Improving children's understanding of police interviews

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Abstract

Providing accurate and detailed statements in police interviews can be challenging, especially for children. After reviewing the challenges relevant to the formation, maintenance and recall of memories, study 1 reviewed the guidance available to police interviewers questioning children in Germany and placed it in an international context through comparison with European manuals and the United States manual. As guidance was found to be limited, study 2 compared primary school-aged children's and adults' understanding of police interviews. Six- and 7-year-old-children were identified as the most vulnerable age group who tended to lack very basic knowledge. Study 3 introduced a live intervention to improve 6- and 7-year-olds' knowledge of how their behaviour could impact on statements in police interviews. This intervention was found to be effective for this age group. Study 4 replicated this finding with 9- and 10-year-old children and additionally suggested that this age group's understanding of police interviewer behaviours could be improved through the same live intervention. In contrast, study 5 suggested that 6- and 7-year-old children's knowledge of police interviewer behaviours could not be improved through the previously used live intervention or an analogous video intervention delivered by a mock police man. Study 6 compared the effectiveness of these two delivery methods of the intervention – live and video – and suggested that, for 8- to 10-year-old children, there was no difference in effectiveness between both delivery methods in improving the knowledge of interviewer and interviewee behaviours for up to a week. Taken together, these findings suggest that, while children's limited understanding of police interviews might be an underlying factor that impairs their ability to testify, only the understanding of older children can be improved for interviewee and interviewer behaviours, while younger children's knowledge can only be improved for interviewee behaviours.

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Declaration

This thesis comprises the candidate's own original work and has not been submitted previously or simultaneously to this or any other university for a degree. All experiments were designed and conducted by the candidate under the supervision of Doctor Mark Blades and Doctor Sarah Krähenbühl. Part of the data from this thesis has previously been presented in the conference presentations detailed below.

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1 Overview of thesis

This chapter is intended to assist the reader in navigating through the present thesis by providing a brief summary of each chapter.

1.1 Introduction

Children are involved in the legal system with increasing frequency, either as witnesses (e.g. for custody hearings) or as victims of crimes (e.g. of child sexual abuse). Given the gravity of children's statements in these situations and that children are frequently the only witnesses, it is important that the process of testifying is designed in a way that allows children to provide as detailed and as accurate statements as possible while minimizing the distress that children experience during and after the process. The present thesis reviews challenges that child interviewees commonly face during police interviews, outlines the guidance police interviewers in Germany receive – as an example any European country that has not received much attention in the literature – and places this guidance in context through comparison with other European countries and the United States. The present thesis then evaluates two variations of an intervention to support children who are interviewed by police officers.

1.2 Overview of chapters

Chapter 2

This chapter summarises the challenges that police interviewees and in particular children face in the formation, maintenance and recall of memories before reviewing studies suggesting that limitations during the recall phase (i.e. the only phase that police interviewers can influence) may be the result of children's lack of understanding of police interviews and that increasing children's understanding might improve the quantity and quality of information provided.

Chapter 3

In the framework of study 1, this chapter outlines the manuals and the practical training available to police interviewers questioning children in Germany. The guidance is placed into

context with supplements provided by German counties as well as through comparison with European and the US manuals.

Chapter 4

This chapter describes study 2 which compared primary school aged children's and adults' understanding of various components of police interviews.

Chapter 5

This chapter introduces the intervention designed for the purpose of this thesis and in the framework of study 3 evaluated if the intervention could improve young children's understanding of police interviews, in particular of interviewee behaviours.

Chapter 6

This chapter describes study 4 which assessed if the intervention could improve older children's understanding of interviewee and interviewer behaviours.

Chapter 7

This chapter describes study 5 which evaluated if the intervention could improve younger children's understanding of interviewer behaviours. In addition to using the pre-established delivery method for the intervention, a more standardized delivery method was introduced.

Chapter 8

This chapter describes study 6 which compared the effectiveness of the two previously employed delivery methods of the intervention for older children with two novel delay durations.

Chapter 9

This chapter summarises the main findings, outlines the limitations and implications of the research conducted and provides suggestions for future research.

2 Challenges encountered by police interviewees

2.1 Brief introduction to the topic and outline of chapter

Communication between individuals of the same or different species serves various functions, such as warning others of dangers (Rainey, Zuberbühler, & Slater, 2004; Stephan & Zuberbühler, 2014) or alerting them to the presence of a resource such as food (Clay & Zuberbühler, 2009). Consequently, it is no surprise that most animal species have developed some means of communication, commonly through gestures, vocalization or a combination of both. Humans are among the species that have developed these means of communication most highly; indeed, it has been suggested that humans are among only a few species that can use communication to serve certain functions, such as reminiscing about the past and planning the future (Clayton, Bussey, & Dickinson, 2003) as well as demonstrating awareness of oneself and others as individuals (Griffin & Speck, 2004). Consequently, given that we have mastered communication at a sufficiently high level to explore these diverse and abstract themes, it would seem like a straight-forward task to provide an accurate and detailed statement of a situation that one has observed.

However, this apparently simple task can be complicated by a wide range of factors and for the past century forensic psychologists have strived to identify and address these factors and thereby increase witnesses' capability to report factual information about what they have seen in an objective, complete and accurate manner. Considering the artificial nature of police interviews compared to other communication situations (as discussed in 2.2), the increasing number of police interviews in which minors are the sole witnesses as well as the severity of the majority of cases involving minors – frequently sexual abuse and/or domestic violence –, the importance of supporting these vulnerable witnesses becomes apparent.

Indeed, considerable progress has been made in this area in the past years and while this introductory chapter will provide an overview of the issues concerning police interviews with minors, the main focus will be on the difficulties they face in attending to (2.3), encoding (2.4), storing (2.5) and retrieving information (2.6).

In spite of the contribution that the studies presented in this thesis have made to support minors in police interviews, the vast majority of studies have a common short-coming that

will be addressed in this thesis: they attempt to describe, rather than explain and address the abilities and difficulties that minors demonstrate in police interviews. After comparing the guidance that police interviewers in Germany, other European countries and the US receive in interviewing children (study 1), children's understanding of key aspects of police interviews was assessed (study 2). Based on the key finding, that children did not understand police interviews, an intervention was designed to improve children's knowledge of interviewee behaviours (studies 3, 4 and 6) and interviewer behaviours (studies 4 to 6). Two delivery methods were assessed (studies 5 and 6) and evaluated with varying delays (study 6). The implications of the key findings are discussed (chapter 9).

2.2 How police interviews differ from other communication situations

There are numerous significant differences between police interviews and other communication situations. First, police interviews are quite rare in most individuals' lives and a considerable number of individuals might not have a single police interview in their life span. Consequently, lay-people – and in particular minors (Block, Oran, Oran, Baumrind, & Goodman, 2010; Malloy, Brubacher, & Lamb, 2011; Saywitz, 1989) - frequently lack knowledge about what happens in police interviews and have false expectations or negative attitudes towards them (Low & Durkin, 2001; Malloy et al., 2011; Powell, Skouteris, & Murfett, 2008), which may lead to increased arousal and negative feelings about attending police interviews.

Second, unlike other communication situations, interviewees do not decide to attend a police interview but are required to do so as a consequence of extraneous circumstances. Indeed, interviewees can be forced to attend police interviews even if they express a strong desire not to. Thus, whether or not to attend a police interview is beyond interviewees' control which can result in further negative thoughts or emotions.

Third, situations requiring police interviews tend to be stressful and frequently negative, such as traffic accidents, robberies or in extreme cases being victim to violence or forced sexual activities. In addition to having to relive these extreme moments in as great depth as possible and potentially re-experiencing the emotions felt, interviewees are required to share these intense experiences with a legal interviewer whom they have never met before. Consequently,

negative emotions – e.g. fear, shame or guilt – may be experienced for periods after the actual situation (Kendall-Tackett, Williams, & Finkelhor, 1993; Maniglio, 2009; Stephens & Sinden, 2000) and might be increased in intensity or duration as a consequence of police interviews or the expectation thereof.

Fourth, as previously mentioned, the interviewee and the police interviewer will frequently be strangers. This can intensify the negative emotions felt and be a stressor in itself. Furthermore, the unfamiliarity with the interviewer as well as the professional attitude required of the interviewer can lead to feelings of anxiety, being judged or not being supported (Shoham, 2000). Particularly vulnerable individuals can consequently experience negative emotions for prolonged periods of time after the police interview has ended (Kendall-Tackett et al., 1993; Maniglio, 2009; Stephens & Sinden, 2000).

Fifth, unlike other communication situations, police interviews can place considerable responsibility for one's own or somebody else's fate on the interviewee, which can increase reluctance to disclose misconduct, especially if involving family members (DiPietro, Runyan, & Fredrickson, 1997; Goodman-Brown, Edelstein, Goodman, Jones, & Gordon, 2003; Hershkowitz, Horowitz, & Lamb, 2005; Paine & Hansen, 2002; Sjöberg & Lindblad, 2002; Tye, Amato, Honts, Devitt, & Peters, 1999; Ussher & Dewberry, 1995; Wyatt & Newcomb, 1990). While most police interviews might result in minor financial loss or temporary restrictions, such as loss of one's driver's license, more severe situations, such as abuse or violence, can result in another individual being imprisoned for long periods of time and being registered on a criminal list. While these decisions are not made in the initial police interview, the statement provided determines if criminal proceedings will be pursued. Consequently, interviewees hold potentially more responsibility for another individual's fate during a police interview than at most other points of their lives. Police interviews are therefore unique in the amount of responsibility they place on interviewees.

Sixth, in everyday conversations, both partners tend to have similar control over the situation and determine the direction of the conversation to a similar degree. In police interviews, in contrast, the interviewer is more influential in determining the direction of the interview, especially with children (Kraheck-Brägelmann, 1998, pp. 19–23). While in-depth training of the interviewer might overcome potential adverse effects from this shift of control, (e.g. the interviewee feeling anxious, helpless and powerless; Thompson, 1981), police interviewers

admit to being less knowledgeable than they are expected to be, to feeling inadequately trained, to not employing their knowledge to its full potential or to simply ignoring their knowledge due to various reasons, such as financial or time constraints (Smith, Powell, & Lum, 2009; Wright & Powell, 2007).

To draw a conclusion, police interviews differ from other communication situations in various ways, most importantly in regards to the lay-individuals' lack of knowledge about police interviews, the involuntariness of legal interviews, the negativity of the situations to be reported about, the unfamiliarity with the police interviewer, the potential responsibility for one's own or somebody else's fate and the unusual shift of control in favour of the police interviewer. In addition to these challenges resulting from the unusual nature of legal interviews, there are various challenges associated with the key processes necessary to provide accurate and detailed statements of situations, namely attending to (2.3), encoding (2.4), storing (2.5) and retrieval (2.6) of information.

2.3 The first challenge for interviewees – attending to information

The literature suggests that children develop the ability to attend to information in a self-controlled, intentional and systematic manner between the ages of five and seven years (Paris & Lindauer, 1982). Up until this age, children's ability to attend to stimuli is inferior to that of older individuals in several ways. Children depend more strongly on external cues – such as rewards or explicit prompts - to guide their attention (Pozuelos, Paz-Alonso, Castillo, Fuentes, & Rueda, 2014). Therefore, outside the laboratory children might fail to understand that they should pay attention to a particular situation, either because they do not understand that they might be asked to provide information on an incident at a later time or because they misinterpret the situation (e.g. an incident of shop-lifting might seem perfectly innocent to a child).

In addition to these potential attention problems naturally occurring situations may be brief - often lasting no more than a few seconds. Thus, children might fail to attend to the situation quickly enough or might fail to process what they have witnessed in the brief period before the information is lost (Peterson & Peterson, 1959). Further, in addition to the temporal brevity of the situation, the actual exposure to it might be brief either through naturally occurring obstacles, distractions, withdrawal from the setting or children's choice (Rothbart, Posner, & Boylan, 1990).

Indeed, children have been suggested to perceive negative situations as more negative than adults (Lagattuta, Sayfan, & Bamford, 2012) as they have less experience of the world and consequently find it more difficult to accurately judge potential consequences. Therefore, children might try to withdraw from the potentially stressful situations by closing or covering their eyes, averting their gaze or directing their attention to less stressful elements, such as a toy or a parent (Rothbart et al., 1990).

Even if children pay attention to situations potentially leading to a police interview, they might not focus on crucial details, as laboratory studies have suggested that children struggle to distinguish between important, less important and irrelevant information (Hagen, 1967; Hale, 1979; Roebers, Schmid, & Roderer, 2010). Children might attend to irrelevant information and thus exert unnecessary cognitive effort (Miller, Seier, Barron, & Probert, 1994), rely on less important or incomplete information to make decisions (Vurpillot, 1968) or fail to appropriately weight important and less important information (Miller et al., 1994). Suggested explanations for these short-comings include failure to inhibit less efficient responses (Chelune & Baer, 1986), overestimation of own abilities (Flavell, Friedrichs, & Hoyt, 1970; Shin, Bjorklund, & Beck, 2007; Yussen & Levy, 1975) as well as inability to prioritize (Miller et al., 1994). These findings are based on laboratory studies and should thus be applied with caution to naturally occurring situations, especially situations significant enough to result in police interviews (Goodman & Reed, 1986).

Considering the characteristics of most situations leading to police interviews, attending to all crucial information can be challenging, especially for children, as these situations tend to be spontaneous, brief, stressful and complex.

2.4 The second challenge for interviewees – encoding of information

While attending to crucial information is essential to enable further processing thereof, not all information that is attended to will also be encoded (Peterson & Peterson, 1959). Indeed, children can also find it very challenging to encode information successfully as various skills necessary for the successful encoding of information are still developing (Güler & Thomas, 2013).

To start with, children might not understand the situation they are trying to encode because it includes unfamiliar objects or processes, for example in cases of sexual abuse. Therefore, they might either fail to encode the entire situation or encode it through referring to experiences more familiar to them. While a failure to encode results in lost information, children's reference to more familiar experiences can result in bizarre or ambiguous explanations (page 51; Kraheck-Brägelmann, 1998, pp. 35–36). Such explanations are frequently found in young sexual abuse victims who lack understanding for the abuse they fell victim to, for example in regards to bodily fluids. The failure to encode – and subsequently report - their experiences in an unambiguously understandable way can have consequences for the interview and the prosecution thereof, such as loss of credibility or accusations of suggestibility (i.e. information received after an event may subconsciously be integrated into memories and genuinely alter the memory of the event; Gudjonsson, 1986).

A related issue to the lack of understanding for a situation is the absence of language to describe a situation. While this issue relates particularly to cases of sexual abuse, it is not limited to this domain, as children's vocabulary might be insufficient in various domains which may be addressed in a police interview (Ahern & Lyon, 2013; Wandrey, Lyon, Quas, & Friedman, 2012). Notably, even if the vocabulary to describe the situation is available in the present, the information may not be retrievable unless sufficient language to encode the situation was available at the time of the event (Jack, Simcock, & Hayne, 2012; Peterson & Rideout, 1998; Simcock & Hayne, 2002). Children's developing language skills might therefore impair their ability to testify.

Also related to children's maturing brain (Güler & Thomas, 2013) is the lack of knowledge about the situation being witnessed. While lack of knowledge can result in the same issues as lack of understanding – no encoding or fragmented encoding that can result in an ambiguous, bizarre statement – less pronounced absence of knowledge may result in increased difficulty in remembering information, in particular peripheral rather than central information (Paz-Alonso & Goodman, 2008; Paz-Alonso, Goodman, & Ibabe, 2013; Rush, Quas, & Yim, 2011). This increased difficulty in remembering may be due to at least three main deficiencies. First, the lack of knowledge or experience with a situation makes it more difficult to perceive or assess certain phenomena. Studies comparing experts (thus knowledgeable individuals) with lay-people or beginners (thus less knowledgeable individuals) suggest that the increased

experience in a specific domain makes it easier to anticipate and predict possible outcomes from aspects of a situation (e.g. experienced tennis players find it easier to predict where the ball will hit) while at the same time requiring less cognitive effort, thereby enabling experts to focus on other aspects of the situation or perform other simultaneous tasks (Beilock, Bertenthal, McCoy, & Carr, 2004; Beilock, Wierenga, & Carr, 2002). Furthermore, increased experience leads to better and more effortlessly created memories (Schneider & Bjorklund, 1992; Schneider, Gruber, Gold, & Opwis, 1993). Children who do not possess experiences similar to the one they are questioned about, might find it more difficult to anticipate or explain aspects of the situation - especially less central and missed ones - as well as struggle to form a memory for the situation to be reported.

Further, as suggested previously, lay-people and beginners struggle considerably more to perform an unrelated task at the same time (Beilock et al., 2004, 2002; Schneider & Bjorklund, 1992; Schneider et al., 1993). Although based in the laboratory, this finding can clearly be transferred to less knowledgeable children who experience a naturally occurring situation and are thus exposed to numerous distractions and competing stimuli which might overshadow the situation witnessed or aspects thereof (Lane, 2006) especially because children are unlikely to be proficient in filtering disturbances (Miller et al., 1994).

The second mechanism that impairs children's ability to encode information and consequently store them as proficiently as adults – the absence of schemata and stereotypes – likewise operates through the increased cognitive effort that needs to be exerted for memories to be created (DiMaggio, 1997). Schemata are scripts of actions that describe the steps necessary to perform an action and reduce the cognitive effort to be exerted by summarizing similar instances of an action as one schemata (DiMaggio, 1997). This reduces the cognitive effort required to encode novel instances of similar action sequences. Children, however, have not yet fully developed these schemata and will thus attempt to encode every instance of an action separately. While this may prevent them from making errors due to schemata and stereotypes (Otgaar, Smeets, & Peters, 2012), as adults are prone to do (Kleider, Goldinger, & Knuycky, 2008; Nelson & Gruendel, 1981), it may also hinder them from encoding aspects of an action because they have to encode every step individually, which, given their impaired ability to distinguish between crucial and less crucial information (Miller et al., 1994), can

easily lead to forgetting of aspects, especially in naturally occurring situations that contain numerous distractors and stimuli that are not crucial to the situation.

Importantly though, this inferiority due to the decreased reliance on schemata can lead to children reporting more accurate information about a situation than adults as children are less likely to falsely report schema-congruent – yet situation-incongruent – information than adults (Nelson & Gruendel, 1981). While adults have frequently been suggested to alter information in line with schemata about everyday actions (Nelson & Gruendel, 1981) and populations – such as females versus males (Kleider, Pezdek, Goldinger, & Kirk, 2008) – as well as adding or removing incongruent information altogether (Gerrie, Belcher, & Garry, 2006; Pérez-Mata & Diges, 2007), children tend to be considerably more accurate in reporting the actual, schema-incongruent rather than the false, schema-congruent information (Nelson & Gruendel, 1981). Consequently, while lack of knowledge can impair memory for situations or reduce the ability to make correct assumptions about a situation, it can also be beneficial through improving the accuracy of the statement, especially for situations that differ from other instances.

Third, children's ability to encode situations and stimuli may be severely impaired through their inferior or non-existing use of encoding strategies. Encoding strategies – as the name suggests - facilitate the encoding of information through diverse and context-dependent measures. Thus, examples for encoding strategies are the repetition of words (Rundus & Atkinson, 1970), the visualization of items to be remembered – either through envisioning the item or placing it in a more memorable context, such as a familiar route (Roediger, 1980) - as well as categorization of items into groups (Channon & Daum, 2000) – thereby minimizing the cognitive effort required. While adults tend to be familiar with several encoding strategies and frequently use at least some of them on a regular basis, children – especially younger ones – do not employ encoding strategies or do so in a very suboptimal manner, for example by repeating lists of words to be remembered word by word rather than list-wise (Ornstein, Naus, & Liberty, 1975) or by naming one stimulus belonging to a category before moving on to the next category (Frankel & Rollins, 1982). Indeed children's ability to use encoding strategies has been suggested to undergo a dramatic change throughout the primary school years and consequently be less efficient until after this period (Cowan & Kail, 1996).

While this might initially seem detrimental to children's memory, it is actually necessary as the use of encoding strategies would require considerable cognitive effort, thereby impairing the encoding process rather than facilitating it (Guttentag & Ornstein, 1990). Furthermore, children may not realise the need to use encoding strategies as they tend to considerably overestimate their own memory capabilities – even if provided with feedback on their own as well as peers' performances (Flavell et al., 1970; Lipko, Dunlosky, & Merriman, 2009; Shin et al., 2007; Yussen & Levy, 1975), which can be particularly detrimental in naturally occurring contexts where no external prompts to use encoding strategies are available.

Even if formally trained in the usage of encoding strategies, children are prone to using them inefficiently, only in limited contexts – frequently only the ones they have been trained in – and may fail to do so if they are no longer prompted or if the context changes (e.g. different stimuli or interviewer; Cowan & Kail, 1996; Frankel & Rollins, 1982; Guttentag & Ornstein, 1990; Ornstein et al., 1975).

Thus, children tend to process information on a more shallow level than adults which predisposes them to forget information at a faster rate (Wimmer & Howe, 2010); this is particularly problematic as children's lack of understanding, language or knowledge can further impair their ability to encode and subsequently report information in an unambiguous way.

2.5 The third challenge for interviewees – storing of information

Children's encoding difficulties described in the previous section might have contributed to the suggestion that children are more limited in their ability to store information than adults (Fivush, 1998; Kail, 1989; Lamb, Sternberg, & Esplin, 2000; Saywitz & Camparo, 1998; Schneider & Pressley, 1989; Wimmer & Howe, 2010). Evidence to support this claim has largely been derived at through studies investigating semantic learning. However, these studies have yielded mixed results suggesting that children's ability to store information might be inferior (Khanna & Cortese, 2009) as well as equal (Sugrue & Hayne, 2006) to that of adults. While the contribution made by these studies should not be discarded, the applicability

of these studies to the current review is limited due to their usage of predominantly verbal stimuli, such as word lists.

Studies using more naturalistic stimuli – such as pictures, photographs, stories and factual knowledge – have suggested that children might be able to memorize information as proficiently or even more so than adults (Goodman & Reed, 1986; Nelson & Gruendel, 1981). These findings are important as they suggest that the process of storing information might be less dependent on age than the previously discussed two processes – attending to (2.3) and encoding of information (2.4). Consequently, the following two kinds of forgetting – naturally occurring decay and childhood amnesia – as well as the subsequent discussion of factors leading to the distortion of memories – either through interaction with other individuals or through exposure to misinformation from other sources - can affect children and adults in the same way, although there might be differences in the degree of the effect. It should be noted that, while forgetting of information can affect the legal interview and the consequent prosecution of perpetrators, the resulting errors of omission are frequently less detrimental than the potential errors of commission resulting from distortions of memory. Consequently, a stronger emphasis will be placed on factors leading to the distortion of memories below.

There are two phenomena relating to forgetting which are of importance to the legal setting. First, there is the naturally occurring decay of information which results from an inability to encode and consequently store all information attended to. As a consequence, a considerable amount of information is never stored, with most information being lost immediately or after a brief delay (Jones & Pipe, 2002). While this loss of information can be limited (e.g. through more in-depth processing of information) or slowed down (e.g. through repetition; Rundus & Atkinson, 1970), it cannot be prevented entirely. Information that is lost tends to be less crucial, so that the naturally occurring decay of information tends to have a minor impact in the legal context (Paz-Alonso & Goodman, 2008; Paz-Alonso, Goodman, & Ibabe, 2013; Rush, Quas, & Yim, 2011). Information is more likely to be lost or distorted if it is ambiguous or contrary to expectations in regards to for example gender (Kleider, Pezdek, et al., 2008), or strongly held beliefs (Gerrie et al., 2006; Pérez-Mata & Diges, 2007). The role of expectations in the storage of memories will be discussed later (2.6).

The second kind of forgetting that can have consequences in the legal setting is childhood amnesia. This term was originally coined to describe the forgetting of experiences that

occurred between 3 and 4 years of age (Freud, 1916). As a consequence of this initial definition, reports of experiences that allegedly occurred in this time period were more likely to be discarded or regarded with caution as they were assumed to be potentially the result of implanted memories (for a more in-depth discussion of implanted and/or distorted memories see 2.6). A recent revision of this definition describes the period of childhood amnesia as a more fluid concept that depends on the reporting individual's age (Cleveland & Reese, 2008; Fivush & Schwarzmueller, 1998; Peterson, 2012; Peterson, Grant, & Boland, 2005) as well as other factors, such as presence of external representations and opportunities to recall memories (Larkina & Bauer, 2012), which are important to acknowledge in legal settings. More precisely, the period of childhood amnesia is now regarded to shift along with the reporting individual's age, thus the older the individual trying to remember situations from childhood, the closer the period of irretrievable memories is likely to be in line with the original suggestions; younger individuals, in contrast, might be able to report significantly earlier memories and might show little evidence of childhood amnesia (Cleveland & Reese, 2008; Fivush & Schwarzmueller, 1998; Peterson & Parsons, 2005; Peterson & Whalen, 2001).

While the two kinds of forgetting described previously – naturally occurring decay and childhood amnesia – result in a loss of information, distorted memories may result in a distortion of information. Thus, while the former phenomena yield an incomplete statement, the later ones result in a changed statement that may – in extreme cases – lead to the conviction of an innocent individual or the release of a guilty one. Therefore, implanted memories can have a more severe impact than forgotten information and will thus be discussed.

Distorted memories are the result of erroneous source monitoring, which especially children are prone to (Ackil & Zaragoza, 1995). Source monitoring refers to the consideration of different sources of information and subsequent accurate distinction thereof. Children and adults can make errors in this classification and consequently integrate knowledge from external sources into their own memories of experiences. The two main sources of misinformation are through interaction with other individuals or through exposure to information without the involvement of other individuals.

The most likely sources of misinformation due to interaction with another individual are early questioning (through a lay-person or a police interviewer) or communication with co-

witnesses. First, early questioning through a legal interviewer or a self-administered questionnaire – frequently still at the location of the situation witnessed - has been recommended in the literature as it can potentially reduce later integration of misinformation (Gabbert, Hope, Fisher, & Jamieson, 2012; Jack, Zydervelt, & Zajac, 2014; LaPaglia & Chan, 2012) as well as improve the memory for the situation (Chan, Wilford, & Hughes, 2012; Gabbert et al., 2012; Hope, Gabbert, Fisher, & Jamieson, 2014; LaPaglia, Wilford, Rivard, Chan, & Fisher, 2014; Nelson & Fivush, 2004; Pansky & Nemets, 2012). Notably, the reverse can also be true and early questioning can introduce misinformation (Chan et al., 2012; LaPaglia et al., 2014; Principe, DiPuppo, & Gammel, 2013) or result in impaired memories for the situation (Anderson, Bjork, & Bjork, 1994; Anderson & McCulloch, 1999; Baran, Wilson, & Spencer, 2010; Blix & Brennen, 2012; Campbell & Phenix, 2009; Camp, Wesstein, & Bruin, 2012; Chan, 2009; Chan, Thomas, & Bulevich, 2009; Ciranni & Shimamura, 1999; Ford, Keating, & Patel, 2004; Harris, Sharman, Barnier, & Moulds, 2010; MacLeod, 2002; MacLeod & Macrae, 2001; Migueles & García-Bajos, 2007; Phenix & Campbell, 2004; Pipe, Sutherland, Webster, Jones, & Rooy, 2004; Saunders & MacLeod, 2002; Starns & Hicks, 2004) because the questions that are asked may provide a framework for the information that should be stored while other, potentially important, information is not focused on in the initial interview and consequently not regarded as crucial and thus forgotten (Anderson et al., 1994; Camp et al., 2012).

A brief delay further increases the likelihood that individuals still experience emotional strain and are more likely to integrate misinformation as a consequence of the resulting depletion (Morgan, Southwick, Steffian, Hazlett, & Loftus, 2013).

The initial questioning may not be conducted by trained interviewers, as particularly children and adolescents tend to confide in somebody within their social network whom they trust, such as family members, teachers or peers (Stein & Nofziger, 2008). These individuals' lack of training and experience in dealing with such situations can affect how and what information is reported at the legal interview. Untrained interviewers tend to be unaware of which question techniques are recommended to ensure a detailed and accurate report and which question techniques should be avoided as they could potentially distort the report (Ricci, Beal, & Dekle, 1996; for a further discussion see 2.6).

Two other issues to consider in regards to untrained interviewers conducting the initial interview are that information may be lost between interviews – e.g. because the reporting individual believes to have provided information during the legal interview that was actually provided in the initial interview (Yael Orbach, Lamb, La Rooy, & Pipe, 2012) – and that questions necessarily need to be repeated which, especially with younger children, can lead to undesirable changes in their responses (Krähenbühl, Blades, & Eiser, 2009; see 2.6).

Likewise, co-witnesses can have a detrimental effect on the accuracy of memories. Numerous studies have suggested that children (Bright-Paul, Jarrold, Wright, & Guillaume, 2012; Principe, Guiliano, & Root, 2008) and adults (Gabbert et al., 2012; Gabbert, Memon, & Allan, 2003; Paterson & Kemp, 2006; Paterson, Kemp, & Ng, 2011; Skagerberg, 2007; Skagerberg & Wright, 2008a) are likely to change their own beliefs about a situation in response to a conflicting belief expressed by a co-witness, especially if the co-witness is perceived to be more knowledgeable (Brown et al., 2009; Skagerberg & Wright, 2009). While ambiguous or unverifiable situations may increase the likelihood of agreeing with a co-witness, it is important to note that the influence of a co-witness might have been overestimated in the literature due to social demands, such as compliance and social pressure (e.g. when having to articulate one's disagreement aloud; Bright-Paul et al., 2012; Goodwin, Kukucka, & Hawks, 2013). Although individuals are less likely to agree with a co-witness under optimal conditions (that is, non-ambiguous, clearly verifiable situations without social demands) these are unlikely to occur in real-life situations and there is a robust effect that co-witnesses can influence other individuals' statements and can permanently alter their memories for events (Garry, French, Kinzett, & Mori, 2008; Goodwin et al., 2013).

It is not necessary to interact with another individual to incorporate misinformation into memory; children are particularly likely to integrate misinformation from mere exposure to it. Four sources of misinformation and their potential effect on memories will be discussed, namely one's own expectations, news coverage, visual aids (e.g. pictures) and imagination.

Expectations can be a source of misinformation that results in distorted memories. The two kinds of expectations that are most likely to result in distorted memories – stereotypes (i.e. expectations about individuals or groups of individuals) and schemata (i.e. expectations about the execution of actions) – are beneficial in everyday life. Stereotypes and schemata allow quick, efficient judgment of novel individuals and actions based on previously encountered

instances of the same or similar category. Consequently, the cognitive effort that would otherwise be required to process all relevant information is reduced, thereby enabling the faster and automatic execution of appropriate behaviours. But this less in-depth, faster processing can lead to inappropriate behaviours (Nelson & Gruendel, 1981) and also lead to distorted memories. For example, adults have been found to incorrectly report an actor's gender (i.e. adjusting the gender in line with their expectations about the performed action; Kleider, Pezdek, et al., 2008), report seeing information that was not presented (i.e. supplementing it with knowledge they have about the action in question; Brewer & Treyens, 1981; Gerrie et al., 2006), not remember untypical, presented information (Pérez-Mata & Diges, 2007), or make false identifications (Flowe & Humphries, 2011) as a consequence of their expectations. Less central information is more likely to be distorted by expectations, whereas more central information is more likely to be correctly remembered (Garcia-Bajos, Migueles, & Anderson, 2009; Gerrie et al., 2006). Children also report distorted memories or even create entirely novel memories as a consequence of their expectations or their existing knowledge (Otgaar, Smeets, et al., 2012).

Factual media coverage, such as news, can be a source of misinformation for situations covered in the media. Most factual reports – regardless of the medium they are presented in – share three characteristics that can lead to distorted memories, namely their assumed reliability (Bucy, 2003), their vividness (Walma van der Molen & Voort, 2000) and their repetition (Foster, Huthwaite, Yesberg, Garry, & Loftus, 2012; Mares, 2006). First, media reports are often believed to be a reliable source of accurate information, a belief which is further enhanced by the frequent reference to experts (Birnbaum & Stegner, 1979; Skagerberg & Wright, 2009). Furthermore, media reports do not allow for interaction, but instead present information as facts, with speculation frequently not clearly indicated as such. Consequently, if information presented conflicts with an individual's memories for this event, the individual might be more likely to believe the information in the media, especially if the initial situation was ambiguous, brief and/or unfamiliar – even if the information is wrong or cannot have been observed by the individual (Smeets et al., 2006).

Second, media reports may include visual aids, such as pictures, illustrations or video sequences to clarify the reported situation or aspects thereof. While these very vivid and detailed visualizations might initially be classified correctly as originating from a source different to one's own observations – i.e. the news -, factors such as a lengthy delay or

uncertainty about the witnessed situation or aspects thereof can subsequently lead to source monitoring errors and consequently the integration of information depicted in the media into individuals' memories of the situation, especially for younger individuals (Garry, Strange, Bernstein, & Kinzett, 2007; Roberts & Blades, 1999).

Third, media reports may be presented repeatedly and are frequently also covered in different formats, such as in newspapers, on the television as well as online. This repeated exposure is likely to strengthen the memory for the information presented, although not necessarily for the source of the memory (Foster et al., 2012; Zaragoza & Mitchell, 1996). Information presented might vary depending on the format – or indeed on who the information is reported by – which might contribute to the distortion of memories. News may provide information that has resurfaced after the original situation and thus could not have been known by witnessing individuals at the time and might consequently alter or extend the original memories in undesirable ways.

Further potential sources of misinformation that children may be exposed to include visual aids and pictures. In research studies, visual aids – such as images or models – are sometimes used to reduce the dependency on language. While visual aids clearly reduce the linguistic demands placed on children and indeed have been suggested to improve memories of events (Brown, Pipe, Lewis, Lamb, & Orbach, 2012) – particularly, if they aid in the reinstatement of the context of the original situation (Butler, Gross, & Hayne, 1995) -, some studies have also reported a decrease in accuracy as a result of using visual aids (Brown et al., 2012; Otgaar, Howe, Peters, Sauerland, & Raymaekers, 2013; Otgaar, Howe, Peters, Smeets, & Moritz, 2014). Both, children and adults, may change their initial response to a question if they are presented with visual aids (e.g. photographs, video clips or objects that they have interacted with) that have been manipulated to conflict with the individual's initial – and correct – statement (Garry & Gerrie, 2005; Garry & Wade, 2005; Henkel, 2011; Lindsay, Hagen, Read, Wade, & Garry, 2004; Nash, Wade, & Lindsay, 2009; Otgaar, Candel, Smeets, & Merckelbach, 2010; Strange, Hayne, & Garry, 2008; Strange, Sutherland, & Garry, 2006; Wade, Garry, Read, & Lindsay, 2002; Wade, Green, & Nash, 2010). For children, this effect may persist if the delay between the situation and the interview is reduced – thus reducing the cognitive effort required -, if the interviewer is changed – reducing the likelihood of demand characteristics and compliance (Otgaar et al., 2010) – and in some cases even after individuals are informed that the visual evidence had been manipulated to conflict with their statement

(Otgaar, Scoboria, & Smeets, 2013), suggesting that individuals' memory was indeed altered as a consequence of exposure to the visual aids.

Visual aids may also be instrumental in creating entirely novel memories. In particular, both, children (Otgaar, Scoboria, et al., 2013; Strange et al., 2008) and adults (Garry & Wade, 2005; Otgaar, Scoboria, et al., 2013), have been found to report experiences that they previously denied having happened to them if they were presented with manipulated visual evidence, such as a photograph. Furthermore, experiences reported included emotions, sensory perceptions and the establishment of context which could not have been derived at from mere inspection of the visual aid (Erdmann, Volbert, & Böhm, 2004; Laney & Loftus, 2008; Strömwall, Bengtsson, Leander, & Granhag, 2004; Vredeveldt & Wagenaar, 2013). False memories of highly implausible events – such as being abducted by a UFO – may be implanted in children through the use of visual aids (Otgaar, Candel, Merckelbach, & Wade, 2009). Altered memories, entirely novel – and implanted – memories may also persist across interviewers and after being debriefed, even after long delays (Otgaar, Scoboria, et al., 2013).

Imagination is another potential source of misinformation. While more vivid imagination has been associated with improved verbal skills, especially those related to story-telling, and better memory, it can also facilitate the distortion of existing memories or the creation of false memories (Frost et al., 2012; Lane & Zaragoza, 2007; Shapiro, Blackford, & Chen, 2005; Shapiro & Purdy, 2005). In particular, after individuals have been prompted to imagine situations that they have previously identified as never happened to them and as unlikely to have happened to them, both, children (Ceci, Huffman, Smith, & Loftus, 1994; Foley & Johnson, 1985; Foley & Ratner, 1998; Parker, 1995; Johnson, Hashtroudi, & Lindsay, 1993) and adults (Ackil & Zaragoza, 2011; Garry, Manning, Loftus, & Sherman, 1996; Hyman, Husband, & Billings, 1995; Lindsay et al., 2004; Loftus, 2005; Scoboria, Wysman, & Otgaar, 2012; Sharman & Scoboria, 2009), developed false memories for these situations. Subsequent descriptions of these situations contained considerable detail, such as sensory perceptions and emotions felt, which made it difficult to distinguish true and implanted memories (Erdmann et al., 2004; Laney & Loftus, 2008; Strömwall et al., 2004; Vredeveldt & Wagenaar, 2013). False memories persisted even after individuals were debriefed (Otgaar, Scoboria, et al., 2013), suggesting that false memories were created and not the result of factors such as compliance.

Younger children are likely to suffer from source monitoring failures as a consequence of more vivid imagination and consequently tend to report false information about situations that originated in their own imagination. Increasing the delay between the encoding and the retrieval of information may further distort memories, especially in individuals with more vivid imagination (see 2.6).

Thus, expectations, media, visual aids and an individual's imagination can be sources of misinformation. Due to the frailty of memories the period between the witnessed situation and an interview should be kept as brief as possible. There are additional risks associated with a lengthy delay which will be discussed in the next section.

2.6 The fourth challenge for interviewees - retrieving the information

The factors discussed in previous sections (2.3 - 2.5) exert their potential impact prior to police interviews and can thus not be influenced by the interviewer. In contrast, the retrieval of information can directly be affected by the interviewer. Three challenges to be considered at the retrieval stage - delay, structure of the interview and question techniques used – will be discussed.

Interviewers are commonly recommended to keep the delay between the situation and the initial interview as brief as possible (page 35). Furthermore, it is commonly suggested that legal interviewers adhere to the routines of the minor and not conduct interviews with minors at later hours (pages 38, 47).

Using various methods, longer delays have been suggested to increase the likelihood that interviewees will report less information, be it adults exposed to crime-related film clips (Paz-Alonso & Goodman, 2008; Tuckey & Brewer, 2003) or children being exposed to stressful and thus forensically relevant situations such as medical procedures (Quas et al., 1999; Shrimpton, Oates, & Hayes, 1998) or indeed actual sexual abuse (Lamb et al., 2000). Considering that the rate of forgetting is fastest immediately after the situation and then gradually slows down (Jones & Pipe, 2002), delay is a risk as information can be lost. When younger children's memories for episodic events (Bemis, Leichtman, & Pillemer, 2011), medical procedures (Baker-Ward, Gordon, Ornstein, Larus, & Clubb, 1993; Quas et al., 1999;

Shrimpton et al., 1998) or actual sexual abuse (Lamb et al., 2000) are compared with older children's memories, younger children are more susceptible to longer delays, that is, they forget more information and do so after briefer delays than older children as they are not yet proficient in the use of encoding strategies (see 2.4).

Second, information may become distorted as a consequence of a longer delay. As a direct consequence of increasingly long delays, both, children and adults, have been suggested to report more distorted information when watching film clips of crimes (Paz-Alonso & Goodman, 2008; Shapiro et al., 2005), observing staged events (Poole & White, 1993) or providing details about suffered injuries (Peterson, 2011). Furthermore, children are likely to be exposed to false information through naturally occurring conversations with peers and parents before the interview and to subsequently report this misinformation (Principe & Schindewolf, 2012). Likewise, daily events and forensically relevant observations may be shared rapidly by individuals through naturally occurring conversations (Harber, 2005; Pasupathi, McLean, & Weeks, 2009; Paterson & Kemp, 2006; Skagerberg & Wright, 2008b) and distressing observations increase the likelihood that children may communicate the situation to individuals like parents or other trusted individuals who consequently choose to discuss the situation to reduce the distress experienced by the child. These informal conversations can lead to the distortion of information or to a reduction of detail and/or accuracy of information provided in subsequent police interviews (Leichtman, Pillemer, Wang, Koreishi, & Han, 2000; Principe & Schindewolf, 2012; Ricci et al., 1996; Warren & Peterson, 2014).

Third, a lengthy delay can make it difficult for children – especially younger ones – to identify the purpose of the legal interview. While interviewers can overcome this through subtle prompting for situations that are confirmed to have taken place – e.g. public situations, such as a theft or a traffic accident -, any prompts in regards to an uncertain situation – e.g. a private situation, such as domestic violence or sexual abuse – could be subsequently dismissed as suggestive.

A delay can be problematic for children as they might have no or an insufficient understanding of time concepts. An understanding of time concepts (Gosse & Roberts, 2013; Tillman & Barner, 2015) and order of events (Bauer, Burch, Scholin, & Guler, 2007; Friedman, 1992; Friedman & Lyon, 2005) does not fully develop until about 7 to 8 years.

Thus, experiencing a delay prior to this period may lead to confusion or difficulty in reporting information like the seasons, the time of the month, weeks or days (Wandrey et al., 2012) which can reduce children's credibility.

To reduce the effect of detrimental factors on children, police interviews should commence with a so-called rapport phase (pages 36, 50) in which case-unrelated open-ended questions are asked to relax interviewees, to accustom them to the level of detail that they will be required to provide as well as to encourage accuracy prior to the actual interview. While inclusion of this phase improves interviewees' well-being and increases accuracy and quantity of information when compared to interviews conducted without this phase (Abbe & Brandon, 2013; Almerigogna, Ost, Bull, & Akehurst, 2007; Davis & Bottoms, 2002; Holmberg & Madsen, 2014; Kieckhaefer, Vallano, & Schreiber Compo, 2014; Sternberg et al., 1997; Sternberg, Lamb, Orbach, Esplin, & Mitchell, 2001; Vallano & Compo, 2011), in particular with children (Jack, Leov, & Zajac, 2014; Price, Roberts, & Collins, 2013; Sternberg, Lamb, Orbach, et al., 2001), police interviewers frequently shorten the rapport phase considerably or even leave it out altogether (Sternberg, Lamb, Esplin, & Baradaran, 1999; Warren, Woodall, Hunt, & Perry, 1996).

Children provide more and more accurate information if they are interviewed by somebody they perceive to be supportive, for example through the usage of warmer gestures and friendlier prompts (Almerigogna, Ost, Akehurst, & Fluck, 2008; Almerigogna et al., 2007; Carter, Bottoms, & Levine, 1996; Davis & Bottoms, 2002; Klemfuss, Milojevich, Yim, Rush, & Quas, 2013; Quas & Lench, 2007; Quas, Rush, Yim, & Nikolayev, 2014; Rush et al., 2014). Specially designed interview rooms as well as the absence of formal police uniforms (Ceci, Ross, & Toglia, 1987; Lowenstein, Blank, & Sauer, 2010) might further enhance the perceived supportiveness and thus lead to a better statement. Frequently though, logistic or financial reasons make it difficult to accommodate these recommendations.

Associated with the idea of building a rapport through prior asking of case-unrelated open questions is the recommendation to maintain a high frequency of open-ended questions throughout the entire interview (pages 36, 44, 51) and to indeed start the formal police interview with an open question prompting children to report everything they can in regards to the case (page 51). Open-ended questions offer multiple benefits such as decreasing suggestibility when compared to forced-choice questions (Dale, Loftus, & Rathbun, 1978;

Horowitz, 2009), improving accuracy when compared to specific (Hutcheson, Baxter, Telfer, & Warden, 1995), closed or suggestive questions (Orbach & Lamb, 2001) as well as increasing the quantity of information provided when compared to inappropriate questions, such as closed or leading questions (Phillips, Oxburgh, Gavin, & Myklebust, 2011). These benefits are particularly pronounced for child witnesses who are more suggestible than adults (Battin, Ceci, & Lust, 2012; Bruck & Ceci, 1999; Ceci & Bruck, 1993; Ghetti & Alexander, 2004; Pezdek & Hodge, 1999). The latter might be due to several reasons. Suggestions from the literature include the perceived need to comply with the interviewer (Mastroberardino & Marucci, 2013), the insufficient insight into the lack of knowledge on the interviewer's part (Scullin & Bonner, 2006) or the difficulty in disagreeing with the interviewer in response to suggestive questions (Scullin & Bonner, 2006). While interviewers are frequently aware of the usefulness of open questions to overcome these problems, interview transcripts suggest that open-ended questions are not as frequently used in legal interviews as they could be (Cederborg, Orbach, Sternberg, & Lamb, 2000; Cyr & Lamb, 2009; Daviesl, Westcott, & Horan, 2000; Faller, 1996; Freeman & Morris, 1999; Hill & Davies, 2012; Korkman, Santtila, Westeråker, & Sandnabba, 2008; Lamb et al., 2000; Lamb et al., 2009; Myklebust & Bjørklund, 2010; Sternberg, Lamb, Davies, & Westcott, 2001; Warren et al., 1996; Westcott & Kynan, 2006).

Interviewers need to use age-appropriate, easily understandable language throughout an interview. Children may respond to questions they do not understand instead of indicating their lack of understanding (Evans, Lee, & Lyon, 2009; Katz & Hershkowitz, 2012; Saywitz, Jaenicke, & Camparo, 1990; Saywitz, Snyder, & Nathanson, 1999). Perhaps not surprisingly, responses provided to questions that were not understood tend to be inaccurate although the correct response is frequently known and can be provided if the question is expressed in an easier, more age-appropriate way (Saywitz et al., 1999) – a finding that has been replicated for adult witnesses (Kebbell, Evans, & Johnson, 2010).

Reasons for children's failure to indicate their lack of understanding include social influence - such as compliance with the interviewer (Ackerman, 1983; Ceci et al., 1987) – or lack of understanding for their own failure to comprehend the question (Peters & Nunez, 1999). Importantly, even when children are encouraged to indicate if they do not understand something, they may continue to fail to do so (Peterson & Grant, 2001).

Children might be unfamiliar with certain terminology or "jargon", in particular in regards to the legal context (Evans et al., 2009; Katz & Hershkowitz, 2012; Saywitz, 1989; Saywitz et al., 1990). Children's ability to testify might be adversely affected, if they are prone to agree with statements they do not understand or experience negative arousal due to their lack of understanding (Peters & Nunez, 1999). Young children can be influenced through the mention of words that they do not understand or that they interpret differently; for example, mentioning the word "prison" or "lie" can lead young children to believe that the person in question will have to go to prison or has lied previously (Hülsken, 2011).

Negations – i.e. statements and questions including the word "not" – should be avoided if at all possible (page 51). Negations are more difficult to process than positive statements, both in written and oral form (Fischler, Bloom, Childers, Roucos, & Perry, 1983; Perry et al., 1995). Consequently, negative statements are frequently processed as positive statements, thereby leading to unintended agreement or inaccurate responses in general (Perry et al., 1995). Single and double negations have been found difficult to answer as responses to them tend to be ambiguous (i.e. agreeing to a statement indicates that something has not happened while disagreeing with a statement indicates that something has happened). Therefore, interviewers should avoid negations.

Young children, whose working memory capacity is inferior to that of older children or adults (Barrouillet, Gavens, Vergauwe, Gaillard, & Camos, 2009; Cowan, AuBuchon, Gilchrist, Ricker, & Saults, 2011), are likely to forget parts of the sentence and might thus provide an incorrect response as a consequence of the way they are questioned rather than due to not knowing the correct response. Additionally, long sentences frequently combine multiple statements which may conflict with each other or differ in regards to their accuracy; consequently, they can be difficult to answer (Perry et al., 1995). Therefore, police interviewers should use short, unambiguous statements and questions throughout the interview (page 51).

These recommendations are particularly important when difficult or abstract concepts have to be included. One such concept is the discussion of truth and lies (page 50) to determine whether the child interviewee can distinguish between them as well as understand the importance of reporting true information only (Huffman, Warren, & Larson, 1999). To assess

children's understanding, interviewers are advised to provide examples, to prompt the child interviewee to suggest own examples or to use a combinatory approach of the previous two approaches, depending on the interviewee's cognitive abilities. Demonstration of the interviewee's ability to make this distinction and understanding of the importance of reporting truthful information only is essential for the police interview and may also improve the interviewee's credibility if the case proceeds to court (page 50). Therefore, some police manuals suggest that police interviewers should include a discussion of truth and lies at the beginning of interviews with children.

Interviewers should stress to minors that it is acceptable to admit if they do not know the response to a question or do not understand something (page 51). In particular young children are unlikely to spontaneously admit that they do not know the answer and might be more likely to do so after being explicitly instructed that this is an acceptable response (Waterman & Blades, 2011; Waterman, Blades, & Spencer, 2004). When children have been formally trained to admit to not understanding something or to not knowing the correct response children's accuracy rates improved (Gee, Gregory, & Pipe, 1999; Mulder & Vrij, 1996; Saywitz & Moan-Hardie, 1994; Waterman, Blades, & Spencer, 2001). However, these studies also suggested, as a consequence of training, that children might provide a "do not know" response even if they do know the answer (Howie & O'Neill, 1996). Instructing children to state if they do not know something may result in less distorted information, but may also reduce the quantity of information provided. This potential drawback can be limited through the use of appropriate questions such as open questions (discussed above).

Interviewers are also advised to be cautious when using models, such as (anatomically correct) dolls (page 52). While props can benefit children, especially children with impaired or still developing linguistic abilities (Bauer et al., 2004), props can also lead to a distortion of information (Brown et al., 2012; Willcock, Morgan, & Hayne, 2006), for example through imprecise pointing. Children might be distracted by the use of props and find it harder to concentrate on the interview. Also, props have led to the reporting of inaccurate or invented information as props may be suggestive (Brown et al., 2012). Consequently, props should only be used with caution and if other means of obtaining information have been unsuccessful (page 52).

Interviews should be concluded with a brief closure phase in which interviewees can ask questions, for example about possible consequences for individuals involved, including themselves (page 53). This phase is very important for children as they often lack fundamental knowledge about legal procedures (Saywitz, 1989) – a finding that also extends to adults – and as a consequence tend to hold negative attitudes towards these procedures and individuals working in the legal profession (Block et al., 2010). Consequently, the focus of this phase should clearly be to provide reassurance (page 53).

Through following this advice in regards to the structure of police interviews, police interviewers can greatly enhance the accuracy and quantity of information provided by children as well as improve children's well-being while simultaneously reducing factors that could adversely affect the statement or the interviewee. In addition to improving children's ability to retrieve information through these indirect measures, police interviewers can also have a more direct influence on the quantity and quality of information recalled by following recommendations in regards to question techniques that should be used or avoided when questioning children.

As discussed previously, open questions should be used as frequently as possible to ensure that children provide as detailed and as accurate information as they can. But after the initial open question prompting interviewees to report everything they can, open questions might only be of limited use. Interviewers are still advised to ask as many open questions as possible throughout the entire interview (page 51). However, it is difficult to entirely avoid potentially detrimental questions, such as repeated questions, forced choice questions and suggestive questions, each of which will be discussed below.

During police interviews, it may be necessary to repeat questions, for example to ensure that information has been correctly understood or to verify information (Andrews & Lamb, 2014; La Rooy & Lamb, 2010). Importantly, while adults can identify these purposes for repeating a question and thus repeat the previously given response, children tend to change their responses if asked repeatedly. The shift in response is usually undesirable, that is from accurate to inaccurate responses (Krähenbühl, Blades, & Eiser, 2009). While changing the response as a consequence of being asked repeatedly is a reasonable reaction in other contexts in which it is assumed that the previously given response was wrong (Memon & Vartoukian, 1996), a changed response can have negative consequences in a police interview. In addition to losing

credibility and opening the interview up to criticisms of being suggestive, changing responses can lead to the distortion of information about the question asked as well as any follow-up questions (Sharps, Herrera, Dunn, & Alcala, 2012).

Children might feel like they are not believed if questions are repeated, which can have a negative impact on their subsequent co-operation as well as the amount of detail provided (Hartwig & Wilson, 2002). Consequently, questions should not be repeated, although explaining the repetition might prompt children to repeat previously given information or indeed expand on it (Andrews & Lamb, 2014).

Forced choice questions present a number of options to choose from and should not be used unless absolutely necessary (page 51) as forced choice questions result in more inaccurate information than open or mixed questions, especially for younger children (Ceci & Bruck, 1993; Dickinson, Brubacher, & Poole, 2015; Horowitz, 2009; Peterson, 2012; Peterson & Bell, 1996). The literature recommends that forced choice questions should include at least three options for children to choose from (Peterson & Grant, 2001). However, younger children may demonstrate difficulties when presented with numerous options and consequently pick options that are in a memorable position (Mehrani & Peterson, 2015; Rocha, Marche, & Briere, 2013) rather than options that reflect their observations. Thus, the first difficulty with forced choice questions is the number of options that should be presented as this can have an impact on the response provided – and even more so than the accuracy of the response (Peterson & Grant, 2001). The second difficulty in regards to forced choice questions is in their suggestibility (Laimon & Poole, 2008; Sharman & Powell, 2012). Child interviewees may feel pressured to select one of the options given even if it is an inaccurate one and even if they have been instructed to indicate if the correct response is not included (Ceci & Bruck, 1993; Gee et al., 1999; Waterman et al., 2001). Formally including a “do not know” response improves accuracy rates for forced choice questions, but overall accuracy is still lower than for open questions (Horowitz, 2009; Lehman et al., 2010; Waterman & Blades, 2011). Also, forced choice questions result in considerably less detail than open choice questions as they do not require interviewees to produce a response but to confirm options presented by the interviewer (Ceci & Bruck, 1993; Dickinson et al., 2015; Hershkowitz, 1999; Horowitz, 2009; Lyon, Scurich, Choi, Handmaker, & Blank, 2012; Peterson, 2012; Phillips et al., 2011). Child interviewees may select one of the given options for social reasons, such as compliance, which can potentially distort their later statement and recall of the interview

(Bright-Paul et al., 2012; Frost et al., 2012; Paz-Alonso, Goodman, & Ibabe, 2013), in particular as especially children still possess poor source monitoring skills (Ackil & Zaragoza, 1995; Sprondel, Kipp, & Mecklinger, 2011). Even adults demonstrate distorted memories as a consequence of forced choice questions suggesting that forced choice questions should be avoided in police interviews (Lamb et al., 2007; Sharman & Powell, 2012).

Suggestive questions should be avoided in interviews. There are various ways in which a question can be suggestive, – indeed the previously discussed forced-choice questions are frequently described as suggestive. The most important characteristic of suggestive questions in legal interviews is that they imply information that has not been previously mentioned by the interviewee (Goodman & Schaaf, 1997). While suggestive questions might be useful to facilitate recall or as a prompt to provide information on aspects of a situation that has not previously been mentioned (Lamb et al., 2000), suggestive questions have frequently been found to increase the number of errors (Ackil & Zaragoza, 2011; Pezdek, Lam, & Sperry, 2009; Sharman & Powell, 2012) as well as to decrease the amount of detail provided (Phillips et al., 2011). Younger children have been found to be considerably more suggestible than adults in response to suggestive questions (Battin, Ceci, & Lust, 2012; Bruck & Ceci, 1999; Ceci & Bruck, 1993; Ghetti & Alexander, 2004; Pezdek & Hodge, 1999) although adults are not exempted from the effects of suggestible influences (French, Sutherland, & Garry, 2006; Garry & Wade, 2005; Heaps & Nash, 2001; Hyman & Billings, 1998; Hyman et al., 1995; Hyman, Jr. & Pentland, 1996; Kaasa, Cauffman, Clarke-Stewart, & Loftus, 2013; Lindsay et al., 2004; Mazzoni & Memon, 2003; Ost, Foster, Costall, & Bull, 2005; Porter, Yuille, & Lehman, 1999; Wade et al., 2002). Reasons for this might include the poorer source monitoring capabilities (Ackil & Zaragoza, 1995; Bright-Paul & Jarrold, 2012; Thierry, Spence, & Memon, 2001; see 2.5) that predispose children to integrate information from external sources into own memories and even provide supplemental emotional and sensory descriptions if prompted to do so (Erdmann et al., 2004) as well as children's lack of experience with police interviews which can result in strong compliance with authority figures (Ceci et al., 1987; Lowenstein et al., 2010). Children's lack of resistance to suggestions that adults might reject due to implausibility (Hart & Schooler, 2006; Otgaar et al., 2009) or certainty of their own memories (van Bergen, Horselenberg, Merckelbach, Jelicic, & Beckers, 2010) may also make them vulnerable to suggestive questions. Suggestibility has also been associated with certain intelligence quotient scores (Gignac & Powell, 2006; Zhu et al., 2012) and with ego depletion (Otgaar, Alberts, & Cuppens, 2012) which could occur as a

consequence of a police interview. Acknowledging these limitations, interviewers are strongly advised not to involve any suggestive questions when questioning children. Interviewers may be exposed to information from other sources, such as official reports and statements made by other witnesses. Consequently, interviewers might accidentally suggest information based on external information (Hughes-Scholes & Powell, 2008) or because of their understanding of the provided statement.

Consequently, suggestive questions might be used purposely or accidentally in police interviews involving children although they tend to increase the amount of incorrect information, decrease the overall quantity of information provided and might lead to long-lasting distorted memories and are consequently strongly advised against (page 51).

2.7 Rationale behind the remainder of the thesis

To draw a conclusion, the formation, maintenance and recall of memories relies on a multitude of challenging processes that especially children can struggle with. It is therefore vital that child interviewees in police interviews receive the best support possible to increase the quantity and quality of information recalled in this demanding and frequently very stressful context. The assessment and improvement of currently existing support can be approached from two different angles, both of which will be considered in the present thesis. To start with, police interviewers can be provided with better instruction and training to ensure that they are sensitive to child interviewees' needs and can design the police interview in a way that aims to improve the quantity and quality of information that child interviewees provide while reducing any negative emotions experienced by the interviewee. Pursuing this approach, study 1 evaluated the current standard of instruction and training in a less well-researched European country, Germany, and placed it in context through comparison with other European manuals as well as the frequently researched United States NICHD Investigative Protocol.

Acknowledging that the German police manual requires considerable improvements compared to the other manuals and that such improvements would be very time-consuming, expensive and not always effective due to interviewers failing to follow provided instructions, the second approach, identifying the underlying causes for child interviewees' limitations and attempting to address them, will be pursued for the remainder of this thesis. Specifically, while the

existing literature has largely focused on describing children's limitations and abilities in interview situations, only a limited number of studies have attempted to identify the causes for and ways to overcome them, although this is a promising area of research as it could improve child interviewees' abilities in police interviews in a cheaper, less interviewer-dependent and potentially more time-efficient manner than through targeting the police manuals used by interviewers. Thus, the existing research will be briefly reviewed before concluding with a rationale for the remainder of the present thesis.

Past studies have suggested that a potential underlying cause for child interviewees' limitations could be their lack of comprehension of different aspects of police interviews. Indeed, when children were directly questioned about their knowledge and understanding of court-related procedures (Block et al., 2010; Cooper, Wallin, Quas, & Lyon, 2010; Flin, Stevenson, & Davies, 1989) and legal terms (Cooper et al., 2010; Flin et al., 1989; Saywitz et al., 1990), children were found to lack considerable knowledge for both, which was associated with negative attitudes towards police officers (Powell et al., 2008) and court (Block et al., 2010). In addition to potentially decreasing child interviewees' well-being prior to and during involvement in legal procedures, such as police interviews, insufficient knowledge has also been found to have a direct negative effect on children's ability to provide detailed and accurate information. Specifically, children seem unable to comprehend certain dynamics of interviews, such as the permissibility of indicating that they do not know the answer; instead, children have frequently been found to respond to questions that were designed to be impossible to answer due to the usage of complex language (Perry et al., 1995), insufficient information being provided (Hughes & Grieve, 1980; Waterman et al., 2001, 2004) or questions being bizarre (e.g. "what do bricks eat?"; Waterman, Blades, & Spencer, 2000). Restricting the way that children can respond (e.g. asking yes/no questions as opposed to open questions; Peterson & Grant, 2001) and repeating questions (Krähenbühl et al., 2009; Krähenbühl & Blades, 2009) may further increase the likelihood that children provide inaccurate information as younger children fail to understand expectations associated with these questions (i.e. that children can indicate that they do not know the answer to a question and that questions may be repeated to obtain an elaboration on the response respectively).

However, while these studies only assess children's understanding through their performance in mock interviews, a study (Hülsken, 2011) conducted by the author of the present thesis has suggested that children's limitations are indeed due to a lack of comprehension for these

factors. Specifically, this study asked 6- to 7-year-olds, 9- to 10-year-olds and adults to explain why a police interviewer would perform specific behaviours within a videotaped mock police interview. While six of the 12 displayed behaviours have been found to improve child interviewees' well-being or to increase the quantity or quality of information that child interviewees provide in interviews (rapport-building, open questions, use of models, gist question repetition, evaluation of interviewee's well-being, assistance in court-related procedures), the remaining six factors have been suggested to reduce the well-being or the quantity or quality of information provided (intimidation, developmentally inappropriate language, leading questions, closed questions, repeated questions, negated questions). All age groups assessed were able to explain the beneficial behaviours displayed, but the younger children were mostly unable to explain the detrimental behaviours, suggesting that young children's limitations in interviews might be due to a lack of understanding in regards to specific elements of the police interview. This idea was investigated further in study 2.

Indeed, studies have suggested that improving children's understanding for interviews can result in better statements being provided. The most frequent intervention to improve children's understanding that could be located for the present review focused on instructing children to indicate if they do not know the answer to a question. While this instruction may lead children to indicate that they do not know the answer even if they do (Gee et al., 1999; Howie & O'Neill, 1996), most studies suggested that this instruction was successful in decreasing the number of responses to suggestible (Mulder & Vrij, 1996) or unanswerable questions (Cordón, Saetermoe, & Goodman, 2005; Gee et al., 1999; Nesbitt & Markham, 1999; Saywitz et al., 1999; Waterman & Blades, 2011). Likewise, children's suggestibility could be reduced through instructing children that the interviewer is unable to help (Mulder & Vrij, 1996), that children might not understand all questions (Peters & Nunez, 1999) as well as through training children in identifying complex syntax (Peters & Nunez, 1999; Saywitz et al., 1999) and discussing why children might respond to suggestive questions (Saywitz & Moan-Hardie, 1994). Improving children's understanding has therefore been suggested to be effective in improving performance in police interviews and was thus attempted in the remaining studies in the present thesis (studies 3 – 6).

Notably, there is only a very limited number of studies exploring children's understanding of legal procedures and/or attempting to address children's lack of understanding to help child interviewees overcome their limitations. Therefore, children's understanding of police

interviews needs to be addressed in much more depth than has been done in previous studies. The first empirical study (study 2) assessed children's understanding of various processes and dynamics essential to police interviews before an intervention was designed to improve children's understanding on several dimensions that are vital to providing a good statement in a police interview (studies 3 – 6) as existing interventions tended to focus on one dimension and would thus be only of very limited benefit to actual child interviewees.

3 Study 1 - Guidance available to police interviewers questioning children

3.1 Introduction

As the literature review in chapter 2 suggests, the ability to testify within an interview relies on the successful formation, maintenance and retrieval of information and can be prone to numerous, considerable interferences at each of these stages. Consequently, it is essential that police interviewers are provided with sufficient guidance and are adequately trained to design the interview in a way that increases the likelihood that child interviewees will provide as much and as accurate information as possible while children's stress levels are reduced.

Acknowledging the strong research bias for the UK and the US, the present chapter assessed the current standard of guidance and training available to police interviewers on a less well-researched European country, namely Germany. To provide a comprehensive overview of the guidance and training available in Germany, this chapter was divided into three sections.

The first section aimed to provide an overview over the theoretical guidance (i.e. the police manual) available to German police interviewers. To do so, the relevant sections of the main German police manual (i.e. compulsory in the whole of Germany) were first summarised before the supplements made by the individual counties (i.e. compulsory in the respective counties) were briefly outlined. The guidance provided in the German police manual was then placed into context through comparison with selected other European manuals as well as the NICHD Investigative Interview Protocol used in the US.

The second section reviewed one of the training manuals used in Germany, namely the training manual provided by the county North Rhine-Westphalia, which was the most comprehensive training manual that could be located for the purpose of the present thesis.

3.2 The German police manual

Police interviews are commonly the first experience of child witnesses in the legal system. In Germany, one police manual, namely the "PDV382" (Deutsche Vereinigung für Jugendgerichte und Jugendgerichtshilfen e.V., 1997), is used for all police interviews

involving minors. According to the PDV382, the term “minors” encompasses children (individuals who are younger than 14 years old) and adolescents (individuals who are older than 14 years but younger than 18 years old), but excludes individuals who are 18 years or older, including, but not limited to individuals younger than 21 years old.

3.2.1 The main German police manual

3.2.1.1 The format

The PDV382 comprises 17 pages, including one page to introduce the overall aims of the police manual and the work with children and one page to explain the terminology used. Thus, the actual manual comprises 15 pages and is laid out in a way that directly compares the currently used version from 1995 and the previous, original version from 1987.

3.2.1.2 Accessibility

The PDV382 is exclusively available in German and can be accessed by the public online, although several police forces approached were unaware that the police manual could be accessed by the public or that it existed.

3.2.1.3 General

The introduction of the PDV382 stresses that the main aim of police forces dealing with minors should be the prevention of crime rather than the punishment thereof. Instead, it is stressed that the PDV382 is to be used for all police investigations involving minors with the goal to prevent as well as to suppress crimes. Notably, no distinction is made between minors who are interviewed as perpetrators, witnesses or victims.

In preparation for later sections, the PDV382 explains the term “legal guardian” by attributing this title to every individual who is eligible to care for the minor to be interviewed, usually both parents. In the case of a divorce or separation, this responsibility is typically transferred to a sole parent, usually the mother. The same applies when one parent suffers from a severe illness, is absent for a prolonged period of time or if one parent is no longer eligible to care for the minor. If neither parent is present or eligible to care for the minor, the family court requests a legal guardian in lieu.

Further, it is recommended that specifically trained police forces – if available – should conduct all interviews with minors and ideally cooperate with relevant organisations.

3.2.1.4 General guidelines for interviews with minors

The PDV382 stresses that interviews with minors, in their interest, should be conducted with as brief a delay as possible. If, to follow this recommendation, it is necessary that an untrained police interviewer needs to conduct the first interview, spontaneous comments made by the minor as well as impressions by the interviewer need to be written down. Further interviews are to be conducted by a trained police interviewer.
After the interview, children are to be picked up by legal guardians or transported to them. If circumstances suggest this – e.g. time of day, age -, the same recommendation applies to adolescents. Social services are to be contacted if legal guardians cannot be contacted and if the minor has committed significant illegal activities or if the circumstances outlined previously apply.

If, in the framework of the interview, it becomes necessary to break medical confidentiality, the minor is the only individual who can grant permission for the confidentiality to be broken. The minor may consult a legal guardian (in lieu) prior to making a decidion, which is to be explicitly stressed. If, however, the minor does not seem to understand the importance of this decision – as is to be assumed with children – the PDV382 recommends obtaining permission from a legal guardian provided neither of the legal guardians are accused in the investigation. If either of the legal guardians is accused to be involved in the crime, an independent legal guardian in lieu can be appointed by a judge, a prosecutor, social services or in urgent cases by the police interviewer.

3.2.1.5 Summons of a minor

Summons of a minor are to be addressed to the legal guardians. If adolescents do not share their primary residence with the legal guardians, the summons is to be addressed to the adolescents directly. Legal guardians are to be informed of the summons at the same time.

3.2.1.6 Advising a minor

The PDV382 stresses the importance of advising all minors of their right to refuse to give evidence in an age-appropriate manner. Comprehension of the advice is assumed if the minor understands that his or her statement can lead to the punishment of a relative. For children a justification why comprehension has been assumed is to be written down.

Prior to their decision to testify, interviewees may consult a legal guardian, unless this could endanger the investigation. If a legal guardian is accused, a neutral legal guardian in lieu can

be appointed by a judge, a prosecutor or the police. Interviewees decide whether or not they wish to testify. While the legal guardian's recommendation is to be noted, it does not carry any weight.

If a minor does not comprehend the advice, he or she can be questioned if willing to do so and if the legal guardian consents. If the legal guardian cannot be contacted, the minor can only be questioned if the investigation would otherwise be endangered.

3.2.1.7 Interviewing a minor

The PDV382 stresses that interviews with minors are to be prepared with particular care although no details are provided in regards to what this entails. This serves the purpose of conducting – if at all possible – one interview only as the PDV382 suggests that repeated interviews can expose children to unreasonable distress and potential interferences on the statement. Prior to interviewing minors about sexual crimes a credibility assessment needs to be requested.

Minors are to never wait in the same location as the accused. The delay prior to the interview is to be kept brief.

Legal guardians are to be informed of the purpose of the interview unless this could endanger the investigation. Legal guardians have the right to be present during the interview of a minor although it may be beneficial to, in agreement with the legal guardian, interview the minor only to reduce any influence on the statement. If the legal guardian insists on being present, but this does not seem to be recommendable (e.g. because of being a suspect, because of being a witness who cannot be interviewed prior to the minor, if the minor's statement might distress the legal guardian or if this might have a detrimental effect on the minor after the interview), the interview is only to be conducted if it is absolutely necessary and a useable statement is expected. Individuals, who enjoy the minor's trust, may be present in every interview in addition to the legal guardian.

The PDV382 highlights the importance of conducting the interview in a supportive environment and to commence the interview with a conversation about the minor's circumstances and interests. In addition to personal details, this is to include information about the legal guardians, the school and any involvement of social services to date. The substantial

questioning phase should then begin with a comprehensive account by the minor, which may be in written form. The minor's correct use of any terminology should be established.

The PDV382 recommends the use of breaks and avoidance of interviews during night-time if possible. Verbatim protocols are to be composed of the interview if possible, especially for children's terminology. In individual cases, it might be useful to audio- and/or video-record the minor, to which the minor and the legal guardian need to consent. After the interview, the police interviewer is required to note down his or her personal impression without commenting on the minor's credibility.

3.2.1.8 Summary

The summarised PDV382 is the theoretical foundation upon which all police interviews with minors in Germany are conducted. Given its importance, the PDV382 seems very vague (e.g. it does not outline which training qualifies a police interviewer to question children) and provides insufficient depth in the description of the actual interview of minors. Specifically, the rapport phase, which is commonly used in other countries (see 3.3) is only briefly mentioned and no guidance about suitable or not suitable questioning techniques for children of different ages is provided.

3.2.2 Supplements by the individual counties

Germany consists of 16 counties and, while the previously outlined PDV382 is legally binding for police interviewers questioning children in all counties, every county can provide their own supplements to the PDV382. Consequently, all counties have been contacted and asked to provide their supplements to the PDV382 if applicable. An overview over the findings is provided below.

3.2.2.1 No supplements

Six of the 16 contacted counties (Brandenburg, Mecklenburg-Western Pomerania, North Rhine-Westphalia, Saxony, Saxony-Anhalt, Thuringia) stated that they do not have any supplements, but rely solely on the PDV382 when interviewing minors.

3.2.2.2 Unavailable supplements

Six of the 16 contacted counties (Baden-Wuerttemberg, Bavaria, Berlin, Hamburg, Hesse, Lower Saxony) suggested that they had supplements in addition to the PDV382, but indicated

that these were not available to the researcher as they were only accessible to qualified police officers.

3.2.2.3 Available supplements

Four of the 16 contacted counties (Bremen, Rhineland-Palatinate, Saarland, Schleswig-Holstein) specified that they used supplements to the PDV382 and provided them for the purpose of the present thesis. Each of these supplements is briefly summarised below.

Bremen

In addition to following the PDV382, police forces in Bremen are required to obtain minors' consent to the following addition of the advice:
I was instructed that I can request evidence to be taken for the purpose of exonerating myself. I am also aware that, by law, I can testify in regards to the accusation or stay silent and that, at any time, including prior to the interview, I can ask my legal guardian and a counsel for the defence of my choosing for advice.

Rhineland-Palatinate

The supplement to the PDV382 used in Rhineland-Palatinate consists of three additional instructions.

First, to further reduce the necessity of repeated interviews with minors, the supplement stresses the importance of using video recordings in interviews with minors whenever possible. Both, the interviewer and the interviewee, should be recorded and the recording should include the advice and the interviewee's consent to provide a statement. Further, to ensure that the video recording can be used as evidence in the subsequent trial, it is recommended that the judge of the trial interviews the minor. For crimes it is also recommended that the accused and the counsel for the defence can contribute to the interview.

Second, depending on the nature of the case, the prosecutor is to request legal guardians in lieu at an early stage of the investigation.

Third, all circumstances that could impact the credibility of the minor are to be assessed as early as possible. For this purpose, consultation with legal guardians, teachers or any other individuals in the minor's social environment, including social services if applicable, should

take place. If credibility cannot be established without a doubt, an expert in credibility assessment and developmental psychology [profession in Germany] is to be consulted.

Saarland

In addition to incorporating the same supplements as Rhineland-Palatinate – and thus strongly recommending that the interview is video recorded and conducted by the judge -, the supplement in Saarland explicitly stresses the prosecutor is responsible for minimizing any distress experienced by victims of crimes as a consequence of the counsel for the defence/the accused's questions or statements.

The supplement in Saarland explicitly stresses that interviews with minors can only be conducted by specifically trained police interviewers. The training is designed and conducted by the county's police training college and covers specific regulations (general and with particular focus on minors), and particulars of the psychological aspects of communicating with children and adolescents who have become the victims of crimes. In addition, there are special interview rooms in the county which are equipped to video record interviews with children. Police interviewers based in police stations equipped in such a way receive additional training in conducting video recorded interviews.

The supplement in Saarland stresses that a physical examination or a blood sample can only be obtained with prior permission by a judge, which can replace the legal guardian's consent. If this permission is not granted, any evidence obtained cannot be used even with if a legal guardian provides consent to this measure later.

Schleswig-Holstein

While the previously discussed supplements are indeed that – supplements to the universal PDV382 -, the interior ministry of Schlwesig-Holstein has published an independent, comprehensive police manual ("Leitlinie für die polizeiliche Bearbeitung von Sexualdelikten in Schleswig-Holstein"; abbreviated for the purpose of this chapter as LpBSSH) to support police interviewers of sexual crime victims. This manual also covers the particulars of interviewing minors. Consequently, the sections relevant to child interviewees will be reviewed here.

To start with, the introduction provided in the LpBSSH stresses the uniqueness of sexual crimes to police interviewers on the basis that victims of these crimes are to be treated in a way that conveys safety and understanding while at the same time ensuring that the interview is conducted in a way that does not open the interview to juridical criticism. The LpBSSH is therefore the only German theoretical manual which could be obtained that explicitly focuses on interviewees as victims rather than employing the same approach for victims and perpetrators of crimes.

The LpBSSH suggests that, in line with the PDV382, children (recommended age no younger than 10-12 years) need to be informed of their right to refuse to give evidence only if there is a reason to assume that the interviewee has indeed this right (i.e. is related to the accused). Supplementing the PDV382 further, the LpBSSH suggests that breaks are to be offered regularly to avoid exertion and concentration loss and recommends a break after 40 minutes for adults and after 20 minutes for minors. All breaks and activities undertaken in breaks need to be documented. Similar to the supplements provided by Rhineland-Palatinate and the Saarland, the LpBSSH recommends the initial interview to be conducted by the judge of the trial, especially if a subsequent interview might not be possible (due to use of the right to refuse to give evidence, absence or psychological distress).

The LpBSSH strongly recommends video recording all interviews after obtaining consent from the interviewee, unless this might impose additional distress on the victim, in which case an audio recording should be attempted. The entire video recording should be conducted by specially trained police interviewers in a room designed for the purpose of video recording so that the first interviewer can be questioning the interviewee while a second interviewer may operate the technology and provide additional questions to the first interviewer. Any additional individuals present in the technology room due to the involvement of a minor (e.g. legal guardian, social services) need to be documented.

Unlike the previously outlined supplements, the LpBSSH provides in-depth guidance on general aspects of interviewing children as well as an overview over phases and the order they should be conducted in. In particular, the LpBSSH encourages police interviewers to use generic prompts and open questions to increase the amount of information provided in free recall – if given, through remaining silent during breaks in the interviewees' statement -, and

to avoid repeated, closed or suggestive questions as well as remarks that could be perceived as accusatory by the interviewee.

For the specific structure of the interview, the LpBSSH suggests that legal guardians should be informed about the procedure prior to the interview.

The substantial phase should be used to welcome interviewees, to show them the interview room (with the possibility to let child interviewees play in there to help them acclimatise to the room), to advise interviewees and, if necessary, to build a rapport. This should then be followed by the interview commencing with a free narrative provided by the interviewee.

The third phase, which is no longer recorded, should then be used to provide any reassurance as needed, such as explanations of further proceedings, provision of interviewer's contact details and the acquisition of any physical evidence (e.g. photos of the victim).

3.3 The German police manual from an international perspective

For the purpose of the present chapter, 20 European countries – other than Germany - (Andorra, Austria, Belgium, Cyprus, Denmark, England, Estonia, Finland, Greece, Latvia, Liechtenstein, Luxembourg, Malta, Netherlands, Norway, Poland, Scotland, Sweden, Switzerland, Wales) were contacted and requested to provide any written guidance they make available to police interviewers interviewing minors. As a number of police interviewers and police stations contacted in regards to the overall German police manual discussed above erroneously stated that there are no manuals available or that the manuals would not be available to the public – although they could be located through a web search –, multiple requests were sent to each country if feasible.

Specifically, if possible, the interior ministry, the head of police forces in the respective country and the organisation responsible for training the police forces in the respective country were contacted to minimize the room for error.

3.3.1 No manuals

Of the 20 countries that were contacted, seven countries (Cyprus, Estonia, Greece, Luxembourg, Malta, Norway, Sweden), indicated that they had no manuals that matched the criteria of the request (i.e. manuals were not available in written form or did not have a

specific focus on minor interviewees). These countries were therefore excluded from the present review.

3.3.2 Unavailable manuals

Four countries had to be excluded because the police manuals were provided in a language that the author of the present thesis could not translate (Andorra, Finland, Poland) or because the country refused permission to provide their police manual for the purpose of the present thesis (Belgium).

3.3.3 Refusal to provide information

Four countries (Austria, Denmark, Latvia, Netherlands) refused to provide information on whether they had any written guidance available to police interviewers questioning minors although multiple requests were made to different agencies and it was stressed that any information obtained would be used strictly for the purpose of the present thesis. The availability of written guidance in these countries could thus not be established and the countries were excluded from the present review.

3.3.4 Available manuals

Of the 20 countries originally contacted, only five countries (England, Liechtenstein, Scotland, Switzerland, Wales) indicated that they had written manuals available to police interviewers questioning minors and consented to the usage of their manuals for the present thesis. The research has further indicated that England and Wales share the same manual, thereby reducing the number of different police manuals to four. As this number was considerably lower than the initial number expected, it was decided to include the guidance available to interviewers in the US (NICHD Investigative Protocol) as this is one of the most commonly used manuals in the literature and it would increase the diversity of the manuals analysed for the present chapter due to its unique format.

3.3.4.1 Manuals providing no specific guidance on how to interview minors

As noted previously (3.2.1), the PDV382, while outlining legal regulations in regards to minor interviewees, provides no actual guidance on how the interview should be conducted. Two of the five manuals, Liechtenstein and Switzerland, follow this approach and will thus be considered separately to the remaining three manuals (England & Wales, Scotland, US).

Further, due to the brevity of these two manuals, a separate summary will be provided for each of these manuals.

Liechtenstein

The Liechtenstein manual ("Jugendgerichtsgesetz"; JGG) commence by providing a definition of when this manual should be applied, namely for minors under the age of 18 (a distinction between children and minors is made analogous to the one in the PDV382) who have committed a crime and are (a) interviewed for the first time prior to their 18th birthday and (b) are questioned no later than two years after the minor's 18th birthday. This strong focus on minors as perpetrators that the Liechtenstein manual shares with the PDV382 is further emphasized through outlining appropriate methods to penalise minors. Excluding further sections that exclusively apply to minor interviewees as perpetrators, the Liechtenstein manual stresses the importance of reducing any delays and appearing in plain clothes when minors are involved; these suggestions are shared by the German PDV382. Special accommodations – in agreement with the PDV382 - to be arranged for minor interviewees are the assessment of the interviewees' mental state as well as other relevant circumstances and the presence of a legal guardian or other individual of the interviewees' choosing (if explicitly requested by the minor and not associated with any delays).

Summarized comparison Liechtenstein and German manuals

The German and Liechtenstein manuals are very similar which is to be expected due to the strong focus on minor interviewees as perpetrators rather than as witnesses or victims in both manuals. Even though the German manual provides very limited guidance in regards to the actual interview, the Liechtenstein manual provides no such assistance at all. Consequently, the Liechtenstein manual provides even less support to police interviewers questioning minors than the German manual.

Switzerland

The manual available to Swiss police interviewers questioning minors stresses four points. First, it is stressed that the manual should be used for all individuals who are younger than 18 years old at the time of the police interview or the personal identification. Second, the importance of questioning children (note that the Swiss manual does not use the more generic term "minor") as soon as possible is indicated. Third, if the individuals accompanying the interviewee could influence the statement, the police interviewer may prohibit the accompanying individual from being present during the investigation. Fourth, special regulations need to be considered if the interview or the identification parade are expected to

cause considerable distress child interviewees. To start with, identification parades may only be used if children explicitly request this or if the accused individuals' rights cannot be granted in any other way. Further, children may not be questioned more than twice during the entire course of the investigation and, if possible, the interviewer needs to be the same individual at both interviews. However, a second interview can only be conducted if (a) one of the affected parties could not execute their rights at the first interview or (b) if this is in the best interest of the investigation or the child interviewees. In addition, the manual states that only adequately trained police officers can conduct the interview with children and affected parties need to execute their rights through the interviewer. Observations made by the interviewer are to be noted down. The interview is to be video recorded if no identification parades are used (i.e. if the interviewees and accused individuals have no contact whatsoever).

Summarized comparison Swiss and German manuals

While the German manual provides slightly more in-depth guidance to police interviewers in regards to the summons, advice and the interview itself, the Swiss manual places slightly more emphasis on reducing the distress experienced by the child interviewee through limiting the number of interviews and clearly defining the necessary justifications for a second interview. Neither manual, however, provides concrete suggestions about how the actual interview with minors should be carried out which might lead to variability in the interviews conducted and in particular poses the risk that not all interviews are conducted to equal and as high standards as possible.

3.3.4.2 Manuals providing specific guidance on how to question minors

Unlike the Liechtenstein and the Swiss manuals, the remaining three manuals (England and Wales, Scotland, US) provide concrete suggestions about how interviews with minors should be conducted. As mentioned previously, the US manual differs considerably from the two UK-based manuals in the format of this information and will thus be considered separately.

United States

The NICHD Investigative Protocol (Lamb, Orbach, Hershkowitz, Esplin, & Horowitz, 2007) used in the US differs considerably from the two UK-based manuals in its format. Specifically, rather than providing generic assistance, it provides 11 sections that guide the police interviewer almost word for word through what should be said (although adjustments

depending on the specific circumstances may be made). Each of these sections is reviewed before an overall comparison to the PDV382 is made.
The first section of the NICHD protocol allows police interviewers to introduce themselves and establish fundamental ground rules for the subsequent interview. Specifically, interviewers establish if interviewees know the distinction between truths and lies and can apply this distinction. Interviewers also instruct the interviewees to indicate if a question is not understood, if an answer is not known or if interviewers make a wrong assumption.

The second section serves to build a rapport. Interviewers are to ask interviewees about things they [the interviewees] enjoy and to expand on one specific activity, which should not be based on fictional content.

The third section of the NICHD protocol is designed to accustom interviewees to the level of depth that will be required in the subsequent phases of the interview. To do so, interviewers use open questions that focus increasingly on specific aspects to obtain as much information as possible about a neutral event that should have preferably taken place at about the same time as the alleged crime. This procedure is then repeated about the day prior to the interview and, if interviewees fail to provide detailed responses, about the day of the interview.

In the fourth section, interviewers move on to the substantive part of the interview, namely the questioning about the alleged incident. Increasingly specific (yet open questions) should be used to prompt interviewees to make spontaneous allegations of the incident, perpetrators or related circumstances. If interviewees fail to make an allegation in response to open questions, interviewers use semi-open question through briefly summarising the allegation (without the mention of alleged perpetrators or any specific details) and indicating the source of this knowledge (e.g. teachers, doctors, other individuals). If interviewees continue to fail to make an allegation, the interview is terminated at this point and concluded with the eleventh section (see below).

The fifth section commences once interviewees make an allegation through the usage of open questions to obtain more details on allegations made. Contrary to the open questions used in the fourth section, interviewers can now incorporate aspects of the interviewees' allegations (in the interviewees' words and without providing unmentioned details) into the open

questions and request more information on these details. If more than one allegation has been made by interviewees, the same technique can be applied multiple times.

The sixth section consists of a break for interviewees that should be used by interviewers to identify any missing information and plan on how to obtain this information through additional open-ended questions.

If interviewers presume that forensically relevant information has not been provided and other techniques have failed, the seventh section recommends the careful usage of focused questions based on previous information provided by interviewees.

If the seventh section fails to elicit the information expected by interviewers, the eighth section recommends the usage of relevant prompts, such as conversations that included the information, disclosures, observations or injuries/marks suffered by interviewees.

If an allegation has been made, interviewers can then use the ninth section as a guide on how to obtain information on disclosures made by interviewees. This section provides advice on how to proceed if interviewees have mentioned the disclosure or if no information has been provided.

In the tenth section, interviewers prompt interviewees to provide any additional information that might not have been covered in previous sections.
The eleventh section terminates the interview through the discussion of a neutral topic (what interviewees will do after leaving the interview).

Summarized comparison US and German manuals

The guidance provided to US and German police interviewers differs considerably. Specifically, the US manual consists of a script that provides police interviewers with exact information on which questions should be asked in which order while the German manual provides no in-depth guidance on how questioning should be conducted. While the US manual might be criticized for being too rigid, the literature suggests that it is useful in eliciting accurate and detailed information from children (Cyr & Lamb, 2009; Lamb et al., 2009; Lamb, Orbach, Hershkowitz, Esplin, & Horowitz, 2007; Orbach et al., 2000; Sternberg, Lamb, Orbach, et al., 2001). Furthermore, the clearly-defined structure ensures comparability and

standardization across interviewers and provides multiple benefits over the rudimentary guidance provided by the PDV382.

England & Wales and Scotland

The following sections aim to provide a brief comparison of the police manuals available in England & Wales (Achieving Best Evidence in Criminal Proceedings; ABE; 'Achieving best evidence in criminal proceedings, 2011) and Scotland (Guidance on Joint Investigative Interviewing of Child Witnesses in Scotland; GJIICWS; Scotland & Scottish Government, 2011). The ABE has been designed to obtain the best evidence from vulnerable interviewees (e.g. vulnerable adults, individuals with special needs, etc.), but as these populations are not relevant for the present thesis, the sections in the ABE that focus on populations other than children will be ignored. In addition to the following comparison of the ABE and GJIICWS and the subsequent summary outlining differences and commonalities with the German police manual, a summary table is provided in appendix A.

Training

The GJIICWS does not indicate if any training should be provided to police interviewers, while the ABE stresses that children are a vulnerable population and should be questioned by specially trained interviewers. No specifics of the training are outlined, but the ABE indicates that the quality of the interviews needs to assured through developing, maintaining and enhancing the skills of interviewer. This should be supported by an agreed assessment protocol considering the national occupational standards for interviews with witnesses developed in Skills for Justice.

Recording

Both, the ABE and the GJIICWS recommend video recording the statement made by children provided that the crime to be testified about did not involve video cameras which might increase the likelihood of interviewees being exposed to further distress. In these situations, the manuals recommend the usage of audio recording equipment or, if this is not possible (e.g. due to the interviewees' unwillingness), a verbatim protocol.

Location and timing of the interview

Unlike the GJIICWS, the ABE prompts police interviewers to consider the location of the interview to ensure that interviewees feel comfortable (e.g. an interview suite or a more familiar location), that any disturbances are minimized, that no subsequent identification of the location

(e.g. through background noise or visuals) is possible and that all necessary materials (e.g. paper, pens) are available.

In regards to the timing of the interview, both manuals agree that, if possible, priority should be given to the interviewees' preferences and routines (e.g. bedtime routines, social activities where absence might detrimentally affect interviewees) and the availability of a recording suite. Situations, in which immediate, potentially shortened, interviews are necessary (e.g. to secure vital evidence) are exempted in both manuals. Similarly, while both manuals allow for the conduct of multiple interviews if necessary, a single session (if necessary with multiple breaks) is recommended to avoid the distortion of memories or unnecessary distress to the interviewee.

Consent

The ABE is in line with the majority of manuals reviewed previously in that it states that parents should be informed prior to interviews (unless this could endanger the investigation) and that parental consent for minors to be interviewed and video recorded is required and consent from interviewees is desirable. In contrast, the GJIICWS clearly states that no consent is required from either parents or interviewees prior to the interview. Further, no consent from either is required to view the video recorded interview for the purpose of the investigation, although consent is required to view the video recording for the purpose of competence evaluation and complaints from an interested (but not involved) party. This consent can be provided by interviewees older than 12 years without the additional need for parental consent.

Assessments

While the GJIICWS provides no guidance on any assessments that should be conducted on children, the ABE recommends the sensitive conduct of medical examinations (if penetration is alleged), psychiatric/psychological assessment (if appropriate, e.g. to assist the criminal investigation) as well as the desirable acquisition of comprehensive information about interviewees, including, but not limited to the age, culture, religion, special needs (physical, learning, (mental) health), cognitive and linguistic abilities, relationship to the alleged perpetrator and current or previous contact with public services.

Individuals present at the interview

Both manuals, the GJIICWS and the ABE, outline briefly which individuals might be present during the interview, although the ABE provides a more comprehensive list. Specifically, both manuals outline the need for two interviewers (the second interviewer might take a more

“active” role and be located in the interview room or take a more “passive” role and be located in the equipment room) and to allow a support person to provide emotional support to interviewees (but not get involved in the interview in any other way). The GJIICWS suggests limiting the number of individuals to be present to one or two interviewers. While the ABE discusses the potential need for interpreters for interviewees whose native language is not English or who are hearing impaired. The ABE further suggests the use of intermediaries whose purpose is to limit language confusions due to, for example, specific language used by interviewees or suboptimal wording in interviewer questions.

Futile interviews

The GJIICWS, but not the ABE, alert interviewers to the fact that children might not provide the information sought due to not being prepared to do so at the current point, due to suboptimal interview conditions or due to not having witnessed the incident in question. Likewise, it is mentioned that children might retract or change their statements at later interviews. None of these issues should reflect negatively on interviewers or interviewees, but they should be considered prior to the interview to avoid interviewer bias in obtaining confirmatory information only.

Conducting the interview

As the conduct of the actual interview is the main focus of this comparison, all aspects suggested in either of the manuals will be considered individually.

Preparation of the witness

The ABE and the GJIICWS differ considerably in their approach to outlining how interviewees should be prepared for the interviews. Specifically, the ABE provides very general guidance on three main points. First, it suggests that carers should be informed that they may comfort interviewees, but should aim to avoid discussing the incident to be reported prior to the interview. Second, interviewers are reminded to convey respect and sympathy for interviewees’ feelings at all stages of the interview. Third, the ABE recommends that interviewers attempt to build a rapport through discussing neutral topics, which, if necessary, can be done over repeated sessions. In contrast, the GJIICWS provides more specific suggestions on how to prepare interviewees. The GJIICWS recommends that, during the transport of interviewees, no incident-related topics should be addressed, that all individuals in the room should be introduced, and any misconceptions by interviewees (e.g. being

interviewed by the police equals being in troubles) should be addressed and the technological equipment should be explained.

Ground rules

Both manuals, the ABE and the GJIICWS largely agree on the ground rules that should be conveyed to minor witnesses, such as the need for children to indicate if they do not understand something or if interviewers have misunderstood something, the need to explain that interviewers were not present at the event and have no information on the event and need interviewees to provide as much information as possible, and the permissibility to ask for a break at any time. The GJIICWS includes some additional suggestions, such as clarifying the purpose of repeating questions being to help interviewers and not intending to accuse children, advising interviewees to provide information even though they believe interviewers to possess the information already, and explaining that interviewees can admit to not knowing an answer. The main difference between the manuals is that the ABE suggests instructing interviewees prior to the substantial interview phase (i.e. during the rapport phase), whereas the GJIICWS recommends indicating these rules when they become necessary.

Truth- and lie-telling

The ABE and the GJIICWS differ in regards to their recommendation about advising interviewees of the difference between truth- and lie-telling. While the ABE indicates that interviewees should be reminded early in the interview that they must tell the truth and to use examples to establish their ability to distinguish between truths and lies, the GJIICWS indicates that it is not permissible to assess interviewees' abilities to distinguish between truths and lies in any way.

Rapport

Both manuals, the ABE and the GJIICWS, recommend the use of neutral topics to build a rapport and accustom interviewees to the level of detail required during subsequent phases of the interview, but only the ABE recommends the integration of ground rules and the distinction between truth- and lie-telling in the rapport phase.

Practice interview

Both manuals suggest the consideration of a practice interview in which neutral topics are discussed to accustom interviewees to the level of detail required, but they differ in the specific guidance provided. The ABE proposes conducting a practice interview in the

preparation phase (i.e. prior to the actual interview), but the GJIICWS recommends conducting the practice interview between the rapport phase and the interview about the incident.

Free narrative

Both manuals stress the importance of allowing interviewees to provide an uninterrupted, free narrative at the beginning of the substantial phase of the interview. Both manuals strongly recommend the use of open-ended prompts and open questions to obtain more information about details provided by interviewees. Both emphasise the need to avoid mention of any aspects that have not yet been mentioned by interviewees. In addition, the ABE alerts interviewers to potential risks with interviewees, namely compliance (i.e. agreeing with interviewers to be helpful), acquiescence (i.e. responding to specific questions with "yes", even if they are in direct conflict with previous answers) and reticence (i.e. reluctance to provide information).

Questioning

Both manuals agree largely on the type of questioning which is suggested. Both manuals strongly recommend obtaining as much information as possible through the use of open questions and prompts and, if other question types need to be used, to revert back to open questions as soon as possible, usually as a follow-up question. According to both manuals, the next preferable, although less recommended question type, are specific questions that limit the range of response that can be provided and should be based on information that interviewees have already provided (e.g. "Where were you when you played this game?"; GJIICWS). Both manuals advise against the usage of forced-choice (the term used in the ABE) /closed questions (the term used in the GJIICWS) unless the previous question types have already been used unsuccessfully. Forced-choice/closed questions provide interviewees with a limited number of response options, which might not include the correct option and might thus prompt interviewees to agree with one of the options provided. Both manuals strongly advise against the use of leading questions, i.e. questions which imply an expected response or assume facts not previously mentioned by interviewees as the responses might subsequently be rejected as evidence. The GJIICWS further indicates that factors other than the wording of a question might have a leading effect, such as the tone of voice and misunderstanding interviewees. Both manuals advise against the usage of multiple propositions, complex language, jargon and alert interviewers to interviewees' potential lack of comprehension for

concepts such as dates and times, length and frequency of events, weight, height and age estimates. In addition to these shared suggestions, the GJIICWS recommends that interviewers avoid double negatives, long questions, abstract/hypothetical questions as well as questions using the word “why” which might imply accusation of interviewees or induce insecurity in interviewees who cannot provide an exclusive reason for behaviours conducted by themselves or other individuals. The GJIICWS supplements the concepts that might be difficult to grasp for interviewees with locations, pronouns and the passive voice.

The GJIICWS provides more comprehensive guidance than the ABE on how to seek clarifications from children. While the ABE suggests that interviewers justify the repetition of questions, the GJIICWS alerts interviewers that children may over- and under-extend the meaning of words, use imprecise anatomical terms, include bizarre elements due to a lack of comprehension (e.g. semen being described as “glue”) or inaccurately point to body parts either on the individuals present (i.e. the interviewer or the interviewee) or on body diagrams.

Props

While the GJIICWS strongly advises against the usage of props (drawings or other interviewee-created aids are not considered in detail in this manual) and only makes allowances for items brought along as comforters, the ABE provides a more in-depth discussion of specific kinds of props. Specifically, the ABE introduces the issue by outlining the potential advantages of props (to assess interviewees' language/understanding, to relax interviewees, to support the recall of events and to enable interviewees to give an account of the events) and the disadvantages of props (may increase the number of distortions, may engender fantasy, may upset interviewees or carers, young children may be unable to perceive the representational character of props) before discussing specific props in more depth. First, the ABE generally regards drawings (either created prior to or in the interview) as positive as they can increase recall and improve communication. Second, pictures, photographs and symbols are not discussed, but their use is allowed, especially if the interviewees’ communication is based upon them. Third, dolls, figures and similar props are regarded as controversial as they can assist in recollection and improve understanding, but may also cause distress, confuse interviewees or lead to a decrease in accuracy of the information provided.

Closure

Both manuals provide similar guidance about how the interview should be terminated. Both suggest that interviewers summarise the information provided (using the interviewees' language as much as possible), allow interviewees to ask any questions, outlines what is likely to happen next (without making any promises), thank interviewees for their time and effort (but not for the information provided) and ensure that interviewees are feeling positive and not distressed.

Additional needs

While the ABE and the GJIICWS consider additional needs that might arise, the two manuals focus on different kinds of needs. In particular, the GJIICWS outlines particular considerations to be made with very young children, such as the potential strong attachment to carers, the increased distress in the presence of strangers or strange environments, the bias to interact with adults on a more playful than serious level and the limitations in young children's language, which can result in reliable, albeit briefer, statements. In contrast, the ABE outlines the necessity to be aware of any therapeutic help interviewees may have received, receive at the time of the interview or might receive subsequently. The ABE also provides in-depth guidance on the support that interviewees might need prior to and during a trial, which is not the focus of the current chapter and was not considered further.

Complicating factors

The GJIICWS, but not the ABE considers complicating factors, such as multiple interviewees, children coached prior to interview and lengthy delays. The GJIICWS recommends the co-ordination of multiple interviewees by the senior investigating officer, to exclude any individuals other than the respective interviewee from the interview to minimize the effects of potential prior coaching and the careful planning for interviews when a lengthy delay has occurred.

Visual recordings

The GJIICWS, but not the ABE, provide recommendations on issues relating to the visual recordings of minor interviewees' statements. In particular, the GJIICWS states that any copy other than the two initial default copies requires authorisation of at least the rank of a Police Inspector, that interviewees' parents, child protection services as well as the accused may request to view the recording, and that the recording may be used to refresh the interviewees'

memories prior to cross-examination or as evidence-in-chief, but does not remove the requirement for interviewees to be available for cross examination.

Summarized comparison of the England & Wales, Scotland and German manuals

While the ABE is slightly more specific than the GJIICWS and the PDV382 in regards to the training that police interviewers should receive, all three manuals are comparable in their recommendations about training for interviewers as well as in their advice to video record the interview.

The ABE, GJIICWS, and PDV382 provide similar guidance in regards to the location, the timing and the duration of the interview, but differ considerably in other aspects relating to the preparation of the interview. The ABE and PDV382 largely agree on the consent required by the interviewee and the legal guardian as well as on the notification of legal guardians prior to the interview, but the GJIICWS differs by saying that no consent – by either the interviewee or the legal guardian – is necessary prior to the interview or for the video recorded interview to be viewed as long as this takes places in the context of the investigation. A further difference lies in the recommendation by the GJIICWS to be prepared that children may not provide any relevant information. The ABE, in contrast, provides more comprehensive information on individuals that may be present during the interview and is the only manual out of the three that suggests assessments and the acquisition of appropriate information prior to the interview.

The PDV382 provides only very limited guidance on preparation of interviewees, the inclusion of ground rules, the distinction between truth and lies and the establishment of a rapport, although the guidance provided largely agrees with the general suggestions made by the ABE and the GJIICWS. The ABE and the GJIICWS provide more in-depth guidance and while they are largely similar, there are some differences between them. In particular, the GJIICWS is more specific about how interviewees should be prepared, suggests that the ground rules are established as and when needed (rather than during the rapport phase as suggested by the ABE), does not permit interviewers to establish if interviewees know the distinction between truths and lies (which is strongly advised in the ABE) and differs in the design of the rapport phase (due to the omission of establishing ground rules and the distinction between truth and lies as well as the inclusion of the practice interview as part of the rapport phase while it is conducted prior to that in the ABE). In addition to the very

limited guidance the PDV382 offers on the previous issues, it provides only negligible guidance on the following issues and was thus not considered. Specifically, the GJIICWS provides more comprehensive guidance on the questioning phase (through assisting interviewers in seeking clarifications as well as discussing which language and concepts can be understood by children), while the ABE discusses the use of props in a more balanced and nuanced way (i.e. considering different kinds of props). The two manuals, the ABE and the GJIICWS, do not differ considerably in their suggestions for the closure phase.
Both, the ABE and the GJIICWS, provide guidance on additional needs interviewees might experience that are not addressed in the PDV382. In particular, the ABE considers the impact of therapy and assistance necessary prior to and during a trial, while the GJIICWS indicates particular considerations to be made when interviewing very young children.

The GJIICWS is the only manual out of the three that considers complicating factors, such as multiple interviewees, children coached prior to interview and lengthy delays.
The GJIICWS is the only manual that provides practical guidance on the storage, distribution and usage of the visual recordings of the statement.
Overall, the present comparison suggests that the ABE and the GJIICWS provide considerably more in-depth guidance on a variety of issues than the PDV382 does.

3.4 A German training manual

Based on the previous comparison, the PDV382 provides considerable less theoretical guidance to police interviewers than the English & Welsh ABE, the Scottish GJIICWS or the US NICHD Investigative Protocol. Before criticising the quality of German police interviews based upon the availability of theoretical guidance, it should be noted that practical training might impact on the quality of the interviews conducted to the same degree or to a higher degree than the theoretical guidance. Consequently, the training manual used in one of the counties (North Rhine-Westphalia; NRW) will be outlined.

3.4.1 North Rhine-Westphalia

3.4.1.1 Theoretical background

In line with the PDV382, the training manual suggests that the main aims of every interview should be the acquisition of detailed and factual information as well as the reduction of distress experienced by the interviewee. Acknowledging that the complete elimination of

distress experienced would be an illusory endeavour, the stress-inducing factors of a police interview are then outlined. First, police interviews are novel and therefore by definition stressful situations, which is further manifested through the more pronounced gap of control between minors and adults as a consequence of the additional authority of police interviewers. Second, interviewees are frequently expected to talk about a tabooed topic (i.e. sex). Third, the actions and situations to be reported frequently exceed children's cognitive and linguistic capacities. Fourth, abuse may be committed over long periods of time and the distinction of separate occasions may become more challenging as a consequence. Fifth, abuse situations, which will have frequently been portrayed as normal or as the children's fault, will be rightfully depicted as wrong actions during police interviews. Therefore, police interviews are assumed to always be distressing situations for children, regardless of whether they report genuine or implanted memories and police interviewers can only reduce, but not eliminate the distress experienced. Reduction of distress might take place through children finally being able to communicate their experiences with other individuals, the perpetrator being punished/removed, the discontinuation of abuse, or the re-establishment of an accurate perception of right and wrong actions.

3.4.1.2 Fundamentals of the interview

Acknowledging that minors differ in terms of their biological and mental age, the NRW training manual suggests three considerations that interviewers might find useful. First, like most adults, minors may find it reassuring to be given a sense of control over the decisions concerning police interviews. Specifically, while the training manual acknowledges that too much control over their own decisions might overwhelm minors and that certain factors might be uncontrollable and so a false illusion that minors can influence these might be detrimental, it recommends that interviewers attempt to warrant minors a reasonable, personalised level of control. Concrete suggestions on how to do this include allowing the minor to determine if a neutral topic (and if so which one) should be discussed prior to the actual interview and allowing minors between 7 and 12 years to refuse to give evidence and minors over the age of 12 to consent to providing a statement. Second, the training manual strongly recommends the avoidance of language that could be interpreted as accusatory by minors, such as "why"-questions, indications that minors have failed to obey to rules and regulations, the repetition of questions or the explicit instruction to tell the truth (as this might imply that interviewers expect minors to not comply with this request). Third, the training manual alerts interviewers to the differences in cognitive and linguistic capabilities between minors and adults and

consequently recommends being aware of minors' limitations (and thus to not attempt to push minors beyond these limitations) as well as avoiding restricting minors through enforcing the cognitive and linguistic abilities of adults with minors as this might lead to loss of valuable information or opportunities to verify the statement made.

3.4.1.3 Planning the interview

The NRW training manual suggests that the structure of interviews should be considered in the immediate planning thereof. The structure of interviews should be clearly planned and include sufficient breaks during which interviewees can relax in a way suitable for their personality (e.g. on their own or with the interviewer). Second, interviewees should be informed about the interview and associated expectations prior to commencing the interview. Specifically, the individual phases should be clearly explained and indicated throughout the interview. The minor should also be aware of the circumstances of the interview (e.g. where their carers will be located) as well as of the implications thereof (i.e. the legal proceedings that might result). The roles of the individuals present during interviews should be clarified and any potentially suggestible elements during interviews minimized (i.e. use of suggestive questions, focus on investigation-relevant content over not relevant content, minors' expectancies to have to provide an answer to every question, minors' assumptions that their statements might carry less weight than those of adults').

3.4.1.4 Preparation of the interview

The training manual suggests that five considerations should be made in the preparation of interviews. First, interviewers should consider different methods through which minors may be questioned without being too suggestable as well as the evidence available, which may be based on false assumptions. Second, interviewers need to evaluate how evidence has been obtained (e.g. who made the initial report) and if there have been opportunities when minors could have been influenced (e.g. initial interview with non-trained interviewers). Third, based on the previous two considerations, the training manual recommends the identification of topics that minors should be questioned about (provided that they mention the information in the free narrative) and suggests that interviewers plan how to address these topics if minors do/do not mention these spontaneously. Fourth, relevant information about minors should be acquired if necessary as this may assist in the selection of a neutral topic, the design of interviews (e.g. when and how many breaks will be needed) as well as of the interview locations (e.g. stuffed animals might convey to older minors that they are not taken seriously). Fifth, interviewers should obtain as much information as possible about individuals in contact

with interviewees. Interviewers should avoid creating expectations in their own mind for which confirmation is then sought in the interviewees' statements without exploring alternatives.

3.4.1.5 Conducting the interview

The training manual suggests conducting interviews in four phases. In the first phase, interviewers should strive to establish a rapport with interviewees to increase their motivation to testify, to assess their level of development and to decrease any distress experienced by describing what will happen.

In the second phase, interviewers should request a free narrative from interviewees to obtain accurate and detailed information. Especially with younger children, it might be useful to remind them that interviewers were not present and that interviewees are thus the only source of information available. To increase the quantity and accuracy of the information provided, it might be useful to use open questions and prompts, allow breaks and to praise interviewees if they indicate uncertainty or lack of knowledge in regards to specific elements.

The third phase allows interviewers to ask questions to obtain additional information or clarify previously obtained information. To increase the accuracy and quantity of information provided, the NRW training manual suggests following certain rules. These rules include the recommendations to ask the most open question possible (and thus avoid closed questions), to include at least three options and a possibility to add a response if asking forced-choice questions, to avoid question repetition with brief delays and to include questions that interviewees can answer after questions which could not be answered. This phase should be concluded through giving interviewees the option to add anything that might not have been mentioned.

The fourth phase should be used to summarise interviewees' statements (as far as possible in their own words) to ensure that all information has been understood correctly and to establish a positive end for interviewees, for which the neutral topics used in the first phase might be addressed again.

3.4.1.6 Summary of training manual

As to be expected from a training manual, the NRW training manual provides more practical suggestions on how interviews with minors should be conducted, in particular which question

techniques should be used and which question techniques should be avoided. Therefore, the training manual is a useful addition to the PDV382 and should be considered in other counties.

3.5 Summary of police manuals

Compared to the English-speaking manuals, the German manual seems to provide the least guidance to interviewers. Specifically, it is very general and does not provide any detail on how interviews should be designed to increase the quantity or accuracy of information obtained. Therefore, the suggestions provided in the NRW training manual would provide a useful addition to the PDV382.

Furthermore, while the PDV382 was at a level comparable to the Liechtenstein and Swiss manuals, its guidance was considerably poorer than the ABE, GJIICWS and even the NICHD, which followed an entirely different format to the other manuals reviewed in this chapter. The PDV382 should therefore be revised to either provide more depth (like the ABE and the GJIICWS) or to suggest a useful template (like the NICHD) to improve the quality of police interviews conducted and thus the accuracy and quantity of information provided in children's statements.

4 Study 2 - Initial assessment of children's and adults' knowledge and understanding

4.1 Introduction

Study 1 suggested that the guidance on interviewing children for European and US police interviewers was not uniform, but differed in the level of detail provided, in terms of specific recommendations made as well as in the suggested format of the interview (page 59). These differences may amplify the challenges experienced by child interviewees during police interviews, which were outlined in depth in chapter 2. Of particular relevance to police interviews were challenges which related to the retrieval of information, such as children's susceptibility to different questioning techniques and misinformation from diverse sources (Battin et al., 2012; Bruck & Ceci, 1999; Ceci & Bruck, 1993; Ghetti & Alexander, 2004; Pezdek & Hodge, 1999) as well as children's sensitivity to factors relating to interviewers and the situation of the interview itself (Almerigogna et al., 2008, 2007; Carter et al., 1996; Ceci et al., 1987; Davis & Bottoms, 2002; Klemfuss et al., 2013; Lowenstein et al., 2010; Quas & Lench, 2007; Quas et al., 2014; Rush et al., 2014; for a more comprehensive discussion of these issues see 2.6).

These challenges have been identified and described in great depth in the literature, but to the author's knowledge, only one study so far has attempted a comprehensive and in-depth investigation of more than challenge in the same study (Hülsken, 2011). In this study, German first graders (age range 6 to 7 years), fourth graders (age range 8 to 11 years) and adults were asked (a) to provide a reason for why a police interviewer displayed a certain behaviour towards a child interviewee in the context of a videotaped mock police interview, (b) to classify whether this behaviour would possibly have a beneficial or detrimental effect on the child interviewee and (c) to provide a justification for this classification. Of the twelve displayed behaviours, six have been suggested in the literature to have a beneficial effect on actual child interviewees (rapport-building, open questions, use of models, gist question repetition, evaluation of interviewee's well-being, assistance in court-related procedures), while the other six factors have been suggested to have a negative effect on child interviewees (intimidation, developmentally inappropriate language, leading questions, closed questions, repeated questions, negated questions). Using a large sample (>400 participants), this study

suggested that participants in all three age groups, but especially younger participants, found it easier to explain why beneficial as opposed to detrimental behaviours were displayed – suggesting that the beneficial behaviours could be understood at a younger age. Also, older participants were more able to provide better justifications for why a certain behaviour would have a beneficial or detrimental effect on child interviewees, suggesting that older participants had a better understanding of how different behaviours could affect child interviewees. Overall, this study suggested that younger participants were less knowledgeable about police interviews and how different interviewer behaviours might affect child interviewees and thus the statement that would be provided.

Therefore, study 2 of the present thesis followed a similar approach to the one used previously (Hülsken, 2011) and asked participants to explain fundamental components of police interviews. Unlike existing studies which engaged participants in mock interviews, study 2 evaluated participants' understanding based on a video-taped mock police interview and allowed for comparison between different age groups. As this approach is novel, nine components of police interviews were selected for exploratory investigation. Based on a review of the relevant literature as well as a training course for police interviewers who question children which was attended by the experimenter, these nine components emerged as essential to fully understand a police interview. Thus, they were selected to allow for a comprehensive investigation of whether participants of different ages could understand the most common and frequent elements of police interviews and thus the dynamics of police interviews as a whole. Each of these components is reviewed in brief before a prediction regarding participants' knowledge and understanding of the respective component is made.

Prior to evaluating participants' understanding of police interviews, their *basic understanding* in regards to police forces was assessed, e.g. whether participants would be able to identify a policeman on the basis of his uniform and whether participants would realise that the duties of police forces encompass more than engaging with criminals. Understanding of these issues was regarded as both essential to the current study as well as to real-life police interviews to ensure that interviewees could recognise the situation of a police interview and the implications thereof (e.g. necessity to tell truth, potential consequences of providing a statement). In line with the other predictions made in this chapter, it is hypothesised that older participants (i.e. 7-year-olds attending the second grade, 8-year-olds, 9-year-olds, 10-year-olds

and adults) would demonstrate a similar level of understanding, but the youngest participants (i.e. 6-year-olds and 7-year-olds attending the first grade) would show less understanding.

Subsequently, based on the manuals reviewed in study 1, participants' knowledge of selected *common components of police interviews* was investigated. As study 2 was conducted in NRW, Germany, a county in which police forces largely write down the interview while questioning children, participants' understanding of this procedure was assessed along with their understanding in regards to why the policeman would ask so many questions – a suggestion shared by most police manuals reviewed (page 51), especially for younger children. The final set of questions was derived at from the literature, which suggested that children may hold negative attitudes towards the police which might discourage them from contacting the police or from communicating effectively during a police interview (Block et al., 2010; Low & Durkin, 2001; Malloy et al., 2011; Powell et al., 2008; Saywitz, 1989); therefore, it was assessed if participants differed in regards to their focus on the solely punitive role executed by police forces. Failure to comprehend these common components of police interviews could result in reluctance or refusal to provide a statement in actual police interviews, thereby adversely affecting the quality and quantity of information provided. Given the youngest participants' lack of experience with any of these factors (i.e. written protocol of conversation, large number of one-sided questions and true roles of police forces), it was predicted that first graders (i.e. 6-year-olds and 7-year-olds attending the first grade) would be less knowledgeable than the other age groups.

To further explore participants' knowledge of non-punitive aspects of police work, participants' ability to identify *co-operative child interviewee behaviours* was explored. Being able to clearly distinguish between co-operative and uncooperative interviewee behaviours demonstrated by interviewees and to consequently adopt the most appropriate behaviour is essential to fully contribute to police. Specifically, participants were asked to classify the child actor's behaviour as positive or negative and to provide a justification for their classification at two points in the interview which could be perceived as ambiguous (i.e. after the policeman mentioned that lying would be a crime, and after the child actor mentioned the word "prison"). These points in the interview were selected because the implicit threat in the policeman's statement could be regarded as a response to misbehaviour on the child actor's part, especially because young children have been found to be vulnerable to authority as conveyed by a police uniform (Lowenstein et al., 2010) . Also, a past study suggested that the mention of the word

"prison" led 6-year-olds to classify displayed behaviour as negative, even in the absence of further evidence to support this suggestion (Hülsken, 2011). Therefore, it was predicted that first graders (i.e. 6-year-olds and 7-year-olds attending the first grade) would be less knowledgeable about these issues than the other age groups.

Related to the idea of co-operative interviewee behaviours during police interviews is the necessity to follow *ground rules*, in particular the ground rule to provide truthful evidence, which is highlighted in various police manuals (page 50). For interviewees to comply to this request, they need to understand that (a) lying is wrong and that (b) there might be serious consequences resulting from lying to authority figures. Given the complexity of these processes, it was predicted that first graders would be less knowledgeable than the other age groups, while older participants would be more knowledgeable.

As discussed in chapter 2 (2.2), ground rules are not the only element that distinguish police interviews from everyday conversations and interviewees need to understand the key duties of police forces to fully comprehend the implications of providing a statement. Therefore, participants' understanding of *the overall situation of police interviews* was assessed. Specifically, participants were asked to summarise what happened during the mock interview as well as to indicate likely preceding and subsequent events to explore participants' expectations of police interviews as research has indicated that children and adults are frequently not familiar with the procedures revolving around police interviews (Block et al., 2010; Malloy et al., 2011; Saywitz, 1989). Also, participants' expectations in regards to the presence or absence of a support person (i.e. a parent) during police interviews and the degree of familiarity with the police interviewer were assessed. Most police manuals recommend the presence of a support person (pages 36, 43, 44, 49), and some manuals suggest pre-interview meetings to allow child interviewees to familiarize themselves with the interviewer (page 50) as the perception of increased supportiveness can impact positively on children's statement (Almerigogna, Ost, Akehurst, & Fluck, 2008; Almerigogna et al., 2007; Carter, Bottoms, & Levine, 1996; Davis & Bottoms, 2002; Klemfuss, Milojevich, Yim, Rush, & Quas, 2013; Quas & Lench, 2007; Quas, Rush, Yim, & Nikolayev, 2014; Rush et al., 2014). Given the unfamiliarity of children and adults with the legal system and police protocols it was predicted that all age groups would perform badly, but adults would be more knowledgeable than children.

To assess participants' understanding of the overall situation of police interviews in more depth, the understanding for *roles within the interview* was compared between participants. As children may be more susceptible to misinformation than adults (Battin, Ceci, & Lust, 2012; Bruck & Ceci, 1999; Ceci & Bruck, 1993; Ghetti & Alexander, 2004; Pezdek & Hodge, 1999) because they have limited experience of assuming the role of a situational expert (i.e. about what they have witnessed; Deutsche Vereinigung für Jugendgerichte und Jugendgerichtshilfen e.V., 1997), participants' ability to identify the perceived "expert" at different stages in the mock interview was compared (note that the role of the situational expert changed throughout the interview). Following these suggestions, it was predicted that adults would be more knowledgeable than children, although it was expected that an age difference would emerge for child participants.

Most manuals suggest that part of the interviewer's role may be to adhere to *situational constraints of police interviews*, such as time-keeping and the offer of breaks (pages 36, 39, 44, 49) while attempting to obtain as much information as possible about the event reported through minimizing the time spent discussing irrelevant or potentially suggestible topics to avoid over-exerting or misleading child interviewees. Furthermore, some manuals limit either the number of interviews to be conducted with child interviewees, the duration of the interviews or both (pages 35, 47); this may increase the need for the interviewer to obtain as much information as possible in a limited time and thus the need to avoid irrelevant topics. Young children, who are less proficient in the understanding of conversations – and thus the principle of relevance – might struggle to comprehend these constraints and thus fail to understand why an interviewer may avoid some topics and instead focus on other, possibly unpleasant topics, which could lead children to experience anxiety as a consequence. As children gain more experience of these constraints, for example through classroom exposure, they are less likely to be affected by this issue. For study 2, it is predicted that children with the most limited experience of situational constraints (i.e. 6-year-old children and 7-year-old children attending the first grade) will be less knowledgeable than the other age groups.

While the previously described components create a useful framework to assess participants' understanding of police interviews, it was essential to compare participants' understanding of *specific questioning techniques* across different age groups as this component has received the most attention in the literature and is clearly the most prominent aspect of every police interview. For the purpose of study 2, five questioning techniques were focused on, which are

briefly reviewed in turn, and separate predictions are made for each of the techniques assessed, namely rapport-building, the use of models, jargon used by police forces, open questions, as well as two aspects of repeated questions and their effect on the mock interviewee.

All reviewed police manuals recommend that police interviewers should strive to build a rapport prior to the substantial questioning phase, although the exact guidance on the best way to achieve this differed considerably between different countries (pages 36, 44, 50). For example, the German training manual (page 58) suggested that the rapport-building phase may be dropped with older individuals as this phase may be perceived as patronizing by adolescents. This concrete suggestion contrasted directly with the majority of research, which suggested that establishment of a rapport may lead to numerous potential benefits throughout the entire interview, such as improved-wellbeing of the interviewee, increased resistance to suggestibility and amplified accuracy and quantity of the information reported (Abbe & Brandon, 2013; Almerigogna, Ost, Bull, & Akehurst, 2007; Davis & Bottoms, 2002; Holmberg & Madsen, 2014; Kieckhaefer, Vallano, & Schreiber Compo, 2014; Sternberg et al., 1997; Sternberg, Lamb, Orbach, Esplin, & Mitchell, 2001; Vallano & Compo, 2011) in particular with minors (Jack, Leov, & Zajac, 2014; Price, Roberts, & Collins, 2013; Sternberg, Lamb, Orbach, et al., 2001). Given these clear benefits of rapport-building as identified in the literature, it is predicted that all age groups will demonstrate a good understanding of this technique with adults outperforming first graders (i.e. 6-year-olds and 7-year-olds attending the first grade, the youngest participants in study 2) due to adults' increased awareness of young children's needs.

A further benefit, which has been suggested to result from prior-rapport building, is the increased usage of open questions and prompts (Leander, Granhag, & Christianson, 2009). Open questions and prompts ask the interviewee to freely report all available information in regards to a topic, with minimal input from the interviewer. These questions may lead to increased accuracy and quantity of information provided and decreased suggestibility to misinformation (Dale, Loftus, & Rathbun, 1978; Dent & Stephenson, 1979; Goodman & Aman, 1990; Horowitz, 2009; Hutcheson, Baxter, Telfer, & Warden, 1995; Lamb et al., 2000; Lamb & Fauchier, 2001; Lamb, Orbach, Hershkowitz, Horowitz, & Abbott, 2007; Oates & Shrimpton, 1991; Orbach & Lamb, 2001; Ornstein, Gordon, & Larus, 1992; Phillips, Oxburgh, Gavin, & Myklebust, 2011), which explains why most police manuals reviewed

recommend that open questions should be used as frequently as possible and more so than other questioning techniques (pages 44, 51, 58). It was predicted that adults would be better than children at identifying an open prompt.

Another questioning technique included was the use of models. Given the controversial perception of models in the literature – e.g. anatomically correct dolls and body diagrams were largely found to be misleading (Poole & Dickinson, 2011) and their usage was thus not advised (page 52), while models created by child interviewees themselves, such as drawings, have been suggested to increase the quantity and accuracy of information and are recommended by the ABE (page 52) - , the understanding of a basic model was compared in study 2. Specifically, the mock interviewee was shown to create a simple model using familiar objects (i.e. toys) and to expand on his statement based on guiding cues provided by the mock policeman. These characteristics of a model – child-generated, using familiar objects, and expanding knowledge rather than generating new knowledge in response to a model – may be beneficial on children's ability to provide accurate and detailed statements. Based on a previous study (Hülsken, 2011), it was predicted that there would be no significant differences between age groups, thereby ensuring that all participants would be able to provide at least some correct responses.

Participants were also asked to explain the usage of jargon by the mock policeman. Jargon, or, more general, complex language, has repeatedly been identified as a misleading factor for both children and adults (Kebbell et al., 2010; Saywitz, 1989). The misleading effect was suggested to be due to individuals' inability to monitor their failure to comprehend complex language and thus respond appropriately (Peters & Nunez, 1999) – even though the correct response is known and might have been provided if the question had been expressed in easier wording. While some manuals suggested the use of child-appropriate language, only two manuals provided specific guidance on how this may be achieved (page 51). This may be an issue as legal interviewers, including police interviewers, were found to use complex language to mislead the interviewee for their own motives (Zajac, Gross, & Hayne, 2003). Given the documented failure of all age groups to monitor their own understanding (Peters & Nunez, 1999), it was expected that all age groups would perform poorly on this question technique, although adults were predicted to outperform all children due to their increased exposure to jargon.

Another questioning technique for which participants' understanding was assessed were two aspects of repeated questions and their effect on the mock interviewee. Question repetition has been associated with shifts in the responses provided by children, usually from accurate responses to inaccurate responses (Krähenbühl & Blades, 2009). Due to this frequent observation that question repetition decreased the accuracy of the information provided in subsequent responses, study 2 compared participants' understanding for (a) why a question was repeated and for (b) why question repetition might lead to a shift in response. In addition to an immediate, verbatim repetition, the mock interviewee's statement was rephrased into a question and repeated later in the mock interview to assess if participants' understanding differed depending on the way the target information was repeated. It was predicted, that since adults have more experience with the motivations for repeated questions, adults would demonstrate better understanding than children.

The final component to be assessed was whether participants could understand two potentially interview-related words (i.e. "fib" and "crime"). While failure to understand these terms would not necessarily disadvantage less knowledgeable participants, more knowledgeable participants might benefit from their knowledge. The main purpose for including these questions, however, was so that potential problems with the used mock interview could be identified (i.e. if a large number of participants failed to demonstrate any comprehension of these terms, the mock interview might need revision before it could be used in further studies). The youngest children in study 2 (i.e. 6-year-olds and 7-year-olds attending the first grade) were predicted to be least knowledgeable about these terms and would be outperformed by older children, who in turn would be outperformed by adults.

The main hypotheses made can be summarized as follows:

(a) For all components discussed, adults will be the most knowledgeable age group
(b) For all components discussed, 6-year-olds and 7-year-olds attending the first grade will demonstrate less understanding than older age groups
(c) Given that most of the challenges identified in chapter 2 are directly related to specific questioning techniques, this component will be more challenging to participants and all participants, including adults, will be less knowledgeable about this component than about the other components assessed

4.2 Method

4.2.1 Participants

Ethical permission was granted by the Department of Psychology of the University of Sheffield.

Children from four German primary schools and their parents were recruited for the present study. For participant numbers, participants' ages and standard deviations of their ages, see table 4.1.

As adult participants were the parents of the recruited children, they were invited to attend a one-hour session at their children's respective schools prior to their children's participation to take part in the study themselves. They were also given the opportunity to provide written consent without participating themselves. If parents had not provided written consent, had declined children's participation or had provided ambiguous consent (e.g. returning the form, but not indicating a response), children were not allowed to participate. Simultaneously to providing consent for t children to participate, parents were also asked for permission to voice-record children's responses. Heads of schools also consented to this measure.

		Number of participants	Mean age (months, unless otherwise denoted)	Standard deviation (months, unless otherwise denoted)
6-year-olds			80.07	2.69
	Males	15	80.94	2.02
	Females	15	79.07	3.07
7-year-olds, 1st grade			87.81	2.76
	Males	15	87.33	3.02
	Females	17	88.24	2.54
7-year-olds, 2nd grade			92.73	2.97
	Males	15	93.40	2.80
	Females	15	92.07	3.08
8-year-olds			99.63	3.47
	Males	18	99.00	2.87
	Females	15	100.40	4.05
9-year-olds			114.53	3.25
	Males	15	115.33	4.06
	Females	15	113.73	1.98
10-year-olds			124.11	3.48
	Males	20	126.10	2.92
	Females	15	121.47	2.17
Adults			41.70 years	3.75 years
	Males	15	42.07 years	4.11 years
	Females	15	41.33 years	3.75 years

Table 4.1 Mean ages and standard deviations for participants in study 2

4.2.2 Experimental materials

For study 2, video sequence *a* was used. This video sequence was recorded using a Canon Powershot A480 camera with a 640*480-pixel solution, capturing 30 images per second.

Video sequence *a* showed a policeman (as apparent from his blue German police uniform) sitting opposite a boy who looked about 12 years old in an office-like setting with computers and files (for a still image taken from the video sequence see figure 4.1). The policeman interviewed the boy about an accident that the boy had allegedly witnessed (for a complete transcript of the video sequence see table 4.2). Both actors were shown from the side and the camera was in a fixed position throughout the video.
A novel questionnaire *"overall understanding of police interviews"* was constructed for this study by the experimenter (see table 4.2).

A Samsung R-780 laptop (17.3") was used to present the video sequence. For children, it was shown with Windows Media Player in full screen mode with the volume set to the maximum level. For adults, the video sequence was projected onto a large screen at the front of the room and the volume was adjusted by the aid of external loudspeakers.
Children's responses were recorded with the android app "Easy Voice Recorder" on a Sony Xperia J mobile phone.

Figure 4.1 A still image taken from video sequence a used in study 2

4.2.3 Questionnaire

As this was the first study to investigate children's understanding of such a large number of components comprised in police interviews, a novel questionnaire *"overall understanding of police interviews"* (see table 4.2) was designed. For a summary of the components that were assessed along with associated questions see table 4.2. For a translated copy of the questionnaire *"overall understanding of police interviews"* along with an overview over the corresponding content of the video sequence see table 4.2.

4.2.4 Procedure

Prior to study 2, all participants were informed that participation was voluntarily and that they could withdraw from it at any point without giving reasons. Also, it was explicitly stressed that declining to participate or terminating the study before its end would have no adverse consequences on participants. All participants completed the study.

All children participated individually in a separate room within their respective schools. Prior to starting the video sequence, children were given 30 seconds to inspect a still image from the beginning. Children were then asked the corresponding questions (see table 4.2). Each segment

of the video sequence (see table 4.2) was then played separately and children responded verbally to the corresponding questions (see table 4.2). All responses were audio-recorded.

Adults participated in groups and were therefore asked to refrain from talking to other participants during the study. All adults complied with this request. To allow testing in groups, the video was displayed on a screen at the front of the room and the volume was adjusted appropriately. Adults responded in writing. No other adjustments to the method were made.

After completion of the study, all participants were thanked for their participation, debriefed and given the opportunity to ask questions.

Video segment (translation of the original German script)	**Questions associated with this segment**
[Still image from the beginning of the video]	1. Look at the picture. Do you have any idea what kind of people they are? 2. Where are the two people? 3. What is the person on the left *[pointing to person on the left]* wearing? 4. Why is he wearing that? 5. How old is he roughly? 6. How old is the person on the right *[pointing to person on the right]* roughly?
Policeman: Hello, I am Paul Bremer and you must be Matthias Müller. Before we talk about the accident, how are you? Boy: I'm fine, thanks. I'm just a bit nervous because I have never been questioned by a policeman before.	7. Why does the man say his name? 8. Do the two people know each other? *[If participants respond with yes/no:]* a. Why/why not?

Policeman: You needn't be. Do you want anything to drink by chance? Fanta or Sprite? Boy: No, thanks, I'm not thirsty. Policeman *(while bending forward)*: Okay, but before we start, I have to tell you that you mustn't fib even the littlest bit because this would be a crime. So think well about what you say, alright? Boy *(after being silent for a few seconds)*: Alright.	9. Do you know the word "fib"? [*If participants indicate they know the word "fib", but do not provide a definition/description:]* a. What does this word mean? 10. Why does the man say "fib"? 11. Are you allowed to fib in this situation? *[If participants respond with yes/no:]* a. Why/why not? 12. How is the boy behaving? *[If generic good/bad response:]* a. Why? 13. Do you know the word "crime"? *[If participants indicate they know the word "crime", but do not provide a definition/description:]* a. What does this word mean? 14. Why does the man say "crime"? 15. Has anybody committed a crime in the video? *[If participants respond with "yes":]* a. Who? *b.* Why do you think so?

Policeman: Okay, then tell me everything that you saw yesterday, please. Boy: Well, I went home from school and the traffic lights were red. There were a blue and a red car driving over the crossing. Suddenly, there was a loud bang. I closed my eyes because of being afraid and when I opened them again, two men were honking and yelling. After that, the blue and the red car looked like a red-blue car. I was relieved when my teacher, Ms Petersen, saw me and calmed me down.	16. Why does the man say "please"? 17. What are the two people talking about? 18. Why are the two people talking about that? 19. Who has seen this? 20. Where was this? 21. Why is the man writing? *[If generic "he's taking notes"-response:]* a. Why is he taking notes?
Policeman: You said that the blue and the red car seemed like a red-blue car – then they surely drove against each other, didn't they? Boy: Yes, I think so. You are a policeman, you are always right and you have seen many more accidents than many other people. Policeman: Yes, but I didn't see that accident. This is why I need your help. So... were the cars wedged? Boy: Mhm... wedged.... mhm... I think so.	22. Why does the man say "wedged"? 23. Is the word "wedged" important? *[If participants respond with yes:]* a. For whom? b. Why (is it important)?

Policeman: Do you maybe have problems with the word “wedged”? Boy: Yes. Policeman: Okay, wedged is for example if you have two kinds of modelling clay and you want to separate them, but parts of the red [modelling clay] are stuck in the blue [modelling clay] and parts of the blue [modelling clay] are stuck in the red [modelling clay]. Have you understood that? Boy: Yes, sometimes my mum tells me off when I do that because she thinks I need new modelling clay. Policeman: So, were the cars wedged or driven against each other?	24. Why does the man talk about modelling clay? 25. Why does the man not talk about the boy’s mum? 26. Should the man talk about the boy’s mum? *[If unjustified yes/no response:]* a. Why/why not?
Boy: I think they were wedged. Policeman: Wedged like two balls of modelling clay? Boy: Yes. Policeman: And did you see that as well? Boy: No.	27. Why does the man repeat his question? 28. Why does the boy say “yes” and then “no”?

Boy: I was too afraid.
Policeman: Alright, then you can show me what happened. Here, I have a map of the school and the crossing where you were. There's the school – and where were you? *(hands the boy a playmobil figure).*
Boy: I stood exactly here *(puts the playmobil figure close to the school).*
Policeman: Alright and where was the blue car? *(hands the boy a blue car)*
Boy: It was here *(places the blue car on the road that the playmobil figure is facing).*
Policeman: Alright. Finally, where was the red car? *(hands the boy a red car).*
Boy: It was there *(places the red car in a right angle to the blue car and parallel to the playmobil figure).*
Policeman: Can you also show me where the traffic lights were?
Boy: They were there *(points to a point that the playmobil figure and the red car are facing).*
Policeman: And which colours did the traffic lights display?
Boy: They were red.
Policeman: For you or for the drivers?
Boy: For me.

29. Why does the man give the boy a sheet of paper?
30. Why does the man give the boy the cars and playmobil man?
31. Why does the man talk about traffic lights?

Policeman: And where was the little man of the traffic lights? At the top, at the bottom or in the middle? Boy: Really, really at the top. Policeman: This means you have to wait, doesn't it? Boy: Yes, my teacher, Ms Petersen, taught us this at school. Policeman: But weren't both cars driving?	32. Why does the man ask so many questions? 33. Why does the man not talk about the boy's teacher? 34. Should the man talk about the boy's teacher? *[If unjustified yes/no response:]* a. Why/why not?
Boy: Yes, they were. Policeman: Alright, that's all. How do you feel right now? Boy: Fine. It was really interesting to watch a real policeman at work. Policeman: Do you still have any questions? Boy: Yes, do the drivers have to go to prison now? Policeman: No, probably they won't have to go to prison. But you helped me a lot in determining who has to pay how much to repair the cars. So thank you really much. And, of course, both drivers will have to drive more carefully in the future.	35. Why does the boy say "prison"? 36. Does anybody have to go to prison? *[If participants respond with yes:]* a. Who? b. Why? 37. How has the boy behaved? *[If generic good/bad response:]* a. Why? 38. What happened in the video? 39. Has the child given too much/too less/enough information? *[If unjustified response:]* a. Why? 40. What happens after this video? 41. What happened before this video? 42. Where is the boy's mum?

Table 4.2 Transcript of video sequence a and copy of questionnaire "overall understanding of police interviews" used in study 2. Sections indicate where the video sequences were paused to enable participants to respond to the associated questions.

4.3 Results

4.3.1 Scoring

After completion of the study, participants' responses were scored as correct (i.e. in line with the literature or demonstrating understanding of the demonstrated behaviours) or incorrect (i.e. lacking understanding). An overview of questions and responses that were scored as correct along with the overall component that the respective questions assessed can be found in table 4.2. The initial analysis consisted of 91 questions as question components were analysed separately (e.g. question 9 "do you know the word fib?" would be coded in regards to whether participants provided a spontaneous definition or a yes/no response, the format of the spontaneous definition, such as description, definition, example or a combination of the format – if provided -, if the definition provided was correct or needed to be corrected by the experimenter, if the experimenter asked a follow-up question [for yes/no responses], whether participants subsequently provided a definition or a yes/no response [for initial yes/no response], the format of the subsequent definition [same categories as for spontaneous definition] and if the definition provided was correct or needed to be correct by the experimenter)

Nearly three quarters of the questionnaires (150 out of 220; i.e. 68.2%) were scored independently by a second marker. The two markers agreed on 13634 out of 13650 responses (99.9%).

Question number and question	Responses scored as correct	Overall component assessed
1) **Look at the picture. Do you have any idea what kind of people they are?**	Policeman and Boy/Child/Pupil/Witness *(correct identification of both people)*	Basic understanding of police interviews
2) **Where are the two people?**	Police *(explicitly mentioned)*	Basic understanding of police interviews
3) **What is the person on the left** *[pointing to person on the left]* **wearing?**	Police uniform *(both terms explicitly mentioned)*	Basic understanding of police interviews
4) **Why is he wearing that?**	It is characteristic for police; It belongs to police uniform; Policemen always wear this	Basic understanding of police interviews
5) **How old is he** *[pointing to person on the left]***?**	*This question was not analysed as it was only included to ensure participants would rate the policeman as considerably older than the child*	
6) **How old is he** *[pointing to person on the right]**?***	*This question was not analysed as it was only included to ensure that participants would rate the child as considerably younger than the policeman*	
7) **Why does the man say his name?**	To introduce himself; To build a rapport; To take away fear	Specific question techniques

8) Do the two people know each other?	*Due to the restrictive nature of this question, it was not analysed separately*	
8a) Why do you think the two people know /do not know each other?	[They do not know each other, because] The man has introduced himself/ Because the man uses last names, not given name/Because the man says "you must be"	Overall situation of police interviews
9) Do you know the word "fib"?	*Due to the restrictive nature of this question, it was not analysed separately*	
9a) What does the word "fib" mean?	Synonym; Description; Explanation; Synonym & description/explanation	Understanding of video sequence
10) Why does the man say "fib"?	To point out that the boy must not lie there; So that boy does not lie	Ground rules
11) Are you allowed to lie in this situation?	*Due to the restrictive nature of this question, it was not analysed separately*	Ground rules

11a) Why [are you **(not)** allowed to lie in this situation]? [Depending on participant's response to question 11, the word "not" was either included or excluded]	There is a police investigation; Correct/Precise information is needed; You must not lie to police; Otherwise police investigation might be slowed down	Ground rules
12) How is the boy behaving?	Recommendable, not emotional; Good	Co-operative child interviewee behaviours
12a) Why [is he behaving] **well/badly?**	Bad – the boy is displayed as a victim (e.g. scared); Good – referring to the way the boy behaves (e.g. polite)	Co-operative child interviewee behaviours
13) Do you know the word "crime"?	*Due to the restrictive nature of this question, it was not analysed separately*	
13a) What does the word "crime" mean?	Description; Explanation; Synonym & description/explanation; Synonym & consequence; Description & consequence	Understanding of video sequence
14) Why does the man say "crime"?	Link to the current situation (i.e. admonition for the boy not to lie); The boy shall not lie; Because the boy can be punished	Ground rules
15) Has anybody committed a crime in the video?	No (with or without additional explanation)	Basic understanding of police interviews

15a) Who?	No crime has been committed	Basic understanding of police interviews
15b) Why?	No crime has been committed	Basic understanding of police interviews
16) Why does the man say "please"?	As a prompt for the boy to start talking; The boy is a witness; To learn what happened	Specific question techniques
17) What are the people talking about?	Accident; Description of accident	Roles within the interview
18) Why are the two people talking about that?	The boy is an accident witness (with or without jargon); The policeman wants information/a description of the situation; There is a police investigation; To determine guilt	Roles within the interview
19) Who has seen this?	Boy; Boy and teacher; Boy, teacher and driver(s); Drivers	Roles within the interview
20) Where was this?	Crossing; Crossing near school; Traffic lights; Traffic lights on a road; Near school	Understanding of video sequence

21) Why is the man writing?	As a memory aid; To communicate the accident with others; As a memory aid & to communicate the accident with others; He is taking a witness statement (with or without jargon); So that police know what happened; He is taking notes to investigate further	Common elements of police interviews
21a) Why is he taking notes? [Question was only asked if participants responded with generic response to question 21]	As a memory aid	Common elements of police interviews
22) Why does the man say "wedged"?	To estimate the damage; Because it is a police investigation; It is the policeman's vocabulary	Specific question techniques
23) Is the word "wedged" important?	*Due to the restrictive nature of this question, it was not analysed separately*	Roles within the interview
23a) For whom is the word "wedged" important?	The boy and the policeman	Roles within the interview
23b) Why is the word "wedged" important?	To obtain a situation description/more information; So that the boy can explain it correctly	Roles within the interview

24) Why does the man talk about modelling clay?	To explain the word "wedged"	Roles within the interview
25) Why does the man not talk about the boy's mum?	The mother is irrelevant	Situational constraints of police interviews
26) Should the man talk about the boy's mum?	*Due to the restrictive nature of this question, it was not analysed separately*	
26a) Why should the man (not) talk about the boy's mum? [Depending on participant's response to question 26, the word "not" was either included or excluded]	He should not talk about the mother, because she is irrelevant; He should talk about the mother to build a rapport	Situational constraints of police interviews
27) Why does the man repeat his question?	For verification; For verification and participant assumes that the boy has accidentally said something wrong; For verification and to obtain more information	Specific question techniques
28) Why does the boy say "yes" and then "no"?	The boy is unsure; The boy is mistaken; The boy did not hear the question right the first time; The boy has not seen it	Specific question techniques

29) Why does the man give the boy a sheet of paper?	So that boy can explain it better; So that the policeman understands the situation better; So that the boy can explain it better and the policeman understands the situation better	Specific question techniques
30) Why does the man give the boy the cars and a playmobil man?	As a model; Showing aids memory; To determine the cause of the accident	Specific question techniques
31) Why does the man talk about traffic lights?	To determine the traffic light colour; To determine the responsible one for the accident; Because the boy mentioned traffic lights earlier in his statement; To determine the location of the traffic lights	Specific question techniques
32) Why does the man ask so many questions?	To determine who is responsible for the accident; To obtain information; To reconstruct the accident	Common elements of police interviews
33) Why does the man not talk about the boy's teacher?	The teacher is irrelevant	Situational constraints of police interviews
34) Should the man talk about the boy's teacher?	*Due to the restrictive nature of this question, it was not analysed separately*	Situational constraints of police interviews

34a) Why should the man (not) talk about the boy's teacher? [Depending on participant's response to question 34, the word "not" was either included or excluded]	He should not talk about the teacher because the teacher is irrelevant; He should talk about the teacher because the teacher could be relevant; He should talk about the teacher to build a rapport	Situational constraints of police interviews
35) Why does the boy say "prison"?	Boy wants to know if the drivers need to go to prison; The boy suspects that prison is an appropriate punishment; The boy does not know whether anyone needs to go to prison	Common elements of police interviews
36) Does anybody have to go to prison?	*Due to the restrictive nature of this question, it was not analysed separately*	
36a) Who has to go to prison?	Nobody	Common elements of police interviews
36b) Why does somebody need to go to prison?	No; Correct consequence(s) (i.e. drive more carefully and/or pay for damage) was/were mentioned	Common elements of police interviews
37) How has the boy behaved?	Recommendable for police interview; Good	Co-operative child interviewee behaviours
37a) Why [has the boy behaved] **well/badly?**	For police interview recommendable (emotional/not emotional)	Co-operative child interviewee behaviours

38) What happened in the video?	At least one of the following: Accident; Witness/Boy; Policeman; Statement was taken	Overall situation of police interviews
39) Has the boy given too much/too less / enough information?	*Due to the restrictive nature of this question, it was not analysed separately*	
39a) Why has the boy provided enough information?	Enough, because the policeman has all necessary information; Enough, because the policeman provides feedback suggesting this	Co-operative child interviewee behaviours
40) What happens after this video?	Consequences for at least one of the following: Cars; Drivers; Boy; Policeman	Overall situation of police interviews
41) What happened before this video?	Possible preceding actions for at least one of the following: Accident; Need for/Ability of statement; Policeman; Boy	Overall situation of police interviews
42) Where is the boy's mum?	Mother is present (e.g. in the office, in front of the office, in a designated waiting room)	Overall situation of police interviews

Table 4.3 Responses scored as correct for questionnaire "overall understanding of police interviews" in study 2. Question numbers including letters were initially follow-up questions, but were treated as independent questions for the analyses

4.3.2 Main analyses

4.3.2.1 Basic understanding of police interviews

Question number and question	6- year-olds	7-year-olds (first grade)	7-year-olds (second grade)	8-year-olds	9-year-olds	10-year-olds	Adults	*p*
1. What kind of people are they?	46.7 %	53.1 %	50.0 %	66.7 %	60.0 %	82.9 %	83.3 %	.005
2. Where are the two people?	3.3 %	37.5 %	20.0 %	21.2 %	30.0 %	28.6 %	26.7 %	.069
3. What is the person on the left *(pointing to person on the left)* **wearing?**	6.7 %	12.5 %	10.0 %	21.2 %	13.3 %	25.7 %	33.3 %	.073
4. Why is he wearing that [police uniform]?	10.0 %	34.3 %	20.0 %	12.1 %	30.0 %	22.9 %	20.0 %	.194
15. Has anybody committed a crime in this video?	53.3 %	53.1 %	46.7 %	60.6 %	60.0 %	65.7 %	46.7 %	.663
15a. Who [has committed a crime in this video]**?**	73.3 %	71.9 %	76.7 %	75.8 %	66.7 %	74.3 %	76.7 %	.978

15b. Why [has somebody committed a crime in this video]**?**	73.3 %	71.9 %	80.0 %	75.8 %	66.7 %	74.3 %	76.7 %	.949
Mean correct responses	38.1 %	47.8 %	43.3 %	47.6 %	46.7 %	53.5 %	51.9 %	

Table 4.4 Correct responses (in percent) for component "basic understanding of police interviews" in study 2

Question 1. What kind of people are they?

There was a significant association between age group and ability to correctly identify the two individuals (χ^2 (6, N = 220) = 18.59, p = .005).

This association was followed up by five planned comparisons. These revealed that 10-year-olds (82.9%), whose performance did not differ from adults (83.3%; χ^2 (1, N = 65) = 0.00, p = .959), were more likely than 6-year-olds (46.7%) to correctly identify the two individuals in the video (χ^2 (1, N = 65) = 9.45, p = .002). Further tests revealed that 8-year-olds (66.7%) were the youngest age group that did not differ from adults (83.3%; χ^2 (1, N = 63) = 2.30, p = .129); 7-year-olds in the second grade (50.0%; χ^2 (1, N = 60) = 0.67, p = .796) and the first grade (53.1%; χ^2 (1, N = 62) = 0.26, p = .611) in contrast, did not differ from 6-year-olds.

Question 2. Where are the two people?

There was no association between age group and ability to correctly identify where the displayed two people were (χ^2 (6, N = 220) = 11.71, p = .069). Thus, 6-year-olds (3.3%), 7-year-olds attending the first grade (37.5%), 7-year-olds attending the second grade (20.0%), 8-year-olds (21.2%), 9-year-olds (30.0%), 10-year-olds (28.6%) and adults (26.7%) did not differ in their ability to correctly identify the location of the two actors as relating to police.

Question 3. What is the person on the left wearing?

There was no association between age group and ability to correctly identify what the left person [policeman] was wearing (χ^2 (6, N = 220) = 11.56, p = .073). Thus, 6-year-olds (6.7%), 7-year-olds attending the first grade (12.5%), 7-year-olds attending the second grade (10.0%), 8-year-olds (21.2%), 9-year-olds (13.3%), 10-year-olds (25.7%) and adults (33.3%) did not differ in their ability to correctly identify the man’s clothes as a police uniform.

Question 4. Why is he wearing that [the police uniform]?

There was no association between age group and ability to provide a reason for why the policeman was wearing a uniform (χ^2 (6, N = 220) = 8.65, p = .194). Thus, 6-year-olds (10.0%), 7-year-olds attending the first grade (34.4%), 7-year-olds attending the second grade (20.0%), 8-year-olds (12.1%), 9-year-olds (30.0%), 10-year-olds (22.9%) and adults (20.0%) did not differ in their ability to provide a correct reason for why the man was wearing a police uniform.

Question 15. Has anybody committed a crime in the video?

There was no association between age group and ability to indicate if anybody had committed a crime (χ^2 (6, N = 220) = 4.10, p = .663). Thus, 6-year-olds (53.3%), 7-year-olds attending the first grade (53.1%), 7-year-olds attending the second grade (46.7%), 8-year-olds (60.6%), 9-year-olds (60.0%), 10-year-olds (65.7%) and adults (46.7%) did not differ in their ability to correctly state that no crime had been committed in the video sequence.

Question 15a. Who [has committed a crime in the video]?

There was no association between age group and ability to identify that had committed a crime (χ^2 (6, N = 220) = 1.17, p = .978). Thus, 6-year-olds (73.3%), 7-year-olds attending the first grade (71.9%), 7-year-olds attending the second grade (76.7%), 8-year-olds (75.8%), 9-year-olds (66.7%), 10-year-olds (74.3%) and adults (76.7%) did not differ in their ability to correctly state that nobody in the video had committed a crime.

Question 15b. Why [has somebody committed a crime in the video]?

There was no association between age group and ability to indicate that there is no reason to suspect anyone had committed a crime (χ^2 (6, N = 220) = 1.65, p = .949). Thus, 6-year-olds (73.3%), 7-year-olds attending the first grade (71.9%), 7-year-olds attending the second grade (80.0%), 8-year-olds (75.8%), 9-year-olds (66.7%), 10-year-olds (74.3%) and adults (76.7%) did not differ in their ability to correctly state that there was no reason to assume that a crime had been committed in the video sequence.

4.3.2.2 Common elements of police interviews

Question number and question	6-year-olds	7-year-olds (first grade)	7-year-olds (second grade)	8-year-olds	9-year-olds	10-year-olds	Adults	*p*
21. Why is the man writing?	46.7 %	56.3 %	70.0 %	81.8 %	76.7 %	77.1 %	90.0 %	.002
21a. Why is he taking notes?	60.0 %	75.0 %	83.3 %	90.9 %	83.3 %	97.1 %	90.0 %	.002
32. Why does the man ask so many questions?	53.3 %	62.5 %	76.7 %	93.9 %	80.0 %	97.1 %	100 %	< .001
35. Why does the boy say "prison"?	33.3 %	25.0 %	33.3 %	21.2 %	23.3 %	27.7 %	30.0 %	.901
36a. Who has to go to prison?	86.7 %	81.3 %	86.7 %	97.0 %	100 %	97.1 %	100 %	.013
36b. Why does somebody need to go to prison?	86.7 %	81.3 %	86.7 %	97.0 %	100 %	97.1 %	100 %	.013
Mean correct responses	61.1 %	63.6 %	72.8 %	80.3 %	77.2 %	82.2 %	85.0 %	

Table 4.5 Correct responses (in percent) for component "common elements of police interviews" in study 2

Question 21. Why is the man writing?

There was a significant association between age group and ability to provide a reason why the man was writing (χ^2 (6, N = 220) = 20.41, p = .002).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (77.1%), who did not differ from adults (90.0%; χ^2 (1, N = 65) = 1.90, p = .168), were more likely than 6-year-olds (46.7%) to provide a reason why the man was writing (χ^2 (1, N = 65) = 6.44, p = .011). Seven-year-olds attending the first grade (56.3%), who were the least accurate age group other than 6-year-olds, did not differ from 10-year-olds (77.1%; χ^2 (1, N = 67) = 3.31, p = .069).

Question 21a. Why is he taking notes?

There was a significant association between age group and ability to provide a reason why the man was taking notes (χ^2 (6, N = 220) = 20.34, p = .002).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (97.1%), who did not differ from adults (90.0%; χ^2 (1, N = 65) = 1.43, p = .232), were more likely than 6-year-olds (60.0%) to provide a reason why the man was taking notes (χ^2 (1, N = 65) = 13.93, p < .001). Seven-year-olds attending the first grade (75.0%) were the only other age group who performed below the level of 10-year-olds (97.1%; χ^2 (1, N = 67) = 7.05, p = .008).

Question 32. Why does the man ask so many questions?

There was a significant association between age group and ability to provide a reason why the man asked so many questions (χ^2 (6, N = 220) = 38.83, p < .001).

This association was further followed up by five planned comparisons. The follow-up analyses revealed that 10-year-olds (97.1%), who did not differ of adults (100%; χ^2 (1, N = 65) = 0.87, p = .351), were more likely than 6-year-olds (53.3%) to provide a reason why the man asked so many questions (χ^2 (1, N = 65) = 17.47, p < .001). 10-year-olds (97.1%) likewise outperformed 7-year-olds attending the first grade (62.5%; χ^2 (1, N = 67) = 12.83, p < .001), but not 7-year-olds attending the second grade (76.7 %; χ^2 (1, N = 65) = 6.28, p = .012) or 9-

year-olds (80.0%; χ^2 (1, N = 65) = 4.94, p = .026), the least accurate age group of children older than seven.

Question 35. Why does the boy say “prison”?

There was no association between age group and ability to provide a reason why the boy said “prison” (χ^2 (6, N = 220) = 2.20, p = .901). Thus, 6-year-olds (33.3%), 7-year-olds attending the first grade (25.0%), 7-year-olds attending the second grade (33.3%), 8-year-olds (21.2%), 9-year-olds (23.3%), 10-year-olds (25.7%) and adults (30.0%) did not differ in their ability to provide a correct reason why the boy said the word “prison”.

Question 36a. Who has to go to prison?

There was a significant association between age group and ability to identify who had to go to prison (χ^2 (6, N = 220) = 16.12, p = .013).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (97.1%), who did not differ from adults (100%; χ^2 (1, N = 65) = 0.87, p = .351) or 6-year-olds (86.7%) in their ability to correctly indicate that nobody had to go to prison (χ^2 (1, N = 65) = 2.50, p = .114). After applying the correction for multiple testing, the least age accurate group, 7-year-olds attending the first grade (81.3%), did not differ from adults (100%; χ^2 (1, N = 62) = 6.23, p = .013).

Question 36b. Why does somebody need to go to prison?

There was a significant association between age group and ability to provide a reason why somebody - if anyone - needed to go to prison (χ^2 (6, N = 220) = 16.12, p = .013).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (97.1%), who did not differ from adults (100%; χ^2 (1, N = 65) = 0.87, p = .351) or 6-year-olds (86.7%) in their ability to provide a reason why nobody has to go to prison (χ^2 (1, N = 65) = 2.50, p = .114). After applying the correction for multiple testing, the least accurate group, 7-year-olds attending the first grade (81.3%), did not differ from adults (100.0%; χ^2 (1, N = 62) = 6.23, p = .013).

4.3.2.3 Co-operative child interviewee behaviours

Question number and question	6 - year-olds	7 - year-olds (first grade)	7 - year-olds (second grade)	8 - year-olds	9 - year-olds	10 - year-olds	Adults	*p*
12. How is the boy behaving?	33.3 %	21.9 %	33.3 %	33.3 %	23.3 %	11.4 %	13.3 %	.152
12a. Why (is he behaving) well/badly)**?**	43.3 %	68.8 %	56.7 %	69.7 %	86.7 %	97.1 %	96.7 %	< .001
37. How has the boy behaved?	70.0 %	50.0 %	56.7 %	70.0 %	36.7 %	17.1 %	26.7 %	< .001
37a. Why has the boy behaved well/badly?	30.0 %	21.9 %	30.0 %	27.3 %	26.7 %	8.6 %	3.3 %	.039
39a. Why has the boy provided enough information?	0.0 %	0.0 %	6.7 %	6.1 %	13.3 %	14.3 %	40.0 %	< .001
Mean correct responses	35.5 %	32.5 %	36.7 %	41.3 %	29.7 %	36.0 %		

Table 4.6 Correct responses (in percent) for component "co-operative child interviewee behaviours" in study 2

Question 12. How is the boy behaving?

There was no association between age group and ability to judge the boy's behaviour (χ^2 (6, N = 220) = 9.41, p = .152). Thus, 6-year-olds (33.3%), 7-year-olds attending the first grade (21.9%), 7-year-olds attending the second grade (33.3%), 8-year-olds (33.3%), 9-year-olds

(23.3%), 10-year-olds (11.4%) and adults (13.3%) did not differ in their ability to correctly judge the boy's behaviour as positive.

Question 12a. Why [is he behaving] well/badly?

There was a significant association between age group and ability to justify the judgements of the boy's behaviour made in question 12 (χ^2 (6, N = 220) = 40.91, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (97.1%), who did not differ from adults (96.7%; χ^2 (1, N = 65) =.012, p = .912), were more likely than 6-year-olds (43.3%) to provide a correct reason for why the boy was behaving well (χ^2 (1, N = 65) = 23.36, p < .001). Nine-year-olds (86.7%) were the only other age group that did not differ from 10-year-olds (97.1%; χ^2 (1, N = 65) = 2.51, p = .114)

Question 37. How has the boy behaved?

There was a significant association between age group and ability to judge the boy's behaviour (χ^2 (6, N = 220) = 28.69, p < .001).

This association was further followed up by four planned comparisons. The follow-up analyses revealed that 10-year-olds (17.1%), who did not differ from adults (26.7%; χ^2 (1, N = 65) = 0.87, p = .351), were less likely than 6-year-olds (70.0%) to judge the boy's behaviour as positive (χ^2 (1, N = 65) = 18.59, p < .001). Seven-year-olds attending the first grade (50.0%), who were the least accurate age under the age of eight, did not differ in their ability from 6-year-olds (70.0%), the most accurate age group overall (χ^2 (1, N = 62) = 2.57, p = .109). In contrast, 9-year-olds (36.7%), the most accurate age group older than eight, were less accurate than 6-year-olds (70.0%; χ^2 (1, N = 60) = 7.00, p = .010).

Question 37a. Why has the boy behaved well/badly?

There was a significant association between age group and ability to provide a reason why the boy behaved well (χ^2 (6, N = 220) = 13.25, p = .039).

This association was further followed up by four planned comparisons. The follow-up analyses revealed that 10-year-olds (8.6%), who did not differ from adults (3.3%; χ^2 (1, N = 65) = 0.77, p = .381) or 6-year-olds (30.0%) in their ability to provide a reason why the boy behaved well (χ^2 (1, N = 65) = 4.93, p = .026). 6-year-olds (30.0%) and 7-year-olds attending the second grade (30.0%) did not differ (χ^2 (1, N = 62) = 2.57, p = .109) and outperformed

adults, the least likely age group (3.3%) to provide a correct justification for the boy's behaviour (χ^2 (1, N = 60) = 7.68, p = .006).

Question 39a. Why has the boy provided enough information?

There was a significant association between age group and ability to evaluate the amount of information the boy has provided (χ^2 (6, N = 220) = 34.36, p < .001).

This association was further followed up by two planned comparisons. The follow-up analyses revealed that 10-year-olds (14.3%), who performed below adult level (40.0%; χ^2 (1, N = 65) = 5.53, p = .019), did not differ from 6-year-olds (0.0%) in their ability to provide a reason why the boy provided enough information (χ^2 (1, N = 65) = 4.64, p = .031).

4.3.2.4 Ground rules

Question number and question	6 - year-olds	7 - year-olds (first grade)	7 - year-olds (second grade)	8 - year-olds	9 - year-olds	10 - year-olds	Adults	*p*
10. Why does the man say "fib"?	26.7 %	28.1 %	20.0 %	36.4 %	16.7 %	31.4 %	30.0 %	.635
11a. Why are you (not) allowed to lie in this situation?	40.0 %	34.4 %	26.7 %	54.5 %	36.7 %	45.7 %	63.3 %	.067
14. Why does the man say "crime"?	3.3 %	0.0 %	13.3 %	6.1 %	16.7 %	22.9 %	46.7 %	< .001
Mean correct responses	23.3 %	20.8 %	20.0 %	32.3 %	23.4 %	33.3 %	46.7 %	

Table 4.7 Correct responses (in percent) for component "ground rules" in study 2

Question 10. Why does the man say "fib"?

There was no association between age group and ability to explain why the man said the word "fib" (χ^2 (6, N = 220) = 4.31, p = .635). Thus, 6-year-olds (26.7%), 7-year-olds attending the first grade (28.1%), 7-year-olds attending the second grade (20.0%), 8-year-olds (36.4%), 9-year-olds (16.7%), 10-year-olds (31.4%) and adults (30.0%) did not differ in their ability to provide a correct reason why the man said the word "fib".

Question 11a. Why are you (not) allowed to lie in this situation?

There was no association between age group and ability to provide a reason why it was not permissible to lie in the displayed situation (χ^2 (6, N = 220) = 11.78, p = .067). Thus, 6-year-

olds (40.0%), 7-year-olds attending the first grade (34.4%), 7-year-olds attending the second grade (26.7%), 8-year-olds (54.5%), 9-year-olds (36.7%), 10-year-olds (45.7%) and adults (63.3%) did not differ in their ability to provide a correct reason why lying would not be permissible in the displayed situation.

Question 14. Why does the man say “crime”?

There was a significant association between age group and ability to provide a reason why the man said “crime” (χ^2 (6, N = 220) = 35.42, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (22.9%), who did not differ from adults (46.7%; χ^2 (1, N = 65) = 4.09, p = .043) or 6-year-olds (3.3%) in their ability to provide a reason why the man said “crime” (χ^2 (1, N = 65) = 5.16, p = .023). No other age group, including 9-year-olds (16.7%), the next most accurate age group, performed at adult level (46.7%; χ^2 (1, N = 60) = 7.94, p = .005).

4.3.2.5 Overall situation of police interviews

Question number and question	6 - year-olds	7 - year-olds (first grade)	7 - year-olds (second grade)	8 - year-olds	9 - year-olds	10 - year-olds	Adults	*p*
8a. Why do you think the two people know/do not know each other?	13.3 %	21.9 %	20.0 %	12.1 %	40.0 %	31.4 %	10.0 %	.036
38. What happened in the video?	33.3 %	37.5 %	33.3 %	66.7 %	80.0 %	85.7 %	96.7 %	<.001
40. What happens after this video?	20.0 %	18.8 %	30.0 %	42.4 %	66.7 %	68.6 %	90.0 %	< .001
41. What happened before this video?	23.3 %	31.3 %	36.7 %	57.6 %	76.7 %	74.3 %	83.3 %	< .001
42. Where is the boy's mum?	3.3 %	9.4 %	6.7 %	3.0 %	10.0 %	5.7 %	36.7 %	< .001

Mean correct responses	18.6 %	23.8 %	25.3 %	36.3 %	54.7 %	53.1 %	63.3 %

Table 4.8 Correct responses (in percent) for component "overall situation of police interviews" in study 2

Question 8a. Why do you think the two people know /do not know each other?
There was a significant association between age group and ability to justify why the two displayed individuals had not met previously (χ^2 (6, N = 220) = 13.49, p = .036).
This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (31.4%), who did not differ from adults (10.0%; χ^2 (1, N = 65) = 4.39, p = .036) or 6-year-olds (13.3%) in their ability to provide a correct reason why the two people would not know each other (χ^2 (1, N = 65) = 2.98, p = .084). Further analyses revealed that 9-year-olds (40.0%), the most accurate age group for this question, outperformed adults, the least accurate age group for this question (10.0%; χ^2 (1, N = 60) = 7.20, p = .007).

Question 38. What happened in the video?
There was a significant association between age group and ability to identify what happened in the video (χ^2 (6, N = 220) = 57.32, p < .001).
This association was further followed up by five planned comparisons. The follow-up analyses revealed that 10-year-olds (85.7%), who did not differ from adults (96.7%; χ^2 (1, N = 65) = 2.31, p = .128), were more likely than 6-year-olds (33.3%) to identify what happened in the video (χ^2 (1, N = 65) = 18.73, p <.001). Nine-year-olds (80.0%) were the only other age group who did not differ from adults (96.7%; χ^2 (1, N = 60) = 4.04, p = .044), with 8-year-olds (66.7%) outperforming 6-year-olds (33.3 %; χ^2 (1, N = 63) = 6.99, p = .008), but not 7-year-olds attending the first grade who were the next most accurate age group (37.5%; χ^2 (1, N = 65) = 5.54, p = .019).

Question 40. What happens after this video?
There was a significant association between age group and ability to suggest what might happen after the video sequence (χ^2 (6, N = 220) = 56.00, p < .001).
This association was further followed up by four planned comparisons. The follow-up analyses revealed that 10-year-olds (68.6%), who did not differ from adults (90.0%; χ^2 (1, N = 65) = 4.39, p = .036), were more likely than 6-year-olds (20.0%) to suggest what will happen

after the video sequence (χ^2 (1, N = 65) = 15.34, p < .001). Nine-year-olds (66.7%) were the only other group that did not differ from adults (90.0%; χ^2 (1, N = 60) = 4.81, p = .028), with 8-year-olds (42.4%) performing no different to 6-year-olds (20.0%; χ^2 (1, N = 63) = 3.65, p = .056).

Question 41. What happened before this video?

There was a significant association between age group and ability to suggest what might have happened before the video (χ^2 (6, N = 220) = 44.29, p < .001).

This association was further followed up by four planned comparisons. The follow-up analyses revealed that 10-year-olds (74.3%), who did not differ from adults (83.3%; χ^2 (1, N = 65) = 0.78, p = .376), were more likely than 6-year-olds (23.3%) to suggest what might have happened before the video sequence (χ^2 (1, N = 65) = 16.78, p <.001). Eight-year-olds (57.6%) were the youngest age group that outperformed 6-year-olds (23.3%; χ^2 (1, N = 63) = 7.60, p = .006) although 8-year-olds still performed worse than adults (83.3%; χ^2 (1, N = 63) = 4.95, p = .026).

Question 42. Where is the boy's mum?

There was a significant association between age group and ability to identify the [boy's] mother's location (χ^2 (6, N = 220) = 26.93, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (5.7%), who performed worse than adults (36.7%; χ^2 (1, N = 65) = 9.67, p = .002), did not differ from 6-year-olds (3.3%) in their ability to correctly identify the boy's mother's location (χ^2 (1, N = 65) = 0.21, p = .648). Nine-year-olds, the most accurate child sample (10.0%), still performed worse than adults (36.7 %; χ^2 (1, N = 60) = 5.96, p = .015).

4.3.2.6 Roles within the interview

Question number and question	6 - year-olds	7 - year-olds (first grade)	7 - year-olds (second grade)	8 - year-olds	9 - year-olds	10 - year-olds	Adults	*p*
17. What are the people talking about?	46.7 %	56.3 %	70.0 %	72.7 %	80.0 %	94.3 %	90.0 %	< .001
18. Why are the two people talking about that?	40.0 %	40.6 %	43.3 %	51.5 %	73.3 %	80.0 %	83.3 %	< .001
19. Who has seen this?	56.7 %	78.1 %	83.3 %	78.8 %	90.0 %	97.1 %	90.0 %	.001
23a. For whom is the word "wedged" important?	0.0 %	0.0 %	0.0 %	6.1 %	0.0 %	8.6 %	0.0 %	.064
23b. Why is the word "wedged" important?	10.0 %	18.8 %	16.7 %	18.2 %	40.0 %	34.4 %	46.7 %	.006
24. Why does the man talk about modelling clay?	16.7 %	9.4 %	40.0 %	36.4 %	63.3 %	60.0 %	96.7 %	< .001

Mean correct responses	28.4 %	33.9 %	42.2 %	44.0 %	57.8 %	62.4 %	67.8 %

Table 4.9 Correct responses (in percent) for component "roles within the interview" in study 2

Question 17. What are the people talking about?

There was a significant association between age group and ability to identify the topic of the conversation (χ^2 (6, N = 220) = 28.56, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (94.3%), who did not differ from adults (90.0%; χ^2 (1, N = 65) = 0.42, p = .518), were more likely than 6-year-olds (46.7%) to correctly identify the topic of the conversation (χ^2 (1, N = 65) = 18.29, p < .001). Nine-year-olds (80.0%) were the only other age group that did not differ from 10-year-olds (94.3%; χ^2 (1, N = 65) = 3.06, p = .081).

Question 18. Why are the two people talking about that?

There was a significant association between age group and ability to provide a reason why the two displayed people were talking about an accident (χ^2 (6, N = 220) = 29.04, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (80.0%), who did not differ from adults (83.3%; χ^2 (1, N = 65) = 0.12, p = .730), were more likely than 6-year-olds (40.0%) to provide a reason why the two displayed people were talking about an accident (χ^2 (1, N = 65) = 10.92, p = .001). Nine-year-olds (73.3%) were the only other age group that did not differ from 10-year-olds (80.0%; χ^2 (1, N = 65) = 0.40, p = .525).

Question 19. Who has seen this?

There was a significant association between age group and ability to identify who saw the accident (χ^2 (6, N = 220) = 21.93, p = .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (97.1%), who did not differ from adults (90.0%; χ^2 (1, N = 65) = 1.43, p = .232), were more likely than 6-year-olds (56.7%) to correctly identify who saw the accident (χ^2 (1, N = 65) = 15.66, p < .001). Seven-year-olds attending the first grade

(78.1%) were the only other age group that performed less well than 10-year-olds (97.1%; χ^2 (1, $N = 67$) = 5.75, $p = .016$).

Question 23a. For whom is the word “wedged” important?

There was no association between age group and ability to identify for whom the word “wedged” was important (χ^2 (6, $N = 220$) = 11.92, $p = .064$). Thus, 6-year-olds (0.0%), 7-year-olds attending the first grade (0.0%), 7-year-olds attending the second grade (0.0%), 8-year-olds (6.1%), 9-year-olds (0.0%), 10-year-olds (8.6%) and adults (0.0%) did not differ in their ability to correctly identify for whom the word “wedged” was important.

Question 23b. Why is the word “wedged” important?

There was a significant association between age group and ability to provide a reason why the word “wedged” was important (χ^2 (6, $N = 220$) = 18.06, $p = .006$).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (34.4%), who did not differ from adults (46.7%; χ^2 (1, $N = 65$) = 1.03, $p = .310$) or 6-year-olds (10.0%) in their ability to provide a reason why the word wedged is important (χ^2 (1, $N = 65$) = 5.37, $p = .021$). Nine-year-olds (40.0%) were the only other age group that did not differ from adults (46.7%; χ^2 (1, $N = 60$) = 0.27, $p = .602$)

Question 24. Why does the man talk about modelling clay?

There was a significant association between age group and ability to provide a reason why the man talked about modelling clay (χ^2 (6, $N = 220$) = 66.75, $p < .001$).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (60.0%), who performed worse than adults (96.7%; χ^2 (1, $N = 65$) = 12.23, $p < .001$), were more likely than 6-year-olds (16.7%) to provide a reason why the man was talking about modelling clay (χ^2 (1, $N = 65$) = 12.64, $p < .001$). Seven-year-olds attending the first grade (9.4%) were the only other age group who performed worse than 10-year-olds (60.0%; χ^2 (1, $N = 67$) = 18.64, $p < .001$).

4.3.2.7 Situational constraints of police interviews

Question number and question	6 - year-olds	7 - year-olds (first grade)	7 - year-olds (second grade)	8 - year-olds	9 - year-olds	10 - year-olds	Adults	*p*
25. Why does the man not talk about the boy's mum?	23.3 %	15.6 %	40.0 %	30.3 %	36.7 %	34.3 %	90.0 %	< .001
26a. Why should the man (not) talk about the boy's mum?	20.0 %	25.0 %	33.3 %	36.4 %	43.3 %	54.3 %	53.3 %	.030
33. Why does the man not talk about the boy's teacher?	33.3 %	37.5 %	50.0 %	48.5 %	70.0 %	60.0 %	96.7 %	< .001
34a. Why should the man (not) talk about the boy's teacher?	30.0 %	37.5 %	40.0 %	42.4 %	70.0 %	71.4 %	30.0 %	.001
Mean correct responses	26.7 %	28.9 %	40.8 %	39.4 %	55.0 %	55.0 %	67.5 %	

Table 4.10 Correct responses (in percent) for component "situational constraints of police interviews" in study 2

Question 25. Why does the man not talk about the boy's mum?

There was a significant association between age group and ability to provide a reason why the man did not talk about the boy's mother (χ^2 (6, N = 220) = 44.99, p < .001). This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (34.3%), who performed worse than adults (90.0%; χ^2 (1, N = 65) = 20.89, p < .001), did not differ from 6-year-olds (23.3%) in their ability to provide a reason why the man was not talking about the boy's mother (χ^2 (1, N = 65) = 0.94, p = .333). Seven-year-olds attending the second grade (40.0%), who were the most accurate age group apart from adults, performed worse than adults (90.0%; χ^2 (1, N = 60) = 16.48, p < .001).

Question 26a. Why should the man (not) talk about the boy's mum?

There was a significant association between age group and ability to provide a reason why the man should not talk about the boy's mother (χ^2 (6, N = 220) = 14.00, p = .030). This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (54.3%), who did not differ from adults (53.3%; χ^2 (1, N = 65) = .006, p = .939), were more likely than 6-year-olds (20.0%) to provide a reason for why the man should not talk about the boy's mother (χ^2 (1, N = 65) = 8.02, p = .005). Seven-year-olds attending the first grade (25.0%) were the only other age group who performed worse than 10-year-olds (54.3% (χ^2 (1, N = 67) = 5.96, p = .015).

Question 33. Why does the man not talk about the boy's teacher?

There was a significant association between age group and ability to provide a reason why the man did not talk about the teacher (χ^2 (6, N = 220) = 34.70, p < .001).

This association was further followed up by six planned comparisons. The follow-up analyses revealed that 10-year-olds (60.0%), who performed worse than adults (96.7%; χ^2 (1, N = 65) = 12.23, p < .001), did not differ from 6-year-olds (33.3%) in their ability to provide a reason why the man did not want to talk about the boy's teacher (χ^2 (1, N = 65) = 4.61, p = .032). Nine-year-olds (70.0%) were the only age group that performed better than 6-year-olds (33.3%; χ^2 (1, N = 60) = 8.08, p = .004) although they still performed worse than adults (96.7%, (χ^2 (1, N = 60) = 7.68, p = .006).

Question 34a. Why should the man (not) talk about the boy's teacher?

There was a significant association between age group and ability to provide a reason why the man should not talk about the teacher (χ^2 (6, N = 220) = 23.75, p = .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (71.4%), who performed better than adults (30.0%; χ^2 (1, N = 65) = 11.11, p = .001) and 6-year-olds (30.0%) were more likely to provide a reason why the man should not talk about the teacher (χ^2 (1, N = 65) = 11.11, p = .001). Seven-year-old children attending the first grade (37.5%) were the only other age group who performed worse than 10-year-olds (71.4%; χ^2 (1, N = 67) = 7.78, p = .005).

4.3.2.8 Specific question techniques

Question number and question	6 - year-olds	7 - year-olds (first grade)	7 - year-olds (second grade)	8 - year-olds	9 - year-olds	10 - year-olds	Adults	*p*
7. Why does the man say his name?	13.3 %	25.0 %	33.3 %	33.3 %	50.0 %	51.4 %	83.3 %	< .001
16. Why does the man say "please"?	16.7 %	25.0 %	25.0 %	33.3 %	23.3 %	28.6 %	23.3 %	.753
22. Why does the man say "wedged"?	6.7 %	0.0 %	0.0 %	3.0 %	10.0 %	5.7 %	66.7 %	< .001
27. Why does the man repeat his question?	13.3 %	25.0 %	20.0 %	33.3 %	53.3 %	68.6 %	86.7 %	< .001
28. Why does the boy say "yes" and then "no"?	30.0 %	28.1 %	33.3 %	39.4 %	43.3 %	54.3 %	60.0 %	.074
29. Why does the man give the boy a sheet of paper?	86.7 %	93.8 %	90.0 %	93.9 %	96.7 %	97.1 %	100 %	.348

30. Why does the man give the boy the cars and playmobil man?	90.0 %	84.4 %	83.3 %	93.9 %	96.7 %	91.4 %	100 %	.192
31. Why does the man talk about traffic lights?	63.3 %	34.4 %	53.3 %	69.7 %	66.7 %	51.4 %	66.7 %	.057
Mean correct responses	40.0 %	39.5 %	42.3 %	50.0 %	55.0 %	56.1 %	73.3 %	

Table 4.11 Correct responses (in percent) for component "specific question techniques" in study 2

Question 7. Why does the man say his name?

There was a significant association between age group and ability to provide a reason for why the policeman said his name (χ^2 (6, N = 220) = 39.10, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (51.4%), who performed worse than adults (83.3%; χ^2 (1, N = 65) = 7.34, p = .007), were more likely than 6-year-olds (13.3%) to provide a correct reason why the man said his name (χ^2 (1, N = 65) = 10.47, p = .001), but did not differ from 7-year-old second graders (25.0%; χ^2 (1, N = 65) = 2.16, p = .142).

Question 16. Why does the man say “please”?

There was no association between age group and ability to provide a reason why the man said “please” (χ^2 (6, N = 220) = 3.43, p = .753). Thus, 6-year-olds (16.7%), 7-year-olds attending the first grade (25.0%), 7-year-olds attending the second grade (25.0%), 8-year-olds (33.3%),

9-year-olds (23.3%), 10-year-olds (28.6%) and adults (23.3%) did not differ in their ability to provide a correct reason why the man said please.

Question 22. Why does the man say “wedged”?

There was a significant association between age group and ability to provide a reason for why the man said “wedged” (χ^2 (6, N = 220) = 93.16, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (5.7%), who performed worse than adults (66.7%; χ^2 (1, N = 65) = 26.80, p < .001), did not differ from 6-year-olds (6.7%) in their ability to provide a reason why the man said “wedged” (χ^2 (1, N = 65) = 0.035, p = .873). Nine-year-olds (10.0%), the most accurate child age group, performed worse than adults (66.7%; χ^2 (1, N = 60) = 0.38, p < .001).

Question 27. Why does the man repeat his question?

There was a significant association between age group and ability to provide a reason for why the man repeated his question (χ^2 (6, N = 220) = 56.66, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (68.6%), who did not differ from adults (86.7%; χ^2 (1, N = 65) = 2.98, p = .084), were more likely than 6-year-olds (13.3%) to provide a reason for why the man repeated his question (χ^2 (1, N = 65) = 20.10, p < .001). Nine-year-olds (53.3%), the most accurate age group other than 10-year-olds and adults, performed below adult level (86.7%; χ^2 (1, N = 60) = 7.94, p = .005).

Question 28. Why does the boy say “yes” and then “no”?

There was no association between age group and ability to provide a reason for why the boy said “yes” then “no” (χ^2 (6, N = 220) = 11.51, p = .074). Thus, 6-year-olds (30.0%), 7-year-olds attending the first grade (28.1%), 7-year-olds attending the second grade (33.3%), 8-year-olds (39.4%), 9-year-olds (43.3%), 10-year-olds (54.3%) and adults (60.0%) did not differ in their ability to provide a correct reason why the displayed boy changed his response from “yes” to “no”.

Question 29. Why does the man give the boy a sheet of paper?

There was no association between age group and ability to provide a reason for why the man gave the boy the sheet of paper (χ^2 (6, N = 220) = 6.71, p = .348). Thus, 6-year-olds (86.7%),

7-year-olds attending the first grade (93.8%), 7-year-olds attending the second grade (90.0%), 8-year-olds (93.9%), 9-year-olds (96.7%), 10-year-olds (97.1%) and adults (100%) did not differ in their ability to provide a correct reason for why the man handed the boy a sheet of paper.

Question 30. Why does the man give the boy the cars and a playmobil man?
There was no association between age group and ability to provide a reason for why the man gave the boy the cars and the playmobil man (χ^2 (6, N = 220) = 8.69, p = .192). Thus, 6-year-olds (90.0%), 7-year-olds attending the first grade (84.4%), 7-year-olds attending the second grade (83.3%), 8-year-olds (93.9%), 9-year-olds (96.7%), 10-year-olds (91.4%) and adults (100%) did not differ in their ability to provide a correct reason for why the man handed the boy a playmobil man and two cars.

Question 31. Why does the man talk about traffic lights?
There was no association between age group and ability to provide a reason for why the man talked about traffic lights (χ^2 (6, N = 220) = 12.25, p = .057). Thus, 6-year-olds (63.3%), 7-year-olds attending the first grade (34.4%), 7-year-olds attending the second grade (53.3%), 8-year-olds (69.7%), 9-year-olds (66.7%), 10-year-olds (51.4%) and adults (66.7%) did not differ in their ability to provide a correct reason for why the man was talking about traffic lights.

4.3.2.9 Understanding of video sequence

Question number and question	6 - year-olds	7 - year-olds (first grade)	7 - year-olds (second grade)	8 - year-olds	9 - year-olds	10 - year-olds	Adults	*p*
9a. What does the word "fib" mean?	36.7 %	31.3 %	43.3 %	66.7 %	60.0 %	71.4 %	100 %	< .001
13a. What does the word "crime" mean?	16.7 %	18.8 %	23.3 %	42.4 %	66.7 %	82.9 %	100 %	< .001
20. Where was this (accident)**?**	50.0 %	75.0 %	86.7 %	84.8 %	83.3 %	94.3 %	100 %	< .001
Mean correct responses	33.4 %	41.7 %	51.1 %	64.6 %	70.0 %	82.9 %	100 %	

Table 4.12 Correct responses (in percent) for component "understanding of video sequence" in study 2

Question 9a. What does the word "fib" mean?

There was a significant association between age group and ability to define the word "fib" (χ^2 *(*6, N = 220) = 43.19, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (71.4%), who performed worse than adults (100%; χ^2 *(*1, N = 65) = 10.13, p = .001), were more likely than 6-year-olds (36.7%) to correctly define "fib" (χ^2 *(*1, N = 65) = 7.90, p = .005). Seven-year-olds attending the second grade (43.3%) were the youngest age group that was outperformed by 10-year-olds (71.4%; χ^2 *(*1, N = 65) = 5.25, p = .022).

Question 13a. What does the word “crime” mean?

There was a significant association between age group and ability to define the word “crime” (χ^2 (6, N = 220) = 83.56, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (82.9%), who did not differ from adults (100%; χ^2 (1, N = 65) = 5.67, p = .017), were more likely than 6-year-olds (16.7%) to correctly define “crime” (χ^2 (1, N = 65) = 28.37, p < .001). 9-year-olds (66.7%) were the only other age group that did not differ from 10-year-olds (82.1%; χ^2 (1, N = 65) = 2.28, p = .131)

Question 20. Where was this [accident]?

There was a significant association between age group and ability to identify the location of the accident (χ^2 (6, N = 220) = 33.08, p < .001).

This association was further followed up by three planned comparisons. The follow-up analyses revealed that 10-year-olds (94.3%), who did not differ from adults (100%; χ^2 (1, N = 65) = 1.77, p = .184), were more likely than 6-year-olds (50.0%) to correctly identify the location of the accident (χ^2 (1, N = 65) = 16.40, p < .001). Seven-year-olds attending the first grade (75.0%) were the only other age group who performed worse than 10-year-olds (94.3%; χ^2 (1, N = 67) = 4.90, p = .027).

4.4 Discussion

As predicted, adults were the most proficient age group overall for nearly all components assessed, namely basic understanding of police interviews, common elements of police interviews, ground rules, overall situation of police interviews, roles within the interview, situational constraints of police interviews, specific questioning techniques and understanding of video sequence, although it should be noted that adult participants demonstrated considerably less understanding about specific questioning techniques. Given that adults tend to be more proficient interviewees than children - i.e. adults provide more detailed information (Jack, Leov, et al., 2014), are less susceptible to misinformation (Battin et al., 2012; Bruck & Ceci, 1999; Ceci & Bruck, 1993; Ghetti & Alexander, 2004; Pezdek & Hodge, 1999) and are less prone to situational factors such as delay (Baker-Ward et al., 1993; Bemis et al., 2011; Fivush et al., 2004; Lamb et al., 2000; Paz-Alonso & Goodman, 2008; Quas et al., 1999; Rubin & Wenzel, 1996; Shrimpton et al., 1998; Tuckey & Brewer, 2003; Wandrey et al.,

2012; Wimmer & Howe, 2010; Wixted & Ebbesen, 1991; Wixted & Ebbesen, 1997) or interviewer factors (Almerigogna et al., 2008, 2007; Carter et al., 1996; Davis & Bottoms, 2002; Klemfuss et al., 2013; Lowenstein et al., 2010; Quas & Lench, 2007; Quas et al., 2014; Rush et al., 2014) - these findings were in line with the predictions made. Contrary to predictions, adults were outperformed by child participants when asked to classify the mock interviewee's behaviour and to provide a justification for their classification (i.e. co-operative child interviewee behaviours). Inspection of the results revealed that adults were more critical towards the mock interviewee than younger age groups (i.e. adults failed to acknowledge that the mock interviewee was co-operative and providing information to the best of his ability) and adults were also less likely to spontaneously provide a justification for their classification. This might have been a methodological issue as adult participants provided written responses (and might have missed the prompt to justify their classification) whereas child participants provided verbal responses and were thus explicitly asked by the experimenter to justify their classification. Overall, adults seem to have been quite proficient in their understanding of police interviews and, as the following sections will indicate, more so than most of the child age groups in study 2.

Ten-year-olds, the oldest child participants, demonstrated an understanding of police interviews that was not different from that demonstrated by adults for most of the components, namely basic understanding of police interviews, common elements of police interviews, co-operative child interviewee behaviours, ground rules, overall situation of police interviews, roles within the interview and understanding of the video sequence. For the understanding of specific questioning techniques, 10-year-olds' understanding was nearly the same as that of adults, although 10-year-olds were less likely to correctly explain rapport-building and the use of jargon. Furthermore, 10-year-olds were less able than adults to state that irrelevant topics may be excluded from police interviews (situational constraints of police interviews). Thus, while 10-year-olds' knowledge was inferior to that of adults for two of the components assessed – specific questioning techniques and situational constraints of police interviews -, 10-year-olds demonstrated as in-depth understanding of police interviews as adults for most of the components.

The performance of 9-year-olds did not differ from the performance of 10-year-olds and adults for the basic understanding of police interviews, common elements of police interviews, co-operative child interviewee behaviours, ground rules or roles within the interview. In

contrast, 9-year-olds demonstrated slightly better understanding for the overall situation of police interviews, as they were on the same level as 10-year-olds and adults for most questions, but were more likely to provide a correct justification about why the two actors would not know each other within the context of the mock interview (i.e. to correctly realise that police interviews may be conducted by somebody unfamiliar to the interviewee). Likewise, 9-year-olds demonstrated knowledge comparable to 10-year-olds about the situational constraints of police interviews, but showed a slightly larger increase in knowledge between the two time points at which they were asked about the exclusion of irrelevant topics. For specific questioning techniques, 9-year-olds performed at the same level as 10-year-olds for most questions (i.e. comparable to adults for most techniques, but worse than adults for rapport-building and usage of jargon), but 9-year-olds were less likely to provide a correct explanation for why the policeman repeated his question. For the understanding of the video sequence, 9-year-olds performed at the same level as 10-year-olds for all questions (i.e. 9-year-olds demonstrated the same knowledge as adults for two out of the three questions, but were less likely than adults – and as likely as 10-year-olds – to provide a definition for the word "fib"). Overall, while there were some differences between 9-year-olds and the older participants, especially the adults, none of these differences were pronounced, so that 9-year-olds demonstrated knowledge comparable to that of 10-year-olds and adults for most questions.

Eight-year-olds demonstrated knowledge comparable to that of 9-year-olds for four of the nine components, namely basic understanding of police interviews, common elements of police interviews, ground rules and specific questioning techniques. For co-operative child interviewee behaviours, 8-year-olds were significantly more likely than 10-year-olds and adults to provide a justification for why the mock interviewee's behaviour was positive, suggesting that 8-year-olds were less harsh in their evaluation of the mock interviewee behaviour than the older participants. The age difference emerging between 8-year-olds and the older participants was more pronounced for the overall situation of the police interview as findings suggested that, while 8-year-olds demonstrated understanding similar to 9-year-olds and/or 10-year-olds for three out of the five questions, 8-year-olds were worse at identifying what had happened in the mock interview as well as predicting what would happen after it. Therefore, 8-year-olds seem to be the oldest age group which lacked understanding of the roles of police forces within and outside police interviews. Likewise, while demonstrating similar knowledge to 9- and 10-year-olds for three out of the six questions asked for roles

within the interview, 8-year-olds demonstrated less insight into the roles of the interview for the remaining three questions, two of which required participants to attribute the role of an expert to the mock interviewee (i.e. the child). While this evidence would have to be backed up further to be informative, it might indicate that children aged eight years and younger struggle to attribute the role of an expert to children. Eight-year-olds also demonstrated less improvement of knowledge when identifying irrelevant topics as part of situational constraints of the interview than older participants. Eight-year-olds were also less likely to provide a definition of the word "crime" than older participants.

Seven-year-olds attending the second grade demonstrated knowledge comparable to 9- and 10-year-olds as well as adults for three of the nine components, namely common elements of police interviews, ground rules and specific questioning techniques. Further, 7-year-olds attending the second grade demonstrated a similar understanding to that of 8-year-olds for four additional components, namely co-operative child interviewee behaviours, roles within the interview, situational constraints of police interviews and understanding of video sequence. These findings are not surprising given that 8-year-olds were largely attending the second grade, thus should have been at a similar level of education to 7-year-olds attending the second grade. For the remaining two components, basic understanding of police interviews and overall situation of the police interview, 7-year-olds attending the second grade demonstrated less knowledge than the older participants; this difference was negligible for the basic understanding of police interviews, but quite pronounced for the overall situation of police interviews. Specifically, only a third of 7-year-olds attending the second grade could identify what happened in the mock interview, predict what would happen after it or provide an informed suggestion about what might have happened before the mock interview. Therefore, 7-year-olds attending the second grade seemed to struggle to appreciate the roles of police forces, especially when compared to adults who demonstrated very good awareness thereof.

Seven-year-olds attending the first grade did not differ from 8-year-olds in basic understanding of police interviews, co-operative child interviewee behaviours, ground rules, overall situation of police interviews, specific questioning techniques and understanding of video sequence and were thus outperformed by participants older than 8 years for most of the components assessed. Furthermore, 7-year-olds attending the first grade demonstrated less understanding for common elements of police interviews, specifically, they failed to identify

why the policeman would be writing and asking so many questions. Likewise, 7-year-olds attending the first grade were slightly less knowledgeable about roles within the interview, failed to identify situational constraints of police interviews and struggled to provide definitions of interview-related vocabulary (understanding of video sequence).

6-year-old children did not differ from 7-year-olds attending the first grade for any of the components.

To summarize, hypothesis (a) was largely supported – adults were more knowledgeable than other age groups for all components except for co-operative child interviewee behaviours, which might have been due to a methodological issue. Specifically, adults demonstrated very good understanding for all components assessed including specific questioning techniques (see hypothesis c). Failure to demonstrate good understanding in adults could be attributed to a methodological issue; concretely, as adults provided written responses to the questionnaire (as opposed to the verbal responses provided by children), they did not receive as explicit prompts as children and might have been less motivated to justify their responses beyond the crucial explanations.

Hypothesis (b) was largely supported – 6-year-olds and 7-year-olds attending the first grade were less knowledgeable than older participants for nearly all the components assessed, namely common elements of police interviews, roles within the interview, situational constraints of the police interviews and understanding of video sequence.
In addition, age differences beyond the ones predicted in hypotheses (a) and (b) emerged. Specifically, 7-year-olds attending the second grade and 8-year-old children tended to perform at an intermediate level for the components assessed, that is, their knowledge tended to be less profound than that of 9-year-old-children, 10-year-old children and adults but better than that of 6-year-old children and 7-year-old children attending the first grade.

However, while the finding, that 6- and 7-year-olds attending the first grade demonstrated less understanding than the older age groups, was supported in the present study and indeed received considerable support across the different factors, future researchers should consider three potential issues arising from the statistical analyses used. While Pearson's Chi-square was an appropriate statistical test to analyse the current data, performing logistic regression instead could have strengthened the current study by identifying if the age of participants

would have been a suitable predictor of participants' understanding of police interviews. However, as the main aim of the current study was to (a) assess if the materials were appropriate, (b) to explore age trends in participants' understanding of police interviews using a novel approach and (c) to allow the reader to easily compare findings between studies presented in this thesis, Pearson's Chi-square was used to analyse the data for studies presented in this thesis.

The resulting problem of running multiple tests on the same data set and thereby increasing the chance of a type I error (i.e. finding an effect when there is actually none) was taken into consideration, but deemed to be acceptable as subsequent studies in this thesis would require considerable less tests to be run on the same dataset. However, future researchers should address this issue by minimising the number of tests run.

Likewise, a final issue with the selection of Pearson's Chi squares is the strong reliance on p-values. Traditionally, researchers in psychology have used the p-value as the main and frequently only indication of whether to determine if the experimental hypothesis should be supported or rejected. However, more recently it is being acknowledged that the p-value can vary drastically between replications of the same experiment and, through the lack of a predictive value for future studies, might not be a reliable indicator of whether the null hypothesis should be accepted or rejected; instead, confidence intervals have been recommended as a more reliable measure (Cumming, 2008). Acknowledging this recent development in the field of psychology, future researchers might wish to explore confidence intervals as a more reliable indicator of whether the experimental hypothesis should be accepted or rejected.

Hypothesis (c) was supported – participants demonstrated less understanding about specific questioning techniques than about any of the other although the vast majority of adults were able to provide correct explanations for the questioning techniques assessed. Children, in contrast, demonstrated very poor understanding of the questioning techniques used.

These findings have four important implications for the remainder of the thesis, each of which will be discussed in turn.

Apart from the methodological issue described for hypothesis (a), adults demonstrated very good understanding for most of the questions used. This is particularly important as the

approach used in study 2 was novel. Consequently, the suitability of the materials had to be verified prior to future use and the answerability of questions had to be assessed. The proficient performance demonstrated by adults suggested that the video sequence was suitable and the questionnaire *"overall understanding of police interviews"* was answerable; consequently, the materials were deemed as suitable for subsequent studies presented in this thesis.

However, due to the novelty and exploratory nature of the questionnaire (but not the video sequence which has previously been validated in a study with over 400 participants; Hülsken, 2011), it would benefit from better validation before being used in future studies, for example through factor analysis. While correlations between a large number of individual questions within each component have been found (see appendices B-J), the current study did not aim to validate the components or to identify any underlying factors, but instead explored the differing degrees of understanding displayed by participants of varying age groups. Indeed, the main aim of this comprehensive questionnaire was to assess whether the used questions would be answerable by adult participants to ensure that variations of these questions could be used in subsequent studies presented in this thesis.

Also, the finding that 6-year-olds and 7-year-olds attending the first grade did not differ in their performance and were outperformed by older participants for the majority of components assessed (hypothesis b) has implications for the remainder of the thesis. 6-year-olds and 7-year-olds attending the first grade were deemed as appropriately similar to be treated as a homogenous group in regards to their understanding of police interviews – or the lack thereof. The following studies will therefore target these two age groups as a suitable sample. Likewise, given that these age groups' understanding was less proficient than the understanding demonstrated by older participants, it is suggested that these age groups are particularly vulnerable to the challenges identified in chapter 2. Therefore, these age groups are particularly likely to benefit from an intervention improving their understanding of police interviews (see below).

Furthermore, the finding that 8-year-olds and 7-year-olds attending the second grade performed at an intermediate level while 9-year-olds and 10-year-olds tended to demonstrate understanding comparable to adults informed subsequent studies in this thesis. In particular, this finding suggests that 9- and 10-year-olds would be suitable as a pilot group to evaluate the

suitability of new materials as their understanding is comparable to that of adults while their cognitive abilities may be more similar to those of 6-year-olds and 7-year-olds attending the first grade (thus potentially indicating if children are likely to possess the necessary linguistic and mnemonic skills to respond appropriately to the methods used).

The most important implication of the findings from study 2 derives from hypothesis (c). Specific questioning techniques seem to be the most difficult component to understand for children, which may not be surprising given the number of challenges identified in the literature that are directly associated with questioning techniques (see 2.6). Indeed, study 2 suggests that there may be an association between the challenging nature of questioning techniques for police interviewees and their understanding of these techniques, as the identified age difference in study 2 is reflected in children's performance when interviewed using various questioning techniques. Therefore, the two key suggestions deriving from study 2 are that (a) questioning techniques may be challenging because individuals lack understanding of these techniques and (b) if understanding of questioning techniques could be improved, interviewees might find it easier to overcome the challenges and provide detailed and accurate statements within the framework of police interviews. Using the novel approach employed in study 2, these two suggestions will be addressed in the remainder of the thesis. Specifically, study 3 will (a) assess 6- and 7-year-olds' (i.e. first graders') understanding of questioning techniques using a similar approach to the one used in study 2 and (b) evaluate the effectiveness of an intervention designed for the present thesis in improving first graders' understanding of the questioning techniques used.

5 Study 3 - Design of an intervention to improve young children's understanding of interviewee behaviours

5.1 Introduction

As suggested in study 2, children lack basic understanding of fundamental procedures and dynamics within a police interview which potentially increases children's vulnerability. If children's knowledge and understanding of interviews could be improved, this might increase the accuracy and quantity of the information they could provide. Children's knowledge and understanding for various domains have been successfully increased in the past through brief, inexpensive interventions such as stories or television programmes (Anderson et al., 2000; Beuscher & Roebers, 2005; Fisch, Truglio, & Cole, 1999; Krackow & Lynn, 2010; Linebarger, Kosanic, Greenwood, & Doku, 2004; Michel, Roebers, & Schneider, 2007; Rice, Huston, Truglio, & Wright, 1990; Walma van der Molen & van der Voort, 1997; Walma van der Molen & Voort, 2000). Therefore, an intervention to improve children's understanding of police interviews was designed, which considered six factors that may be related to children's learning, namely ability to engage (Hidi, 2001; Renninger & Wozniak, 1985; Troseth, Saylor, & Archer, 2006), ability to identify with the main character (Calvert, Strong, Jacobs, & Conger, 2007; Hoffner, 1996; Hosford, 1981), comprehensibility (Mayer, 2005), length of the intervention, ability to increase knowledge and children's awareness of their novel knowledge. Each of these factors will be discussed in turn.

5.1.1 Engagement of children

Ability to engage children's attention and maintain it for the duration of the learning experience has been suggested as crucial to children's learning (Hidi, 2001; Renninger & Wozniak, 1985; Troseth et al., 2006). Children are poorer than adults in selecting crucial stimuli (e.g. information) and maintaining attention for prolonged periods of time, especially when faced with conflicting less crucial stimuli (Miller et al., 1994; Vurpillot, 1968). Rewards can be instrumental in guiding children's attention; while these rewards may be extrinsic (e.g. physical rewards, such as stickers or sweets), intrinsic rewards may also be effective (Cordova & Lepper, 1996; Lepper & Gilovich, 1982). Children are more likely to engage with stimuli if they perceive them to be enjoyable, for example through visual appeal, such as colours or physical attributes (Hoffner, 1996; Schnotz, 2005), perception of them as a game or a story

(Cordova & Lepper, 1996; Gee, 2007; Graesser, Singer, & Trabasso, 1994; Lepper & Cordova, 1992; Lepper & Gilovich, 1982; Nguyen, Kemp, & Want, 2011; Steinkuehler, 2006; Wimmer, 1983) or interaction with them (D. R. Anderson et al., 2000; Blewitt, Rump, Shealy, & Cook, 2009; Calvert et al., 2007, 2007; Crawley et al., 2002; Crawley, Anderson, Wilder, Williams, & Santomero, 1999; W. L. Johnson, Rickel, & Lester, 2000; Lauricella, Gola, & Calvert, 2011; Moody, Justice, & Cabell, 2010; Strouse, O'Doherty, & Troseth, 2013).

For older individuals, interacting with additional materials may interfere with the individuals' ability to attend to the information to be encoded, resulting in diminished performance (Courage, Bakhtiar, Fitzpatrick, Kenny, & Brandeau, 2015; Moreno, Mayer, Spires, & Lester, 2001; Murray & Thomson, 2011). In contrast, young children benefit from the simultaneous presentation of text and images (Carney & Levin, 2002; Digdon, Pressley, & Levin, 1985; Hannus & Hyönä, 1999; Murray & Thomson, 2011; Paivio, 1970; Peeck, 1993; Pressley, Pigott, & Bryant, 1982; Ruch & Levin, 1977; Saada-Robert, 1999; Schnotz, 2005; Tindall-Ford, Chandler, & Sweller, 1997; Tindall-Ford et al., 1997; Vekiri, 2002).

Acknowledging that children are more engaged and motivated if they perceive activities as a game, the literature provides several examples of assessments of abilities being declared as games, such as colour sorting (Frye, Zelazo, & Palfai, 1995; Halford, Bunch, & McCredden, 2007; Marcovitch, Boseovski, & Knapp, 2007; Oh & Lewis, 2008), memory (Schwenck, Bjorklund, & Schneider, 2007; Shin et al., 2007), strategic reasoning (Carroll, Apperly, & Riggs, 2007), decision making (Beck, Robinson, & Freeth, 2008), and map use (Shusterman, Ah Lee, & Spelke, 2008). Consequently, the present intervention was designed in a way that would be visually appealing to children through the inclusion of pictures, allowing them to interact with the presented material as a "game" while reducing the demands of the story line and other potential distractors in favour of explanatory elements embedded in the presentation.

5.1.2 Choice of character

Another factor to be considered was the inclusion of a character to be introduced to the children. By introducing a fictional character as a 'mediator' between the instructions provided, it was hoped to minimize pressure on children to respond correctly while encouraging the children to engage with the intervention (Anderson et al., 2000; Calvert et al., 2007, 2007; Crawley et al., 2002, 1999; Lauricella et al., 2011; Roberts & Blades, 1998; Strouse et al., 2013) as well as to increase children's motivation and enjoyment of the

intervention (Atkinson, 2002; Cordova & Lepper, 1996; Graesser et al., 1994; Hoffner, 1996; Johnson et al., 2000; Moreno et al., 2001) and ultimately their processing of new information (Atkinson, 2002; Calvert et al., 2007; Cordova & Lepper, 1996; de Koning, Tabbers, Rikers, & Paas, 2007; Dickey, 2006; Johnson et al., 2000; Linebarger, 2005; Moreno et al., 2001; Strouse et al., 2013; Wouters, van Nimwegen, van Oostendorp, & van der Spek, 2013). Particular attention was paid to designing a character with whom children would be able to identify (Calvert et al., 2007; Hoffner, 1996; Hosford, 1981). Various television programmes that aim to engage children via a fictional character suggested the use of a character children would perceive as funny (Hoffner, 1996; Nguyen et al., 2011).

Likewise, the literature suggested an easy-to-follow story line that children can either relate to like Sesame Street (Cordova & Lepper, 1996; Rice et al., 1990) or that children would like to experience themselves like Dora the Explorer (Calvert et al., 2007). Additional features used in visual media for children include visual appeal such as colourful clothes to attract attention, simplified human features, easily recognizable facial expressions or attractiveness (Hoffner, 1996). Pseudo-interactions with the audience, such as asking questions, providing sufficiently long pauses for children to "reply" and subsequent "feedback" on children's responses (Anderson et al., 2000; Calvert et al., 2007; Crawley et al., 2002, 1999; Johnson et al., 2000; Lauricella et al., 2011), the promotion of qualities that both children and adults value, including politeness, honesty, friendship and humour, (Hoffner, 1996) as well as the usage of age-appropriate language make fictional characters appear more like peers than like adults (Ginns, Martin, & Marsh, 2013; Mayer, Fennell, Farmer, & Campbell, 2004; Moreno & Mayer, 2007, 2004) and ensures comprehensibility for the intended age group. Unlike characters in television programmes, a static character was chosen over an animated one as animations do not necessarily provide any additional benefit to learners and may interfere with learning through increased cognitive load (Betrancourt, 2005; Hegarty, Kriz, & Cate, 2003; Mayer, Hegarty, Mayer, & Campbell, 2005; Sweller, 1988; Tversky, Morrison, & Betrancourt, 2002).

5.1.3 Comprehensibility

Comprehensibility was another factor to be considered when designing an intervention for children. Children's ability to comprehend and produce spoken and written language varies considerably as it depends on various factors, for example working memory span (Montgomery, 2003), numbers and age of siblings (Jones & Adamson, 1987; Wellen, 1985),

attachment (Oades-Sese & Li, 2011) and parental reminiscing about the past (Peterson, Sales, Rees, & Fivush, 2007; Wareham & Salmon, 2006). While past research suggests that certain concepts, such as questions with multiple components (Evans et al., 2009, 2014), specific vocabulary and jargon (Saywitz et al., 1990) or long sentences and sentences with multiple sub-clauses (Katz & Hershkowitz, 2012) can interfere with children's ability to comprehend spoken or – albeit lesser so – written language, there are no comprehensive guidelines in regards to which concepts are commonly understood by children of a specific age. Consequently, the content should be easily understood by children while avoiding oversimplifying the content. Using informal, personalized language has been associated with better recall of presented material as well as better application of acquired information to novel problems (Mayer et al., 2004; Moreno & Mayer, 2007, 2000, 2004; Rogers, Kuiper, & Kirker, 1977). Therefore, informal, personalized language was employed.

5.1.4 Length

Children's attention is less focused (Miller et al., 1994; Vurpillot, 1968) and more difficult to maintain. Past research recommends frequent breaks as well as more alternations (Ayres & Paas, 2007) in the content of a presentation to children to ensure their continuous engagement and ability to comprehend and transfer new information into long-term memory. Thus, the intervention was kept very brief (about 10 minutes) and the presentation was varied between children listening to explanations being read to them and children engaging in pseudo-interactions with a fictional character presented on a screen.

5.1.5 Increase of knowledge and awareness thereof

The two other considerations that were made in the design of the current intervention are that interventions need to lead to an increase in knowledge that the individual is aware of to encourage application of the newly-gained knowledge. Findings from study 2 have suggested that the targeted age group, i.e. 6- to 7-year-old children, lacked even very basic knowledge of police interviews and in particular of the dynamics and processes assessed within study 3. Due to the lack of knowledge in 6- to 7-year-old children as well as their age (Sobel & Letourneau, 2015), children should be able to detect knowledge that was acquired as a consequence of the

intervention and, if the intervention is successful, be able to subsequently demonstrate this knowledge.

To summarise, children should be able to learn from the intervention designed for study 3 if (a) the intervention is engaging, (b) they can identify with the main character, (c) the content is comprehensible and (d) of appropriate length while (e) increasing children's previous knowledge in a way that (f) children are aware of it. In addition to explicitly comparing children's knowledge prior and after the intervention, children were asked to provide feedback on the factors named above. It was predicted that children's understanding of interviewee behaviours would increase as a consequence of the intervention.

5.2 Method

5.2.1 Participants

Prior to recruitment, ethical permission was granted by the Ethics Committee of the Department of Psychology of the University of Sheffield. In addition, written consent was obtained from the headmaster and children's caretakers.
Fifty-seven first graders (M_{age} = 87.82 months, SD = 4.42 months) were recruited from a primary school in Germany. There were 29 males (M_{age} = 86.41 months, SD = 4.42 months) and 28 females (M_{age} = 87.92 months, SD = 4.58 months).

5.2.2 Experimental materials

For study 3, a novel intervention was designed that consisted of a text that was read to the children along with seven accompanying PowerPoint slides. A translation of all materials can be found in figures 5.2 to 5.8.

5.2.3 Questionnaires

Two novel questionnaires were designed.
Questionnaire *"understanding of interviewee behaviours"* assessed children's understanding of interviewee behaviours in police interviews. This questionnaire, while based on the questionnaire *"overall understanding of police interviews"*, which was previously used in study 2, differed from the former version in two key aspects. First, it was shortened to avoid over-exerting participants while at the same allowing a more focused investigation of issues that 6- and 7-year-old children (i.e. the participants in the current study) evidently struggled

with based on the literature and study 2, in particular in regards to interviewee behaviours (as opposed to interviewer behaviours, the understanding for which will be assessed in study 4). Second, in contrast to the previous questionnaire *"overall understanding of police interviews"*, which assessed children's understanding based on a concrete video sequence (*a*) that was used in study 2, the novel questionnaire *"understanding of interviewee behaviours"* assessed children on a more abstract level (i.e. without a concrete staged mock interview). This adjustment was made as children's understanding would have to be improved beyond specific mock interviews for the intervention to be truly effective and usable in actual police interviews. The questions used were therefore worded in a way that suggested a brief scenario; participants then had to suggest an appropriate reaction to respond to this scenario.

Specifically, children had to

- Overcome the bias of providing a response in spite of failing to comprehend a question (question 1)
- Disagree with a suggestive question (question 2)
- Acknowledge that the interviewee was the expert in the conversation and thus had to provide as many details as possible (question 3)
- Realise that question repetition does not indicate that the given response was incorrect and thus repeat, rather than change the previously given response (question 4)
- Demonstrate awareness that words associated with the punitive role of police forces may be used in a non-threatening context (question 5)
- Recognise that asking for clarification is a desirable behaviour in the context of police interviews (question 6)
- Identify that indicating uncertainty is a desirable behaviour in the context of police interviews (question 7)
- Provide a novel suggestion in response to a closed question rather than selecting an inaccurate option provided (question 8)
- Understand that a potential focus on unpleasant topics over investigation-irrelevant topics should not induce anxiety (question 9)
- Be aware of key duties of police forces (question 10)

A translated transcript can be found in figure 5.1. Children responded to this questionnaire 48 hours before (time 1) and 48 hours after exposure (time 2) to the experimental manipulation.

Questionnaire *"feedback on intervention"* asked children to provide feedback on how much they enjoyed various aspects of the intervention. A translated transcript can be found in figure 5.9. Children responded to this questionnaire immediately after exposure to the experimental manipulation.

5.2.4 Procedure

Prior to all phases of study 3, children were informed that participation was entirely voluntarily and that they could withdraw from it at any point without giving reasons. Also, it was stressed that refusal to participate or terminating study 3 before its end would have no adverse consequences on participants. All children decided to take part in all phases.

Study 3 was conducted in three phases. Responses provided in the first and the third phase (i.e. the phases in which children were questioned individually) were voice-recorded for later transcription.

In the first phase, all children individually (i.e. without any other children present) responded to questionnaire *"understanding of interviewee behaviours"*. Based on their position on an alphabetical class list, children were randomly allocated to one of four question orders (i.e. child 1 responded to questions 1-10 (i.e. in the order used for this report), child 2 responded to questions 10-1 (i.e. in reverse order), child 3 responded to questions 6-5 (i.e. starting from question 6 and then following the same order as child 1), child 4 responded to questions 5-6 (i.e. starting from question 6 and then following the same order as child 3) child 5 responded in the same order as child 1, etc.. The (translated) questionnaire (in the order as would be experienced by child 1, child 5, etc.) is provided below. The question order was only changed for the numbered questions; questions labelled with a letter were always asked before and after the other questions respectively.

a) *What class are you in?*
b) *Are you male or female?*
c) *When were you born?*

1. *What should you do if you don't understand something a policeman says?*
2. *What should you do if a policeman says something and you believe he is wrong?*
3. *What should you do if a policeman asks you to tell him everything?*
4. *What should you do when a policeman repeats a question?*
5. *Why does a policeman say words such as "prison"?*
6. *You ask a policeman to explain a word to you. How does the policeman like that?*
7. *What should you do if you are not sure about something?*
8. *A policeman makes several suggestions what could have happened, but you think all suggestions are wrong. What should you do?*
9. *Why does a policeman not talk about certain things?*
10. *What – other than interviewing people – do policemen do?*

a) *How difficult were questions 1- 10?*

Very difficult Difficult Not difficult or easy Easy Very easy

b) *How many questions (from 1-10) do you think you've got right?*

Figure 5.1 Questionnaire "understanding of interviewee behaviours" used in study 3

After a delay of 48 hours, the second phase of study 3 was conducted. Children were randomly allocated to the control group or the intervention group and then participated in groups of up to five children. This random allocation resulted in 21 children being allocated to the control group (41.2%) and 30 children being allocated to the intervention (58.8%). Children were welcomed with the following words.

[For children in the control group]: *Hi, I would like to talk about what you like to do today. Is that alright?*

[For children in the intervention group; the fictional character used in the intervention was called Uli]: *Hi, I would like to play a game called "the Uli-game" with you today. Is that alright?*

Children in the control group engaged in a task-unrelated discussion on age-appropriate topics familiar to children (e.g. siblings, pets, holidays, hobbies) and indicated their responses through hand signs for about 10 minutes (i.e. the same duration as the intervention). Comparable to the intervention group, children in the control group also received generic feedback on their responses (e.g. "so *x* of you like to cycle") and provided feedback on their experience via hand signs. Intervention-specific terms from questionnaire *"feedback on intervention"* (see figure 5.9) were replaced with generic terms (e.g. "text", "main character" etc., were replaced through generic terms such as "discussion", "topic x").

Children in the intervention group underwent the intervention (see figures 5.2 to 5.8). After each slide, children were requested to indicate via hand signs which response they thought was correct and received feedback on their response. The intervention lasted approximately ten minutes and at the end, children provided feedback on the intervention through responding to questionnaire *"feedback on intervention"* (see figure 5.9) via hand signs. Instructions to children in the intervention group are provided below.

When you see policemen on television, they often catch bad people or save good people from danger. However, this is not all that policemen do and today I'd like to tell you about something else that police regularly do: they interview people to find out what happened in certain situations such as accidents.

When policemen interview somebody, they want to find out the truth. Therefore, they try their hardest to interview people in a way that makes them feel safe and listened to – without influencing what people are saying. However, as you can imagine, policemen can be really busy and so, like everybody else, they can make mistakes.

This is why today I'd like to talk to you about mistakes that can happen when the police interview somebody – especially children - – and how people can help the police to find out what really happened. After all, we want the police to be able to do their job well, don't we?

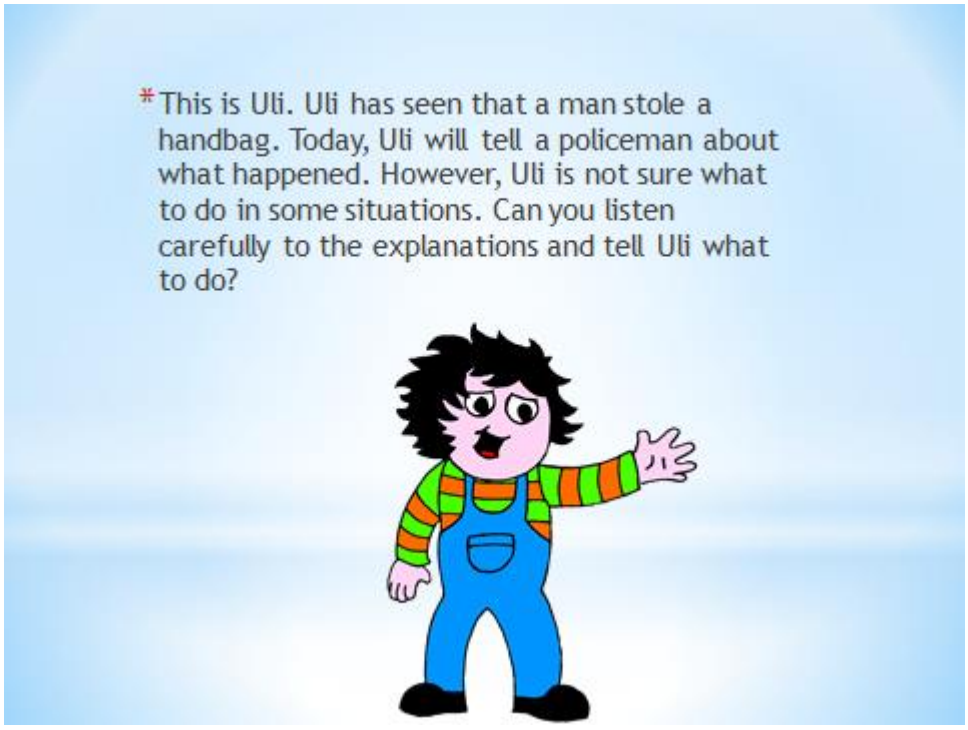

Figure 5.2 Slide 1 which was presented in the intervention in study 3

As you probably know, policemen have to help at a lot of accidents. So, sometimes it can happen that policemen forget that normal people don't know that much about accidents – and then they might use words that people, especially children, don't understand. Policemen don't do this on purpose, but sometimes it happens. In this case, it's a really good thing to say "I don't know what this word means" – because then the policeman can explain the word. Policemen don't mind explaining a word – it actually helps them, because then they know that they and the people they interview talk about the same thing. So it makes it easier for the police to find out what really happened.

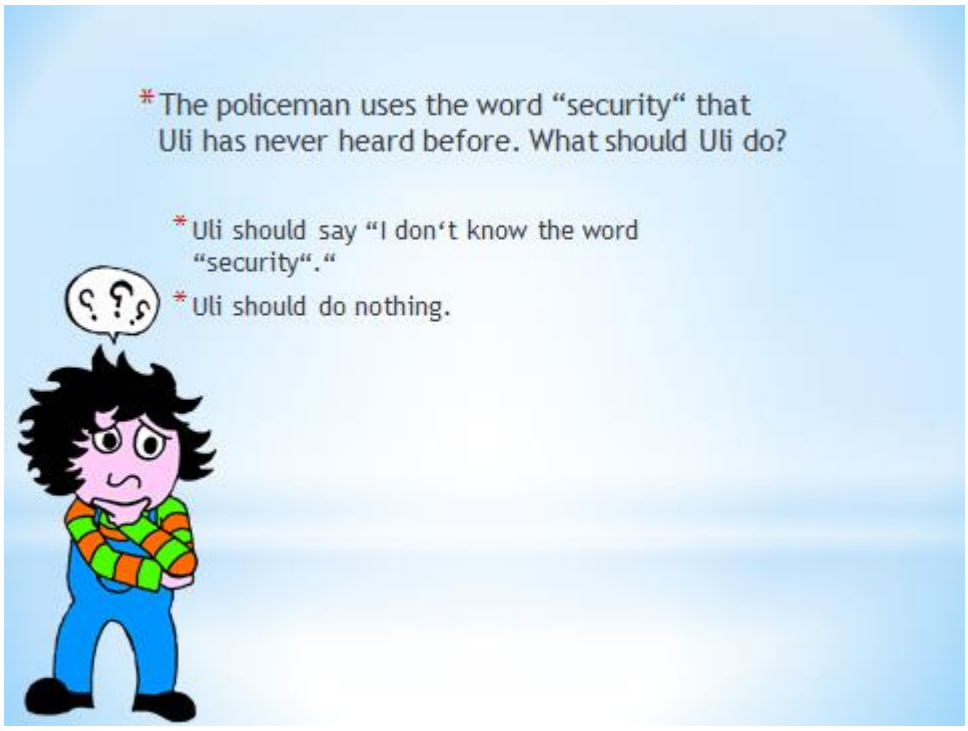

Figure 5.3 Slide 2 which was presented in the intervention in study 3

Similarly, policemen sometimes know a bit about the accident already – or they think they do because they've seen a similar accident before. In this case, it can happen that policemen ask a question that already suggests an answer. For example, they can say that a particular car did something wrong or that an accident happened in a particular way. However, policemen aren't always correct and so it is really important to tell the policemen if something happened in a different way or if people aren't sure what really happened. It can sometimes be difficult to disagree with an adult, especially with a policeman – but don't forget, policemen want to find out the truth. So it's a good thing to tell them if something happened differently or if you [impersonal, not addressing the children] *are unsure about what actually happened.*

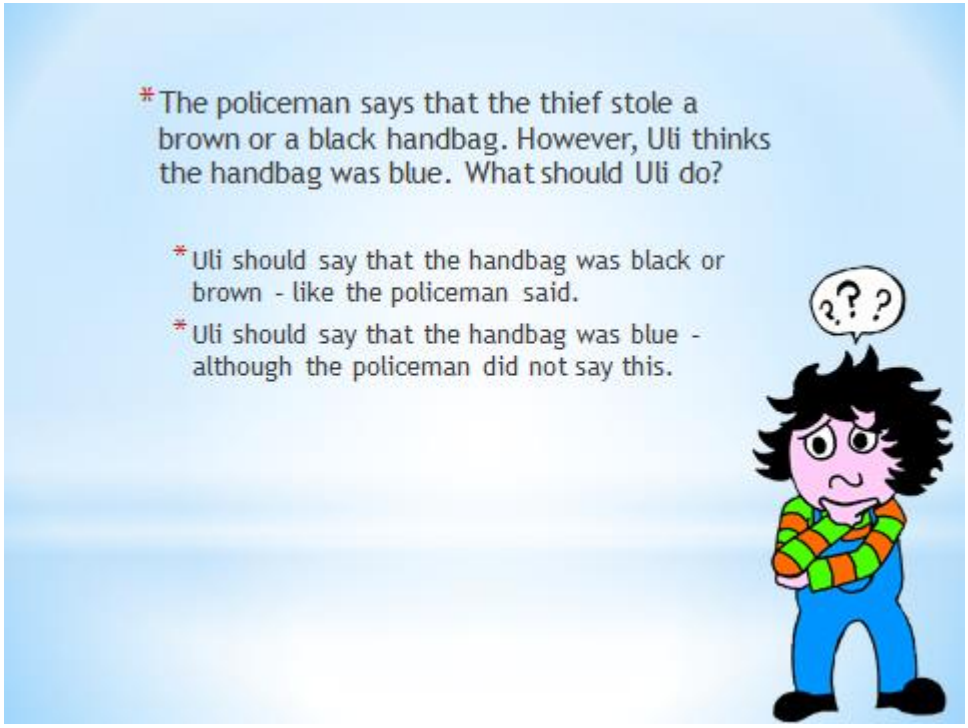

Figure 5.4 Slide 3 which was presented in the intervention in study 3

Policemen will often try and ask a question such as "what happened?". By asking a question like this, people can tell the police everything that they saw and the policeman can get a really good idea what happened and find out the truth. So this is a really good way to ask somebody. However, sometimes, policemen can forget to ask in this way and they ask questions such as "did the motorbike or the bus drive first?". This question can be difficult to answer, because what could you say if they both drove off at the same time? Or if some other car drove first? If this happens, it's really important to remember that even policemen don't know everything – so you might have to correct them; even if it's difficult. But in the end, this is how the police can find out the truth.

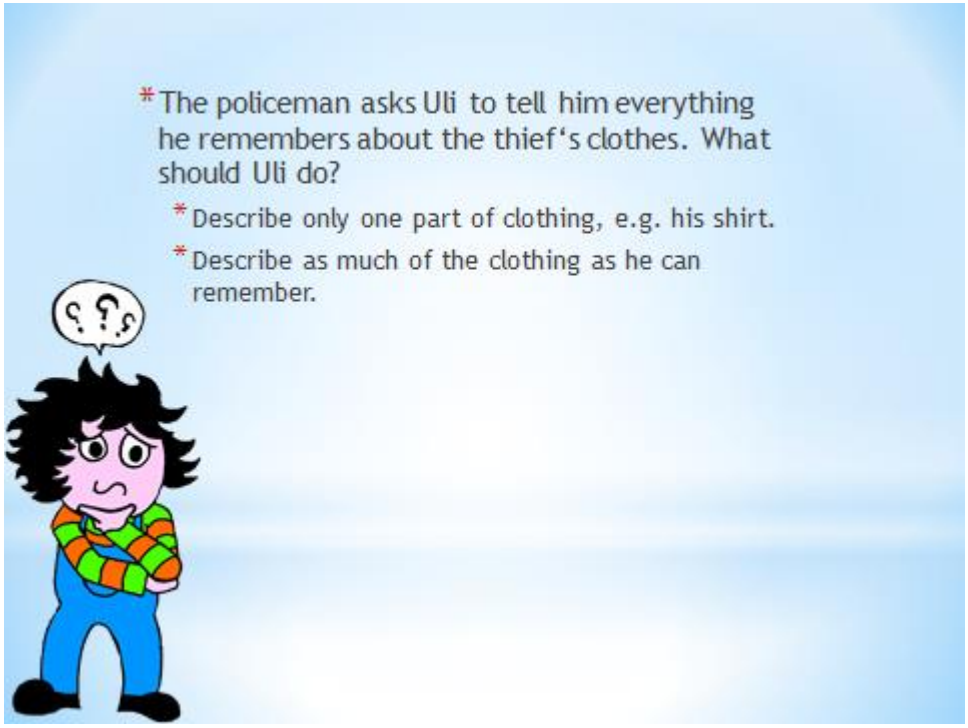

Figure 5.5 Slide 4 which was presented in the intervention in study 3

To find out the truth, policemen will sometimes ask the same question twice – or ask very similar questions. This is not because you've [impersonal] *said something wrong, but the police might not have heard it right or might be unsure whether they understand what you* [impersonal] *mean. Or they simply didn't have time to write it all down! So it's best to be patient and repeat your answer – the policeman will be glad to have some extra time to write it down. But, as you can imagine, policemen are really busy people, so sometimes they don't have time to talk about everything. They will always try and find out everything that people know about a situation, such as an accident – but sometimes they don't have time to talk about other things that have nothing to do with the accident. So they might interrupt people if they talk about other things or they might not be able to ask questions about this. This doesn't mean they don't care – they merely don't have time because policemen are really busy.*

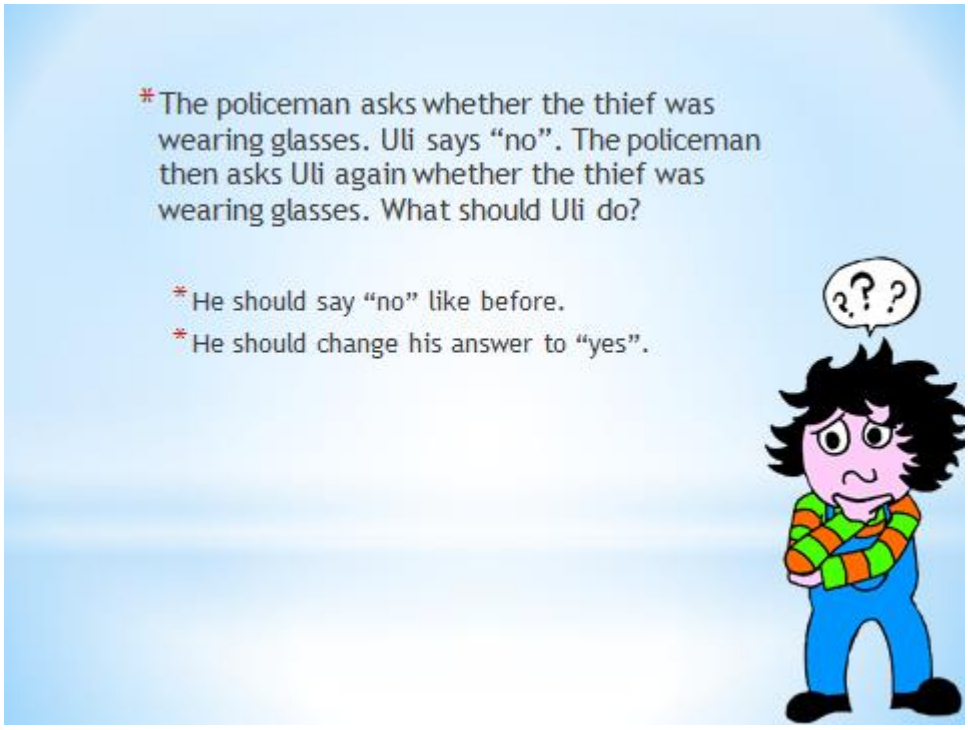

Figure 5.6 Slide 5 which was presented in the intervention in study 3

Finally, it's important to remember that even if a policeman uses words that you might have seen on the television, that doesn't mean he thinks you've [impersonal] *done something bad. Sometimes they just have to say certain words to make sure people don't lie or because it's their job. However, remember that a police officer is your friend and helper – police officers don't think you've done anything bad! After all, policemen are also just people and they try and help people all day long. So before they've talked to somebody, they might have helped at an accident, talked to other people or told their colleagues and bosses what they've found out.*

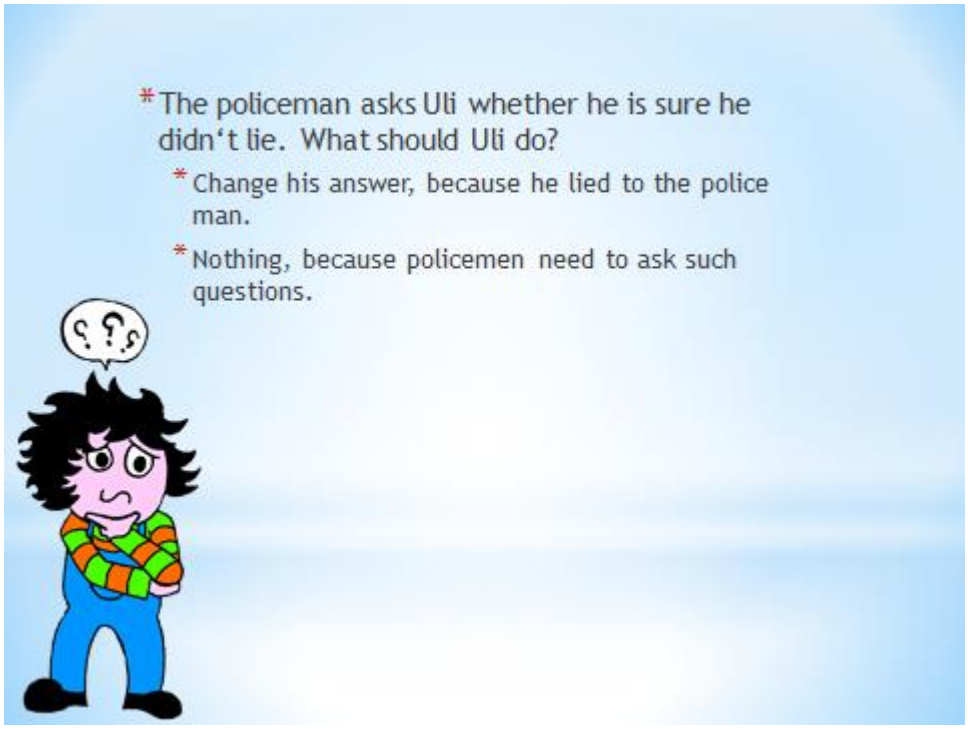

Figure 5.7 Slide 6 which was presented in the intervention in study 3

Whatever policemen do before and after they talk to somebody though, they are just humans and as such, they make mistakes. This is why it's really important to remember that they sometimes don't do things as well as they could – but they always try to help you and everybody can help them by:

- *Telling them if you don't understand something they say*
- *Telling them if something happened in a different way or you aren't sure what happened*
- *Repeating the answer if they haven't understood a response correctly or couldn't write it down*
- *Trying to talk only about the situation the policeman needs to find out about*
- *Understanding that sometimes police need to say certain words – but that doesn't mean they think you've done something bad*
- *Remember that policemen have many things to do and sometimes make mistakes*

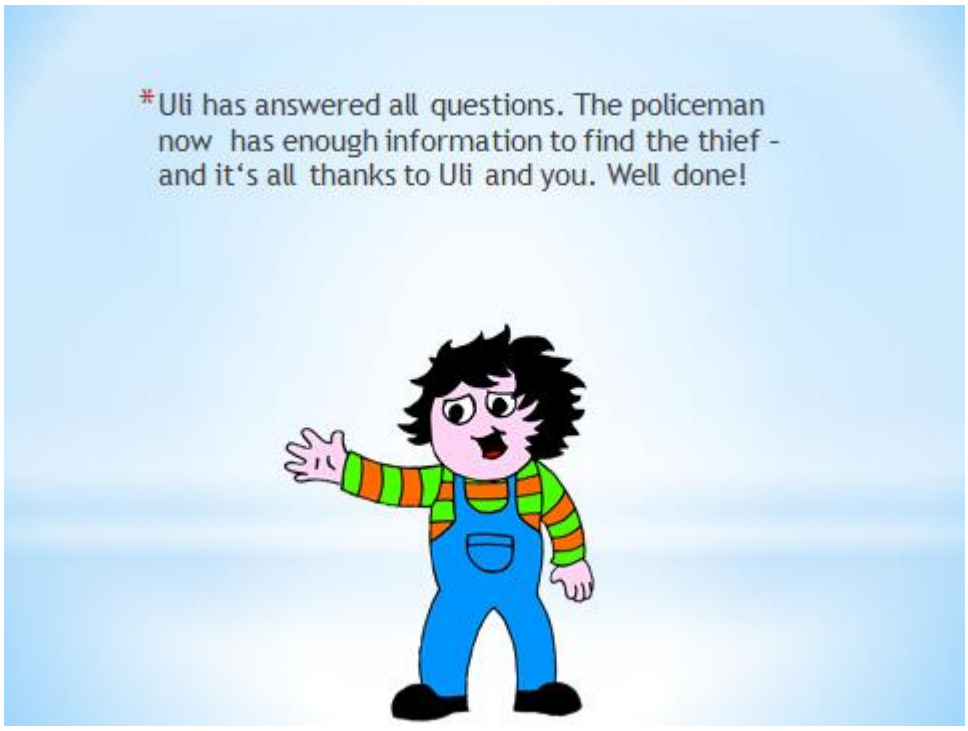

Figure 5.8 Slide 7 which was presented in the intervention in study 3

After exposure to the experimental manipulation, children provided feedback through questionnaire *"feedback on intervention"* (see figure 5.9). Please note that intervention-specific terms were replaced by more generic terms for children in the control group (e.g. "text", "main character" etc., were replaced with generic terms such as "discussion", "topic x").

1. *How interesting was the text you've heard?*

   Not at all A bit Very

2. *How much did you like Uli?*

   Not at all A bit Very

3. *How easy/difficult to understand were the explanations?*

Very easy A little bit easy Not easy or difficult A bit difficult Very difficult

4. *How easy/difficult was it to listen to the end?*

Very easy A little bit easy Not easy or difficult A bit difficult Very difficult

5. *How many new things did you learn about police work?*

   None Not many/A few Many

6. *What did you like best?*
7. *What did you like least?*
8. *What would make the text better?*

Figure 5.9 Questionnaire "feedback on intervention" used in study 3

For the third phase, which took place 48 hours after the second phase, all children individually responded a second time to questionnaire *"understanding of interviewee behaviours"* (see figure 5.1). The order of the question was reversed to the order that children experienced in the first phase (i.e. children who previously received the order 1-10 now replied to the reverse order 10-1, children who previously received the reversed order 10-1 now replied to the order 1-10, children who previously received the order 5-6 now replied to the order 6-5 and children who previously replied to the order 6-5 now replied to the order 5-6). Prior to the questionnaire, children received the following instructions.

[For children in the intervention group]: *Do you remember the "Uli-game" we played the last time I saw you*?" (When children indicated that they remembered playing the game): *"Because we played that game, I would like to ask you a few more questions. Is that alright?"*

[For children in the control group]*: "Do you remember that we talked about* [topic that this specific child discussed within the group] *last time I saw you?* (When children indicated that they remembered): *"Because I know you a bit better now, I would like to ask you a few more questions. Is that alright?"*

All children indicated that they remembered the previous session.

After each phase, children were thanked for their participation and returned to their classrooms.

5.3 Results

5.3.1 Scoring

Responses were scored as correct if they corresponded to the information provided in the intervention (for an overview of responses scored as correct see table 5.1). All responses were scored independently by a second marker. The two markers agreed on 1099 out of 1140 responses (96.5%).

Question number and question	Responses scored as correct
1. What should you do if you do not understand something a policeman says?	Ask for clarification; Ask policeman to repeat what he has said
2. What should you do if a policeman says something and you believe he is wrong?	Disagree with policeman; Express doubt
3. What should you do if a policeman asks you to tell him everything?	Explain everything
4. What should you do when a policeman repeats a question?	Repeat answer; Talk only about true events; Tell him everything you know
5. Why does a policeman say words such as "prison"?	Police forces need to say such words; To ensure that people tell the truth
6. You ask a policeman to explain a word to you. How does the policeman like that?	Positive
7. What should you do if you are not sure about something?	Talk about things that are you are sure about; Explain everything you have seen; Refrain from lying; Talk only about true things; Indicate uncertainty
8. A policeman makes several suggestions what could have happened, but you think all suggestions are wrong. What should you do?	Disagree with policeman; Talk only about true events; Indicate uncertainty
9. Why does a policeman not talk about certain things?	Some things are not important to policeman; Lack of time
10. What (other than question people) do policemen do?	Arrest (bad) people; Assist (good) people/with accidents; Solve crimes; Obtain evidence; Listen to people; Investigate; Obtain statement; Ensure people's safety; Chase thieves; Regulate traffic

Table 5.1 Responses scored as correct for questionnaire "understanding of interviewee behaviours" in study 3

5.3.2 Preliminary analyses

Preliminary analyses were conducted to assess if there were any differences due to the order the questions were presented in or the allocation to groups prior to the experimental manipulation (i.e. at time 1).

5.3.2.1 Question order

No differences emerged due to the order that the questions were presented in. Consequently, question order was not considered any further.

5.3.2.2 Differences prior to experimental manipulation

The number of correct responses provided revealed that the control group significantly outperformed the intervention group for one of the 10 questions (question 2) asked at time 1 (χ^2 (1, N = 51) = 6.04, p = .014). However, as the control group outperformed the intervention group - thereby minimizing the chance that a potentially higher performance in the intervention group at time 2 could be attributed to pre-existing differences between groups at time 1 -, this was not regarded as a risk and was not considered any further.

5.3.3 Main analyses

The data collected was analysed under three aspects.

The first and most important aspect assessed whether children's knowledge increased as a consequence of exposure to the experimental manipulation. Two Chi-Square tests were conducted for each question presented at time 2 to assess (a) whether type of experimental manipulation had an effect on children's knowledge and (b) whether exposure to the intervention would improve children's understanding. Results for these analyses are provided in section 5.3.3.1.

The second aspect assessed how much children enjoyed various aspects of the intervention and whether their overall enjoyment correlated with the number of correct answers that they provided. Results for these analyses are provided in section 5.3.3.2.

The third aspect examined children's predictions of their own performance. In particular, it was assessed (a) how many correct responses children estimated that they had provided prior and after the experimental manipulation, (b) whether their estimates of correct scores they had provided prior to and after the experimental manipulation correlated with their actual scores

and (c) how difficult or easy children perceived the questions to be prior and after the experimental manipulation. Results for these analyses are provided in section 5.3.3.3.

5.3.3.1 The effect of experimental manipulation on children's knowledge

Two Chi-Square tests were conducted for each question presented at time 2.
First, the condition (control vs. intervention) was plotted against children's correct and incorrect responses provided at time 2 to assess if the condition had an effect on children's scores.

Second, the condition (control vs. intervention) was plotted against children's correct and incorrect responses provided at time 2 if children's responses at time 1 were incorrect. These analyses assessed (a) if the intervention improved children's performance and, if so, (b) if the intervention improved children's performance significantly beyond any potential improvement apparent in the control group.

Question number and question	Before intervention	After intervention	*p*
1. What should you do if you do not understand something that a policeman says?	46.7 %	70.0 %	.026
2. What should you do if a policeman says something and you believe that he is wrong?	6.7 %	40.0 %	.413
3. What should you do if a policeman asks you to tell him everything?	66.7 %	70.0 %	.574
4. What should you do when a policeman repeats a question?	20.0 %	50.0 %	.005
5. Why does a policeman say words such as "prison"?	0.0 %	10.0 %	.091
6. You ask a policeman to explain a word to you. How does the policeman like that?	36.7 %	63.3 %	.088
7. What should you do if you are not sure about something?	3.3 %	46.7 %	.024
8. A policeman makes several suggestions what could have happened, but you think all suggestions are wrong. What should you do?	10.0 %	53.3 %	.035
9. Why does a policeman not talk about certain things?	13.3 %	26.7 %	.697
10. What – other than question people - do policemen do?	60.0 %	70.0 %	.396

Table 5.2 Overview of correct responses (in percent) for questionnaire "understanding of interviewee behaviours" in study 3. Note that only results from the intervention group are displayed.

Question 1. What should you do if you do not understand something a policeman says?

	Control	Intervention
Time 1	37.0 %	46.7 %
Time 2	40.7 %	70.0 %

Table 5.3 Correct responses (in percent) by condition to question 1 in study 3

There was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 57) = 4.94, p = .026).
Less than half the children in the control group (40.7%) provided a correct response, but two thirds of the children in the intervention group (70.0%) did so.

When only children who had provided an incorrect response at time 1 were considered, there was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 33) = 5.31, p = .021).
Over half the children in the intervention group (N = 16; 56.3%) could provide a correct response, while less than a fifth of children in the control group (N = 17; 17.6%) did so.

Question 2. What should you do if a policeman says something and you believe he is wrong?

	Control	Intervention
Time 1	29.6 %	6.7 %
Time 2	29.6 %	40.0 %

Table 5.4 Correct responses (in percent) by condition to question 2 in study 3

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 57) = 0.67, p = .413)

When only children who had provided an incorrect response at time 1 were considered, there was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 47) = 4.68, p = .031).
Over one third of children in the intervention group (N = 28; 39.3%) could provide a correct response while only a tenth of children in the control group (N = 19; 10.5%) did so.

Question 3. What should you do if a policeman asks you to tell him everything?

	Control	Intervention
Time 1	59.3 %	66.7 %
Time 2	63.0 %	70.0 %

Table 5.5 Correct responses (in percent) by condition to question 3 in study 3

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 57) = 0.32, p = .574)

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 21) = 0.38, p = .537).

Question 4. What should you do when a policeman repeats a question?

	Control	Intervention
Time 1	18.5 %	20.0 %
Time 2	14.8 %	50.0 %

Table 5.6 Correct responses (in percent) by condition to question 4 in study 3

There was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 57) = 7.92, p = .005).
Half the children in the intervention group (50.0%) could provide a correct response while about a sixth of children in the control group (14.8%) did so.

When only children who had provided an incorrect response at time 1 were considered, there was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 46) = 10.15, p = .001).
Nearly half the children in the intervention (N = 24; 45.8%) could provide a correct response while only one child in the control group (N = 22; 4.5%) did so.

Question 5. Why does a policeman say words such as “prison”?

	Control	Intervention
Time 1	0.0 %	0.0 %
Time 2	0.0 %	10.0 %

Table 5.7 Correct responses (in percent) by condition to question 5 in study 3

There was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 57) = 2.85, p = .091).

As all children provided an incorrect response to this question at time 1, no separate analyses were conducted to assess if there was an effect of the intervention on children’s ability to provide a correct response to this question at time 2 when only children who provided an incorrect response at time 1 were considered.

Question 6. You ask a policeman to explain a word to you. How does the policeman like that?

	Control	Intervention
Time 1	33.3 %	36.7 %
Time 2	40.7 %	63.3 %

Table 5.8 Correct responses (in percent) by condition to question 6 in study 3

There was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 57) = 2.91, p = .088).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 37) = 1.51, p = .219).

Question 7. What should you do if you are not sure about something?

	Control	Intervention
Time 1	18.5 %	3.3 %
Time 2	18.5 %	46.7 %

Table 5.9 Correct responses (in percent) by condition to question 7 in study 3

There was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 57) = 5.07, p = .024).
Nearly half the children in the intervention (46.7%) could provide a correct response, while about a fifth of children in the control group (18.5%) did so.

When only children who had provided an incorrect response at time 1 were considered, there was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 7.70, p = .006).
Half the children in the intervention group (N = 29; 44.8%) could provide a correct response while only one tenth of children in the control group (N = 22; 9.1%) did so.

Question 8. A policeman makes several suggestions what could have happened, but you think all suggestions are wrong. What should you do?

	Control	Intervention
Time 1	18.5 %	10.0 %
Time 2	25.9 %	53.3 %

Table 5.10 Correct responses (in percent) by condition to question 8 in study 3

There was an effect of the intervention on children's ability to provide a correct response at time 2 (χ^2 (1, N = 57) = 4.44, p = .035).
Over half the children in the intervention group (53.3%) could provide a correct response while a fourth of children in the control group (25.9%) did so.

When only children who had provided an incorrect response at time 1 were considered, there was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 49) = 7.81, p = .005).

Over half the children in the intervention group ($N = 27$; 51.9%) could provide a correct response while only about a tenth of children in the control group ($N = 22$; 13.6%) did so.

Question 9. Why does a policeman not talk about certain things?

	Control	Intervention
Time 1	14.8 %	13.3 %
Time 2	22.2 %	26.7 %

Table 5.11 Correct responses (in percent) by condition to question 9 in study 3

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, $N = 57$) = 0.15, $p = .697$).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, $N = 49$) = 0.28, $p = .868$).

Question 10. What – other than question people – do policemen do?

	Control	Intervention
Time 1	48.1 %	60.0 %
Time 2	59.3 %	70.0 %

Table 5.12 Correct responses (in percent) by condition to question 10 in study 3

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, $N = 57$) = 0.72, $p = .396$).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, $N = 26$) = 2.35, $p = .126$).

5.3.3.2 Pleasantness of intervention

To assess how enjoyable children perceived the intervention to be, children in the intervention group were asked to provide feedback on how interesting the intervention was, how much

they liked the character used in the intervention, how comprehensible the explanations were, how easy or difficult it was to listen to the end, and how many new things they learned about police work. Children were also asked to indicate what they liked best and liked least, as well as to provide comments on how the intervention could be improved. Results for each of these elements are provided below.

Additionally, an overall "pleasantness" score was calculated through scoring children's responses based on the overview provided in table 5.13. The overall score was then correlated with children's overall number of correct responses at time 2.

	Responses scored as "0"	Responses scored as "1"	Responses scored as "2"	Responses scored as "3"	Responses scored as "4"
How interesting was the intervention?	Not at all	A bit	Interesting	Very interesting	/
How much did you like the main character?	Not at all	A bit	Liked the main character	Liked the main character very much	/
How comprehensible were the explanations?	Not at all	A bit	Comprehensible	Very comprehensible	/
How easy or difficult was it to listen to the end?	Very difficult	Difficult	Average	Easy	Very easy
How many new things have you learned about the way police forces work?	None	A few	Many	/	/

Table 5.13 Scoring system to convert children's feedback in overall "pleasantness" score in study 3. Note that for the overall scores, points for all questions were added and recorded separately for each child.

How interesting was the intervention?

About one third of children ($N = 30$; 36.7%) tended to rate the intervention as 'very interesting', with about a fifth of children respectively rating the intervention as 'a bit interesting' (20.0%), 'interesting' (16.7%) or not providing a response (16.7%). Some children (10%) indicated that they did not find the intervention interesting at all.

How much did you like the main character?

Over half the children (*N* = 30; 60.0%) indicated that they liked the main character very much, with about a fifth of children respectively stating that they liked the main character a bit (16.7%) or not providing a response (13.3%). Less than a tenth of children (6.7%) reported that they liked the main character and only one child (3.3%) responded that they did not like the main character at all.

How comprehensible were the explanations?

Nearly half the children (*N* = 30; 40.0%) provided no response to this question. A further third (33.3%) indicated that they found the explanations very comprehensible while about a fifth of children indicated that they found the intervention comprehensible (6.7%) or at least a bit comprehensible (13.3%). Only one child (3.3%) indicated that they did not find the intervention comprehensible at all.

Was it difficult or easy to listen to the end?

The majority of children (*N* = 30) found it very easy (40%) or easy (20.0%) to listen to the end. A fifth of children provided no response (20.0%) and about a sixth of children (13.3%) found it difficult to listen to the end. One child respectively (3.3%) found it very difficult or of average difficulty to listen to the end.

How many things have you learned about police work?

The majority of children (*N* = 30; 60.0%) indicated that they learned many new things about police work, with nearly a quarter of children (23.3%) not providing a response. A sixth of children (13.3%) reported learning a few new things and one child (3.3%) indicated learning no new things.

What did you like best?

The majority of children (*N* = 30; 73.3%) provided no response to this question. About one sixth of children (16.7%) indicated that they liked everything, while two children (6.7%) enjoyed assisting the main character most and one child (3.3%) indicated that the explanations provided were their favourite aspect of the intervention.

What did you like least?

The majority of children (N = 30; 70.0%) provided no response to this question. Nearly a quarter of children (23.3%) indicated that there was no least liked element while two children (6.7%) mentioned that they did not like the example crime provided in the intervention (i.e. that a handbag was stolen).

How could the intervention be improved?

Over three-quarters of children (N = 30; 76.7%) provided no response to this question. The remaining quarter of children (23.3%) indicated that no improvement was needed.

Correlation "pleasantness" score and number of correct responses provided at time 2

There was a weak positive correlation between children's overall perception of the intervention (i.e. the overall "pleasantness score" obtained; see table 5.13) and the number of correct responses overall they provided at time 2 (r (36) = .330, p = .049). Thus, the more children enjoyed the intervention overall, the more likely they were to provide a higher number of correct responses in the subsequent phase of study 3.

5.3.3.3 Predicted number and actual number of correct responses & perceived difficulty of questions

There was a moderate positive correlation between the number of correct responses children estimated they had provided at time 1 and the actual number of correct responses provided (r (35) = .565, p < .001). Specifically, at time 1 children predicted that they had provided an average of 5.10 correct responses (SD = 3.46) but only 2.70 responses on average (SD = 1.73) were correct.

There was a moderate positive correlation between the number of correct responses children estimated they had provided at time 2 and the actual number of correct responses provided (r (30) = .635, p < .001). For time 2, both children's estimates (M = 6.60, SD = 2.63) and the actual number of correct responses provided (M = 4.12, SD = 2.31) increased.

These findings indicate that children's estimates of the number of correct responses and the actual number were correlated. Also, children's predictions of their own performance are higher at time 2, which reflected their actual scores.
In addition to children's increased optimism of their performance and indeed performing better, children also perceived the questions to be easier at time 2 than at time 1 as displayed in table 5.14.

	Children rating the questions "very easy"	**Children rating the questions "easy"**	**Children rating the questions "average"**	**Children rating the questions "difficult"**	**Children rating the questions "very difficult"**	**Children withholding a response**
Time 1	1.8 %	24.6 %	40.4 %	28.1 %	3.5 %	1.8 %
Time 2	5.3 %	50.9 %	21.1 %	15.8 %	0.0 %	7.0 %

Table 5.14 Children's rating of question difficulty (in percent) in study 3

5.4 Discussion

Statistically significant improvements in children's performance, which could be attributed to the designed intervention, emerged for four out of 10 questions (1, 4, 7, 8). While these results are promising – as only a limited number of studies to date have attempted to improve children's understanding rather than their behaviour -, the intervention did not result in statistically significant improvements for slightly more than half of the questions assessed in study 3.

However, closer inspection of the results and in particular of the summary table provided earlier (table 5.2), suggests that, for children in the intervention group, their knowledge improved considerably for most questions. In contrast, children in the control group showed little or no improvement between time 1 and time 2. Consequently, the intervention seems to have been effective in increasing children's ability to provide a correct answer to the questions asked, albeit not enough so to be detected by the statistical tests used. While the previously discussed limitations of running multiple tests and over-reliance on p-values (4.4) should still be considered for the current study, a more relevant potential limitation to the present study

might have been the lower sample size in the conditions. While the sample size employed in the current study is relatively in line with similar studies being conducted (i.e. based on the sample and methodology used), small samples increase the risk of committing a type II error, i.e. of incorrectly rejecting the experimental hypothesis. Put another way, small samples require a larger effect for it to be detected than larger samples. As the present study is novel in terms of the overall methodology and the materials, no predictions about potential effect sizes can be made and thus a larger sample would have been advantageous to reduce the risk of a type II error and to avoid potential biases that are more likely to result from small samples, such as sampling bias (i.e. recruiting a sample that is not representative of the population as a whole). Thus, while these and subsequent studies can inspire future research, they would need replication with larger samples to increase the confidence in the methodology used as well as the findings reported.

Further investigation of this effect revealed that the intervention benefited children. As to be expected, children's knowledge improved as a consequence of exposure to the intervention and children in the intervention group who had provided an incorrect response at time 1 were more likely to provide a correct response to the question at time 2 than children who engaged in the control task and had provided an incorrect response at time 1.

The feedback that children in the intervention group provided as part of study 3 suggests further that children perceived the intervention to be engaging (Hidi, 2001; Renninger & Wozniak, 1985; Troseth et al., 2006), comprehensible and of appropriate length (Ayres & Paas, 2007), which are important issues to consider in designing an intervention for children.

Additionally, children said they liked the main character (Calvert et al., 2007; Hoffner, 1996; Hosford, 1981) and indicated that they enjoyed the interaction present in the intervention (Atkinson, 2002; Cordova & Lepper, 1996; Graesser et al., 1994; Hoffner, 1996; Johnson et al., 2000; Moreno et al., 2001) – thus increasing the likelihood of children benefitting from the suggested intervention - as well as being able to 'help' the main character through this interaction. Children were aware that they gained new knowledge and, as described above, demonstrated this knowledge after a delay of 48 hours, even if statistical significant

improvements were not obtained for all questions. Thus, the results suggest that the intervention might assist in improving child interviewees' understanding of police interviews. Providing further support for this recommendation is the observation that children seemed to perceive the asked questions as easier after exposure to the intervention, suggesting that their knowledge may have increased.

Thus, the designed intervention improved children's knowledge of interviewee behaviours, decreased the perceived difficulty of questions and was perceived positively by children. To successfully select the appropriate interviewee behaviour in social situations (e.g. police interviews), however, children would also have to appropriately interpret interviewer behaviour. Therefore, study 4 evaluated children's understanding of interviewee and interviewer behaviour.

6 Study 4 - Intervention to improve older children's understanding of interviewee and interviewer behaviours

6.1 Introduction

Study 3 suggested that the designed intervention significantly increased young children's knowledge of interviewee behaviours for half the questions assessed and emerged in a positive trend for the other questions. Specifically, the intervention seemed to have improved young children's understanding of appropriate behaviours if assessed via isolated questions that provided clearly-defined scenarios (e.g. "what should you do if a policeman repeats a question?").

While these results are promising, especially given the novelty of the approach used, they are too simplistic to be of immediate practical applicability. Specifically, child interviewees in actual police interviews are unlikely to face isolated, clearly-defined scenarios that require them to behave in a certain way. Instead, actual police interviewees are involved in social interactions with other individuals (i.e. police interviewers) which require evaluation of other individuals' behaviours in the context of novel situations and subsequent selection of appropriate behavioural responses. The demands arising from such a situation would be higher than the demands placed on children when providing them with well-defined, independent scenarios.

Therefore, study 4 introduced an additional assessment method that would resemble the demands of an actual interview more closely. Specifically, participants in study 4 were asked to explain a policeman's behaviour in the context of a staged police interview in addition to being asked to recommend suitable behaviours in response to well-defined scenarios. To evaluate the appropriateness of the novel methods and materials, older children (i.e. 9- and 10-year-olds) were recruited as study 2 suggested that older children would have a similar level of understanding to adults.

Also, within the context of the staged police interview, two novel types of questions were included that were addressed in study 3, but not study 2, namely closed and leading questions. These question techniques are briefly reviewed in turn.

Closed questions require the interviewee to select the correct response from options provided by the interviewer. Thus, whether the correct response will be selected depends strongly on (a) whether the correct option is presented by the interviewer (including via a "correct option not present – response") and (b), if the correct option is not present, how likely it is that the interviewee will indicate the absence of a correct option. These two issues are problematic, especially for children who have been found to be more easily influenced and/or misled by inappropriate questioning techniques than adults. The first issue, presenting the correct response as one of the options available, might be difficult to implement in a police interview where the correct option is to be determined and might not have been previously mentioned by the interviewee, or might not even be known by either the interviewer or the interviewee. Therefore, introducing the correct – or presumably correct – response could lead to accusations of influencing the interviewee which could reduce the interviewee's credibility or, in extreme cases, invalidate the interview. Likewise, expecting children to indicate that the correct option was not present might be unrealistic as children might not perceive this to be an acceptable response from the viewpoint of the interviewer (Hughes & Grieve, 1980). Closed questions, especially in police interviews, are clearly problematic due to these issues and confidence in statements provided could therefore be greatly enhanced if interviewees could comprehend the difficulties surrounding closed questions and behave accordingly.

While closed questions may be perceived to be leading questions, there are different formats of leading questions. Leading questions are described as questions that imply a response either explicitly or implicitly. Children may be more susceptible to these types of questions than adults (Battin et al., 2012; Bruck & Ceci, 1999; Ceci & Bruck, 1993; Ghetti & Alexander, 2004; Pezdek & Hodge, 1999), although even adults have frequently been suggested to be misled by inappropriate questioning techniques (French et al., 2006; Garry & Wade, 2005; Heaps & Nash, 2001; Hyman & Billings, 1998; Hyman et al., 1995; Hyman, Jr. & Pentland, 1996; Kaasa et al., 2013; Lindsay et al., 2004; Mazzoni & Memon, 2003; Ost et al., 2005;

Porter et al., 1999; Wade et al., 2002). The ability to identify and resist leading questions is therefore crucial in police interviews.

Given the importance of these questioning techniques (i.e. closed and leading questions), they were included in study 4 to assess if children could be taught to identify these questions as study 3 already suggested that children can be taught appropriate behaviours to respond to these techniques.

To summarise, study 4 aims to extend the findings from study 3. The following two predictions were made:

(a) The intervention will improve older children's knowledge of police interviews, specifically of appropriate interviewee behaviours in response to clearly-defined scenarios (when assessed using the same method as study 3)
(b) The intervention will improve older children's understanding of police interviews, specifically of police interviewers' behaviours (when assessed using the novel method introduced in study 4)

6.2 Method

6.2.1 Participants

Ethical permission was granted by the Ethics Committee of the Department of Psychology of the University of Sheffield. In addition, written consent was obtained from the headmaster and children's caretakers.

In total, 51 children were recruited for study 4 (M_{age} = 123.86 months, SD = 6.32 months) from a German primary school. There were 26 males (M_{age} = 123.94 months, SD = 6.43 months) and 25 females (M_{age} = 123.61 months, SD = 6.30 months).

6.2.2 Experimental materials

For study 4, two video sequences *(a* and *b)* were employed. Video sequence *a* was used in study 2 (for a still image, see figure 4.1; for a transcript, see table 4.2). Video sequence *b* was scripted to be similar to video sequence *a* in terms of length, picture composition and conversation content. It was recorded using a Canon Powershot A480 camera with a 640*480-pixel solution capturing 30 images per second. Like video sequence *a*, video sequence *b*

showed a staged police interview with an actress as a child interviewee and an actor as a policeman (as evident from his blue German police uniform). Both actors were filmed from the side (for a still image, see figure 6.1) and the structure of video sequence *b* was matched as closely as possible to video sequence *a* (for a transcript of video sequence *b* see figure 6.2).

Furthermore, the same intervention as in study 3 was used (for a translated transcript of the intervention see figures 5.2 to 5.8).

Figure 6.1 Still image taken from video sequence b used in study 4

Policeman: Hello, I'm Peter Mayer and you'll be Anna Schmidt. Before we talk about the incident, how are you?
Girl: Thanks, I'm fine – just a bit nervous because I haven't been to a police station before.
Policeman: That's understandable. Did you get here alright?
Girl: Oh yes, I used to go to the nursery round the corner, so my mum knew how to get here.
Policeman (while bending forward): Okay, but before we start, I have to tell you that you mustn't fib even the littlest bit because this would be a crime. So think well about what you say, alright?
Girl *(after being silent for a few seconds):* Alright.
Policeman: Okay, then tell me everything that you saw yesterday, please.
Girl: Well, I went home from my grandma and when I wanted to cross, a car transporter was driving backwards around the corner. There were a lot of sports cars on that car transporter and I couldn't stop looking at them. Suddenly, I heard a bang and when I looked around, I saw that the car transporter had driven on a green car. Luckily my grandma had heard the bang, too, and told me everything was alright.
Policeman: You said the car transporter had driven on a green car – surely the car's boot was damaged then?
Girl: Yes, I think so. You are a policeman; you know more about such things than many other people.
Policeman: Yes, but I don't know what happened there. That's why I hope you'll help me. So was the rear [Heck; German jargon for boot] damaged?
Girl: Mhm… rear… mhm… I believe so.
Policeman: Do you know what rear means?
Girl: No.
Policeman: Well, the rear is really just the back of the car – so where the boot is. Do you understand?
Girl: Yes, I think my dad used the word rear before, but I didn't know what it meant then.
Policeman: So, was the rear [Kofferraum; German everyday word for boot] damaged or not?
Girl: I think it was damaged.
Policeman: So the rear was definitely damaged?
Girl: Yes.
Policeman: And you've seen it being damaged?
Girl: Maybe not.

Policeman: Alright, I'd like you to show me the what happened. Here's a map of the crossing where it happened. This is your grandma's house – and where were you? *(Hands the girl a playmobil figure).*
Girl: I was standing here *(Puts playmobil figure close to grandma's house)*
Policeman: Alright and where was the green car? *(Hands the girl a green car)*
Girl: It was here *(Places the green car on the road that the playmobil figure is facing)*
Policeman: Alright, finally, how was the car transporter driving? *(Hands the girl a car transporter)*
Girl: It was there *(Places car transporter in a right angle to the green car and parallel to the playmobil figure)*
Policeman: Can you also show me the street in which the car transporter turned?
Girl: This one *(Points at the road with the green car in)*
Policeman: Can you please use the toy car transporter to show me what it was doing?
Girl *(Bends the rear of the car transporter)*: It was driving backwards in this street.
Policeman: It's a good thing you waited then – because when cars drive backwards, the drivers might not see you.
Girl: I know; my parents keep telling me to always wait when a car is driving backwards.
Policeman: Alright, that's all. Thank you very much. How do you feel now?
Girl: Great – it was exciting to help a real policeman at work.
Policeman: Do you still have any questions?
Girl: Will the driver of the car transporter be punished?
Policeman: Well, it sounds like an accident to me, so he'll just have to pay for the damage – and be more careful next time. But you helped me a lot to find out what happened, so thank you very much.

Figure 6.2 Transcript of video sequence b used in study 4

6.2.3 Questionnaires

Two abbreviated versions of questionnaire *"overall understanding of police interviews"* (questionnaire *"understanding of interviewer behaviours"-I* and *"understanding of interviewer behaviours"-II* respectively) were used in study 4 to assess children's understanding of video sequence *a* and *b* respectively (see table 4.2 and figure 6.2). As discussed in the introduction, two questions were added to each version of questionnaire

"understanding of interviewer behaviours" to assess children's understanding of closed and of leading questions. Specifically, to evaluate children's understanding of closed questions, the questions "why does the policeman ask whether the cars were driven against each other or wedged?"/ "why does the policeman ask whether the boot was damaged or not?" were added to questionnaires *"understanding of interviewer behaviours"-I* and *-II* respectively. Likewise, to evaluate children's understanding of leading questions, the questions "why does the policeman say that the cars drove against each other?"/ "why does the policeman say that the car's boot was damaged?" were added to questionnaires *"understanding of interviewer behaviours"-I* and *-II* respectively.

In addition, questionnaire *"understanding of interviewee behaviours"* (see figure 5.1) and questionnaire *"feedback on intervention"* (see figure 5.9), both of which were previously used in study 3, were employed.

a) *What class are you in?*
b) *Are you male or female?*
c) *When were you born?*

1. *Why does the policeman say "crime"?*
2. *Why does the policeman say that the boy should tell him everything?*
3. *Why does the policeman say that the cars drove against each other?*
4. *Why does the policeman say "wedged"?*
5. *Why does the boy say that he doesn't know the word "wedged"?*
6. *Is that a good or a bad thing to do?*
7. *Why?*
8. *Why doesn't the policeman want to talk about the mother?*
9. *Why does the policeman ask whether the cars were driven against each other or wedged?*
10. *Why does the policeman ask twice whether the cars were wedged?*
11. *Why does the policeman hand the boy the map and the cars?*
12. *Is that a good or a bad thing to do?*
13. *Why?*
14. *What will the policeman do after the interview?*

a) *How difficult were questions 1- 14?*
   Very difficult Difficult Not difficult or easy Easy Very easy
b) *How many questions (from 1-14) do you think you've got right?*

Figure 6.3 Questionnaire "understanding of interviewer behaviours"-I [based on video sequence a] used in study 4

a) *What class are you in?*
b) *Are you male or female?*
c) *When were you born?*

1. *Why does the policeman say "crime"?*
2. *Why does the policeman say that the girl should tell him everything?*
3. *Why does the policeman say that the car's boot was damaged?*
4. *Why does the policeman say "car rear"? [unfamiliar word to children in German]*
5. *Why does the girl say that she doesn't know the word "car rear"?*
6. *Is that a good or a bad thing to do?*
7. *Why?*
8. *Why doesn't the policeman want to talk about the father?*
9. *Why does the policeman ask whether the boot was damaged or not?*
10. *Why does the policeman ask twice whether the boot was damaged?*
11. *Why does the policeman hand the girl the map and the cars?*
12. *Is that a good or a bad thing to do?*
13. *Why?*
14. *What will the policeman do after the interview?*

a) *How difficult were questions 1- 14?*
   Very difficult Difficult Not difficult or easy Easy Very easy
b) *How many questions (from 1-14) do you think you've got right?*

Figure 6.4 Questionnaire "understanding of interviewer behaviours"-II [based on video sequence b] used in study 4

6.2.4 Procedure

	Order 5	Order 6	Order 7	Order 8
Phase 1	Video sequence *a* Questionnaire *"understanding of interviewer behaviours"-I*	Video sequence *a* Questionnaire *"understanding of interviewer behaviours"-I*	Video sequence *a* Questionnaire *"understanding of interviewer behaviours"-I*	Video sequence *a* Questionnaire *"understanding of interviewer behaviours"-I*
	Questionnaire "understanding of interviewee behaviours"	Questionnaire "understanding of interviewee behaviours"	Questionnaire "understanding of interviewee behaviours"	Questionnaire "understanding of interviewee behaviours"
Phase 2 (48h later)	Control group	Intervention group	Control group	Intervention group
	Questionnaire *"understanding of interviewee behaviours"*	Questionnaire *"understanding of interviewee behaviours"*	Video sequence *b* Questionnaire *"understanding of interviewer behaviours"-II*	*Video sequence b* *Questionnaire "understanding of interviewer behaviours"-II*
Phase 3 (48h later)	Video sequence *b* Questionnaire *"understanding of interviewer behaviours"-II*	Video sequence *b* Questionnaire *"understanding of interviewer behaviours"-II*	Questionnaire *"understanding of interviewee behaviours"*	*Questionnaire "understanding of interviewee behaviours"*

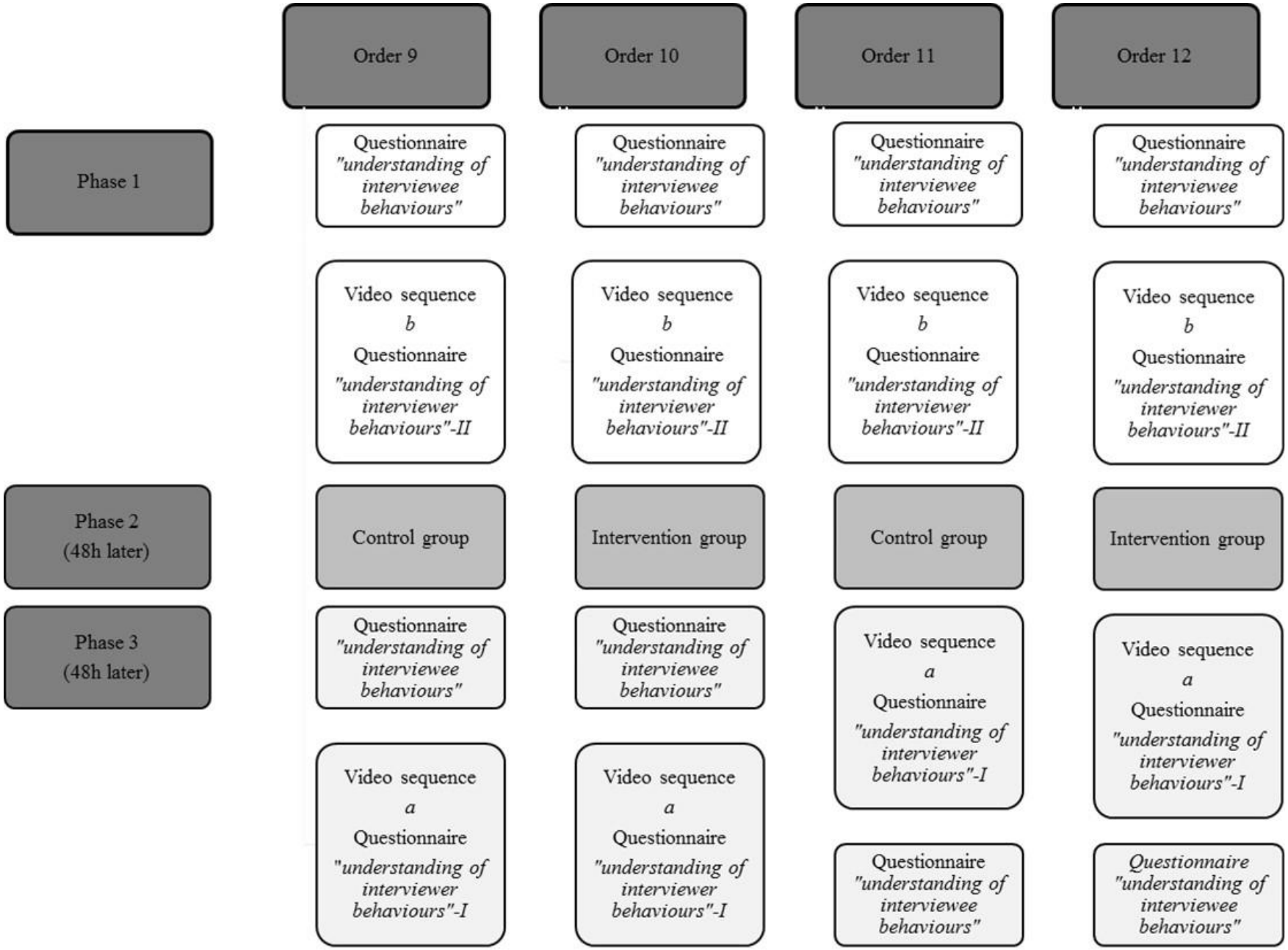
Order 9
Order 10
Order 11
Order 12
Phase 1
Questionnaire "understanding of interviewee behaviours"
Questionnaire "understanding of interviewee behaviours"
Questionnaire "understanding of interviewee behaviours"
Questionnaire "understanding of interviewee behaviours"
Video sequence b
Questionnaire "understanding of interviewer behaviours"-II
Video sequence b
Questionnaire "understanding of interviewer behaviours"-II
Video sequence b
Questionnaire "understanding of interviewer behaviours"-II
Video sequence b
Questionnaire "understanding of interviewer behaviours"-II
Phase 2 (48h later)
Control group
Intervention group
Control group
Intervention group
Phase 3 (48h later)
Questionnaire "understanding of interviewee behaviours"
Questionnaire "understanding of interviewee behaviours"
Video sequence a
Questionnaire "understanding of interviewer behaviours"-I
Video sequence a
Questionnaire "understanding of interviewer behaviours"-I
Video sequence a
Questionnaire "understanding of interviewer behaviours"-I
Video sequence a
Questionnaire "understanding of interviewer behaviours"-I
Questionnaire "understanding of interviewee behaviours"
Questionnaire "understanding of interviewee behaviours"

Figure 6.5 Counterbalancing of questionnaires within control and intervention groups in study 4

For an overview of the counter-balancing used in study 4 see figure 6.5.

In the first phase, all children individually responded to questionnaire *"understanding of interviewee behaviours"* (see 5.2.4) and one version of questionnaire *"understanding of interviewer behaviours"* (see figures 6.3 and 6.4). The order in which children responded to these questionnaires was determined randomly but children always watched video sequence *a* (table 4.2) or *b* (figure 6.2) before responding to the corresponding version of questionnaire *"understanding of interviewer behaviours".* Random allocation was ensured through assigning children to conditions based on their position on an alphabetic list.

After a delay of 48 hours, the second phase of study 4 was conducted. Children were randomly allocated – through the same method as in the first phase - to the intervention group or the control group which they were then exposed to in small groups of up to five children. Random allocation resulted in 26 children (51.0%) being allocated to the control condition and 25 children (49%) being allocated to the intervention. Children were welcomed with the following words.

[For children in the control group]: *Hi, I would like to talk about what you like to do today. Is that alright?*

[For children in the intervention group; the fictional character used in the intervention was called Uli]: *Hi, I would like to play a game called "the Uli-game" with you today. Is that alright?*

Children in the control group engaged in a task-unrelated discussion on age-appropriate topics (e.g. siblings, pets, holidays, hobbies) and indicated their responses through hand signs for approximately ten minutes (i.e. the duration of the intervention). They also received generic feedback on their responses (e.g. "so *x* of you like to cycle") and provided feedback on their experience by filling in a generic version of questionnaire *"feedback on intervention".* Intervention-specific terms from questionnaire *"feedback on intervention"* (see figure 5.9) were replaced with generic terms (e.g. "text", "main character" etc., were replaced through generic terms such as "discussion", "topic x").

Children in the intervention group were presented with the intervention used in study 3 (see figures 5.2 to 5.8). After each slide, children were requested to indicate via hand sign which response they thought was correct and received immediate feedback on their response. The intervention lasted approximately ten minutes per group. Afterwards, children filled in questionnaire *"feedback on intervention"* to provide feedback on the intervention.

For phase 3, following a further delay of 48 hours, all children individually responded to questionnaire *"understanding of interviewee behaviours"* and the novel version of questionnaire *"understanding of interviewer behaviours"*. The order was randomly determined for participants based on their position on an alphabetical list, although children were always exposed to the corresponding video sequence (*a* or *b* respectively) before replying to the corresponding version of questionnaire *"understanding of interviewer behaviours"*. Also, to avoid influencing children's responses as a result of repeating and/or asking similar questions, children received either of the following explanations prior to responding to the questionnaires.

[For children in the control group]: *Do you remember talking about what you like to do the last time I saw you?* (All children agreed) *Because I know you better now, I would like to ask you some questions again. Is that alright with you?*

[For children in the intervention group:] *Do you remember playing the Uli-game the last time I saw you?* (All children agreed) *Because we played this game, I would like to ask you some questions again. Is that alright with you?* [Note that the main character in the intervention was called "Uli"]

After each phase, children were thanked for their participation and returned to their classrooms. Responses provided in the first and the third phase were also voice-recorded for later transcription.

Questions 10, 11 and 11a from questionnaire *"understanding of interviewer behaviours"-I and -II*) were not considered in the intervention as study 2 indicated that all children had a very good understanding of these processes. However, question 10, 11 and 11a were still included in the questionnaire to ensure that all children could provide at least some correct

responses and would thus not be adversely affected by the questionnaires used. Results confirmed that the majority of children in study 4 could provide at least one correct response to either of these questions.

6.3 Results

6.3.1 Scoring

As described in the method section, two questionnaires were used in study 4, namely questionnaire *"understanding of interviewee behaviours"*, and questionnaire *"understanding of interviewer behaviours"-I* and *-II* respectively, which evaluated children's understanding of interviewer behaviours. Children's responses were scored as correct or incorrect based on the information provided in the intervention (see figures 5.2 to 5.8). An overview of responses that were scored as correct can be found in tables 6.1 and 6.2 respectively.

Responses by one third of the participants (i.e. 17 out of 51) were scored independently by a second marker. The two markers agreed on 798 out of 816 responses (97.8%).

Question number and question (questionnaire *"understanding of interviewee behaviours"*)	**Responses scored as correct**
1. What should you do if you do not understand something a policeman says?	Ask for clarification; Ask policeman to repeat what he has said
2. What you should do if a policeman says something and you believe he is wrong?	Disagree with policeman; Express doubt
3. What should you do if a policeman asks you to tell him everything?	Explain everything
4. What should you do when a policeman repeats a question?	Repeat answer; Talk only about true events; Tell him everything known
5. Why does a policeman say words such as "prison"?	Policemen need to say such words; To ensure that people tell the truth
6. You ask a policeman to explain a word to you. How does the policeman like that?	Positive
7. What should you do if you are not sure about something?	Talk about things that are you are sure about; Explain everything you have seen; Refrain from lying; Talk only about true things; Indicate uncertainty
8. A policeman makes several suggestions what could have happened, but you think all suggestions are wrong. What should you do?	Disagree with policeman; Talk only about true events; Indicate uncertainty
9. Why does a policeman not talk about certain things?	Some things are not important to policeman; Lack of time;
10. What – other than question people – do policemen do?	Arrest (bad) people; Assist (good) people/with accidents; Solve crimes; Obtain evidence; Listen to people; Investigate; Obtain statement; Ensure people's safety; Chase thieves; Regulate traffic

Table 6.1 Responses scored as correct for questionnaire "understanding of interviewee behaviours" in study 4

Question number and question (questionnaire *"understanding of interviewer behaviours"-I* and *-II*)	**Responses scored as correct**
1. Why does the policeman say the word "crime"?	(Police) Jargon; He admonishes the child that he/she is not allowed to lie to police
2. Why does the policeman ask the boy/girl to tell him everything?	Police was not present at accident; To determine the involved individuals' guilt; So that the policeman knows everything; Child is a witness to the situation
3. Why does the policeman say that the cars were driven against each other/that the car's boot was damaged?	Policeman's assumption of what happened; Policeman asks if this is what happened; Policeman is inferring this from child's statement
4. Why does the policeman say "wedged"/ "boot"?	Expression is an alternative to what has previously been said; Police jargon
5. Why does the boy/girl say that he/she does not know the word?	The boy/girl requests an explanation for the word; The boy/girl does not know the word; You have to admit if you do not know a word; The boy/girl needs to understand the word to explain what happened
6a. Is that a good or a bad thing to do?	Good
6b. Why is that a good or a bad thing to do?	So that the policeman can explain the word; Otherwise child might inadvertently provide an incorrect response; It is necessary to understand the word to provide an accurate response; The boy/girl follows the rules given in the intervention
7. Why does the policeman not want to talk about the mother/father?	Mother/Father is irrelevant/has not seen it; Policemen only have limited time for their investigations; The boy/girl has seen the accident

8. Why does the policeman ask if the cars were wedged or driven against each other/if the boot was damaged or not?	Policeman's assumption; To distinguish between two different things; To determine the involved individuals' guilt
9. Why does the policeman ask twice whether the cars were wedged/whether the boot was damaged?	The boy/girl was insecure the first time; Verification; Policeman needs more time to note down the response/is unsure/has not heard it right/has forgotten the child's response/that he previously asked the question
10. Why does the policeman hand the boy/girl a map and cars?	*[question dropped from analysis as this component was not covered in the intervention]*
11. Is that a good or a bad thing to do?	*[question dropped from analysis as this component was not covered in the intervention]*
11a. Why is that a good or a bad thing to do?	*[question dropped from analysis as this component was not covered in the intervention]*
12. What will the policeman do after the interview?	Goes to the accident location; Interacts with drivers; Exchanges knowledge gained from the child's statement with somebody else; Investigates accident; Sends boy/girl home; Write protocol; Determine guilt;

Table 6.2 Responses scored as correct for questionnaires "understanding of interviewer behaviours"-I and -II in study 4

6.3.2 Preliminary analyses

Preliminary analyses were conducted to assess if there were any differences due to the order in which video sequences *a* and *b* respectively were presented in, the order in which questionnaires *"understanding of interviewee behaviours"* and *"understanding of interviewer behaviours"-I* and *-II* were presented (both prior and after the experimental manipulation) or due to pre-existing differences between groups.

6.3.2.1 Order of video sequences

A difference due to the order in which video sequences *a* and *b* were presented emerged for two of the 48 questions (4.2%; children who watched video sequence *b* first outperformed children who watched video sequence *a* first on both questions). The video sequences were

thus deemed as appropriately similar in terms of content and difficulty. Consequently, the order in which video sequences were presented was not considered further.

6.3.2.2 Order of questionnaires

A difference due to the order in which questionnaires *"understanding of interviewee behaviours"* and *"understanding of interviewer behaviours"-I* and *-II* respectively were presented in emerged for six of the 48 questions (12.5%; children who were exposed to questionnaires *"understanding of interviewer behaviours"-I* and *"understanding of interviewer behaviours"-II* first outperformed children who were exposed to questionnaire *"understanding of interviewee behaviours"* first on four questions). However, all differences emerged in the first phase of study 4 (i.e. prior to the experimental manipulation), suggesting that these differences might be due to unfamiliarity with the situation of being questioned about police interviews rather than due to a genuine difference emerging as a consequence of the order in which questionnaires were presented to children. Consequently, the order in which questionnaires were presented was not considered further.

6.3.2.3 Pre-existing differences between groups

A difference between groups prior to introduction of the experimental manipulation emerged for only four out of the 21 questions (19.0 %; the intervention group outperformed the control group on all questions). The groups were therefore deemed appropriately similar and differences between groups prior to experimental manipulation were not considered any further.

6.3.3 Main analyses

The main analyses were conducted separately for each of the questionnaires. For each questionnaire, the data collected was analysed with particular reference to two main considerations, described below.

For every question, it was examined (a) whether there was an effect the intervention on ability to provide a correct response and (b) whether exposure to the intervention would improve children's ability to provide a correct response (results of these analyses are presented in section 6.3.3.1).

It was also considered whether children enjoyed various aspects of the intervention and whether their overall enjoyment correlated with the number of correct answers that they

provided (a) when their understanding of interviewee behaviours was assessed (i.e. questionnaire *"understanding of interviewee behaviours"*) and (b) when their understanding of interviewer behaviours was assessed (i.e. questionnaire *"understanding of interviewer behaviours"-I* and *"understanding of interviewer behaviours"-II* respectively). Results of these analyses are presented in section 6.3.3.2.

Children's predictions of their own performance were considered and correlated with their actual performance. Results of these analyses are presented in section 6.3.3.3.

6.3.3.1 The effect of experimental manipulation

6.3.3.1.1 Questionnaire *"understanding of interviewee behaviours"*

Question number and question	Before intervention	After intervention	*p*
1. What should you do if you do not understand something a policeman says?	92.0 %	100.0 %	.322
2. What should you do if a policeman says something and you believe that he is wrong?	32.0 %	96.0 %	.001
3. What should you do if a policeman asks you to tell him everything?	88.0 %	92.0 %	.413
4. What should you do when a policeman repeats a question?	44.0 %	60.0 %	.473
5. Why does a policeman say words such as "prison"?	8.0 %	4.0 %	.977
6. You ask a policeman to explain a word to you. How does the policeman like that?	60.0 %	88.0 %	.030
7. What should you do if you are not sure about something?	52.0 %	92.0 %	.005
8. A policeman makes several suggestions what could have happened, but you think all suggestions are wrong. What should you do?	36.0 %	72.0 %	.180
9. Why does a policeman not talk about certain things?	28.0 %	48.0 %	.001
10. What – other than question people – do policemen do?	96.0 %	92.0 %	.413

Table 6.3 Overview of correct responses (in percent) for questionnaire "understanding of interviewee behaviours" in study 4

Question 1. What should you do if you do not understand something a policeman says?

	Control	Intervention
Time 1	88.5 %	92.0 %
Time 2	96.2 %	100.0 %

Table 6.4 Correct responses (in percent) by condition to question 1, questionnaire "understanding of interviewee behaviours" in study 4

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 0.98, p = .322).

No analyses were conducted for children who had provided an incorrect response to this question at time 1 only as all the children who initially provided an incorrect response consequently provided a correct response to this question.

Question 2. What you should do if a policeman says something and you believe he is wrong?

	Control	Intervention
Time 1	50.0 %	32.0 %
Time 2	53.8 %	96.0 %

Table 6.5 Correct responses (in percent) by condition to question 2, questionnaire "understanding of interviewee behaviours" in study 4

There was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 11.92, p = .001).
Nearly all the children in the intervention group (96.0%) could provide a correct response to this question while about half the children in the control group (53.8%) could do so.

When only children who had provided an incorrect response at time 1 were considered, there was an effect of the intervention on children's ability to provide a correct response to this question (χ^2 (1, N = 30) = 6.70, p = .010).
While nearly all children in the intervention group (N = 17; 94.1%) could provide a correct response to this question at time 2, only half the children in the control group (N = 13; 53.8%) did so.

Question 3. What should you do if a policeman asks you to tell him everything?

	Control	Intervention
Time 1	88.5 %	88.0 %
Time 2	84.6 %	92.0 %

Table 6.6 Correct responses (in percent) by condition to question 3, questionnaire "understanding of interviewee behaviours" in study 4

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 0.67, p = .413).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 6) = 1.20, p = .273).

Question 4. What should you do when a policeman repeats a question?

	Control	Intervention
Time 1	26.9 %	44.0 %
Time 2	50.0 %	60.0 %

Table 6.7 Correct responses (in percent) by condition to question 4, questionnaire "understanding of interviewee behaviours" in study 4

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 0.52, p = .473).

When only children who had provided an in correct response at time 1were considered, there was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 33) = 0.04, p = .853).

Question 5. Why does a policeman say words such as “prison”?

	Control	Intervention
Time 1	0.0 %	8.0 %
Time 2	3.8 %	4.0 %

Table 6.8 Correct responses (in percent) by condition to question 5, questionnaire “understanding of interviewee behaviours” in study 4

There was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 0.00, p = .977).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 49) = 0.90, p = .342).

Question 6. You ask a policeman to explain a word to you. How does the policeman like that?

	Control	Intervention
Time 1	53.8 %	60.0 %
Time 2	61.5 %	88.0 %

Table 6.9 Correct responses (in percent) by condition to question 6, questionnaire “understanding of interviewee behaviours” in study 4

There was an effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 4.70, p = .030).
Nearly all the children in the intervention group (88.0%) provided a correct response while about two thirds of children in the control group (61.5%) could do so.

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 22) = 2.93, p = .087).

Question 7. What should you do if you are not sure about something?

	Control	Intervention
Time 1	50.0 %	52.0 %
Time 2	57.7 %	92.0 %

Table 6.10 Correct responses (in percent) by condition to question 7, questionnaire "understanding of interviewee behaviours" in study 4

There was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 7.90, p = .005).
Nearly all the children in the intervention group (92.0%) could provide a correct response to this question while less than two thirds of children in the control group (57.7%) did so.

When only children who had provided an incorrect response at time 1 were considered, there was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 25) = 7.67, p = .006).
While nearly all children in the intervention group (N = 16; 91.7%) could provide a correct response to this question, less than half the children in the control group (N = 18; 38.5%) did so.

Question 8. A policeman makes several suggestions what could have happened, but you think all suggestions are wrong. What should you do?

	Control	Intervention
Time 1	30.8 %	36.0 %
Time 2	53.8 %	72.0 %

Table 6.11 Correct responses (in percent) by condition to question 8, questionnaire "understanding of interviewee behaviours" in study 4

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 1.80, p = .180).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 34) = 2.89, p = .089).

Question 9. Why does a policeman not talk about certain things?

	Control	**Intervention**
Time 1	7.7 %	28.0 %
Time 2	7.7 %	48.0 %

Table 6.12 Correct responses (in percent) by condition to question 9, questionnaire "understanding of interviewee behaviours" in study 4

There was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 10.40, p = .001).
Nearly half the children in the intervention group (48.0%) could provide a correct response to this question while only two children in the control group (7.7%) could do so.

When only children who had provided an incorrect response at time 1 were considered, there was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 42) = 6.30, p = .012).
While one third of children in the intervention group (N = 18; 33.3%) could provide a correct response to this question, only one child in the control group (N = 24; 4.2%) did so.

Question 10. What – other than question people – do policemen do?

	Control	**Intervention**
Time 1	76.9 %	96.0 %
Time 2	84.6 %	92.0 %

Table 6.13 Correct responses (in percent) by condition to question 10, questionnaire "understanding of interviewee behaviours" in study 4

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 0.67, p = .413).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 7) = 0.88, p = .350).

6.3.3.1.2 Questionnaire *"understanding of interviewer behaviours"-I* and *-II* respectively

Question number and question	Before intervention	After intervention	*p*
1. Why does the policeman say the word "crime"?	8.0 %	20.0 %	.073
2. Why does the policeman ask the boy/girl to tell him everything?	92.0 %	80.0 %	.086
3. Why does the policeman say that the cars were driven against each other/that the car's boot was damaged?	28.0 %	24.0 %	.938
4. Why does the policeman say "wedged"/ "boot"?	4.0 %	28.0 %	.057
5. Why does the boy/girl say that he/she does not know the word?	92.0 %	92.0 %	.413
6a. Is that a good or a bad thing to do?	68.0 %	96.0 %	.091
6b. Why is that a good or a bad thing to do?	80.0 %	80.0 %	.025
7. Why does the policeman not want to talk about the mother/father?	48.0 %	64.0 %	.001
8. Why does the policeman ask if the cars were wedged or driven against each other/if the boot was damaged or not?	24.0 %	76.0 %	< .001
9. Why does the policeman ask twice whether the cars were wedged/whether the boot was damaged?	52.0 %	72.0 %	.108
12. What will the policeman do after the interview?	60.0 %	84.0 %	.214

Table 6.14 Overview of correct responses (in percent) by condition for questionnaires "understanding of interviewer behaviours"-I and -II in study 4

Question 1. Why does the policeman say the word “crime”?

	Control	Intervention
Time 1	3.8 %	8.0 %
Time 2	3.8 %	20.0 %

Table 6.15 Correct responses (in percent) by condition to question 1, questionnaires ”understanding of interviewer behaviours”-I and -II in study 4

There was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 3.20, p = .073).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 48) = 3.48, p = .062).

Question 2. Why does the policeman ask the boy/girl to tell him everything?

	Control	Intervention
Time 1	65.4 %	92.0 %
Time 2	57.7 %	80.0 %

Table 6.16 Correct responses (in percent) by condition to question 2, questionnaires ”understanding of interviewer behaviours”-I and -II in study 4

There was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 2.95, p = .086).

No analyses were conducted to assess if there was an effect of the intervention as all children who provided an incorrect response at time 1 continued to provide an incorrect response at time 2.

Question 3. Why does the policeman say that the cars were driven against each other/that the car's boot was damaged?

	Control	Intervention
Time 1	15.4 %	28.0 %
Time 2	23.1 %	24.0 %

Table 6.17 Correct responses (in percent) by condition to question 3, questionnaires "understanding of interviewer behaviours"-I and -II in study 4

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 0.01, p = .938).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 40) = 0.02, p = .900).

Question 4. Why does the policeman say "wedged"/ "boot"?

	Control	Intervention
Time 1	3.8 %	4.0 %
Time 2	7.7 %	28.0 %

Table 6.18 Correct responses (in percent) by condition to question 4, questionnaires "understanding of interviewer behaviours"-I and -II in study 4

There was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 3.62, p = .057).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 3.66, p = .056).

Question 5. Why does the boy/girl say that he/she does not know the word?

	Control	Intervention
Time 1	69.2 %	92.0 %
Time 2	84.6 %	92.0 %

Table 6.19 Correct responses (in percent) by condition to question 5, questionnaires ”understanding of interviewer behaviours”-I and -II in study 4

There was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 0.67, p = .413).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 10) = 3.75, p = .053).

Question 6a. Is that a good or a bad thing to do?

	Control	Intervention
Time 1	84.6 %	68.0 %
Time 2	80.8 %	96.0 %

Table 6.20 Correct responses (in percent) by condition to question 6a, questionnaires ”understanding of interviewer behaviours”-I and -II in study 4

There was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 2.85, p = .091).

When only children who had provided an incorrect response were considered, there was an effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 12) = 8.40, p = .004).
While nearly all children in the intervention group (N = 8; 87.5%) could provide a correct response, no child in the control group (N = 4; 0.0%) did so.

Question 6b. Why is that a good or a bad thing to do?

	Control	Intervention
Time 1	50.0 %	80.0 %
Time 2	50.0 %	80.0 %

Table 6.21 Correct responses (in percent) by condition to question 6b, questionnaires ”understanding of interviewer behaviours”-I and -II in study 4

There was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 5.02, p = .025).
The majority of children in the intervention group (80.0%) could provide a correct response to this question while half the children in the control group (50.0%) did so. However, inspection of children's responses at time 1 suggests that this difference was due to pre-existing differences between groups.

No separate analyses for children who had provided an incorrect response to this question at time 1 were conducted for this question at time 2 as all children continued to fail to provide a correct response.

Question 7. Why does the policeman not want to talk about the mother/father?

	Control	Intervention
Time 1	26.9 %	48.0 %
Time 2	19.2 %	64.0 %

Table 6.22 Correct responses (in percent) by condition to question 7, questionnaires ”understanding of interviewer behaviours”-I and -II in study 4

There was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 10.55, p = .001).
Two thirds of children in the intervention group (64.0%) could provide a correct response to this question while about a fifth of children in the control group (19.2%) did so.

When only children who had provided an incorrect response at time 1 were considered, there was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 32) = 8.66, p = .003).
While nearly half the children in the intervention group (N = 13; 38.5%) could provide a correct response, none of the children in the control group (N = 19; 0.0%) did so.

Question 8. Why does the policeman ask if the cars were wedged or driven against each other/if the boot was damaged or not?

	Control	**Intervention**
Time 1	26.9 %	24.0 %
Time 2	23.1 %	76.0 %

Table 6.23 Correct responses (in percent) by condition to question 8, questionnaires "understanding of interviewer behaviours"-I and -II in study 4

There was an effect of the intervention on children's ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 14.28, p < .001).
While three quarter of children in the intervention group could provide a correct response (76.0%), only about one quarters of children in the control group (23.1%) did so.

When only children who had provided an incorrect response at time 1 were considered, there was an effect of the intervention on ability to provide a correct response to this question at time 2 (χ^2 (1, N = 38) = 12.88, p < .001).
While three quarters of children in the intervention group (N = 19; 73.7%) could provide a correct response, only a sixth of children in the control group (N = 19; 15.8%) did so.

Question 9. Why does the policeman ask twice whether the cars were wedged/whether the boot was damaged?

	Control	Intervention
Time 1	46.2 %	52.0 %
Time 2	50.0 %	72.0 %

Table 6.24 Correct responses (in percent) by condition to question 9, questionnaires ”understanding of interviewer behaviours”-I and -II in study 4

There was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 2.59, p = .108).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 26) = 0.18, p = .671).

Question 12. What will the policeman do after the interview?

	Control	Intervention
Time 1	69.2 %	60.0 %
Time 2	69.2 %	84.0 %

Table 6.25 Correct responses (in percent) by condition to question 12, questionnaires ”understanding of interviewer behaviours”-I and -II in study 4

There was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 51) = 1.55, p = .214).

When only children who had provided an incorrect response at time 1 were considered, there was no effect of the intervention on children’s ability to provide a correct response to this question at time 2 (χ^2 (1, N = 18) = 0.18, p = .671).

6.3.3.2 Pleasantness of intervention

To assess how enjoyable children perceived the intervention to be, they were asked to indicate how interesting the intervention was, how much they liked the character used in the

intervention, how comprehensible the explanations given were, how easy or difficult it was to listen to the end and how many new things they learned about the way police forces work. Additionally, children were asked to indicate what they liked best and least respectively as well as to provide suggestions on how the intervention could be improved. Additionally, an overall "pleasantness" score was calculated using the same scoring scheme as in study 4 (see table 5.13). The overall score was then correlated with children's ability to provide correct responses to questionnaire *"understanding of interviewee behaviours"* and questionnaires *"understanding of interviewer behaviours"-I* and *-II* respectively. Note that correlations were calculated for time 2 only.

How interesting was the intervention?
Thirty-two percent of the children ($N = 25$) rated the intervention as very interesting, 40% as interesting and 28% as a bit interesting.

How much did you like the main character "Uli"?
Twenty percent of children liked the main character very much, 64% liked him, and 16% liked him a bit.

How comprehensible were the explanations?
Fifty-two percent of children thought the intervention was very comprehensible and 48% thought it was comprehensible.

Was it difficult or easy to listen to the end?

Children said they found it very easy (32.0%), easy (24.0%) or of average difficulty (44.0%) to listen to the entire intervention.

How many things have you learned about police work?
Fifty-six percent of children indicated they learned a lot of new things and 44.0% suggested that they learned some new things.

What did you like best?
Forty-eight percent of children indicated that they liked the interactive element (i.e. the questions asked within the framework of the intervention) best. Twenty percent reported that

they liked the policeman best and 12.0% noted that they liked the explanations provided best. About a tenth of children respectively (8.0%) enjoyed all aspects of the intervention or that the officer in the intervention told the truth. One child (4.0%) said that they liked assisting the policeman best.

What did you like least?
Forty-four percent of children did not answer this question, 36.0% indicated that there was no least liked element to them. About a tenth of children respectively (8.0%) reported that they did not like the explanations or a specific explanation provided. One child (4.0%) said that they did not like the policeman.

How could the intervention be improved?
Sixty-four percent of children indicated that the intervention did not need to be improved and 36.0% did not answer this question.

Correlation "pleasantness" score and ability to provide correct responses
Overall, Pearson's correlation showed no correlation between the rating of the pleasantness (for information on how this score was calculated see table 5.13) of the intervention and children's ability to provide correct responses to questionnaire *"understanding of interviewee behaviours"* (r (25) = -.119, p = .570).

There was a moderate positive correlation between children's enjoyment of the intervention and their ability to provide correct responses to questionnaires *"understanding of interviewer behaviours"-I* and *-II* (r (25) = .479, p = .015). Thus, the more children enjoyed the intervention, the more likely they were to demonstrate understanding of interviewer behaviours.

6.3.3.3 Predictions of own performance

Difficulty of questions
Children (N = 51) tended to rate the questions taken from questionnaire *"understanding of interviewee behaviours"* as of average difficulty (52.9%) or as easy (39.2%) prior to the experimental manipulation. Less than a tenth of children (7.8%) indicated that they thought

the questions were difficult. No child indicated that the questions were “very difficult”, “very easy” or withheld a response.

After the intervention, nearly all children (N = 51) indicated that the questions taken from questionnaire *“understanding of interviewee behaviours”* were either of average difficulty (45.1%) or easy (43.1%). About a tenth of children rated the questions as “very easy” (3.9%) or difficult (7.8%). No child indicated that the questions were “very difficult” or withheld a response.

For questionnaire *”understanding of interviewer behaviours”-I* and *-II*, the majority of children (N = 51; 60.8%) rated the questions as “of average difficulty”. A further fifth of children (19.6%) indicated that the questions were “difficult” while a sixth of children (15.7%) thought they were easy. Two children (3.9%) thought the questions were very easy. No child indicated that the questions were ‘very difficult’ or withheld a response.

After the intervention, the majority of children (N = 51; 66.7%) rated the questions as “of average difficulty”. A fifth of children (19.6%) indicated that the questions were easy. A tenth of children (9.8%) thought the questions were difficult while less than a tenth of children (3.9%) thought the questions were very easy. No child indicated that the questions were very difficult or withheld a response.

Children’s estimated number of correct responses and actual number of correct responses

Children predicted that they had provided on average 6.61 (SD = 1.66) correct responses to questionnaire *“understanding of interviewee behaviours”* prior to exposure to the intervention and 6.87 (SD = 1.51) correct responses after exposure. Their actual scores were 5.04 (SD = 1.56) prior to exposure to the intervention and 6.47 (SD = 1.74) thereafter.

There was no correlation between children’s estimated number of correct responses and the actual number of correct responses for questionnaire *“understanding of interviewee behaviours”* prior to (r (44) = .184, p = .233) or after the experimental manipulation (r (43) = .077, p = .606).

For questionnaires *”understanding of interviewer behaviours”-I* and *-II* children predicted that they provided 7.16 (SD = 3.03) correct responses prior to exposure and 7.77 (SD = 3.42)

correct responses after exposure to the intervention. Their actual scores were 7.66 (*SD* = 2.07) prior to exposure and 7.98 (*SD* = 2.01) thereafter.
There was no association between children's estimated number of correct responses they had provided and the actual number of correct responses that they had provided prior to the intervention (r (43) = -.271, p = .079) or after the experimental manipulation (r (44) = -.197, p = .201).

Thus, children were unable to predict their performances for questionnaire *"understanding of interviewee behaviours"* and *"understanding of interviewer behaviours"-I* and *-II* both prior to and after exposure to the intervention.

6.4 Discussion

The findings suggest that hypothesis (a) was supported whereas hypothesis (b) only received limited support in study 4. Children demonstrated improved knowledge on appropriate behaviours in response to well-defined scenarios for four of the ten questions (2, 6, 7, 9) after exposure to the intervention (hypothesis a). This finding is in line with the findings from study 3, which suggested that younger children's knowledge improved significantly for half the questions as a result of exposure to the intervention and improved – albeit not enough to be significant – for the remaining half of the questions.

The support for hypothesis (b) in study 4 was more limited, as only three of the 11 questions analysed (6b, 7, 8) resulted in significant improvement in children's understanding of police interviews and more specifically in regards to how to interpret the behaviour displayed by police interviewers. Inspection of these questions suggested that one of the significant differences (6b) might have been the result of a sampling error as children in the intervention group outperformed children in the control group prior to introduction of the intervention (i.e. at time 1). However, four out of the 11 questions (1, 2, 4, 6a) suggested a positive trend, which might have been more pronounced in younger children as the children recruited for study 4 demonstrated considerable existing knowledge at time 1 in line with suggestions from study 2. Study 4 therefore provided further evidence for the effectiveness of the intervention used in study 3, specifically in improving children's understanding of interviewee behaviours during police interviews. However, the limitations discussed in studies 2 (running multiple tests,

over-reliance on p-values; see section 4.4) and 3 (small sample size, see section 5.4) should also be considered the present study.

Also, study 4 suggested that the intervention may be useful in improving children's understanding of interviewer behaviours, which, if replicated with younger children, could greatly improve the practical applicability of the designed intervention. Therefore, study 5 will employ the novel assessment method suggested in study 4 to assess if young children's ability to interpret police interviewers' behaviours can be improved through the designed intervention.

7 Study 5 - Intervention to improve young children's understanding of interviewer behaviours and novel delivery method

7.1 Introduction

Study 4 has suggested that the newly-created video sequence *b* is appropriately similar to video sequence *a* which was previously used in study 2. Likewise, the newly-devised questionnaires *"understanding of interviewer behaviours"-I* and *-II* were determined to be appropriately similar in terms of content. All materials assessed in study 4 were therefore deemed suitable to extend the findings from study 3, namely that young children's knowledge of interviewee behaviours can be improved.

As study 5 was intended to extend these findings, the method used in study 3 was also employed for the current study, although two adjustments as well as one addition were made which are briefly reviewed.

Studies 3 and 4 suggested that, both, younger children (study 3) and older children (study 4) demonstrated improved understanding of interviewee behaviours as a consequence of the intervention. As inclusion of questionnaire *"understanding of interviewee behaviours"* in study 5 had supported, but not extended these findings, it was dropped to avoid unnecessarily lengthening study 5 and risking over-exertion of the young age group recruited. Questionnaire *"feedback on intervention"* was not employed in study 5 for the same reasons.

Acknowledging that children are increasingly learning from digital media, such as television programmes and movies especially created for this purpose (Johnson et al., 2000), study 5 employed a video sequence as a novel delivery method in addition to the more classical reading/picture method used in studies 3 and 4. Video sequences have successfully increased children's vocabulary (Rice & Woodsmall, 1988; Silverman, 2013; Strouse et al., 2013; Strouse & Troseth, 2014; Verhallen & Bus, 2010) and are thus a promising method to increase children's knowledge of interviewer behaviours.
In terms of application, an intervention delivered via video sequence as opposed to personal delivery might provide multiple benefits, in particular in the context of police interviews. As

suggested by study 1, different manuals provide guidance that differs in terms of depth, flexibility given to the interviewer and indeed content (page 54). Preparing children for police interviews through a video sequence rather than personal delivery could increase the standardization across locations, interviewers' skill levels and interviewees, thereby potentially enhancing the confidence in and credibility of children's statements.

To compare the effectiveness of the two delivery methods, the video intervention was designed to be as similar as possible to the live intervention. Based on suggestions that children are selective in their choice of informants (Harris, 2007) and do not always recognize that a fictional character (e.g. an actor from a television programme) can provide information about the actual rather than the depicted world (Mares & Sivakumar, 2014), the actor in the video intervention would have to be perceived as an expert by children. Therefore, the video intervention employed an actor wearing a clearly recognizable German police uniform to encourage children to identify the actor as an expert and thus attempt to learn from the explanations provided.
Based on the previous studies 3 and 4, it was predicted that (a) children in both interventions would outperform children in the control group when having to interpret interviewer behaviours and (b) children in the live intervention would outperform children in the video intervention.

7.2 Method

7.2.1 Participants

Prior to recruitment, ethical permission was granted by the Ethics Committee of the Department of Psychology of the University of Sheffield. In addition, written consent was obtained from the headmasters and children's caretakers. Furthermore, in line with legislation of the German county in which study 5 was conducted, permission was also granted by the ministry for culture, youth and sports of Baden-Wuerttemberg.
In total, 91 first graders were recruited from four different German primary schools. There were 45 females (M_{age} = 87.0 months, SD = 3.90 months) and 46 males (M_{age} = 87.7 months, SD = 4.07 months). For an overview of the specific mean ages and standard deviations within the conditions see table 7.1.

	Male			Female		
	N	*M*age	*SD*	*N*	*M*age	*SD*
Control condition	15	86.86	4.41	15	87.3	4.27
Live intervention	15	88.53	4.34	14	85.4	3.54
Video intervention	16	87.63	3.54	16	87.3	4.27

Table 7.1 Mean ages and standard deviations for participants in study 5.Ages and standard deviations are provided in months.

7.2.2 Experimental materials

For study 5, three video sequences were employed. Video sequences *a* and *b* were used previously and still images and transcripts can be found in figure 4.1 and table 4.2 for video sequence *a* and figures 6.1 and 6.2 for video sequence *b*. In addition, a novel video sequence *c* was recorded using a Canon Powershot A480 camera with a 640*480-pixel solution, capturing 30 images per second.

Video sequence *c* displayed a policeman in a blue German police uniform who was facing the camera (for a still image see figure 7.1). The PowerPoint presentation used in studies 3 and 4 was also embedded in this video sequence. No other changes to the intervention used in studies 3 and 4 were made. Therefore, a transcript of the video sequence along with the embedded PowerPoint presentation can be found in figures 5.2 to 5.8. Likewise, a transcript for the live intervention can be found in figures 5.2 to 5.8.

Furthermore, the two versions of questionnaire *"understanding of interviewer behaviours"-I* and *II* used in study 4 were used in study 5. For copies of this questionnaire see figures 6.3 and 6.4. A Samsung R-780 laptop (17.3") was used to display the video sequences. All video sequences were displayed with Windows Media Player in full screen mode with the volume set to the maximum level.

Children's responses were recorded with the android app "Easy Voice Recorder" on a Sony Xperia J mobile phone. Three out of four headmasters consented to this measure, resulting in an audio recording for 57 of 91 children.

Figure 7.1 Still image of video sequence c used in study 5

7.2.3 Questionnaire

Two versions of questionnaire *"understanding of interviewer behaviours",* which have already been used in study 4 were used in study 5 (see figures 6.3 and 6.4). As in study 4, questions 10, 11 and 11a were not considered in the intervention as study 2 indicated that young children had a good understanding of these processes. However, questions 10, 11 and 11a were still included in the questionnaire to ensure that all children could provide at least some correct responses and would thus not be adversely affected by the questionnaires used.

7.2.4 Procedure

Prior to all phases of study 5, children were informed that participation was entirely voluntarily and that they could withdraw from it at any point without giving reasons. Also, it was explicitly stressed that refusal to participate or terminating study 5 before its end would have no adverse consequences on participants. All children decided to take part in all phases.

For the first phase of study 5, children were randomly allocated – based on their position on an alphabetical list - to individually watch video sequence *a* or *b* and respond to the corresponding version of questionnaire *"understanding of interviewer behaviours"*. Provided the headmaster of the respective school had consented to this measure, children's responses were audio-recorded.

For the second phase of study 5, all participants were randomly allocated to one out of three experimental manipulations. Random allocation resulted in 30 children being allocated to the control condition (33.0%), 29 children being allocated to the live intervention (31.9%) and 32 children being allocated to the video intervention (35.2%). Children then participated in small groups of up to five children in these conditions. Each condition lasted ten minutes to account for the length of the video sequence used as part of the video intervention (8:28 minutes). Children were welcomed with the following words.

[For children in the control group]: *Hi, I would like to talk about what you like to do today. Is that alright?*

[For children in the intervention group; the fictional character used in the intervention was called Uli]: *Hi, I would like to play a game called "the Uli-game" with you today. Is that alright?*

[For children in the video intervention group; the fictional character used in the intervention was called Uli]: *Hi, I would like to show you a video and play a game called "the Uli-game" with you today. Is that alright?*

For the first condition (the control condition), the experimenter led a task-unrelated discussion on topics familiar to children (i.e. hobbies, the upcoming holidays, pets, siblings). To encourage a similar dynamic to the two intervention conditions, children indicated their agreement to certain statements (e.g. engaging in a certain holiday activity, owning a specific pet or having siblings of a chosen gender/age) via hand signs and received generic feedback (e.g. "so there are some of you doing *activity* for your holidays").

For the second condition (the live intervention), children were exposed to the live intervention previously used in studies 3 and 4. Specifically, children were read the intervention text and shown the PowerPoint presentation (see figures 5.2 to 5.8). After each PowerPoint slide, children indicated their response via hand signs and received immediate feedback on their response from the experimenter.

For the third condition (the video intervention), children watched video sequence *c*. After each slide of the embedded PowerPoint presentation, the video was stopped and children indicated their response via hand signs and received immediate feedback on their response from the experimenter.

For the third phase of study 5, children individually watched the novel video sequence (*a* or *b* respectively) and responded to the corresponding version of questionnaire *"understanding of interviewer behaviours"*. Provided the respective headmaster had consented to this measure, children's responses were audio-recorded.

After each phase, children were thanked for their participation. After the last phase they were given the opportunity to ask questions about study 5.

7.3 Results

7.3.1 Scoring

Responses were scored as correct if they corresponded to the information provided in the intervention (for an overview of responses scored as correct see table 7.3). Responses by one

third of the participants (i.e. 30 out of 91) were scored independently by a second marker. The two markers agreed on 817 out of 840 responses (97.3%).

Question number and question	Responses scored as correct
1. Why does the policeman say the word "crime"?	(Police) Jargon; He admonishes the child that (s)he is not allowed to lie to police [*question dropped from analysis as no correct responses provided*]
2. Why does the policeman ask the boy/girl to tell him everything?	So that policeman knows what happened
3. Why does the policeman say that the cars were driven against each other/that the car's boot was damaged?	Policeman's assumption of what happened; Policeman asks if this is what happened; Policeman is inferring this from child's statement
4. Why does the policeman say" wedged"/ "boot"?	To learn more about the accident; Expression is a synonym for what has been previously said; Police jargon
5. Why does the boy/girl say that he/she does not know the word?	The boy/girl requests an explanation for the word; The boy/girl does not know the word; You have to admit if you do not know a word; The boy/girl needs to understand the word to explain what happened
6a. Is that a good or a bad thing to do?	Good
6b. Why is that a good or a bad thing to do?	So that the policeman can explain the word; Otherwise child might inadvertently provide an incorrect response; It is necessary to understand the word to provide an accurate response; The boy/girl follows the rules given in the intervention
7. Why does the policeman not want to talk about the mother/father?	Mother/Father is irrelevant/has not seen it; Policemen only have limited time for their investigations; The boy/girl has seen the accident

8. Why does the policeman ask if the cars were wedged or driven against each other/if the boot was damaged or not?	Policeman's assumption; To distinguish between two different things; To determine the involved individuals' guilt
9. Why does the policeman ask twice whether the cars were wedged/whether the boot was damaged?	The boy/girl was insecure the first time; Policeman needs more time to note down the response/is unsure/has not heard it right/has forgotten the child's response/that he has asked the question previously; Verification
10. Why does the policeman hand the boy/girl a map and cars?	*[question dropped from analysis as this component was not covered in the intervention]*
11. Is that a good or a bad thing to do?	*[question dropped from analysis as this component was not covered in the intervention]*
11a. Why is that a good or a bad thing to do?	*[question dropped from analysis as this component was not covered in the intervention]*
12. What will the policeman do after the interview?	Goes to the accident location; Interacts with drivers; Exchanges knowledge gained from the child's statement with somebody else; Investigates accident; Sends boy/girl home; Writes protocol; Determines guilt

Table 7.2 Responses scored as correct for questionnaires "understanding of interviewer behaviours"-I and -II in study 5

7.3.2 Preliminary analyses

Preliminary tests were conducted to assess whether there were any differences resulting due to the order the video sequences were presented in or due to pre-existing differences between groups.

7.3.2.1 Order of video sequences

Pearson's Chi-Square tests revealed that there were no effects due to the order the video sequences were presented in (all $p > .05$). Consequently, both video sequences were deemed appropriately similar for the purpose of study 5 and the order of the video sequences was not considered any further.

7.3.2.2 Pre-existing differences between groups

Pearson's Chi-Square tests revealed that there were no pre-existing differences between groups (all $p > .05$).

7.3.3 Main analyses

Two Chi-Square tests were conducted for every question presented at time 2.
For every question, it was examined (a) whether there was an effect the intervention on ability to provide a correct response and (b) whether exposure to the intervention would improve children's ability to provide a correct response.

Question number and question	Before live intervention	After live intervention	Before video intervention	After video intervention	*p*
1. Why does the policeman say the word "crime"?	0.0 %	0.0 %	0.0 %	0.0 %	-
2. Why does the policeman ask the boy/girl to tell him everything?	44.8 %	69.0 %	65.6 %	75.0 %	.864
3. Why does the policeman say that the cars were driven against each other/that the car's boot was damaged?	0.0 %	0.0 %	0.0 %	3.1 %	.375
4. Why does the policeman say "wedged"/ "boot"?	0.0 %	0.0 %	0.0 %	3.1 %	.394
5. Why does the boy/girl say that he/she does not know the word?	0.0 %	3.4 %	0.0 %	6.3 %	.567
6a. Is that a good or a bad thing to do?	71.4 %	89.3 %	50.0 %	75.0 %	.517

6b.	**Why is that a good or a bad thing to do?**	13.8 %	41.4 %	25.0 %	34.4 %	.048
7.	**Why does the policeman not want to talk about the mother/father?**	17.2 %	37.9 %	18.8 %	53.1 %	.492
8.	**Why does the policeman ask if the cars were wedged or driven against each other/if the boot was damaged or not?**	0.0 %	0.0 %	6.3 %	0.0 %	.842
9.	**Why does the policeman ask twice whether the cars were wedged/wheth er the boot was damaged?**	27.6 %	41.4 %	15.6 %	21.9 %	.334
12.	**What will the policeman do after the interview?**	13.8 %	24.1 %	15.6 %	21.9 %	.543

Table 7.3 Overview of correct responses (in percent) for questionnaires ”understanding of interviewer behaviours”-I and -II in study 5

Question 1. Why does the policeman say the word “crime”?

	Control	Live	Video
Time 1	0.0 %	0.0 %	0.0 %
Time 2	0.0 %	0.0 %	0.0 %

Table 7.4 Correct responses (in percent) by condition to question 1 in study 5

No child – at time 1 or time 2 – provided a correct response to this question. Instead, children indicated that they did not know the response or linked the word “crime” to the wrong part of the video sequence. Consequently, this question was dropped from analysis.

Question 2. Why does the policeman ask the boy/girl to tell him everything?

	Control	Live	Video
Time 1	53.3 %	44.8 %	65.6 %
Time 2	73.3 %	69.0 %	75.0 %

Table 7.5 Correct responses (in percent) by condition to question 2 in study 5

There was no association between condition and children’s ability to provide a correct response to this question at time 2 (χ^2 (2, N = 91) = 0.29, p = .864).

When only children who had provided an incorrect response at time 1 were considered, there was no association between condition and children’s ability to provide a correct response to this question at time 2 (χ^2 (2, N = 41) = 0.47, p = .792).

Question 3. Why does the policeman say that the cars were driven against each other/that the car’s boot was damaged?

	Control	Live	Video
Time 1	0.0 %	0.0 %	0.0 %
Time 2	0.0 %	0.0 %	3.1 %

Table 7.6 Correct responses (in percent) by condition to question 3 in study 5

There was no association between condition and children’s ability to provide a correct response to this question at time 2(χ^2 (2, N = 91) = 1.96, p = .375).

When only children who had provided an incorrect response at time 1 were considered, there was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 88) = 1.86, p = .395).

Question 4. Why does the policeman say "wedged"/ "boot"?

	Control	**Live**	**Video**
Time 1	3.3 %	0.0 %	0.0 %
Time 2	0.0 %	0.0 %	3.1 %

Table 7.7 Correct responses (in percent) by condition to question 4 in study 5

There was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 91) = 1.86, p = .394).

When only children who had provided an incorrect response at time 1 were considered, there was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 90) = 1.83, p = .400).

Question 5. Why does the boy/girl say that he/she does not know the word?

	Control	**Live**	**Video**
Time 1	0.0 %	0.0 %	0.0 %
Time 2	3.3 %	3.4 %	6.3 %

Table 7.8 Correct responses (in percent) by condition to question 5 in study 5

There was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 91) = 1.13, p = .567).

When only children who had provided an incorrect response at time 1 were considered, there was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 51) = 2.26, p = .323).

Question 6a. Is that a good or a bad thing to do?

	Control	Live	Video
Time 1	66.7 %	71.4 %	50.0 %
Time 2	76.7 %	89.3 %	75.0 %

Table 7.9 Correct responses (in percent) by condition to question 6a in study 5

There was no association between condition and children's ability to provide a correct response to this question at time 2(χ^2 (2, N = 91) = 1.32, p = .517).

When only children who had provided an incorrect response at time 1 were considered, there was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 35) = 0.30, p = .985).

Question 6b. Why is that a good/bad thing to do?

	Control	Live	Video
Time 1	10.0 %	13.8 %	25.0 %
Time 2	13.3 %	41.4 %	34.4 %

Table 7.10 Correct responses (in percent) by condition to question 6b in study 5

There was a significant association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 91) = 6.08, p = .048).
This association was further followed up by three separate Chi-Square analyses (control group (N = 30) vs video intervention (N = 32), control group vs live intervention (N = 29), video intervention vs live intervention).
After adjusting the Chi-Square-value to 5.73 for the results to be significant, follow-up Chi-Square analyses revealed that the association between condition and children's scores was significant when comparing the control group with the live intervention (χ^2 (1, N = 59) = 5.87, p = .015). While nearly half the children in the live intervention (41.4%) could provide a correct response to this question, only about a tenth of children in the control group (13.3%) did so.
No significant associations between the condition and children's ability to provide a correct response to this question were found when the control group and the video intervention (χ^2 (1,

$N = 62) = 3.74, p = .053$) or the video intervention and the live intervention (χ^2 (1, $N = 61) = 0.32, p = .573$) were compared.

When only children who had provided an incorrect response at time 1 were considered, there was a significant association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, $N = 76) = 7.05, p = .029$).
This association was further followed up by three separate Chi-Square analyses (control group ($N = 27$) vs video intervention ($N = 24$), control group vs live intervention ($N = 25$), video intervention vs live intervention).
After adjusting the Chi-Square-value to 5.73 for the results to be significant, follow-up Chi-Square analyses revealed that the association between condition and children's ability to provide a correct response to this question was significant when comparing the control group and the live intervention (χ^2 (1, $N = 52) = 7.26, p = .007$). While over a tenth of children in the live intervention (15.4%) could provide a correct response, only 1.9% of children in the control group did so.
No significant associations between the condition and children's ability to provide a correct response were found when the control group and the video intervention (χ^2 (1, $N = 54) = 0.54, p = .462$) or the video intervention and the live intervention (χ^2 (1, $N = 49) = 0.78, p = .376$) were compared.

Question 7. Why does the policeman not want to talk about the mother/father?

	Control	**Live**	**Video**
Time 1	30.0 %	17.2 %	18.8 %
Time 2	46.7 %	37.9 %	53.1 %

Table 7.11 Correct responses (in percent) by condition to question 7 in study 5

There was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, $N = 91) = 1.42, p = .492$).

When only children who had provided an incorrect response at time 1 were considered, there was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, $N = 71) = 1.91, p = .386$).

Question 8. Why does the policeman ask if the cars were wedged or driven against each other/if the boot was damaged or not?

	Control	Live	Video
Time 1	0.0 %	0.0 %	6.3 %
Time 2	0.0 %	0.0 %	0.0 %

Table 7.12 Correct responses (in percent) by condition to question 8 in study 5

There was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 91) = 0.35, p = .842).

When only children who had provided an incorrect response at time 1 were considered, there was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 85) = 0.19, p = .908).

Question 9. Why does the policeman ask twice whether the cars were wedged/whether the boot was damaged?

	Control	Live	Video
Time 1	16.7 %	27.6 %	15.6 %
Time 2	30.0 %	41.4 %	21.9 %

Table 7.13 Correct responses (in percent) by condition to question 9 in study 5

There was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 91) = 2.19, p = .334).

When only children who had provided an incorrect response at time 1 were considered, there was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 69) = 1.68, p = .432).

Question 12. What will the policeman do after the interview?

	Control	Live	Video
Time 1	20.0 %	13.8 %	15.6
Time 2	13.3 %	24.1 %	21.9 %

Table 7.14 Correct responses (in percent) by condition to question 12 in study 5

There was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 91) = 1.22, p = .543).

When only children who had provided an incorrect response at time 1 were considered, there was no association between condition and children's ability to provide a correct response to this question at time 2 (χ^2 (2, N = 76) = 1.08, p = .583).

7.4 Discussion

Neither hypothesis (a), children in both intervention groups would outperform the control group, nor hypothesis (b), children in the live intervention would outperform children in the video intervention, were supported in study 5. Children in the live intervention only outperformed children in the control group for one question while children in the video intervention performed at the same level as the control group for all questions. Therefore, neither intervention was successful in improving 6- to -7-year-olds' understanding of interviewer behaviours.

These results are unexpected because the live intervention improved this age group's understanding of interviewee behaviours (study 3) for all questions and resulted in a significant improvement for four out of ten questions. However, these unexpected results might be due to the limitations discussed in earlier studies, namely running multiple tests, the over-reliance on p-values (see section 4.4) as well as the small sample size (see section 5.4). Furthermore, instead of suggesting interviewee behaviours (as in study 3), children in study 5 were required to explain interviewer behaviours, which is a considerably more difficult task. This is particularly true because children are unlikely to have encountered these behaviours in a similar context (i.e. a staged police interview) previously. Therefore, the demands of

explaining interviewer behaviours in the context of a police interview may have exceeded the young children's cognitive resources.

In contrast to younger children's inability to explain interviewer behaviours, which was observed in study 5, study 4 has suggested that older children can suggest appropriate interviewee behaviours and accurately interpret interviewer behaviours. Consequently, it would be useful to compare whether the live intervention used in study 4 and the video intervention used in study 5 are equally effective in improving this age group's overall understanding. Likewise, the previously recruited age groups of 6- to 7-year-olds and 9- to 10-year-olds should be extended to 8-year-olds to assess if either of the interventions would be successful in improving 8-year-olds' understanding – comparable to the older age group - or if their performance remains poor – comparable to the younger age group. Also, as the effectiveness for the live intervention has already been suggested for older children (study 4), the length of the delay should be adjusted to determine the most beneficial time to deliver the intervention. These three questions – whether the live intervention and video intervention differ in their effectiveness, whether either intervention may be useful for intermediate age groups and what the optimal delay between the intervention and the interview should be – will be addressed in study 6.

8 Study 6 - Comparing the effectiveness of two intervention delivery methods for older children

8.1 Introduction

So far, the designed live intervention could improve young children's understanding of interviewee behaviours (study 3), but not interviewer behaviours, regardless of whether they participated in the live intervention or the video intervention (study 5). Older children demonstrated improved understanding of interviewee and interviewer behaviours after the live intervention (study 4), but the effectiveness of the video intervention has not yet been assessed with this age group. Study 6 will therefore compare the effectiveness of both interventions immediately after exposure and after a 7-day delay as well as target an intermediate age group (i.e. 8- and 9-year-olds).

To start with, and as a direct continuation of studies 4 and 5, the effectiveness of the video intervention for older children was assessed in study 6. As discussed previously (7.1), the delivery via video as opposed to live delivery could ensure standardization, which would allow for the consistent, economical delivery regardless of interviewer training while reducing potential criticism of interviewers influencing interviewees. Therefore, study 6 directly compared the effectiveness of the video and the live delivery of the intervention. Given the slight superiority of the live intervention in study 5, it was hypothesized that children in to the live intervention would outperform children in the video intervention (hypothesis a).

Furthermore, the previous studies in this thesis have employed a delay of 48 hours, which is commonly used when assessing children's ability to recall or apply novel information. However, given the potential application of the designed intervention (i.e. improve the understanding of child interviewees who might have experienced delays of varying duration prior to their first interview), it is important to assess the effectiveness of the intervention with different delays. Consequently, study 6 aimed to provide an initial investigation of the intervention's effectiveness immediately after exposure and after a pro-longed delay of 7 days. In line with literature of the effect of sleep on learning (Born, 2010; Walker, 2010), it was

predicted that children's performance would improve as a consequence of the delay (hypothesis b).

Also, study 2 suggested that 6- to 7-year-olds demonstrated considerably poorer understanding of police interviews than 10-year-old children and adults. While this identified age trend has led to recruitment of the younger age group as most vulnerable and of the older age group as more knowledgeable, the previous studies have not assessed whether children between these specified age ranges (i.e. 8- and 9-year-olds) may benefit from the intervention. Therefore, study 6 targeted older and intermediate children to assess the potential benefit of the intervention on their understanding. As the intermediate age group did not consistently perform at the same level as the older children in study 2, it was predicted that older children would outperform the intermediate age group (hypothesis c).

8.2 Method

8.2.1 Participants

Prior to recruitment, ethical approval was granted by the ethics Committee of the Department of Psychology of the University of Sheffield. In addition, written consent from a headmaster and children's caretakers were obtained.

For study 6, 78 children (M_{age} = 116.63 months, *SD* = 8.17 months) were recruited from a German primary school. For mean ages see table 8.1 below.

	Males			**Females**		
	N	*Mean*	*SD*	*N*	*Mean*	*SD*
Third graders	17	113.33	6.34	21	108.75	5.71
Fourth graders	20	122.90	6.80	20	120.70	4.34

Table 8.1 Mean ages and standard deviations for participants in study 6. Ages and standard deviations are provided in months.

8.2.2 Experimental materials

For study 6, video sequences *a* (see figure 4.1 for a still image and table 4.2 for a transcript), *b* (see figure 6.1 for a still image and figure 6.2 for a transcript respectively) and *c* (see figure

7.1 for a still image and figures 5.2 to 5.8 for a transcript) were used. Video sequences *a* and *b* displayed staged police interviews with child interviewees and were used to assess children's understanding of interviewer behaviours. Video sequence *c* displayed the video intervention which was previously used in study 5.

All video sequences were displayed on a large television screen at the front of the class and the volume was adjusted through external speakers.

The live intervention used in studies 3, 4 and 5 was employed (see figures 5.2 to 5.8 for a transcript). No changes were made to this intervention.

8.2.3 Questionnaires

For study 6, questionnaires *"understanding of interviewee behaviours"* (see figure 5.1), *"feedback on intervention"* (see figure 5.9) and *"understanding of interviewer behaviours" (*see figures 6.3 and 6.4) were employed.

8.2.4 Procedure

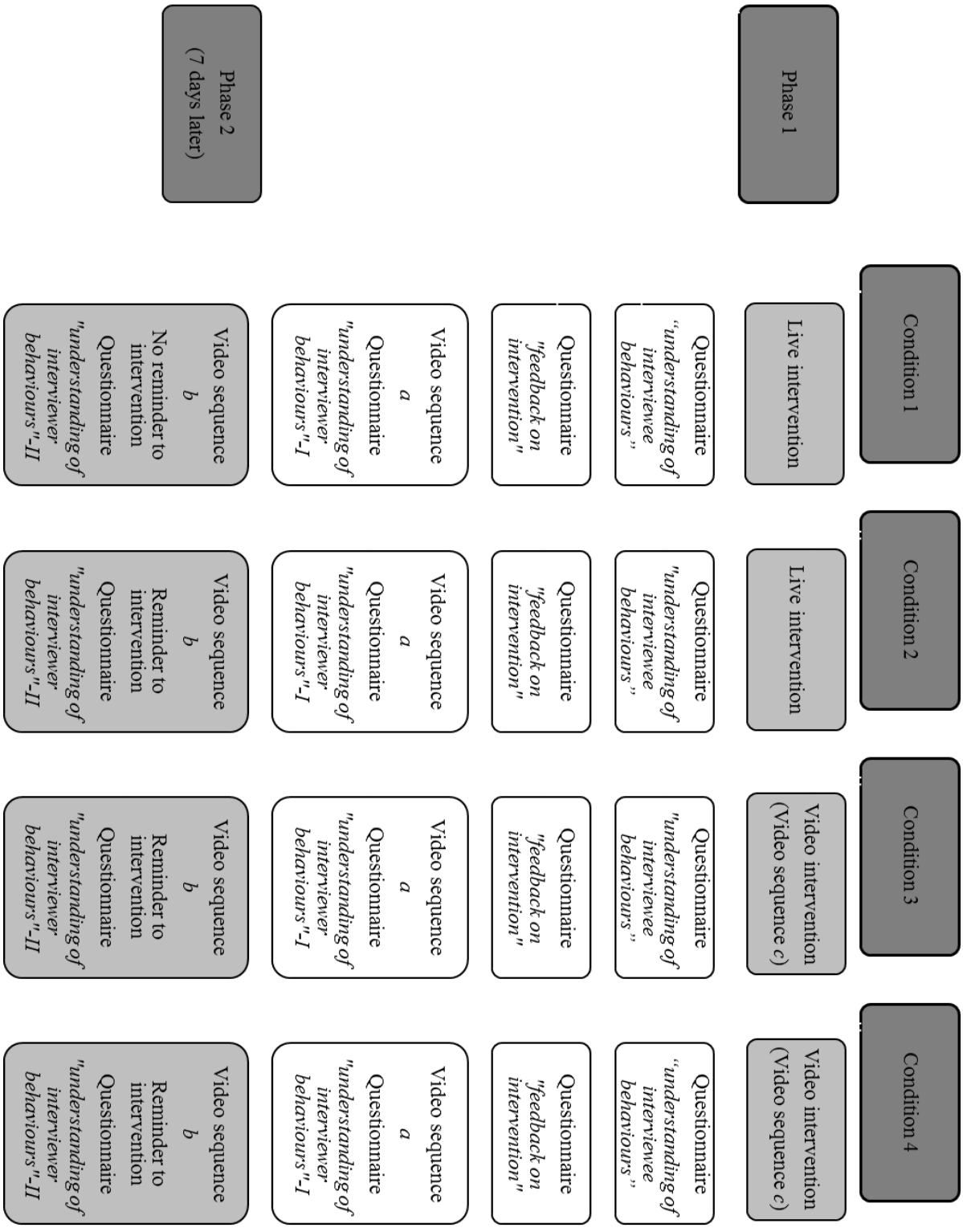

Figure 8.1 Conditions children were exposed to in study 6

Study 6 was conducted in two phases. Prior to all phases of study 6, children were informed that participation was entirely voluntarily and that they could withdraw from it at any point without giving reasons. Also, it was explicitly stressed that refusal to participate or terminating study 6 before its end would have no adverse consequences on participants. All children decided to take part in all phases.

For the first phase, children were randomly allocated to the live or the video intervention based on their position on an alphabetical list. Children then participated in their allocated interventions in groups of no more than ten children.

For children in the live intervention, the experimenter read the intervention and showed children the appropriate PowerPoint slides (see figures 5.2 to 5.8) on a large television screen at the front of the class. Children then indicated their response via hand signs and received immediate feedback from the experimenter.

For children in the video intervention, video sequence *c* (see figures 5.2 to 5.8) was played on a large television screen at the front of the class and the volume was adjusted with external speakers. After each slide and the allocated text were presented, the video sequence was stopped and children were requested to indicate their response via hand signs and received immediate feedback from the experimenter.

After the intervention, all children responded in writing to questionnaires *"understanding of interviewee behaviours"* and *"feedback on intervention"*. All children were proficient in writing their own answers. Children were requested to sit quietly and no communication was allowed until all children had filled in the questionnaires. All children complied to this request.

Subsequently, all children (i.e. children in the live intervention and children in the video intervention) watched video sequence *a* and responded to questionnaire *"understanding of interviewer behaviours"-I* in writing. After all children had completed the questionnaire,

children were thanked for their participation and returned to their classroom as this was the end of the first phase.

After a delay of one week, all children (i.e. children in the live intervention and the video intervention) watched video sequence *b* and filled in the corresponding questionnaire *"understanding of interviewer behaviours"-II* in writing in the same groups as the ones they had participated in during the first phase. Half the questionnaires in each group included the following additional instruction:
When you answer the questionnaire, please try and remember the explanations that I gave you last week about why policemen do certain things.

The other half of the questionnaires included no additional instructions to assess whether children would be able to spontaneously use the information provided to them in the interventions or whether they needed prompting to do so. As in the previous phase, sufficient time was allowed for all children to fill in the questionnaires and children were not allowed to communicate until study 6 had ended. All children complied to this request. At the end of the study, children were thanked for their participation and could ask questions.

8.3 Results

8.3.1 Scoring

Responses were scored as correct if they corresponded to the information provided in the intervention. For an overview of responses that were scored as correct for questionnaire *"understanding of interviewee behaviours"* see table 8.2 and for an overview over responses that were scored as correct for questionnaires *"understanding of interviewer behaviours"-I* and *-II* respectively see table 8.3. Responses by one third of the participants (i.e. 26 out of 78) were scored independently by a second marker. The two markers agreed on 965 out of 988 responses (97.7%).

Question number and question (questionnaire *"understanding of interviewee behaviours"*)	**Responses scored as correct**
1. What should you do if you do not understand something a policeman says?	Ask for clarification; Ask policeman to repeat what he has said
2. What should you do if a policeman says something and you believe he is wrong?	Disagree with policeman; Express doubt
3. What should you do if a policeman asks you to tell him everything?	Explain everything
4. What should you do when a policeman repeats a question?	Repeat answer; Talk only about true events; Tell him everything known
5. Why does a policeman say words such as "prison"?	Police forces need to say such words; To ensure that people tell the truth
6. You ask a policeman to explain a word to you. How does the policeman like that?	Positive
7. What should you do if you are not sure about something?	Talk about things that are you are sure about; Explain everything you have seen; Refrain from lying; Talk only about true things; Indicate uncertainty
8. A policeman makes several suggestions what could have happened, but you think all suggestions are wrong. What should you do?	Disagree with policeman; Talk only about true events; Indicate uncertainty
9. Why does a policeman not talk about certain things?	Some things are not important to policeman; Lack of time;
10. What – other than question people – do policemen do?	Arrest (bad) people; Assist (good) people/with accidents; Solve crimes; Obtain evidence; Listen to people; Investigate; Obtain statement; Ensure people's safety; Chase thieves; Regulate traffic

Table 8.2 Responses scored as correct for questionnaire "understanding of interviewee behaviours" in study 6

Question number and question (questionnaire *"understanding of interviewer behaviours"*)	**Responses scored as correct**
1. Why does the policeman say the word "crime"?	(Police) Jargon; He admonishes the child that he/she is not allowed to lie to police
2. Why does the policeman ask the boy/girl to tell him everything?	Policeman was not present at accident; To determine the involved individuals' guilt; So that the policeman knows everything; Child is a witness to the situation
3. Why does the policeman say that the cars were driven against each other/that the car's boot was damaged?	Policeman's assumption of what happened; Policeman asks if this is what happened; Policeman is inferring this from child's statement
4. Why does the policeman say" wedged"/ "boot"?	Expression is an alternative to what has been previously said; Police jargon
5. Why does the boy/girl say that he/she does not know the word?	The boy/girl requests an explanation for the word; The boy/girl does not know the word; You have to admit if you do not know a word; The boy/girl needs to understand the word to explain what happened
6a. Is that a good or a bad thing to do?	Good
6b. Why is that a good or a bad thing to do?	So that the policeman can explain the word; Otherwise child might inadvertently provide an incorrect response; It is necessary to understand the word to provide an accurate response; The boy/girl follows the rules given in the intervention

7. Why does the policeman not want to talk about the mother/father?	Mother/Father is irrelevant/has not seen it; Policemen only have limited time for their investigations; The boy/girl has seen the accident
8. Why does the policeman ask if the cars were wedged or driven against each other/if the boot was damaged or not?	Policeman's assumption; To distinguish between two different things; To determine the involved individuals' guilt
9. Why does the policeman ask twice whether the cars were wedged/whether the boot was damaged?	The boy/girl was insecure the first time; Verification; Policeman needs more time to note down the response/ is unsure/has not heard it right/has forgotten the child's response/that he previously asked the question
10. Why does the policeman hand the boy/girl a map and cars?	*[question dropped from analysis as this component was not covered in the intervention]*
11. Is that a good or a bad thing to do?	*[question dropped from analysis as this component was not covered in the intervention]*
11a. Why is that a good or a bad thing to do?	*[question dropped from analysis as this component was not covered in the intervention]*
12. What will the policeman do after the interview?	Goes to the accident location; Interacts with drivers; Exchanges knowledge gained from the child's statement with somebody else; Investigates accident; Sends boy/girl home; Writes protocol; Determines guilt;

Table 8.3 Responses scored as correct for questionnaires "understanding of interviewer behaviours"-I and -II in study 6

8.3.2 Preliminary analyses

Preliminary analyses were conducted to assess if there were any differences due to children's grade or due to the reminder to the intervention.

8.3.2.1 Grade

A difference due to children's grade emerged for only 5 of the 38 questions (13.2%). Inspection of the questions affected revealed no consistent pattern (i.e. performance did not differ reliable as a consequence of children's grade) and indicated that 2 of the 5 questions affected were closed questions with two response possibilities. Ignoring these closed questions, only 3 (7.9%) questions produced a difference due to children's grade with fourth graders outperforming third graders for two questions. Children's grade was not considered any further.

8.3.2.2 Reminder to the intervention

No difference due to being reminded of the intervention in phase 2 emerged. Consequently, no distinction will be made between participants who were reminded of the intervention and participants who were not.

8.3.3 Main analyses

The data collected was analysed with reference to three questions, each of which will be discussed in the following sections.

The effect of experimental manipulation (i.e. video intervention vs live intervention) was assessed on each of the questionnaires, namely questionnaire *"understanding of interviewee behaviours"* (figure 5.1) and questionnaires *"understanding of interviewer behaviours"-I* (figure 6.3) and *-II* (figure 6.4). In addition, children's overall number of correct responses immediately after exposure to the intervention and after a week were compared. Results of these analyses are presented in 8.3.3.1.

Based upon an overall pleasantness score indicating children's feedback on the respective interventions (for details see table 5.13), it was assessed if there was a correlation between

children's enjoyment and their ability to provide correct responses to the questionnaires. Results of these analyses are presented in 8.3.3.2.

Third, children's perceptions of the difficulty of the questions was considered. Results of these analyses are presented in 8.3.3.3.

8.3.3.1 Effects of experimental manipulation on questionnaire *"understanding of interviewee behaviours"* and questionnaires *"understanding of interviewer behaviours"-I* and *-II*

8.3.3.1.1 Effects of experimental manipulation on questionnaire *"understanding of interviewee behaviours"*

Question number and question	After live intervention	After video intervention	*p*
1. What should you do if you do not understand something that a policeman says?	86.5 %	87.8 %	.862
2. What should you do if a policeman says something and you believe that he is wrong?	78.4 %	73.2 %	.312
3. What should you do if a policeman asks you to tell him everything?	81.1 %	90.2 %	.246
4. What should you do when a policeman repeats a question?	83.8 %	65.9 %	.070
5. Why does a policeman say words such as "prison"?	27.0 %	14.6 %	.176
6. You ask a policeman to explain a word to you. How does the policeman like that?	70.3 %	73.2 %	.776
7. What should you do if you are not sure about something?	86.5 %	56.1 %	.003
8. A policeman makes several suggestions what could have happened, but you think all suggestions are wrong. What should you do?	64.9 %	61.0 %	.723
9. Why does a policeman not talk about certain things?	8.1 %	17.1 %	.237
10. What – other than question people - do policemen do?	81.1 %	73.2 %	.408

Table 8.4 Overview of correct responses (in percent) to questionnaire "understanding of interviewee behaviours" in study 6 ($N = 78$)

As can be seen in table 8.4, there was an association between condition and understanding of interviewee behaviours for question 7 only (χ^2 (1, N = 78) = 8.64, p = .003). Participants in the live intervention (86.5%) were more likely to provide a correct response to this question than participants in the video intervention (56.1%).

8.3.3.1.2 Effects of experimental manipulation on questionnaire *"understanding of interviewer behaviours"-I*

Question number and question	After live intervention	After video intervention	*p*
1. Why does the policeman say the word "crime"?	5.4 %	4.9 %	.916
2. Why does the policeman ask the boy to tell him everything?	83.8 %	90.2 %	.394
3. Why does the policeman say that the cars were driven against each other?	5.4 %	14.6 %	.180
4. Why does the policeman say "wedged"?	5.4 %	4.9 %	.916
5. Why does the boy say that he does not know the word?	70.3 %	75.6 %	.596
6a. Is that a good or a bad thing to do?	78.4 %	78.0 %	.972
6b. Why is that a good or a bad thing to do?	5.4 %	9.8 %	.472
7. Why does the policeman not want to talk about the mother?	45.9 %	36.6 %	.401
8. Why does the policeman ask if the cars were wedged or driven against each other?	10.8 %	9.8 %	.878
9. Why does the policeman ask twice whether the cars were wedged?	32.4 %	26.8 %	.588
12. What will the policeman do after the interview?	40.5 %	43.9 %	.764

Table 8.5 Overview of correct responses (in percent) to questionnaire "understanding of interviewer behaviours"-I in study 6 (N = 78)

As can be seen from table 8.5, there were no significant associations between condition and children's understanding of interviewer behaviours immediately after exposure to the interventions.

8.3.3.1.3 Effects of experimental manipulation on questionnaire *"understanding of interviewer behaviours"-II*

Question number and question	After live intervention	After video intervention	*p*
1. Why does the policeman say the word "crime"?	27.0 %	17.1 %	.288
2. Why does the policeman ask the girl to tell him everything?	78.4 %	73.2 %	.593
3. Why does the policeman say that the car's boot was damaged?	16.2 %	14.6 %	.847
4. Why does the policeman say "boot"?	8.1 %	7.3 %	.896
5. Why does the girl say that she does not know the word?	83.8 %	68.3 %	.111
6a. Is that a good or a bad thing to do?	86.5 %	90.2 %	.604
6b. Why is that a good or a bad thing to do?	8.1 %	22.0 %	.091
7. Why does the policeman not want to talk about the father?	64.9 %	41.5 %	.039
8. Why does the policeman ask if the boot was damaged or not?	5.4 %	7.3 %	.731
9. Why does the policeman ask twice whether the boot was damaged?	43.2 %	31.7 %	.292
12. What will the policeman do after the interview?	43.2 %	43.9 %	.953

Table 8.6 Overview of correct responses (in percent) to questionnaire "understanding of interviewer behaviours"-II in study 6 (N = 78)

As can be seen from table 8.6, there was an association between condition and ability to provide a correct response to question 7 after a delay of 7 days (χ^2 (2, N = 78) = 7.24, p = .027). Children exposed to the live intervention (64.9%) were more likely to provide a correct response than children in the video intervention (41.5%).

8.3.3.1.4 Effect of delay

A within-participants t-test showed that children's performance was significantly better after a delay of 7 days (M = 5.88, SD = 2.25) than immediately after exposure to the intervention (M = 5.29, SD = 2.19; t (77) = -2.62, p = .011).

8.3.3.2 Pleasantness of intervention

To assess how enjoyable children perceived the intervention to be, they were asked to provide feedback on how interesting the intervention was, how much they liked the character used in the intervention, how comprehensible the explanations were, how easy or difficult it was to listen to the end and how many new things they learned about police work. Additionally, children were asked to indicate what they liked best and least respectively as well as to provide suggestions on how the intervention could be improved. Results for each of these elements are provided below. Additionally, an overall "pleasantness" score was calculated using the same scoring method as in study 3 (table 5.13). The overall score was then correlated with children's ability to provide correct responses (i.e. the overall number of correct responses) to questionnaire *"understanding of interviewee behaviours"* and questionnaires *"understanding of interviewer behaviours"-I* and *-II*.

How interesting was the intervention?

	Overall	**Live**	**Video**
Very interesting	14.1 %	21.6 %	7.3 %
Interesting	48.7 %	67.6 %	31.7 %
A bit interesting	33.3 %	8.1 %	56.1 %
Not at all interesting	2.6 %	0.0 %	4.9 %
No response	0.0 %	0.0 %	0.0 %

Table 8.7 Children's rating (in percent) of interest in interventions in study 6

How much did you like the main character?

	Overall	**Live**	**Video**
A lot	26.9 %	37.8 %	17.1 %
Liked	57.7 %	54.1 %	61.0 %
A bit	12.8 %	5.4 %	19.5 %
Not at all	2.6 %	2.7 %	2.4 %
No response	0.0 %	0.0 %	0.0 %

Table 8.8 Children's rating (in percent) of attractiveness of main character in study 6

How comprehensible were the explanations?

	Overall	Live	Video
Very comprehensible	35.9 %	51.4 %	22.0 %
Comprehensible	41.0 %	37.8 %	43.9 %
A bit comprehensible	19.2 %	10.8 %	26.8 %
Not at all comprehensible	3.8 %	0.0 %	7.3 %
No response	0.0 %	0.0 %	0.0 %

Table 8.9 Children's rating (in percent) of comprehensibility of interventions in study 6

Was it difficult or easy to listen to the end?

	Overall	Live	Video
Very easy	25.6 %	37.8 %	14.6 %
Easy	34.6 %	40.5 %	29.3 %
Average	26.9 %	18.9 %	34.1 %
Difficult	6.4 %	0.0 %	12.2 %
Very difficult	5.1 %	2.7 %	7.3 %
No response	0.0 %	0.0 %	0.0 %

Table 8.10 Children's rating (in percent) of ease of following the interventions in study 6

How many new things have you learned about police work?

	Overall	Live	Video
Many	37.2 %	45.9 %	29.3 %
A few	57.7 %	51.4 %	63.4 %
None	5.1 %	2.7 %	7.3 %
No response	0.0 %	0.0 %	0.0 %

Table 8.11 Children's rating (in percent) of new things learned in the interventions in study 6

What did you like best?

	Overall	Live	Video
Assist main character (Uli)	7.7 %	16.2 %	0.0 %
Everything	7.7 %	8.1 %	7.3 %
Explanations given	7.7 %	5.4 %	9.8 %
Inclusion of policeman	2.6 %	0.0 %	4.9 %
Main character (Uli)	34.6 %	13.5 %	53.7 %
Main character (Uli) is honest	12.8 %	24.3 %	2.4 %
Policeman admits to making mistakes	2.6 %	0.0 %	4.9 %
Policeman repeats question	1.3 %	0.0 %	2.4 %
No response	23.1 %	32.4 %	14.6 %

Table 8.12 Children's rating (in percent) of favourite element in interventions in study 6

What did you like least?

	Overall	Live	Video
Audio quality	9.0 %	0.0 %	17.1 %
Doubt in main character's (Uli) truthfulness	3.8 %	8.1 %	0.0 %
Explanations provided	3.8 %	2.7 %	4.9 %
Inclusion of policeman	5.1 %	0.0 %	9.8 %
Length of slides (too long)	1.3 %	0.0 %	2.4 %
Length overall (too long)	3.8 %	5.4 %	2.4 %
Main character (Uli)	3.8 %	0.0 %	7.3 %
Main character (Uli) lies	1.3 %	0.0 %	2.4 %
Nothing	21.8 %	27.0 %	17.1 %
Repetition of content	1.3 %	0.0 %	2.4 %
Thief's dishonesty (stole handbag)	3.8 %	8.1 %	0.0 %
No response given	41.0 %	0.0 %	34.1 %

Table 8.13 Children's rating (in percent) of least favourite element in the interventions in study 6

How could the intervention be improved?

	Overall	Live	Video
Better audio quality	9.0 %	0.0 %	17.1 %
More questions	1.3 %	2.7 %	0.0 %
No improvement needed	33.3 %	48.6 %	19.5 %
Shorter	1.3 %	0.0 %	2.4 %
Shorter and clearer	1.3 %	0.0 %	2.4 %
No response provided	53.8 %	48.6 %	58.5 %

Table 8.14 Children's suggestions (in percent) for improvements for the interventions in study 6

Correlation "pleasantness" score and correct answers to questionnaire *"understanding of interviewee behaviours"*

Overall, Pearson's correlation showed that there was no correlation between the pleasantness of the intervention and children's understanding of interviewee behaviours (r (78) = .072, p = .531).

The correlation between pleasantness of intervention and understanding of interviewee behaviours stayed insignificant if it was plotted separately for participants in the live intervention (r (37) = .085, p = .615) and participants in the video intervention (r (41) = -.045, p = .780).

Correlation "pleasantness" score and correct answers to questionnaire *"understanding of interviewer behaviours"-I*

Overall, Pearson's correlation showed that there was no correlation between the pleasantness of the intervention and children's understanding of interviewer behaviours immediately after the intervention (r (78) = .024, p = .832).

The correlation between pleasantness of intervention and children's understanding of interviewer behaviours immediately after the intervention stayed insignificant if it was plotted separately for participants in the live intervention (r (37) = .313, p = 0.59) and participants in the video intervention (r (41) = -.129, p = .422).

Correlation "pleasantness" score and correct answers to questionnaire *"understanding of interviewer behaviours"-II*

Overall, Pearson's correlation showed that there was a weak positive correlation between the pleasantness of the intervention and children's understanding of interviewer behaviours after a delay of one week (r (78) = .284, p = .011). Thus, the more children enjoyed the intervention, the more likely they were to demonstrate understanding of interviewer behaviour after a week.

This correlation was moderate for participants in the live intervention (r (37) = .482, p = .003), indicating that the more participants enjoyed the intervention, the more likely they were to demonstrate understanding of interviewer behaviours after one week. There was no correlation for participants in the video intervention (r (41) = -.023, p = .888).

8.3.3.3 Perceived difficulty of questions

Difficulty of questions referring to interviewee behaviours and predictions of own performance

	Children rating the questions "very easy"	**Children rating the questions "easy"**	**Children rating the questions "average"**	**Children rating the questions "difficult"**	**Children rating the questions "very difficult"**	**Children withholding a response**
Overall	8.6 %	17.3 %	60.5 %	9.9 %	0.0 %	0.0 %
Live intervention	10.8 %	18.9 %	54.1 %	16.2 %	0.0 %	0.0 %
Video intervention	7.0 %	16.3 %	67.4 %	4.7 %	0.0 %	0.0 %

Table 8.15 Children's rating of question difficulty (in percent) for questionnaire "understanding of interviewee behaviours" in study 6

Children estimated that they provided on average 6.93 correct responses (*SD* = 2.0, Min = 0.00, Max= 12.00). Children in the live intervention predicted that they provided on average 6.97 correct responses (*SD* = 1.73, Min = 3.00, Max = 9.00), while children in the video intervention on average estimated that they provided 6.91 correct responses (*SD* = 2.15, Min = 0.00, Max = 12.00). While their estimate corresponded to the overall mean number of correct responses provided to questionnaire *"understanding of interviewee behaviours"* (*M* = 6.38, *SD* = 2.09), Pearson's correlation indicated that predictions did not correlate with children's number of correct responses to questionnaire *"understanding of interviewee behaviours"* (*r* (69) = .157, *p* = .199). In addition, no correlation between predicted number and number of correct responses was found for children in the video intervention (*r* (37) = -.007, *p* = .965). However, there was a weak positive correlation for children in the live intervention (*r* (32) = .377, *p* = .033), indicating that children in the live intervention were more likely to accurately estimate the number of correct responses they had provided.

Difficulty of questions referring to interviewer behaviours immediately after intervention and predictions of own performance

	Children rating the questions "very easy"	**Children rating the questions "easy"**	**Children rating the questions "average"**	**Children rating the questions "difficult"**	**Children rating the questions "very difficult"**	**Children withholding a response**
Overall	1.2 %	8.6 %	56.8 %	23.5 %	3.7 %	1.2 %
Live intervention	2.7 %	5.3 %	48.6 %	32.4 %	5.4 %	2.7 %
Video intervention	2.3 %	11.6 %	65.1 %	16.3 %	2.3 %	0.0 %

Table 8.16 Children's rating of question difficulty (in percent) for questionnaire "understanding of interviewer behaviours"-I in study 6

Children estimated that they provided on average 5.87 correct responses (*SD* = 2.10; Min = 1.00, Max = 12.00). Children in the live intervention predicted that they provided on average 5.98 (*SD* = 2.24; Min = 1.00, Max = 12.00) correct responses while children in the video intervention estimated that they provided on average 5.76 (*SD* = 2.11; Min = 1.00, Max = 12.00) correct responses.

While the overall mean of correct responses was 5.87 (*SD* = 2.10), Pearson's correlation indicated that predictions did not correlate with children's number of correct responses to questionnaire *"understanding of interviewer behaviours"-I* (r (69) = .192, p = .134). Likewise, there was no correlation between estimated number of correct responses and actually provided correct responses for children in the live intervention (r (33) = .334, p = .057) or for children in the video intervention (r (36) = .053, p = .759).

Difficulty of questions referring to interviewer behaviours after a delay of one week and predictions of own performance

	Children rating the questions "very easy"	**Children rating the questions "easy"**	**Children rating the questions "average"**	**Children rating the questions "difficult"**	**Children rating the questions "very difficult"**	**Children withholding a response**
Overall	1.2 %	23.5 %	48.1 %	16.0 %	3.7 %	0.0 %
Live intervention	0.0 %	29.7 %	48.6 %	10.8 %	5.4 %	0.0 %
Video intervention	2.3 %	18.6 %	48.8 %	20.9 %	2.3 %	0.0 %

Table 8.17 Children's rating of question difficulty (in percent) for questionnaire "understanding of interviewer behaviours"-II in study 6

Overall, children estimated that they provided 5.94 correct responses (*SD* = 3.01; Min = 0.00, Max = 12.00) which was close to the overall mean of 5.68 correct responses (*SD* = 2.45). While children in the live intervention predicted that they would provide 5.75 correct responses (*SD* = 2.91; Min = 0.00, Max = 12.00) – thus slightly underestimating their performance -, children in the video intervention estimated that they provided on average 6.11 correct responses (*SD* = 3.13; Min = 0.00, Max = 12.00), thus slightly overestimating their performance. Pearson's correlation revealed that there was a strong positive correlation between children's estimated number of correct responses and the actual number (r (71) = .547, $p < .001$), indicating that children were able to predict the number of correct responses provided. This correlation was maintained if separate analyses were conducted for children in the video intervention (r (38) = .608, $p < .001$) and to a lesser degree if only children in the live intervention were considered (r (33) = .508, $p = .003$). Thus, predictions made by children in the video intervention were slightly more accurate than predictions made by children in the live intervention.

8.4 Discussion

Hypotheses (a), that children in the live intervention would outperform children in the video intervention, and (c), that 8- and 9-year-old children (i.e. third graders) would perform worse

than 10-year-old-children (i.e. fourth graders) were not supported. Exposure to the video intervention and the live intervention was associated with better performance for one question respectively and the interventions therefore did not differ in their effectiveness of improving children's knowledge of interviewee and interviewer behaviours. However, unlike in previous studies, no control group was included in study 6. Thus, while the effectiveness of the live intervention was suggested previously (study 4) and findings from the current study would thus suggest that both interventions were equally effective in improving children's understanding of police interviews, the omission of a control group as well as a baseline measure makes it impossible to be certain in whether the interventions were indeed effective in improving children's understanding or if no improvement as a consequence of exposure to the intervention had taken place (for a more in-depth discussion of this issue see 9.2).

However, as study 4 suggested that older children's understanding of interviewee and interviewer behaviours increased as a consequence of the live intervention, it seems likely that both delivery methods of the intervention were effective in study 6.
The intermediate age group recruited for study 6 did not differ significantly from the older children recruited previously. Study 6 does not permit direct conclusions in regards to the intermediate age group's learning from either of the interventions, but the lack of statistically significant differences suggests that the intermediate age group might respond to interventions and assessment methods in a similar way to the older age group, that is, they are likely to demonstrate improved knowledge of interviewee and interviewer behaviours after exposure to the intervention (study 4). These assumptions, however, would have to be validated empirically before they can be relied on in future research.

In contrast, hypothesis (b) was supported as children's performance improved significantly after a delay of 7 days compared to immediately after exposure to the intervention. In line with sleep literature (Born, 2010; Walker, 2010), this suggests that the designed intervention might be most effective if delivered well in advance of police interviews rather than immediately before them.
Implications for future research of the points raised will be discussed in the following chapter.

9 Overall discussion

9.1 Summary of main findings

The aim of the present research was to identify potential factors that might impair child interviewees' ability to provide accurate and detailed statements in police interviews. Based on a literature review (chapter 2), an examination of guidance available to police interviewers in various European countries, the US and in particular in Germany (study 1) and the empirical study 2, children's lack of understanding of various processes and dynamics of police interviews was identified as a potential barrier to children's ability to testify, which has not been investigated in great depth previously. In subsequent studies, an intervention was designed that improved children's understanding of police interviews. Following the intervention both, younger children (study 3) and older children (study 4), demonstrated improved knowledge of interviewee behaviours, up to a week after the intervention (study 6). Older children (study 4), but not younger children (study 5) also displayed an increased understanding of interviewer behaviours which would need to be considered in police interviews to determine which interviewee behaviours would constitute an appropriate response. Delivering the intervention via video or live seems to have been equally effective for older children (study 6).

The main findings, implications and contributions of the chapters will be reviewed before making an overall conclusion.

Chapter 2 presented the literature review and identified that police interviewees – in particular child interviewees – face multiple challenges resulting from the unique circumstances of a police interview. Especially children might have difficulty assuming the role of an "expert" (who could have a severe impact on other individuals' lives) as they report potentially distressing experiences to a stranger. These challenging circumstances are exacerbated by the complex memory processes of attending to, encoding, storing and retrieving of information. Real-life memories are frequently encoded under suboptimal circumstances, such as adverse environmental factors, distractions and competing demands for cognitive resources. The resulting memories are prone to interferences through decay, heuristics – such as the reliance on scripts and schemata – or information provided from other sources. Thus, memories might be distorted or fragmented prior to the police interview and could be subject to further

interference as a result of factors such as unsuitable questioning, complex language and any distress experienced by the interviewee. The literature review (chapter 2) indicated that police interviewees, in particular child interviewees, may face multiple challenges at all stages of the processing of information as well as due to the nature of the police interview itself. This conclusion raised three questions that were then investigated in the remainder of the thesis, namely (a) whether police interviewers receive adequate guidance to support child interviewees (study 1), (b) whether children's vulnerability could be attributed to their lack of understanding of police interviews (study 2) and (c) if children's understanding of police interviews could be improved to reduce children's vulnerability in interviews (studies 3 to 6).

Study 1 extended the literature review by considering the guidance available to police interviewers in Germany – a country that has received little attention in the relevant literature. The universal German police manual, the PDV382, was found to be brief, imprecise and superficial. Supplements to this manual by four German counties were then reviewed. The supplements could be criticised in the same way as the PDV382, but three out of the four supplements highlighted the importance of video-recording interviews with minors – a point made, but not emphasised by the PDV382. Comparison with other European manuals as well as the US manual suggested that the guidance provided to police interviewers in Germany was not based on research and was of a poorer standard in terms of length, level of detail and specific recommendations. Acknowledging that police interviewers might receive guidance through training in addition to the manuals, the training manual from one county (North Rhine-Westphalia) was then reviewed. This training manual made general and specific suggestions about how to obtain evidence from child interviewees based on the literature. It was therefore concluded that, while the theoretical guidance to German police interviewers was limited, especially in comparison with other international manuals, the training manual did provide effective practical advice to police interviewers, even though it could have been more comprehensive and could have had a stronger foundation on academic research. Revision of the German manual was therefore recommended, but even a revised manual might not benefit child interviewees if children themselves do not understand the nature and aims of a police interview.

Children's lack of understanding of interviews has previously been linked to poor statements being provided in police interviews. Specifically, as discussed in 2.7, children's lack of understanding has been associated with negative attitudes towards police officers (Powell et

al., 2008) and court (Block et al., 2010) as well as children failing to indicate if they do not know an answer, but instead providing responses to questions that were designed to be impossible to answer due to the usage of complex language (Perry et al., 1995), insufficient information being provided (Hughes & Grieve, 1980; Waterman et al., 2001, 2004) or questions being bizarre (e.g. "what do bricks eat?"; Waterman, Blades, & Spencer, 2000). Similar limitations resulting from lack of understanding have been found when children were faced with yes/no questions and selected an answer rather than indicating that they do not know the answer (Peterson & Grant, 2001) and children shifting from accurate to inaccurate responses when asked repeatedly due to failure to understand that questions may be repeated to obtain clarification or additional information (Krähenbühl et al., 2009; Krähenbühl & Blades, 2009).

Following a previous successful method of assessing interviewees' understanding through asking them to explain processes and dynamics of a videotaped mock police interview (Hülsken, 2011), study 2 compared primary school aged children's and adults' knowledge and understanding of police interviews based on nine components, such as the overall situation of police interviews, roles within the interview and specific questioning techniques. Nine- and 10-year-old children demonstrated a similar level of understanding as adults, although neither adults nor children demonstrated perfect understanding. Six- and 7-year-olds lacked basic understanding and performed significantly poorer than the previously mentioned age groups, while 8-year-olds were at an intermediate level. While previous studies have identified some of these components as detrimental to children's testimonies (as reviewed in chapter 2), young children's lack of understanding of police interviews has only been investigated in detail in one previous study (Hülsken, 2011). While the findings from study 2 were in line with the findings from this earlier study, study 2 in the present thesis was novel in its depth and comprehensiveness of issues investigated. Addressing children's lack of understanding was therefore considered a promising approach for helping child interviewees, especially as previous studies (discussed in 2.7) have suggested that, through suitable interventions, the accuracy (Cordón et al., 2005; Hughes & Grieve, 1980; Nesbitt & Markham, 1999; Peters & Nunez, 1999; Saywitz et al., 1999; Waterman & Blades, 2011) and level of detail of child interviewees' statements can be increased (Krackow & Lynn, 2010) while their suggestibility

can be decreased (Gee et al., 1999; Mulder & Vrij, 1996; Peters & Nunez, 1999; Saywitz & Moan-Hardie, 1994).

Study 3 introduced a live intervention designed to increase children's understanding of appropriate interviewee behaviours. To be appealing and informative to 6- and 7-year-olds (who demonstrated only very basic or no understanding in study 2) various aspects were considered in the design of the intervention. The overall aim of the intervention was to increase children's understanding of interviewee behaviours and what impact these behaviours might have on their statements. The results of study 3 were encouraging – due to an observed improvement in children's understanding - and in line with previous studies suggesting that children's understanding of interview dynamics can be improved (Cordón et al., 2005; Gee et al., 1999; Hughes & Grieve, 1980; Krackow & Lynn, 2010; Mulder & Vrij, 1996; Nesbitt & Markham, 1999; Peters & Nunez, 1999; Saywitz & Moan-Hardie, 1994; Saywitz et al., 1999; Waterman & Blades, 2011). However, increasing children's knowledge of interviewee behaviours only might be insufficient to decrease their vulnerability in real-life interviews during which they have to interact with other individuals and interpret their behaviours.

Consequently, a second assessment method was introduced in study 4. In addition to suggesting appropriate behaviours based on clearly-defined scenarios, 9- and 10-year-olds watched a staged police interview and were asked to explain why the interviewer displayed certain behaviours. Older children were recruited for this study to assess the feasibility and comparability of the materials and assessment methods in a relatively knowledgeable sample (Hülsken, 2011) . The materials and method were deemed suitable and effective in improving 9- and 10-year-olds' knowledge of interviewee and interviewer behaviours.

Six- and 7-year-olds were then recruited in study 5 to assess the effectiveness of the same intervention for this younger age group. In addition, study 5 introduced an analogous video intervention presented by a mock policeman. Contrary to predictions, the 6- and 7-year-olds showed no improvement in their understanding of interviewer behaviours in response to either the live intervention or the video intervention. Six- and 7-year-olds may have been too young to be taught about interviewer behaviours, which is in line with earlier suggestions that this age group may be too young to benefit from interventions designed to improve their ability to suppress inappropriate responses (Howie & O'Neill, 1996) or to indicate that they do not know the answer to unanswerable questions (Hughes & Grieve, 1980). Notably, while

children's understanding of interviewer behaviours could not be improved in the present study, study 4 suggested that it is possible to improve children's understanding of interviewee behaviours. While there are interesting implications of this (which will be discussed in 9.3), there are also limitations to the current approach that need to be considered (see 9.2).

Study 6 compared the effectiveness of the live and the video intervention with 8-, 9- and 10-year-olds. In addition, a delay was introduced to assess if the intervention would still be effective after a period of time. For older children, both intervention methods were equally effective in improving children's understanding of interviewee and interviewer behaviours and both groups benefited from a delay as opposed to an immediate assessment. However, as mentioned previously (8.4), the lack of a control group is an important limitation of this study, which will be considered further in 9.2.

To draw a conclusion, the present research has made two major contributions to the investigation of limitations that children face in police interviews. First, in the most comprehensible and in-depth study to date, children's lack of understanding of dynamics and processes of police interviews has been identified as a very likely cause for limitations that child interviewees have displayed in numerous studies as well as in actual legal interviews in the past decades.
Second, the present thesis has suggested that the understanding of young children can be improved using a cheap and brief intervention, although the benefits were more pronounced for interviewee than interviewer behaviours. While the studies described have certain limitations (discussed in 9.2), there are also important implications and directions for future research (see section 9.3) emerging as a direct result of the present thesis.

9.2 Limitations of presented studies

Possibly the most significant limitation of the current thesis is the small sample size used in the studies conducted. While studies recruiting child participants commonly recruit smaller samples than studies conducted with adult participants – and indeed use sample sizes that are largely in line with the sample sizes used in the present thesis -, the frequent observation of a trend rather than a significant result in the present studies suggests that larger samples might have resulted in significant effects. However, this is purely speculative and the current data does not allow absolute certainty that significant effects would have been found with larger samples.

Likewise, the lack of a control group and/or baseline measure in the final study (study 6) does not allow for certainty that both intervention methods were equally effective, although this suggestion was supported by study 4, which proposed that the live intervention would be successful in improving older children's knowledge of interviewee and interviewer behaviours. However, as the final study did not include a control group and/or baseline measure, it is possible that, rather than both intervention methods being equally effective, neither of them resulted in any improvement in children's understanding of interview dynamics. Therefore, the findings of this study in particular should be used with caution as further investigation is needed to determine without a doubt if the lack of a difference between the different interventions indicates comparable effectiveness or ineffectiveness.

While some researchers might further argue that running multiple analyses on the same data set can increase the likelihood of a type I error (i.e. finding a difference when there is in fact no difference), this risk was minimised through reducing the number of separate analyses run as much as possible. Likewise, the potential criticism of relying on a significant p-value was addressed through applying corrections when appropriate. However, acknowledging the emerging suggestions to abandon the p-value as a determinant of whether the null hypothesis should be accepted or rejected and to instead consider confidence intervals as a more appropriate measure, future researchers might wish to follow these recommendations.

The final limitation relates to the materials used in the present thesis. While the materials, especially the questionnaires, do indeed require further validation by other researchers to increase the confidence in their suitability, the studies presented in the current thesis follow a novel approach to assess children's understanding of police interviews and could therefore not be based on any previously used materials. However, the method of assessment itself has been validated in a large study of over 400 participants (Hülsken, 2011), which also supported the suitability of video sequence *a* that has been scripted with and assessed by police interviewers in Germany. Likewise, for all studies employing video sequence *a* and *b*, analyses have confirmed that there were no effects on children's responses based on the used video sequence, thereby supporting the suitability of video sequence *b*. Thus, while the use of the questionnaires and the intervention may be criticised for lack of validation, the purpose of this thesis was to explore a novel method to assess and improve children's understanding of police

interviews as no previous research has investigated this important area as comprehensively or as in-depth as the present thesis.

Therefore, while it is acknowledged that replication with larger samples (and resulting changes to the statistical analyses) and better validation of the materials used are essential to increase the confidence in the results, there are important implications of the present thesis and potential emerging studies (see section 9.3).

9.3 Implications and directions for future research

There are three main implications of the present thesis, each of which will be discussed in turn. First, the commonly identified limitations that children display in interview situations (see chapter 2) might be the result of their failure to comprehend the underlying dynamics, procedures and expectations associated with interview situations. While this suggestion might seem trivial, it is actually a novel suggestion in the literature that has previously only been investigated in a very limited number of studies (see section 2.7) and based on a small selection of limitations (e.g. children's failure to indicate that they do not know the response to a question). Study 2 is – to the author's knowledge – the first study to investigate children's lack of understanding for such a large number of factors as well as through measures other than observation (i.e. through asking children to verbalise their understanding). Therefore, in spite of the previously outlined limitations, the present thesis has the potential to inspire a wide range of novel research studies that focus on directly assessing children's understanding rather than observing how their understanding affects their performance in interviews. Thus, future researchers might wish to use a similar methodology to the one used in the present thesis to assess children's understanding of a wide range of factors directly rather than through observing the effects resulting from lack of understanding.

The second implication of the present thesis is that it is very difficult to improve children's understanding of police interviews and consequently their ability to provide detailed and accurate statements. This finding has important practical implications as various police manuals and guidance to police interviews suggest providing children with brief instructions on how they should behave in police interviews (e.g. indicate if they do not understand something). The studies presented in the current thesis suggest that, while children's understanding may improve for isolated, well-defined scenarios (e.g. example questions used by police interviewers to assess children's understanding of the instructions provided),

improving children's understanding for naturally occurring and less well-defined situations (e.g. the actual police interview) is much more difficult and may even be impossible with young children. Thus, actual child interviewees may demonstrate improved understanding in the early stages of the interview (thereby increasing interviewers' confidence that the interviewee will be able to follow the rules throughout the interview), but fail to apply this understanding in the substantial phase of the interview. Therefore, the current thesis should cast doubt in the notion that brief instructions at the beginning of police interviews can be effective in improving children's behaviour throughout the interview and alert interviewers to the potential difficulties that children may face in the substantial phase of the interview in spite of their performance in the early stages.

In spite of this caution that police interviewers should employ with child interviewees, the third implication of the present thesis is that children's understanding of police interviews and thus potentially their performance can be improved. Therefore, future research might explore ways to improve the intervention used in the present thesis or to design a novel intervention to improve children's understanding as this could greatly improve the quality and quantity of information that child interviewees provide in police interviews while ideally reducing the adverse impact of police interviews on children's well-being. Likewise, as the present thesis has established that children can verbalise their improved understanding, future researchers might wish to explore if children demonstrate improved performance in mock or actual interviews as a consequence of their increased understanding. While this might initially seem like reverting back to the original studies of merely observing behaviour, improving children's performance in interviews (rather than just their theoretical knowledge) is clearly the overall aim of intervention studies. The present thesis has suggested that improving children's knowledge of police interviews might be a potential way to also improve children's performance.

Glossary

ABE	Achieving Best Evidence in Criminal Proceedings; English & Welsh police manual
Adolescent	In the German legal system, every individual between 14 and 18 years
Child	In the German legal system, every individual under 14 years
GJIICWS	Guidance on Joint Investigative Interviewing of Child Witnesses in Scotland; Scottish police manual
JGG	Jugendgerichtsgesetz; Liechtenstein police manual
Legal guardian	In the German legal system, every individual who is eligible to care for a minor - usually both parents; if parents cannot function as legal guardians (e.g. due to absence, illness or suspected involvement in crimes against the minor), the family court can request a legal guardian in lieu
LpBSSH	Leitlinie für die polizeiliche Bearbeitung von Sexualdelikten in Schleswig-Holstein; Police manual supplement by Schleswig-Holstein
Minor	In the German legal system, every individual under the age of 18
NICHD	NICHD Investigative Protocol; United States police manual
NRW	North Rhine-Westphalia; county in Germany whose police training manual was reviewed in study 1
PDV382	Polizeidienstvorschrift 382; German police manual

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Appendices

Appendix A. Summary of key differences between the German, Scottish and English police manual

	Germany	Scotland	England
Who should interview children?	Ideally specially trained interviewers	/	Specially trained interviewers
How is the statement logged?	Video recording in individual cases and with prior consent from interviewee and legal guardian, otherwise written protocol	All interviews should be video recorded, audio recorded or written verbatim (order reflects preference of method)	All interviews should be video recorded, audio recorded or written verbatim (order reflects preference of method)
Which consent is required?	Consent from interviewee can overrule consent from legal guardian; Video recordings require consent from interviewee and legal guardian	No consent required from interviewees or legal guardian for any part of the interview	Interviewee consent is recommended; Consent from legal guardian required for interview and recording (unless this endangers the investigation)

Which ground rules should be explained when?	/	The following rules should be outlined as necessary: • Interviewee's lack of understanding should be indicated • Interviewer's misunderstanding should be corrected • All information (even if assumed to be known) should be provided • Permissibility of asking for breaks • Clarification of purpose of repeated questions • Acceptability of "don't know"-responses	The following rules should be outlined at the beginning: • Interviewee's lack of understanding should be indicated • Interviewer's misunderstanding should be corrected • All information (even if assumed to be known) should be provided • Permissibility of asking for breaks
How is the interviewee's ability to distinguish between truths and lies assessed?	Interviews about sexual crimes require prior credibility assessment	Interviewee's ability to distinguish between truths and lies must not be assessed	During the rapport phase, interviewee's ability to distinguish between truths and lies is assessed with examples
How is rapport built?	Neutral topics are to be discussed	Neutral topics are to be discussed	Neutral topics are to be discussed
When should a practise interview be conducted?	No practise interview	Between the rapport phase and the interview about the incident	In the preparation phase (i.e. prior to the actual interview)
Does the interviewee provide a free narrative account prior to interview?	Yes, at the beginning; It may be in written form	Yes, at the beginning; It should be followed up with open questions that do not mention any novel details	Yes, at the beginning; It should be followed up with open questions that do not mention any novel details

How should the questioning phase be conducted?	/	• Open questions are most appropriate • Specific questions based on statement may be used as follow-up • Question repetition should be justified • Interviewer should avoid forced-choice questions, leading questions, complex language, double negatives, long questions, hypothetical questions, why-questions, leading non-verbal behaviour • Interviewees might struggle with frequency, weight, height, age estimates, location, pronouns, passive voice and precise use of anatomical terms	• Open questions are most appropriate • Specific questions based on statement may be used as follow-up • Question repetition should be justified • Interviewer should avoid forced-choice questions, leading questions and complex language
What props are permissible?	/	Only comforters are allowed	• Drawings are recommended • Pictures, photographs and symbols are permissible • Dolls and figures are controversial
What should the interviewer do at the end?	/	• Summarise statement • Answer questions • Outline potential consequences • Thank interviewee • Reassure interviewee	• Summarise statement • Answer questions • Outline potential consequences • Thank interviewee • Reassure interviewee

Appendix B. Correlations between questions of component "basic understanding of police interviews" in study 2

	1.	2.	3.	4.	15.	15a.	15b.
1. What kind of people are they?	1						
2. Where are the two people?	.322***	1					
3. What is the person on the left (pointing to person on the left) **wearing?**	.169*	.154*	1				
4. Why is he wearing that (police uniform)?	.060	-.026	.105	1			
15. Has anybody committed a crime in the video?	.218***	.050	.056	-0.52	1		
15a. Who (has committed a crime in this video)**?**	.080	.023	-.043	-.113	.681***	1	
15b. **Why** (has somebody committed a crime in this video)**?**	.067	.018	-.022	-.119	.673***	.989***	1

[* $p < .05$; ** $p < .01$; *** $p < .001$]

Appendix C. Correlations between questions of component "common elements of police interviews" in study 2

	21.	21a	32.	35.	36a.	36b.
21. Why is the man writing?	1					
21a. Why is he taking notes?	.728***	1				
32. Why does the man ask so many questions?	.356***	.386***	1			
35. Why does the boy say prison?	.067	.055	.133*	1		
36a. Who has to go to prison?	.255***	.161*	.082	.123	1	
36b. Why does somebody need to go to prison?	.179**	.166*	.123	.095	.833***	1

[* $p < .05$; ** $p < .01$; *** $p < .001$]

Appendix D. Correlations between questions of component "co-operative child interviewee behaviours" in study 2

	12.	**12a.**	**37.**	**37a.**	**39a.**
12. How is the boy behaving?	1				
12a. Why (is he behaving) **well/badly?**	-.581***	1			
37. How has the boy behaved?	.395***	-.327***	1		
37a. Why (has the boy behaved) **well/badly?**	.213**	-.213**	.573***	1	
39a. Why has the boy provided enough information?	-.101	.126	-.095	-.079	1

[* $p < .05$; ** $p < .01$; *** $p < .001$]

Appendix E. Correlations between questions of component "ground rules" in study 2

	10.	11a.	14.
10. Why does the man say "fib"?	1		
11a. Why are you (not) allowed to lie in this situation?	.091	1	
14. Why does the man say "crime"?	.055	0.39	1

[* $p < .05$; ** $p < .01$; *** $p < .001$]

Appendix F. Correlations between questions of component "overall situation of police interviews" in study 2

	8a.	38.	40.	41.	42.
8a. Why do you think the two people know/do not know each other?	1				
38. What happened in the video?	.171*	1			
40. What happens after this video?	.136*	.357***	1		
41. What happened before this video?	.154*	.483***	.449***	1	
42. Where is the boy's mum?	-.067	.179**	.120	.164*	1

[* $p < .05$; ** $p < .01$; *** $p < .001$]

Appendix G. Correlations between questions of component "roles within the interview" in study 2

	17.	18.	19.	23a.	23b.	24.
17. What are the people talking about?	1					
18. Why are the two people talking about that?	.499***	1				
19. Who has seen this?	.559***	.419***	1			
23a. For whom is the word "wedged" important?	.028	-.055	.074	1		
23b. Why is the word "wedged" important?	.262***	.241***	.241***	-.021	1	
24. Why does the man talk about modelling clay?	.254***	.250***	.221**	-.016	.291***	1

[* $p < .05$; ** $p < .01$; *** $p < .001$]

Appendix H. Correlations between questions of component "situational constraints of police interviews" in study 2

	25.	26a.	33.	34a.
25. Why does the man not talk about the boy's mum?	1			
26a. Why should the man (not) talk about the boy's mum?	.397***	1		
33. Why does the man not talk about the boy's teacher?	.496***	.404***	1	
34a. Why should the man (not) talk about the boy's teacher?	.170*	.390***	.340***	1

[* $p < .05$; ** $p < .01$; *** $p < .001$]

Appendix I. Correlations between questions of component "specific questioning techniques" in study 2

	7.	16.	22.	27.	28.	29.	30.	31.
7. Why does the man say his name?	1							
16. Why does the man say "please"?	.013	1						
22. Why does the man say "wedged"?	.294***	-.006	1					
27. Why does the man repeat his question?	.270***	.033	.306***	1				
28. Why does the boy say "yes" and then "no"?	.264***	.034	.212**	.288***	1			
29. Why does the man give the boy a sheet of paper?	.208**	.061	.061	.184**	.175**	1		
30. Why does the man give the	.137*	.170*	.086	.206**	.166*	.482***	1	

boy the cars and playmobil man?								
31. Why does the man talk about traffic lights?	.143*	.131*	-.020	.138*	.107	.201**	.188**	1

[* $p < .05$; ** $p < .01$; *** $p < .001$]

Appendix J. Correlations between questions of component "understanding of video sequence" in study 2

	9a.	13a.	20.
9a. What does the word "fib" mean?	1		
13a. What does the word "crime" mean?	.128	1	
20. Where was this (accident)**?**	.296***	.160*	1

[* $p < .05$; ** $p < .01$; *** $p < .001$]