et al., 2013; Kirk et al., 2015).

6. CHAPTER SIX

6.1 Discussion

The overall aim of the present thesis was to evaluate interviewer's gestures in child interviewing. The first study inspected police officers' guidelines and practices in relation to child interviews in Switzerland. The second study analysed mock investigative child interviews conducted by psychologists for the occurrence of gestures. The third study tested misleading gestures during questioning in an adult sample and the fourth study investigated the gestural misinformation effect in child interviews in Switzerland, within three age groups. The fifth study then tested the gestural misinformation effect in interviews regarding a mock robbery video, in both England and Switzerland, within two age groups and with immediate and delayed interview conditions. The studies included in this thesis contained a combined sample of two police officers in study 1, 40 interviewers and 71 interviews in Study 2; and 299 interviews in Study 3-5, including 18 adult participants and 281 child participants. The results demonstrated that interviewers produce various non-verbal gestures when they interview children. Further, the studies found a robust gestural misinformation effect in children of all ages tested; in both Switzerland and England. Finally, the results showed that this effect was consistent, irrespective of delay. Caution is needed, since studies that test gestures by interviewers in real forensic child interviews are necessary. However, the multifaceted approach and findings of the five studies provide robust evidence for the occurrence and influence of gestures in investigative child interviews.

6.1.1 Interpretations of results

6.1.2 The absence of guidelines towards gestures in child interviews

One of the aims of this investigation was to compare Swiss child interviewing guidelines with UK counterparts, to find out, whether Swiss child interviewing guidelines have been informed about current research findings and if they contained any recommendations regarding non-verbal aspects in child interviews. Such a study has never been conducted before and until now, the practices of police child interviews in Switzerland have been unknown to the general public. Chapter 2 found that there is a general lack of experimental studies concerned with the influence of non-verbal behaviour, including hand gestures in child interviewing. Swiss child interviewing guidelines were sparse and less detailed than UK guidelines. In the current state, official child interviewing guidelines and manuals in Switzerland, as well as the UK, do not include any information or references regarding gestures by interviewers. The lack of guidelines regarding non-verbal behaviour should especially be highlighted, in terms of the findings of Study 2-5. The findings of study 1 have practical relevance to real life forensic child interviews; they demonstrate that police interviewers in Switzerland only receive limited guidelines on how to interview children. Further, they show that there is a clear lack of instructions regarding non-verbal behaviour, including gestures during interviews. The lack of such instructions might weaken the practices of police officers in retrieving children's unbiased testimonies in cases, where interviewers make use of suggestive gestures. The strength of this study is its novelty; until now, no other study has investigated the practices of Swiss police child interviewers and the findings provide important knowledge on the similarities and differences between Swiss and UK child interviewing guidelines. Nevertheless, the study also has its weaknesses. The sample size was small; only two interviewers were recruited for the study. Even though the two participants represented the two largest police stations in Switzerland, which also conduct the majority of child interviews in the country, additional interviews with police officers from other cantons, especially in the other languages, may be

necessary, to provide a more rounded picture of Swiss police practices. However, the findings provided a much-needed foundation for the continuing studies of this thesis. From the findings, it could be inferred that currently, there is a clear lack of knowledge and instructions regarding gestures within Swiss police forces. A trend that has already been observed within UK guidelines. This gives the subsequent studies a strong motive.

6.1.3 Do interviewers gesture during child interviews?

Study 2 was the first ever study to our knowledge, investigating the occurrence of gestures by investigative child interviewers in Europe. It was found that interviewers produced gestures, when conducting investigative child interviews. Interviewers produced symbolic, as well as non-symbolic semantic gestures, in form of iconic, deictic and metaphoric gestures. Further, they also produced non-semantic gestures, in form of beat, self-adapter and support gestures. The gestures produced, included meaningful, iconic representations of actions, objects, body parts and numbers, as well as supportive gestures, in form of physical contact. Several themes of gestures were found within the main gesture categories, including iconic gestures referring to body parts, numbers, clothing and accessories, indicating height, actions and objects, as well as supportive behaviour and having physical contact with the child. The results showed that 89% of the interviewers, thus the majority, did employ gestures when interviewing children. These findings have a significant impact onto the area of investigative child interviewing. So far, studies have only tested the influence of gestures within experimental studies, without essentially investigating, if such gestures are indeed spontaneously produced by interviewers.

The findings provide original contribution to gesture theories and correspond with previous research, showing that people produce gestures when communicating (Congdon et al., 2018; McNeill, 1985; So, Sim Chen-Hui, & Low Wei-Shan, 2012), however, going beyond, by

providing evidence that this is also the case in investigative child interviews. Thus, there is strong evidence that interviewers' gestures may be a common occurrence in child interviews.

The study went even further and evaluated interviewers' gestures in various factors. Overall, the age of the children did not affect the quantity of gestures produced by the interviewers. However, certain classifications of gestures were significantly more used with the younger children, including iconic and symbolic gestures. Therefore, it seems that if all gestures are combined, interviewers use the same amount of gestures. However, looking more deeply, it seems that the most common, iconic gestures are significantly more used with younger children. This has important relevance to the subsequent studies, where iconic gestures were utilised to communicate misleading information to the participants. Such gestures hold semantic value and do have the power to transfer information, even unaccompanied by verbal information. As research has shown that younger children are at higher risk of being misled by suggestive gestures (Broaders & Goldin-Meadow, 2010; Kirk et al., 2015), the higher usage of such gestures by interviewers, suggest that in real life cases, younger children might be at even higher risk of being misled, due to the interplay between a higher gesture count and developmental factors associated with the misleading gesture effect.

The feedback which half of the interviewers received did not affect their gesture behaviour. This is not surprising, as the feedback content did not include any reference to gestures or non-verbal behaviour in general. The results also demonstrated a large variance between interviewers' gesture behaviour. The number of gestures per interview ranged from zero to 27, which highlights individual differences between interviewers. However, the individual gesture behaviour seemed to be stable across the first and the second interview. This shows that interviewers, irrespective of producing very few or many gestures, seem to be relatively stable across interviews. If an interviewer uses many gestures, he or she will most likely do so in a subsequent interview, with a different child. This finding could be an indication that

interviewers might be either non-verbally active, or not whatsoever. This has practical relevance to real life interviewers, such as police officers. Interviewers could be analysed for their gesture behaviour, and those who seem to be more prone to using their hands and producing gestures, could potentially benefit from training, which address this behaviour and informs them about the risks associated with it.

Further differences in gesture behaviour between interviewers, were found within the various gesture themes recorded: Interviewers produced more gestures referring to body parts and numbers with the younger children, compared to the older children. These two gestures were both in the top-three of recorded themes. This might be related to interviewers wanting to help the younger children understand what they were communicating. The use of gestures referring to body parts can be risky. Especially in child abuse cases, questions regarding physical aspects, including references to certain body parts are of immense importance. Thus, using gestures for reference, may include suggestive content, which in the wrong circumstances could potentially mislead a child. This has been demonstrated in both study 4 and 5 of this thesis, where misleading gestures referring to body parts negatively affected children's responses.

The use of gestures referring to numbers could also affect a child's reply. This has been demonstrated by study 5 of this thesis, where number gestures successfully mislead children about how many people were present in a video of a crime. Therefore, the findings are of direct relevance to the subsequent studies conducted within this thesis and further, to real investigative interviews with children.

To our knowledge, this is the first ever study, which demonstrated the occurrence of gestures by investigative interviewers in child interviews. The strength of this study is its large participant groups, as well detailed examination of gesture count, categories and themes,

between two different age groups. However, the study also has its limitations. The interviews were conducted by psychologists in Italy. Whilst psychologists are an interesting sample to observe, they are not professional forensic interviewers. However, as psychologists, these participants should possess an even wider knowledge of best practices in child interviewing and it is important to mention that psychologists are often consulting e.g. the police in how to interview children. Since the interviews have been conducted in Italy, with an Italian sample, the findings might not be generalisable to other countries in Europe and follow up studies should be conducted with other European participants. Caution is applied, since studies that test interviewers' gestures in real, forensic interviews are required. However, the analysis provided a strong indication for interviewers' use of gestures in mock investigative child interviews, as well as clear themes of iconic gestures, describing body parts, objects and actions.

6.1.4 The effect of misleading gestures in adult and child interviews in Switzerland

The aim of Study 3 was to investigate the effect of misleading gestures in adults. Further, the study was conducted to rehearse and practice gestures within a pilot experiment, which would later be used with children in Study 4. The findings of Study 2 were crucial in selecting gestures that not only represent the most commonly used gesture categories by interviewers, but also the most common themes, including references to body parts, actions and objects.

Nearly two-thirds of the adult participants were misled by at least one of the gestures. In the total 18 interviews, 15 responses were given, specifically concurring with the information conveyed to them in the interviewer's gesture. Not all misleading gestures elicited false responses by the participants. The gestures which misled the most, were 'cheek', 'arm' and 'necklace', which were gestures referring to questions of where the man stroked the boy

(‘cheek’ instead of ‘hair’), where the man softly punched the boy (‘arm’ instead of ‘chest’) and if the mother wore any jewellery (‘necklace’ instead of ‘none’). Especially the body part gestures are important to consider, as these refer to physical contact between the actors in the video and could, in real life, potentially be interfering in the questioning about physical contact between a victim and a perpetrator. Three of the gestures (‘gloves’, ‘chin’ and ‘throw’) did not elicit any replicate answers. An explanation for this could be that the meaning of these gestures could be too ambiguous, or that they stood in contrast to what was portrayed in the video and what would be expected as the ‘norm’. For example, pinching a cheek of a child seems to be a more common, traditional action than pinching a chin. Also, using a jacket to build a football goal in a park, before a game of football seems to be the more appropriate action than throwing a jacket away.

In Study 5, misleading gestures did significantly affect children’s responses to questions about a previously watched video of a mock robbery. Most of the children were misled by at least one gesture and a significant gestural misinformation effect was found. The misleading gesture condition led children to incorporate significantly more information, based on the gestures, than in the no-gesture condition. Further, the gestures that mislead the most, belonged to gesture categories that have been observed the most in Study 2. There seems to be a clear link between the use of iconic gestures in investigative child interviews and their power to mislead when used inappropriately.

A significant age difference was found between the older and the middle age group, and the older and the young group, with the older age group being more resistant to the gestural misinformation effect than the middle and young age group. Studies have demonstrated the gestural misinformation effect in children in in England (Broaders & Goldin-Meadow, 2010; Kirk et al., 2015), within much younger samples. However, to our knowledge, this is the first study to test in an immediate interview condition, in a wide range of ages, including older

children in Switzerland, adding to the robustness of the gestural misinformation effect, across ages and internationally.

6.1.5 The effect of misleading gestures in immediate and delayed child interviews in Switzerland and England

Study 5 provided even more support for the gestural misinformation effect, in both immediate and delayed interview conditions, in both England and Switzerland. Gestures represent a culturally synonymous concept (Stevanovi & Salmon, 2005) and the results demonstrated that this seems to be valid across language and culture, with children from both countries being misled. All age groups were significantly affected by the gestures and produced poorer responses in the gesture condition.

Delay has been found to affect children's memories for a witnessed event in the past (Goodman, Hirschman, Hepps & Rudy, 1991; Gudjonsson et al., 2016; Waterman & Blades, 2013). Study 5 showed a strong gestural misinformation effect in both the delayed and immediate interview conditions. Children's correct responses were poorer in the gesture condition, irrespective of delay. In addition to the findings of Studies 3 and 4, the gestural misinformation effect also seems to be strong for a mock crime video, highlighting its ecological validity. Noteworthy is also that the four most misleading gestures in Study 5 all related to physical attributes or accessories of the robbers, depicted in the video. This is important in relation to the findings of Study 2, where the interviewers most commonly used gestures referred to body parts. Hence, there might be a correlation between natural gestures produced by interviewers and their ability to mislead children.

Future studies should investigate this topic further, by including live scenarios within the schools, in different countries, applying several delay conditions and a variety of age groups. Also, several gesture versions should be tested, ranging from subtle to obvious. Further directions could also include eye-tracking, to test children's attention to the gestures.

6.2 Limitations

Together with promising new findings regarding the robustness of the gestural misinformation effect in international child interviews, come some limitations. The findings of Study 2 demonstrate that child investigative interviewers tend to produce gestures during interviews, however, it is unknown if this is also the case in real, forensic interviews. The interviews were conducted for a separate study, by Pompedda and Santtila (2016), and involved interviews by Italian psychologists in Italian kindergartens and schools. Cultural differences between Italy and other countries could affect the type or quantity of gestures produced, which may differ in interviewers from the UK or Switzerland. Further, the classification of the gestures might differ, compared to i.e. police interviews, due to the specific nature of the events, children are being interviewed about; which, in laboratory studies are designed to include active involvement of the children to increase ecological validity, however, are inherently different to cases of abuse or neglect.

Another limitation is the use of a video as a target event in Studies 2-4, which represents a less ecologically valid interview scenario, compared to live events. However, previous studies have employed both methodologies, and found evidence for the gestural misinformation effect in both video- (Gurney et al., 2013; Kirk et al., 2015) as well as live events (Broaders & Goldin-Meadow, 2010). In study 3, the sample size was relatively small, and the video shown was a comedy, for both Study 3 and 4. To fully test the gestural misinformation effect in adults, future

studies should incorporate larger participant groups, as well as video clips that employ more ecologically valid scripts, such as mock crimes or live events.

6.3 Implications and future directions

Our findings open up a new issue in forensic interviews, suggesting that interviewers should be made aware of the potentially misleading effect non-verbal gestures can have. Based on the results of our studies, interviews should always be videotaped; including video recordings of both the child and the interviewer; to assess potential accompanying non-verbal gestures of open-ended questions on the interviewers' side, and gestures produced by the children as a response to them. Children were instructed to watch the video carefully, however, most eyewitnesses experience events unprepared and without warnings and no effort is being made to encode specific facts accordingly.

6.4 Conclusions

In summary, the current thesis includes the most comprehensive evaluation of gestures in child interviews to our knowledge so far; demonstrating not only the occurrence of gestures by interviewers, but also the gestural misinformation effect in both immediate and delayed interview conditions, in different age groups and internationally. It demonstrates that misleading gestures can skew children's memory and responses for an event watched on video and adds to the substantial and robust evidence of witnesses being influenced by misleading or suggestive verbal questioning. The overlapping gesture themes, between observed natural gestures by interviewers and their misleading effect when used incorrectly in our experiments, suggest that there is a risk of interviewers using such gestures in real forensic interviews. More research is needed. Future empirical research into best practices in child interviewing should

take into consideration non-verbal behaviour in form of gestures and particularly investigate gestures, by real-life investigative interviewers, both for their occurrence and potential suggestive nature in criminal investigations.

Ultimately, the findings presented in this thesis could potentially reform child interviewing guidelines in the future, leading to revisions of both UK and Swiss guidelines, encouraging documentation of gestures, in order to become more attentive against the effects of misleading gestures in forensic child interviews.

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