

THE COGNITIVE INTERVIEW, EXPLORING ITS EFFECTIVENESS
IN THE UK AND MEXICO

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Abstract

Eyewitnesses are interviewed by police officers or other law enforcers in a bid to obtain information to help solve a crime. The Cognitive Interview (CI) was developed by Geiselman and Fisher (and colleagues) in the 1980's, as an alternative to the existing interviews. Research on the CI has demonstrated its ability to enhance eyewitnesses' memory recall (see Köhnken, Milne, Memon, & Bull, 1999; Memon, Meissner, & Fraser, 2010 for reviews). The present thesis aimed to expand our understanding of the CI, specifically its effectiveness in a sample of participants from Mexico. It compared willingness to report crime and memory performance between participants from the UK and Mexico. A series of four studies were conducted on university students. Study 1 examined participants' willingness to report a crime in the UK and Mexico. Study 2 compared the performance of CI mnemonic techniques used in different combinations in participants from the UK and Mexico. Study 3 examined the effectiveness of a Modified Cognitive Interview and a control interview for positive, neutral and negative events amongst participants from the UK and Mexico. Study 4 explored the impact of misleading information on memory recall through a CI and a control interview in participants from Mexico. The results highlight some key findings: a) participants from Mexico are less willing to report a crime and report fewer details of the event than participants from the UK, b) combinations of the CI mnemonic techniques can reduce interview duration while maintaining a high level of memory recall, c) a misinformation effect was found following the introduction of misleading postevent information regardless of interview type and d) the emotional valence of an event overclouds the enhanced memory recall effect of a MCI. The theoretical and practical implications of these findings are discussed, as well as limitations and further research suggestions.

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List of abbreviations

CI	Cognitive Interview
CO	Change order
CP	Change perspective
CRI	Context reinstatement
EPR	Experimental Participant Requirement
MCI	Modified Cognitive Interview
RA	Report all
SI	Structured Interview

CHAPTER 1. Literature Review

1.1. Introduction

For the last 30 years, the Cognitive Interview (CI) has sought to improve eyewitness memory recall. The CI is perhaps one of the most influential and successful techniques developed in the field of psychology and law (Memon, Meissner, & Fraser, 2010). It was developed by Geiselman and Fisher (and colleagues) to address the difficulties police officers and law enforcers have when interviewing eyewitnesses. The CI is based on theories of memory that describe the phenomenon in terms of encoding, storage and retrieval. Throughout the years, the CI has proven successful in numerous controlled laboratory experiments; researchers have found that the CI improves both the accuracy and completeness of memory reports when compared to conventional police interviews (e.g., Geiselman et al., 1984; Geiselman & Fisher, 2014).

Research testing the efficacy of the CI has been on-going, much of which has taken place in affluent countries such as the USA, UK, Germany, Spain, Italy, France, Canada and Australia. Conversely, studies in developing countries are rather scarce. To date only one study has assessed the role of CI in a developing country and this took place in Brazil (e.g., Stein & Memon, 2006). The majority of these studies show that the CI is an efficient interviewing technique compared to control interviews, including the study by Stein and Memon (2006) in Brazil. Aside from the economic aspects, it is possible that individuals in affluent and developing countries differ in their willingness to report crime. For example, Van Dijk, van Kesteren, and Smit (2007) found that populations from developing countries reported a lower percentage of crimes than the population from the developed countries. Thus in a developing country, where willingness to report crime is low, a CI may constitute a valuable interview technique to gather as much information as possible from the few willing witnesses. However, given the lack of research, it remains unclear whether a CI would be a valid and reliable tool in countries where the population is reluctant to report a crime.

Mexico, a developing country with a high crime rate, is lacking appropriate interviewing techniques to investigate crime. Does the memory enhancing effect of the CI generalize to developing countries such as Mexico? The study by Stein and Memon (2006) indicates that, in Brazil a developing country, a CI is more effective at enhancing memory recall than a control interview. Mexico has been enwrapped in violence for years and the homicide rate has tripled as of 2007 (Asfura-Heim & Espach, 2013). This has led to citizens not trusting the authorities or having the perception that testifying is waste of time (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013). Having an appropriate interviewing technique that can be taught as part of training in investigative research to police officers can be a useful tool to enhance report of details from the few witnesses willing to report a crime.

Despite extensive research on the CI, there are still areas in need of further testing and improvement. For example, as mentioned above, there is very little research to support the effectiveness of CIs in developing countries; this is the overarching goal of this thesis. Within the chapters that follow, willingness to report and the effectiveness of the CI will be compared between Mexico and the UK. In Study 1, differences in willingness to report crime between participants in the UK and Mexico were analysed. Briefly, the results from this study indicate there are differences in willingness to report crime. Therefore, Studies 2-4 focus on examining whether the reluctance to report crime translates to the number of details provided in a CI.

The sections that follow provide an overview of existing literature that describes the most salient aspects of human memory as they pertain to eyewitness memory such as the effect of misleading information. Additionally, an overview of the CI, its mnemonic techniques, the enhanced CI and a close look at the research carried out over three decades on the CI will be addressed. These sections provide the theoretical framework from which the original studies presented within this thesis are based.

1.2. Memory

It is now widely accepted that memory comprises a series of cognitive systems that allow encoding, storage and retrieval of information (Baddeley, 1999; Melton, 1963; Shiffrin & Atkinson, 1969). Many theories attempting to explain memory and its processes are available. The Schema-based Theory by Bartlett (1932), proposes that memory is formed by a series of schemas, which are clusters of interrelated information. The Headed Records Model of memory, which was proposed by Morton and colleagues (1985), states that our memory is composed of information, or records that come with a heading, and that in order to retrieve a memory, one has to first select the heading and then have access to that record. The Multi-Store Model proposed by Atkinson and Shiffrin (1968), describes how three systems interact to achieve perception, encoding, storage and retrieval of information.

Many authors agree the memory system can be explained best using Atkinson and Shiffrin's (1968) Multi-Store Model. It has therefore become one of the most prominent and influential theories of human memory (e.g., Baddeley, 1999; Eysenck & Keane, 2010). Their component-based model is grounded on three systems: the sensory register, the short-term store and the long-term store. They are briefly explained as follows:

The sensory register. The sensory register is a memory store that holds information, very briefly, acquired from both visual and auditory perception. This information is processed and then transferred to the short-term store.

The short-term store. Also known as short term memory, the short-term store is a temporary storage component that is capable of performing complex tasks. It maintains information for a short period of time. During this time it is in charge of manipulating information to perform complex tasks, such as reasoning, comprehension and the ability to transfer information into long-term memory. The information that has not been rehearsed or attended to will decay and disappear rapidly.

The long-term store. Also referred to as long-term memory, the long-term store is thought to be a rather stable source of information. It is concerned with the storage of information that can be later retrieved. It can hold information for significant periods of time. Some authors (e.g., Baddeley, 1999; Shiffrin & Atkinson, 1969) claim that information in long-term memory is never destroyed; nevertheless, a lack of rehearsal, the passage of time, and interfering material can all contribute to forgetting.

These widely accepted memory systems/stores have been further compartmentalized. In particular the short-term store and the long-term store have seen an assortment of further systems with-in.

Short-term memory has been referred to and even been replaced by the term of *working memory*, proposed by Baddeley and Hitch (1974). Since then, Baddeley has proposed the most widely accepted theories of working memory (Baddeley, 1983; Baddeley, 1992; Baddeley, 1999; Baddeley, 2002). He states that working memory refers to the same temporary storage system capable of performing complex tasks as the short-term store, but it comprises a combination of subsystems, effectively replacing the idea of a single-unitary store. Originally, the working memory system was composed of three subsystems: a) the phonological loop, which maintains and rehearses speech based information, and is believed to be influential in the learning of new vocabulary; b) the visual-spatial sketchpad, capable of manipulating and maintaining visual-spatial information for further processing, necessary for spatial orientation; and c) the central executive, which functions as an attentional system in charge of coordinating information for slave systems, has limited capacity, and can control and regulate cognitive processes. A fourth subsystem, the episodic buffer was later introduced by Baddeley (2000), which is capable of integrating and storing information from different sources for a limited period of time.

Long-term memory has also been further defined in terms of subsystems. According to Tulving (1972) information can be stored in episodic or semantic memory. Episodic memory stores and retrieves information about specific events or episodes of a certain time and place, whereas semantic memory corresponds to general knowledge of concepts, words and objects, their meaning and how they interact. Graf and Schacter (1985) use the terms implicit and explicit memory. They describe implicit memory as

that recollection absent of conscious performance, whereas explicit memory is a conscious effort of recollection of a previous experience and information. Additionally, long-term memory is classified into declarative and non-declarative memory (Squire, 1994). Declarative memory is memory for all facts and events, whereas non-declarative encompasses all the rest, including Graf and Schacter's implicit memory, and learned motor, perceptual and cognitive skills; it does not require conscious recollection and is expressed through abilities.

The Multi-Store Modal memory system along with its various subsystems is in charge of encoding, storing and retrieving information for future reference. How does this happen?

Melton (1963) states that in first instance, the person has to perceive the to-be-remembered information in order for the process of encoding to happen (Melton, 1963). This encoding process requires the person to learn the information in order to continue with storage and eventually retrieval. Storage, as its name suggests, is the retention of information in the memory system. This information can later be retrieved. Retrieval is the process of gaining access to those stored memories.

The processes of encoding, storage and retrieval have been greatly studied. Shiffrin and Atkinson (1969) pay particular attention to the storage and retrieval processes in long-term memory. They subdivide these two processes into three stages and propose that storage and retrieval form parallel systems. Storage is divided into a) transfer, which enables a person to decide what, when and how information will be stored, b) placement determines where the information will be stored and c) image-production decides what proportion of the information will be stored. Retrieval is divided into: a) search, a process where the stored information is continuously being examined that leads to b) recovery, which determines how much of the available information will be recovered that gives way to c) response generation, where a decision on whether the information recovered is appropriate and a response can be emitted, or else the loop of search, recovery, response generation continues.

Tulving and Thompson (1973) focused on the retrieval process. They state that what can be remembered had to have been first encoded, and in order to be able to retrieve it

special focus must be made on the way it was encoded. They proposed the *Encoding Specificity Principle*, which refers to the idea that a person will remember an event according to what was perceived and how it was stored in memory. The cues that will help retrieve this memory will only be useful if they are associated to how the memory was stored. Although they emphasized the trace left at encoding, they did not reject the idea that a trace can be thereafter altered. In addition, the theory on *Multiple Retrieval Paths* (Tulving, 1974), stresses that in order to remember an event, it had to have laid a trace and something must remind us of it in order for it to come to our consciousness. In other words, to retrieve an event from memory, an appropriate cue linked to how the event was encoded must be present for the process of retrieval to be successful. If the information that needs to be recalled is not available via one cue, the use of a different cue could be advantageous.

It is clear that memory is a complex system of processes that interact with one another. The theories discussed above offer explanations as to how information is encoded, stored and retrieved. They set the bases to understanding how memory works. Nonetheless, memory recall is not always accurate. It is important to understand how these systems might fail and why they might do so.

1.2.1. The misinformation effect

The misinformation effect occurs when a person's memory of an event has been affected by post-event information (Blank, 1998; Holliday, Reyna, & Hayes, 2002; Lee & Chen, 2013; Loftus & Hoffman, 1989; Loftus, 1991; Paz-Alonso, Goodman, & Ibabe, 2013). Theories on the misinformation effect have been greatly based on Loftus and colleagues' 1970s studies (Loftus, 1975; Loftus, 1977; Loftus, Miller, & Burns, 1978). These studies were mainly based on a three stage paradigm introduced by Loftus et al. (1978). During the first stage participants view an event, such as a slide show. Participants are then divided into two groups where they will receive post-event information in the form of questions or narratives. One group receives all accurate information while the other receives misleading information. In the last stage participants are asked yes/no questions regarding information about the event witnessed.

Results typically show the participants in the misled group accept misleading information as having been part of the original event.

Research following this three-stage paradigm, or a slight modification of it, has consistently found a misinformation effect in participants in a range of samples, including adults (Belli, 1989; Centofanti & Reece, 2006; Gabbert, Memon, Allan, & Wright, 2004; Holliday et al., 2012; Loftus & Hoffman, 1989) and children (Ceci & Bruck, 1993; Holliday & Hayes, 2000; Holliday, 2003a; Holliday & Albon, 2004). Although researchers agree that evidence shows that the misinformation effect exists, the theoretical explanation underlying this effect is yet to be agreed upon. Various theoretical approaches, based on solid research attempt to describe the process behind the misinformation effect (see Ayers & Reder, 1998; Chrobak & Zaragoza, 2013, for reviews). The following are the most salient theoretical accounts.

The memory trace-alteration. This hypothesis proposes that the new misinformation alters or buries the original information so that the trace is inaccessible (Loftus et al., 1978; Loftus & Hoffman, 1989). The misleading information can alter memory and effectively impair recall of the original event (Loftus & Hoffman, 1989; S. Porter, Bellhouse, McDougall, ten Brinke, & Wilson, 2010). Basically, at encoding stage a trace for the original information is laid. When the misleading information is presented the trace for the original effect can be overwritten or altered. Hence, when asked about the original event, the trace is no longer accessible, so the misleading information is reported in its place. According to the memory trace alteration account, once the trace for the original event has been altered, the original memory is un-retrievable. Although this hypothesis seems promising, the type of tests used to prove that memory is altered by postevent information could be responsible for the misinformation effect. The individuals can be confused as to where they have encountered the information at the time of the test (i.e., during the original event or the postevent) and therefore answer incorrectly. The next paragraph explains the reasoning behind this theory.

The source-monitoring framework. As we remember details of an event, it can be difficult to determine where the memory comes from (Johnson, Hashtroudi, & Lindsay, 1993). The process of remembering where the information of that particular memory comes from is known as source monitoring (Johnson et al., 1993; Lindsay & Johnson,

1987). When individuals fail to attribute the details of a certain memory to the proper source of information, a misinformation effect can occur. In the source-monitoring framework, both the original and the post-event information can co-exist in memory, but errors occur when trying to decipher the source of the memory (Blank & Launay, 2014; Johnson et al., 1993; Lindsay & Johnson, 1987; Mitchell, Johnson, & Mather, 2003; Oeberst & Blank, 2012; Wylie et al., 2014). In other words, the misinformation effect occurs when individuals erroneously select the post-event information opposed to the original information as the source of the memory. Nonetheless, this framework has not been able to expand on issues regarding the distinctiveness of the post-event information which could affect memory retrieval, specifically because findings have been contradicting (Titcomb & Reyna, 1995). In a different light, a source misattribution can occur if the details of the original event were not encoded or have been forgotten, thus the post-event detail is mistaken as the original source of information (Johnson et al., 1993; Mitchell et al., 2003; Mitchell & Johnson, 2009).

The memory trace-strength account. The memory trace-strength account is based on some of the principles of the Fuzzy-Trace theory. The Fuzzy-Trace theory (Brainerd & Reyna, 2014; Titcomb & Reyna, 1995; Titcomb & Reyna, 1995) studies memory and higher reasoning and is interested in the relationship between the two. In this theory, memory strength is described as the richness with which memories are stored (Brainerd, Reyna, Howe, & Kevershan, 1991; Brainerd & Reyna, 2014). According to the Fuzzy-Trace theory, individuals encode an event in verbatim and gist traces alike. Gist traces concern the essence, the semantic content of the event, while verbatim memories are more precise accounts of what happened. As the strength of verbatim traces decline rapidly over time, participants rely on gist traces to remember the event. When the post-event information does not directly contradict gist memory, individuals may accept it as part of the original event, and thus a misinformation effect can occur (Brainerd & Reyna, 2005; Holliday, Douglas, & Hayes, 1999; Holliday et al., 1999; Titcomb & Reyna, 1995). Although the memory trace-strength is a sound explanation for the misinformation effect, the time it takes for the verbatim traces to decline and the individual to rely on gist is not clear and it can vary according to the type of information that the individual has received (Memon, Holliday, & Hill, 2006). Also, a misinformation effect in children and older adults can take less time to happen than it does in adults (Holliday et al., 2012).

Retrieval failure accounts. These theories state that memory for the event is not altered by misleading post-event information, but rather there was a failure at the retrieval stage that permitted the post-event information to be reported as the original. Two explanations have been given to account for this failure in retrieval: co-existence and blocking. The co-existence explanation argues that as both memories co-exist in memory, a lack of appropriate cues to retrieve the original information or a recency effect can result in the acceptance of the post-event misleading information (Bekerian & Bowers, 1983; Bowers & Bekerian, 1984; Christiaansen & Ochalek, 1983). The blocking explanation maintains that retrieval of a trace can be blocked by another competing trace, thus the misinformation effect occurs (Chandler, 1991; Eakin, Schreiber, & Sergent-Marshall, 2003; Morton et al., 1985). Yet this would imply that a misinformation effect would always occur unless a solution can be found to avoid the “blocking of the memory”.

The strategic effect account. The strategic effect account of the misinformation effect proposes that the effect does not arise from memory distortion, but rather is an artefact of the testing paradigm (McCloskey & Zaragoza, 1985). According to this account, both the original and post-event information are stored in memory. It argues that factors such as the type of test paradigm used can be responsible for this effect. To examine their theory, McCloskey & Zaragoza (1985) devised a modified test that was different from Loftus’ three-stage procedure in that the final stage did not include the misleading information, but rather a novel item instead. The results failed to find differences in memory performance of misled participants and control participants. Thus they concluded that the misinformation effect is due to the type of recognition test employed. Additionally, the strategic effect account also argues that if participants remember both the original and the post-event information, they can incorrectly guess and/or accept the misinformation as part of the original event (Belli, 1989; McCloskey & Zaragoza, 1985; Zaragoza, Belli, & Payment, 2007). A last argument to add to the strategic effect account states that participants could have simply not encoded or have forgotten the information of the original event, and thus they are influenced by the post-event information (McCloskey & Zaragoza, 1985)

Social Factors explanations. There are other explanations that not only follow memory theories but also take into account social factors to explain the misinformation effect.

For example, the memory conformity explanation, where an individual who has heard the report of another person regarding the same event accepts and incorporates this information as part of their own memory of the event, regardless of the information being correct or not (Gabbert, Memon, & Allan, 2003; Gabbert et al., 2004; Paz-Alonso et al., 2013). This effect can happen when the person that has heard the misinformation is looking for social approval, they therefore report that they have witnessed something that in fact was said by someone else (Gabbert et al., 2003).

In conclusion, the misinformation effect has been found in numerous studies. It occurs when memory for an event has been altered by the introduction of post-event information. Many theoretical explanations have been offered in an attempt to understand the mechanisms responsible for this effect. It is also possible that no single theoretical account can explain the misinformation effect in its totality, but rather a combination of them might be useful (Pickrell, Bernstein, & Loftus, 2004). The issues discussed in this section are particularly relevant in the eyewitness testimony context as eyewitnesses are required to give statements about the event they have witnessed. Misleading post-event information can potentially lead to inaccurate statements about the witnessed event with implications for evidence given in trials.

1.2.2. Eyewitness memory

In the field of eyewitness testimony, understanding human memory is of substantial importance since many crimes rely on eyewitnesses to reconstruct the event (Castelli et al., 2006; Greene & Loftus, 1984; Loftus, 1996). Eyewitnesses play a crucial role in the gathering of information; they are expected to narrate what they have seen and on many occasions their narrative is the only evidence available to carry out justice (Greene & Loftus, 1984). Nonetheless, as with all memory eyewitness memory can be faulty, it can be affected by emotions (Block, Greenberg, & Goodman, 2009; Christianson, 1992), post-event information (Chrobak & Zaragoza, 2013; Loftus et al., 1978; Loftus & Hoffman, 1989) as well as suggestive questioning (Loftus & Palmer, 1974; Loftus, 1975; Ridley, Gabbert, & La Rooy, 2013). Errors in memory of witnessed events have led to many wrongful convictions (Greene & Loftus, 1984). Despite our understanding

of the frailness of eyewitness accounts, juries seem to be very convinced by the testimonies of eyewitnesses (Loftus, 1996).

There are several identifiable key aspects that can make eyewitness testimony unreliable. Such aspects are found in the nature of human memory, the exposure to misinformation (Chrobak & Zaragoza, 2013; Loftus, 1991), the way the evidence has been gathered by investigators (Loftus & Palmer, 1974; Loftus, 1975; Wells & Loftus, 2003) and how it is received by those in charge of hearing the evidence (Bruer & Pozzulo, 2014; Greene & Loftus, 1984), namely the jury and judge. In regards to the nature of human memory, take for example the moment a person witnesses an event of criminal nature. This person is generally caught off guard and becomes an unwilling eyewitness or perhaps victim (Loftus, 1996). The event is generally of a short duration and occurs only once. In addition, the perpetrators have often planned the event and take measures to avoid recognition. All these factors can affect the perception, encoding and storage of information.

Exposure to post-event information constitutes another aspect that affects the narrative of the eyewitness. In some instances there is more than one eyewitness to a crime. These eyewitnesses might interact before the arrival of the police, as seems natural they might discuss the event they have just witnessed (D. B. Wright, Memon, Skagerberg, & Gabbert, 2009). The eyewitnesses' perspectives of what they saw could differ and therefore, their narratives could vary. When an eyewitness has been exposed to the narrative of another, a possible misinformation effect can occur. The eyewitness is susceptible to incorporating the other's narrative to his/her own memory after conversing with them (Gabbert et al., 2003; Gabbert et al., 2004; D. B. Wright et al., 2009). Eyewitnesses may also be exposed to post-event information through the media, and research shows that the media, such as televised news or a broadcast on the radio, can alter an eyewitness' narrative of the event (Blank et al., 2013; Loftus, 1991) changing their original memory of what happened.

While it is not possible to control the nature of human memory and it is very complicated to control interactions between eyewitnesses and their access to media sources, it is possible to control the way information from a crime is gathered. Typically, eyewitnesses are interviewed and asked specific questions about what

happened. This can entail another form of introduction of post-event information present in suggestive questioning. When police officers, detectives or other investigative agents interview the eyewitness they are sometimes searching for a specific answer and their questions are aimed at retrieving that answer (Fisher & Geiselman, 2010). An issue that can arise from this is that in order to find the answer they expect, interviewers run the risk of using suggestive questions, either unintentionally or intentionally (Greene & Loftus, 1984). Numerous studies have shown the negative effects of suggestive questioning (Loftus & Palmer, 1974; Loftus, 1975; Wells & Loftus, 2003). For example, Loftus and Palmer (1974) conducted a study where participants watched a clip of a car crash and were later questioned about what they saw. In one of the questions, the interviewer changed the word used to ask about the car crash, "... how fast were the cars going when they hit/smashed/collided/bumped/contacted each other?" The answers from the participants varied significantly according to the word used, with the word 'smashed' providing the highest speed estimates while the word 'contacted' providing the lowest. The words used clearly affected the participants' response, showing the power of suggestive questioning.

A final aspect that adds to issues of the faulty eyewitness testimony are the people that are in charge of hearing the evidence (Greene & Loftus, 1984). In a courtroom, the jury and the judge hear the narratives of the eyewitnesses. The jury, and sometimes the judge, often have a poor understanding of how human memory works. This can include an erroneous belief that memory is permanent and the eyewitness account of what happened is reliable and error free. If they give too much credit to the eyewitness' account of the event, wrongful convictions could potentially be carried out based exclusively on eyewitness testimony (Greene & Loftus, 1984; Leippe & Eisenstadt, 2009; Loftus, 1980; Wells & Loftus, 2003).

In summary, eyewitness memory is not exact, precise or unchanging (Loftus, 1996). There are many factors that can potentially affect its reliability. The importance of research on eyewitness testimony and tools that can help improve recollection is evident. Investigators need to take cautious measures when retrieving information as they are dealing with the fallibility of human memory. This has led researchers to

examine methods of interviewing eyewitnesses which could help improve accuracy of recall. One such method is the CI and so this will be considered next.

1.3. The Cognitive Interview

1.3.1. The Original Cognitive Interview

In the process of investigating a crime, eyewitnesses can be of immense help. Eyewitnesses are interviewed by the police and others in charge of carrying out justice. They are sometimes the only source of information available to solve a crime (Greene & Loftus, 1984). Nonetheless eyewitness reports are not exact or precise; they can be incomplete, contain errors and are susceptible to external influences (Greene & Loftus, 1984; Loftus & Palmer, 1974; Loftus, 1975; Loftus, 1996). With the purpose of enhancing memory accuracy in eyewitnesses' reports, the Cognitive Interview (CI) was created (Geiselman et al., 1984).

The original CI, developed by Geiselman, Fisher and colleagues in the 1980s, centres its efforts on improving the retrieval of correct information, without increasing the reporting of incorrect information (Geiselman et al., 1984; Geiselman, Fisher, MacKinnon, & Holland, 1985; Geiselman, Fisher, MacKinnon, & Holland, 1986). The theoretical foundations for the CI are based on Tulving and Thomson's (1973) Encoding Specificity Principle and Tulving's (1974) theory of Multiple Retrieval Paths. The Encoding Specificity Principle proposes that information from the past as well as information from the present must be available in the cognitive conscious in order for recall to take place. Recall is based on cues from both the past and present; but, the cues that will be helpful in accurately reconstructing memory are those that are associated to how the memory was stored. These cues enable memory traces needed for recall. The greater amount of cues available the greater the chances of recalling an event correctly and more completely. The theory on Multiple Retrieval Paths affirms that memories can be retrieved with the help of the trace it has left behind and the information that reminds

us of it. In order for recall to be achieved, the subject must activate the trace with an appropriate cue. If the cue is unsuccessful, the use of a different cue could help.

Based on these theoretical frameworks the CI is composed of four mnemonic techniques, Context Reinstatement (CRI), Report all (RA), Change Order (CO) and Change perspective (CP). The first two mnemonics aim to increase the amount of cues available to retrieve an event, while the last two mnemonics aim to activate different traces with cues to retrieve information that would have been otherwise inaccessible. These mnemonic techniques are described below.

1.3.1.1 Context Reinstatement

This mnemonic technique encourages the eyewitness to mentally recreate their external and internal setting when the event was witnessed (Memon & Highman, 1999). The eyewitness is instructed to make a mental recreation of the surrounding environment at the moment of the event, this includes what the scene, objects or people looked like, as well as the weather, sounds and smells of the place (Geiselman et al., 1986). Additionally, the eyewitness is encouraged to remember the feelings he/she had at the moment of the event and his/her reaction to the incident. The aim of this mnemonic is to increase the overlap of cues available to activate memory traces (Memon & Bull, 1991), based on the Encoding Specificity Principal (Tulving & Thomson, 1973). The original instructions were as follows:

First, try to reinstate in your mind the context surrounding the incident. Think about what the room looked like and where you were sitting in the room. Think about how you were feeling at the time and think about your reactions to the incident. (Geiselman et al., 1984, p. 76)

The eyewitness is encouraged to form an image in his/her mind of the environment surrounding the event. This could include the appearance of any object or person at the scene (Memon & Highman, 1999). Additionally the eyewitness is encouraged to recall the weather, time of day, sounds and smells at the time of the event. Another aspect is trying to recall how they felt and what their reaction was to the event (Geiselman et al., 1986).

1.3.1.2. Report All

The RA technique requires the eyewitness to report everything that has happened during the event, even though they might not perceive the information as being important (Geiselman et al., 1986). This technique asks for a full narrative of the event as it was witnessed.

Some people hold back information because they are not quite sure that the information is important. Please do not edit anything out of your report, even things you think may not be important (Geiselman et al., 1984, p. 76)

The original instruction (see above) was clear in stating that all information was important for the interviewer, even though it might not be important to the eyewitness, therefore they are to report all they can remember. Additionally, eyewitnesses may not know what is important from a forensic point of view. Therefore the importance of not omitting details is highlighted (Fisher & Geiselman, 1988). It is possible that from a forensic point of view all details are important as they may lead to further investigation (Memon, Cronin, Eaves, & Bull, 1995). What is more, reporting all the information could enable an overlap in information which in turn might activate further cues to enable recall (Memon & Bull, 1991).

1.3.1.3. Change order

After the initial narrative of the event witnessed, the eyewitness is asked to once again narrate the event but following a different temporal order (Geiselman et al., 1985). The order can be from the ending of the narrative to the beginning, from the middle or from the most salient part to either the ending or beginning (Memon & Bull, 1991; Memon, Wark, Bull, & Koehnken, 1997), as can be seen from the original instruction:

It is natural to go through the incident from beginning to end. However, you should try to go through the events in reverse order. Or try starting with the thing that impressed you the most in the incident and then go from there, going both forward in time and backward (Geiselman et al., 1984, p. 76).

This CO mnemonic followed the main idea of the theory on Multiple Retrieval Paths (Tulving, 1974). When recalling the event in a different order than how it was witnessed it is possible to activate different retrieval cues. These will in turn enable memory traces to access the stored memories. Geiselman and Callot (1990) state that recalling in forward order followed by a reverse order is more effective at retrieving information than two consecutive forward recalls. Recalling the event in a different order can also create access to non-script based details, as with the CO mnemonic eyewitness are forced to pay close attention to their memory record (Geiselman & Callot, 1990; Ginot, Py, & Colomb, 2014; Milne, 1997).

1.3.1.4. Change Perspective

During the CP mnemonic, the eyewitness is encouraged to take the perspective of a different person and retell his/her narrative from that particular point of view. The original technique instructs:

Try to recall the incident from different perspectives that you may have had or adopt the perspective of others who were present during the incident. For example, try to place yourself in the role of a prominent character in the incident and think about what he or she must have seen (Geiselman et al., 1984, p. 76).

As with the CO mnemonic, the CP is based on the theory of Multiple Retrieval Paths (Tulving, 1974). People tend to report things from their own perspective (Fisher & Geiselman, 1992). Therefore, recalling the event in a different perspective might help the eyewitness remember details that would have otherwise gone unmentioned by activating different retrieval cues. These cues could differ from those activated during the RA and CO mnemonic techniques as those narratives were from the perspective of the eyewitness. Additionally the CP mnemonic distances the eyewitness from previous expectations and scheme-based ideas that could potentially mask any further recall of details (Memon et al., 1997).

1.3.2. Early research evaluating the Cognitive Interview

The first study conducted testing the CI techniques was in 1984, by Geiselman et al. They had a group of students witness an argument during a lecture and two days later were asked to complete a questionnaire regarding what they had witnessed. Some students were instructed in the use of the mnemonic techniques of the CI while the rest were just asked to try to remember more things. The results were promising and showed the CI improved recall compared to the control technique used. The CI produced more correct details than the control method (which only asked participants to try to remember more details) and it did not produce a higher number of incorrect details. However there were several problems with the methodology. First, the witnessed event was rather lacking in the arousing component a crime usually has as it did not involve a highly emotional scene; second the students completed written questionnaires with the CI instructions and so they were not interviewed; and third the sample was rather small (Geiselman et al., 1985).

Adjusting to correct the limitations present in the first study, the studies that followed were conducted using a video of a crime and oral interviews (Fisher, Geiselman, Raymond, & Jurkevich, 1987; Fisher & Geiselman, 1988; Geiselman et al., 1985; Geiselman et al., 1986). The changes allowed for more appropriate and ecologically valid videos and interviewing techniques. The methodology used since then across studies shares key similarities and allows for comparisons between studies. A) Tests of the CI are commonly conducted in controlled laboratory settings. Although, controlled laboratory settings allow for comparisons to be made across studies and a stricter control of the variables, they are often limited by a lack of ecological validity. B) A video depicting a crime is typically shown to the participants who function as eyewitnesses. Thus, it is usually a negatively emotionally charged video which is likely to be how witnessing or being a victim of a crime is perceived. However, in Memon et al.'s (2010) review, 37% of videos corresponded to neutral events, which might compromise the ecological validity of these studies, and no positively charged videos were used in the reviewed studies C) A delay of some hours, days or weeks is implemented before the participants are interviewed. D) The interviews are audio recorded to allow for transcribing and scoring of correct and incorrect details (Fisher, Brennan, & McCauley, 2002).

Studies following this methodology again showed enhancing of memory when the CI was employed. Geiselman et al. (1985) tested three interview techniques, a standard interview (typical interview employed by police officers in America at that time, which began with an open-ended report followed by series of questions), hypnosis interview (individuals were first asked to describe the event witnessed, followed by an hypnosis induction and a re-counting of the event and finally specific questions about the event) and a CI. They presented students with a video depicting a crime followed by a 48 hour delay, after which the students were interviewed. Those interviewed with the hypnosis interview and the CI recalled significantly more correct information than those that followed the standard interview. There were no differences found for the number of incorrect or confabulated details between the interview conditions. The study found that the CI and hypnosis interview perform similarly. Nonetheless, there are other considerations that point to the advantages of the CI over hypnosis. The time it takes to train in the use of hypnosis is considerably longer than the time it takes to train in CI mnemonic techniques. Additionally the time it takes to perform a hypnosis induction is longer than that of giving the CI instructions. The authors also note that other research testing the hypnosis interview has found that it leads to more incorrect and/or confabulated information being reported. Therefore they concluded that it would be more efficient to conduct a CI than a hypnosis interview.

Another early set of studies by Geiselman et al. (1986), employed two videos depicting crimes, with participants viewing one of the two videos. The first experiment compared the effectiveness of a CI compared to a standard interview in a non-student sample. The second experiment compared the CRI and the RA mnemonic techniques to a complete CI and a control interview (that simply asked participants to report all they remembered). From the results of the first experiment, they concluded that not only does the CI elicit significantly more correct information compared to a standard interview, it does not increase the report of incorrect or confabulated information. Additionally the CI did not require more questioning than the standard interview making the CI more efficient. The results from the second experiment allowed them to conclude that a complete CI is more effective as it produces more correct details and does not differ in the number of incorrect details than the CRI or the RA mnemonic techniques used in isolation,. However, the authors neglect to discuss the fact that the CI included both the CRI and the RA mnemonic techniques, thus giving the participant

more opportunities to report the witnessed event. In general, they concluded that the CI is an effective interviewing tool that can address some issues with eyewitness memory.

1.3.3. The Enhanced Cognitive Interview

The CI was well received by the scientific community with multiple studies replicating its beneficial effects in the years following its first appearance (Memon & Bull, 1991). Despite the success the CI had in the academic community, this did not translate into practice.

A review of a series of standard police interviews conducted by Fisher, Geiselman and Raymond (1987), showed some specific characteristics of the interview that were considered inappropriate. These included interruptions to the individual's narrative of the event, inappropriate language, lost opportunities to continue asking for information on potential leads, inappropriate sequence when asking questions and questions that were following a format more than the deriving from the narrative (Fisher, Geiselman & Raymond, 1987). To avoid these issues in future interviews, the authors offered some suggestions to overcome these problems, such as tailoring the language to the individual's needs, minimize distractions, employ questions based on the individual's narrative, promoting a more focused retrieval and employing methods to reduce the individual's anxiety.

The suggestions to the standard interview by Fisher et al (1987) prompted a series of improvements to the existing CI. The improvements helped the CI become more user friendly and includes some general principles of effective communication (Memon & Bull, 1991). Aspects such as the structure the interview should follow (order of the mnemonic techniques, questions phase), the communication skills the interviewer should have (appropriate rapport building) and appropriate interviewer-interviewee interaction (avoid interrupting the participant's narrative, transfer of control) were improved (Fisher & Geiselman, 1992; Milne & Bull, 1999). With these changes, what is known as the Enhanced Cognitive Interview (ECI) was thus created (Fisher & Geiselman, 1992).

In 1992, Fisher and Geiselman, presented a revised and improved version of the ECI to overcome some of the earlier difficulties encountered. The ECI aims to achieve better communication between the interviewer and the eyewitness and thus improve memory recall. The ECI employs the original mnemonic techniques, and employs some additional interviewing techniques:

Rapport building. It is important to develop rapport with the witness as to help them feel more comfortable with the interviewer. A well-established rapport can help the eyewitness feel more comfortable in the presence of the interviewer and thus more information can be obtained (Vallano & Schreiber Compo, 2015). The usage of open-ended questions during the rapport phase is highly recommended as it can help the eyewitness get accustomed with providing long detailed answers (Fisher & Geiselman, 1992).

Setting the tone of the interview. At the beginning of the interview, the interviewer should remind the eyewitness that he/she is the one that has the information regarding what happened during the event. Therefore the eyewitness will do most of the talking and the interviewer will be in charge of guiding the eyewitness throughout the process. This change in authority figure is known as transfer of control (Fisher & Geiselman, 1992). It is also important to remind the eyewitness to report all the details that they can, even though they might not seem relevant. This helps minimize any editing eyewitnesses often do as they might consider the information inadequate. The main idea is to establish the tone of the interview, the purpose of it and the role of the interviewer and eyewitness. This in turn will establish a more productive relationship between the two parties (Chirban, 1996; Keats, 2000).

Use of appropriate communication skills. The interviewer should allow the eyewitness to recount the event at his/her own pace, without interruptions to the narrative. An eyewitness who is frequently interrupted will not make an in-depth memory search for details (Fisher & Geiselman, 1992). It is also advisable to present the mnemonic techniques individually so the eyewitness can focus on one task at a time.

Appropriate questioning. Because asking questions is such an important part of the interview, special attention is placed upon them. The interviewer should formulate

eyewitness-compatible questions paying special attention to the narrative of the eyewitness (Fisher, 2010; Fisher & Geiselman, 2010) and avoiding the use of a predetermined set of questions. First, the questions should in majority be open-ended and then become more focused on specific details. The use of open-ended questions permits flexibility and encourages eyewitness to volunteer additional information (Stewart & Cash, 2005). Second, the interviewer should be careful as to avoid leading questions, it is important that the interviewer use the same language as the eyewitness whenever possible. Third, the questions asked should follow the order of the narrative provided by the eyewitness, the interviewer should be careful to not disrupt its logic or sequence. Last, the use of mental imagery is advised during the questions phase. At the beginning of a question the interviewer can ask the eyewitness to make a mental image of a specific scene, object or person in order to help retrieve more information.

Interview sequence. The interview has a set sequence that it should follow to perform adequately. It begins with the introduction (rapport, transfer of control), followed by the narrative of the event (the free recall phase including the mnemonic techniques), the questions phase (using mental imagery when needed) and closure of the interview. Nonetheless, the ECI is flexible and allows for changes, for example the mnemonic techniques can be used as needed, allowing for modifications when special circumstances arise.

The ECI was created by improving the existing CI, which had demonstrated to be more successful at retrieving information than traditional police interviews (see Memon & Bull, 1991 for a review). Researchers have compared the CI and the ECI with the standard interview, finding that both interviews improve memory recall, producing more correct details, than various control interviews (Köhnken, Milne, Memon, & Bull, 1999; Memon & Highman, 1999; Memon et al., 2010). Although the original CI and the ECI produce a slight, but not significant, increase in incorrect details, this could be attributed to the increase of details reported in total. Seemingly, the ECI has not proven to be more efficient at improving memory recall (more correct and accurate details, yet more incorrect details) than the original CI. Nonetheless, the benefits of the ECI extend beyond the increase in information retrieved, it includes the improvement of relationships between eyewitnesses and the police forces (Milne, 1997). As the improvements to the CI enhanced communication between the interviewer and the

interviewee, the ECI has been widely accepted and become popularly used in research studies (Memon et al, 2010) and slowly introduced into practice.

1.3.4. Research on the CI throughout the years

After three decades of research on the CI many changes have occurred. Researchers have sought out appropriate control interviews, analysed individual components of the CI, modified the CI and analysed issues regarding the duration of the CI. The following sections discuss these changes.

1.3.4.1. An appropriate control interview

While the CI has proven to be an effective interviewing technique, one problem when comparing studies is the range of control interviews used in research. In the first studies the CI was compared to the standard interview (Geiselman et al., 1984; Geiselman et al., 1985; Mello & Fisher, 1996). This type of interview had no set structure, it was based on the interviewing techniques police officers used, with a typical free narrative followed by questions. When police officers used the standard interview, the questions should have been based on the narrative of the individual, but they were sometimes following a pattern of questioning typically found within investigative interviews (Fisher, Geiselman & Raymond, 1987). The interviewer (typically a police officer, with little to no training) could then form questions based on information provided during the narrative of the event or ask questions that fit with his/her idea of what information was relevant. Therefore, the standard interview could vary greatly between different police officers, and more importantly some police officers had received no proper training prior to its use (Memon & Highman, 1999). In research, when training interviewers to conduct the standard interview there was also no set format to follow, especially for the questions phase, so training could therefore vary from research study to research study. For example, Mello and Fisher (1996) had the interviewers (first author and a graduate student) receive a 2 week training for the CI (based on Fisher & Geiselman, 1992, Chapter 13) while only a few hours of training were provided for the standard interview. At this point in research on the effectiveness of the CI, it could have been argued that any differences in favour of the CI could simply be due to the training received in order

to conduct a CI. Therefore the standard interview might not always be an adequate control interview.

Other studies have used hypnosis interviews as the comparison interview type. Interviewing techniques such as hypnosis are not of common use in practice due to the difficulties in implementing them. Hypnosis requires many hours of interviewer training (Geiselman et al., 1985) and the interviewing techniques are not clear (Memon & Highman, 1999). Both of these issues represent complications for research and practice of hypnosis interviews. In addition, hypnosis interviews are not necessarily a good comparison interview because, like the standard interview, it is difficult to ensure all hypnosis interviews are conducted the same way. In Geiselman et al.'s study the interviewers, all professionals within the law enforcement domain, had completed a 40 hour course in forensic hypnosis and had field experience of hundreds of cases. This enabled them to conduct the hypnosis interview. Whereas for the CI, the interviewers were given instructions to the CI to study, followed by a brief discussion about the CI and were then able to conduct a CI successfully. In addition to the time it takes to train on the use of hypnosis, a hypnosis induction takes longer to perform than giving the instructions for the mnemonics techniques of the CI (Geiselman et al, 1985) making the hypnosis interview longer in duration and undesirable for time constricted situations. Thus differences between hypnosis interviewers could exist, making it an inappropriate control interview.

The Structured Interview (SI) was first used as a comparison interview by Köhnken, Thürer, and Zoberbier (1994). The SI is very similar to the CI as it establishes rapport, allows the eyewitness to narrate at their own pace without interruption and follows appropriate question asking techniques. In addition, interviewers intending to use the SI require some training in order to adequately employ the instructions, which is similar to what happens with interviewers using the CI. Nonetheless it excludes the CI mnemonic techniques and mental imagery during questions. The SI became the most common comparison interview in the last decades (Memon et al, 2010).

Another consideration is although it can be argued that the standard interview and the SI both constitute a valid comparison interview, depending on the research question of the study, they are fundamentally different from each other as well (Köhnken et al., 1999).

The amount of training an interviewer has received to perform a standard interview is not regulated, nor is there a set of instructions to follow. The SI does have a set of instructions to follow and interviewers must go through training to conduct one. If, when comparing a CI with a standard interview, the CI shows enhanced memory then it is claimed to be beneficial for practitioners. In this case the standard interview would be a valid comparison if the research question is focusing on the accuracy¹ rate, number of correct, incorrect and confabulated details produced by interview type. On the other hand, if the CI is more effective at enhancing memory compared to a SI, then it shows that the CI mnemonic techniques are enhancing recall (Köhnken et al., 1999). In this case, the SI would constitute a more suitable comparison interview if the purpose is to gain theoretical knowledge on the benefits of the CI mnemonic techniques through controlled laboratory experiments.

1.3.4.2. Analysis of the individual components of the Cognitive interview

The CI is composed by the four mnemonic techniques and additional interviewing techniques that appeared with the ECI. Originally these four mnemonic techniques were developed based on memory theories in an attempt to improve eyewitness memory accuracy. These techniques were thought to contribute equally to the success of the CI, each playing its important role in memory enhancement (Geiselman et al., 1984). However, research testing the efficacy of the individual mnemonics – either alone or in combination with one or two other mnemonics – has shown this is not necessarily the case.

The first study to test the efficacy of individual mnemonic techniques was Geiselman et al. (1986). In their paper, Experiment 2 tested the efficacy of the CRI condition and the RA condition techniques (i.e., participants were instructed to be complete) against a complete CI and a control interview (i.e., participants were instructed to engage in free recall). They found that the CRI and RA instructions were more successful at retrieving correct details than the control interview. Nonetheless the complete CI reported a significantly greater number of correct details than the CRI and the RA techniques used

¹ Accuracy is typically calculated by dividing the total number of correct details by the total number of overall details (or proportions). This produces an accuracy rate that indicates the degree to which the details reported by the participants correspond to what actually happened (Fisher, Bernnan & McCuly, 2002).

separately. The CI and the CRI and the RA instructions all produced a similar number of incorrect details, but the control interview had a higher absolute number of incorrect details (although not significant) than the other interview types. It comes as no surprise that the CI produced more correct details given that the full CI includes both the CRI and the RA techniques in addition to the CO and CP, thus giving the participants multiple opportunities of retrieval. Therefore the individuals in the CI had more opportunities to report details than those individuals in other conditions. However, this study did not control for duration of the interview (although it does not provide the duration of each interview, it is safe to assume that the CI took longer than the rest to conduct since it includes more retrieval attempts), which would have allowed for a better interpretation of the results and helped understand whether the CI produces more details due to the multiple retrieval attempts or the effectiveness of each mnemonic technique. Nonetheless, Geiselman et al. concluded that the CI was more effective than the CRI and RA techniques used in isolation, without suggesting that these results could be due to the multiple retrieval attempts.

Boon and Noon (1994) compared the individual CI mnemonic techniques paired with the RA instruction: RA-CO, RA-CP, RA-CRI and RA-try again (instruction to try and recall the event one more time) to a control condition of standard instruction (typical free recall of standard interview)-try again. They found that at the first recall attempt all the interviews that began with the RA helped improved accuracy rate (accuracy = correct details – [incorrect details + commission errors]) more so than the standard instruction. At the second retrieval attempt (i.e., the CO, CP, CRI or try again instruction), the RA-CO, RA-CRI, RA-try again improved accuracy compared to the RA-CP. In turn the RA-CP improved accuracy more so than the control instruction (standard instruction-try again). In the second retrieval attempt they also found no differences in the number of incorrect details or commission of errors details reported in the RA-CO, RA-CP, RA-CRI and RA-try again instructions. Nonetheless a difference was found in the number of correct details reported at second retrieval attempt. The RA-CRI and the RA-try again instructions reported more correct details than the RA-CP. Overall the RA-CO, RA-CRI and RA-try again helped report more accurate information than the RA-CP instruction. Although this study provides for some important results, the methodology employed is not ideal. The instructions to for each interview type were given verbally but the participants' responses were written. This method, much like

Geiselman et al.'s (1986), that provided written instructions paired with a written report of the event, is not widely employed in the CI research field as most studies employ verbal interviews. Therefore comparisons to other studies becomes rather complex. In addition, Boon and Noon did not compare these mnemonic combinations to a full CI as Geiselman et al. did.

In order to evaluate each individual mnemonic technique Memon et al. (1995) conducted two experiments, one with adults, and the other with children, finding similar results for both groups. They tested each mnemonic technique independently against a 'try harder' instruction. They suggested that the enhanced effect found in the CI compared to control interviews was due to the multiple recall attempts; therefore the 'try harder' instruction (i.e. a free recall with the instruction to try harder when recalling details) was used as a comparison. The results showed that the mnemonic techniques used individually are not more effective than a 'try harder' instruction. Nonetheless, this 'try harder' instruction is similar to the free recall in the SI which is usually used as a control interview. Yet Memon et al.'s study did not test the 'try harder' instruction against a full CI. It is therefore unclear whether the CI's effectiveness is due to the combination of techniques.

Milne and Bull (2002) also tested the effectiveness of each mnemonic technique (paired with a free recall attempt: free recall + CRI, free recall + RA, free recall, + CO, free recall + CP) against a 'try again' instruction (i.e. free recall + a second free recall attempt) and a combination of CRI + RA (free recall + CRI + RA). Although the individual mnemonic techniques did not perform better than the 'try again' instruction, the combination of the CRI + RA techniques elicited more correct details than the 'try again' instruction and the mnemonic techniques used in isolation. Two different conclusions were reached as a result of the studies from Memon et al. (1995) and Milne and Bull although the results found are very similar. One study concluded that the enhancing effect of the CI could be due to extra effort put into the interview by both the interviewer and the eyewitness (Memon et al., 1995) and the other that each mnemonic technique contributes equally to the effectiveness of the CI (Milne & Bull, 2002). The first conclusion indicates that the mnemonic techniques are not responsible for the enhanced performance of the CI. The second conclusion indicates that the CI's enhanced performance is due to the equal contribution of each mnemonic technique

towards the complete interview. How did these different conclusions emerge from such similar results? Both of these studies began with a free narrative phase, which did not differ between recall of details across interview conditions, this permitted the study of individual techniques. Nonetheless, the CI does not necessarily begin with a free narrative phase. Additionally, neither of these studies compared the free narrative plus a mnemonic technique to a full CI. The studies state that the individual mnemonics perform similar to a control technique; nonetheless it did not test whether a free recall paired with a mnemonic technique is more efficient than the full CI. Does it follow that a full SI is no better than a control and are the individual components paired with a free recall better than the full CI? It would be interesting to see the results of such a study as it could help further the conclusions reached by the authors; this has not yet been done.

A more recent study comparing the effectiveness of the CO techniques shows interesting results (Dando, Ormerod, Wilcock, & Milne, 2011). Dando et al tested the efficacy of the CO technique against the RA technique; three interviews were used for this purpose: RA + RA, RA + CO and CO + RA. The rationale for changing the typical order of the mnemonic techniques (first RA and then CO or CP) was not made clear by the researchers. Nonetheless, they found that those interviews including the CO mnemonic produced fewer correct details and more confabulated details than the RA + RA interview. In addition, when the CO technique precedes the RA technique, the participants provided an incomplete narrative of the event. In contrast, when the RA technique was employed before CO, it produced less confabulations and more complete narratives than the CO + RA interview. The results found in this study contradict previous findings where the CO mnemonic performs similar to other mnemonic techniques (Milne & Bull, 2002; Memon et al., 1995). The different results of Dando et al.'s study are rather puzzling as the methodology used in Milne and Bull's study is very similar. Both studies have similar participants, procedure, retention time between video and interview, and coding and scoring procedures. Differences in methodology between Dando et al.'s study and Memon et al.'s study are more noticeable: different retention interval time, different age groups, and video against a staged event. Therefore differences in results between Dando et al and Memon et al are expected. Nonetheless differences between Dando et al and Milne and Bull's study can only be attributed to differences in the video that was shown. Dando et al employed a video that was kept script consistent to allow for analyses of script consistent details. The video used by

Milne and Bull was not focused on script consistent details, but was edited from a road safety education film. In conclusion, while other studies have found the CO to perform similar to other techniques, this was not found by Dando et al. The authors recommend using the CO within the CI when other techniques have been exhausted. Nonetheless, the study focuses solely on testing the CO instruction neglecting the other components that form the CI and neglecting to compare it to a full CI.

Additional studies have tested combinations of the CI mnemonic techniques. Davis, McMahon, and Greenwood (2005), in an effort to find a shortened version of the CI for use in time critical situations, conducted a study testing the efficacy of a combination of RA + CRI with a questions phase and an additional motivated recall (i.e., affirming that the interview is producing a lot of information, but an additional retrieval attempt with as much possible detail would be helpful) against a CI and a SI. The results showed that the combination of mnemonic techniques used and the CI produced a comparable number of correct details, while both produced more correct details than the SI. While the use of an alternative instruction, such as the motivated recall, appears very promising, it is important to highlight the type of details it elicits. While the motivated recall elicits more correct details, the CO elicits more accurate details. More correct details in the motivated recall can be a consequence of the individuals lowering their criterion for responding and therefore including information in the narrative that is script consistent and/or they had previously omitted. If this is the case then more incorrect and confabulated details are also produced as was found in Davis et al.'s study. The CO on the other hand limits the individual from reporting script consistent information, making their narratives more accurate (Davis et al., 2005). Davis et al.'s finding the CO more accurate than an additional motivated recall is directly in contrast with Dando et al.'s (2011) finding. Nonetheless, Davis et al examined the CO mnemonic within an ECI, while Dando et al did not. The differences between their results can be due to differences in interview type. In an applied context the interviewer would have to decide whether more details or accuracy is best for the situation at hand. Therefore, before accepting the use of the motivated recall as a substitute for the CO technique, it is important to evaluate the type of detail that is more relevant for the purpose of the interview.

In a similar study to the one mentioned above, Ginet and Verkampt (2007) tested a combination of CRI + RA with a second retrieval attempt against a SI. They found that a combination of some of the CI mnemonic techniques is more effective in retrieving correct details than a SI. Nonetheless, an increase in incorrect information was found for the combination of mnemonic techniques. In this study they failed to compare the CRI + RA with a second retrieval attempt to the full CI. Therefore it is unknown whether the use of the CO and the CP techniques is superior, inferior or similar to a second retrieval attempt. It would have been particularly useful as it could have been compared to Davis et al.'s (2005) study, where the CO and CP techniques were replaced with an additional motivated recall.

In conclusion, the first studies that tested the effectiveness of the CI mnemonic techniques found that these components in isolation are not more effective than a control instruction (Geiselman et al., 1986; Memon et al., 1995; Milne & Bull, 2002). Some argued that the combination of the four mnemonic techniques accounts for the superiority of the CI (Geiselman et al., 1986; Milne & Bull, 2002). Others attributed this effect to the motivation and extra effort put into conducting and completing a CI (Memon et al., 1995). Later studies demonstrated that a combination of some mnemonic techniques can be just as effective as a complete CI and superior to a SI (Davis et al., 2005; Ginet & Verkampt, 2007). It is still unclear whether the CI's enhanced memory effect is due to the sum of the individual components and whether different combinations of these components are more useful than a full CI. The present thesis dedicates a complete study to furthering our understanding of the contribution of the mnemonic techniques to the full CI in the context of the Mexico vs. UK comparison.

1.3.4.3. Modifications to the Cognitive Interview

The CI has a set structure, mnemonic techniques and instructions to follow. Nonetheless there is scope for flexibility to allow for a more adequate application. For example, Fisher and Geiselman (1992) advise that in cases in which the interviewer has difficulty implementing a given mnemonic technique, it is better to omit its usage instead of risking poor management. Flexibility in the use of mnemonic techniques is particularly important as some police officers find the CI too long to implement. Therefore, the CO and CP techniques are often omitted (Dando, Wilcock, & Milne, 2008; Kebbell, Milne,

& Wagstaff, 1999). Moreover, police officers believe that the CP mnemonic is the least useful component of the CI and therefore use it very infrequently (Kebbell et al., 1999). Additionally the CO and CP mnemonic techniques are too complex to use with young children (Holliday, 2003a; Holliday & Albon, 2004), older adults (Holliday et al., 2012; Mello & Fisher, 1996; A. M. Wright & Holliday, 2007a) and those that are cognitively impaired (A. M. Wright & Holliday, 2007b), who find it difficult to understand the instructions. Having an interview that has been found to be effective that allows for modifications without a decrease in its effectiveness is therefore essential. Modified Cognitive Interviews (MCI) or shortened CIs have been developed to adjust to the individual needs of vulnerable eyewitnesses (Memon et al., 2010) and the time constraints police officers frequently encounter, that make the application of a full CI not possible (Kebbell et al., 1999). Some of these MCIs will be considered next.

When developing MCIs or shortened CIs, the research on the combination of mnemonic techniques has been invaluable. Bensi, Nori, Gambetti, and Giusberti (2011), evaluated the effectiveness of a shortened CI for use in time critical conditions, situations where time is limited. They compared a CI, a CRI + RA, a RA with mental imagery (i.e., to form a mental image of the scene in question) and a RA + CRI with mental imagery (these last two being considered shortened CI) against a SI. The RA + CRI with mental imagery elicited a comparable number of correct details as a complete CI, but required less time to be administered, therefore proving that a shortened version of the CI could be just as useful in time critical situations. Davis et al. (2005), compared a shortened CI (RA + CRI with additional motivated recall) to a CI and a SI. They found that the shortened CI took less time to conduct than the complete CI while eliciting a comparable number of details as the CI. Moreover, both the shortened version and the full CI elicited more details than the SI. Both of these studies show that shortened versions of the CI are effective; nonetheless there are issues with the proposed shortened versions. First they include the use of new instructions (mental imagery, motivated recall) that have not been widely tested. Thus, additional studies would need to be carried out before the use of these instructions can replace CI mnemonic techniques. Second the sample of participants consisted of university students, who are not necessarily representative of the population in general. Future studies should expand to test a non-students population as well as different age groups.

As can be seen, modifications to the CI have introduced the use of new instructions such as the mental imagery and motivated recall. The open depth instruction is another one of them (Brunel, Py, & Launay, 2013), the instruction asks the witness to focus on little details of the event that might have gone unmentioned during the first recall attempt. This instruction was intended to alleviate the cognitive demands of the complete CI. The open depth instruction helped participants report more additional details without an increase of incorrect details compared to the SI and a RA+ CP interview. Although this new instruction seems promising, the methodology used in the research is not conventional. The event was a video viewed by groups of 25 students, who were then interviewed either immediately (three minutes) after the viewing or eight days later. Measures were taken to examine whether this delay between the video and the interview had a relationship with the details reported. The relationship was found weak ($r = -0.15$, ns). Therefore, no further analyses were undertaken and it was accepted that the delay did not cause differences in report of detail. Perhaps this measure of delay could have been used as a covariate during some of the analyses to better understand its effect.

MCIs have also been developed to accommodate for the cognitive needs of young children. Particularly, mnemonic techniques such as the CP have been omitted due to the complexity of the instruction (Memon et al, 1995) and young children finding the instruction confusing (Saywitz, Geiselman, & Bornstein, 1992). Holliday (2003a, 2003b) tested the effectiveness of a MCI omitting the CP mnemonic compared to a Memorandum interview (an interview modelled by the UK government in a policy document) (2003a) and a SI (2003b) in young children. The results from both studies showed that children given a MCI reported more correct details than those given a Memorandum interview or SI. This demonstrated that even when omitting a component of the CI, such as the CP that can be confusing for young children, recall of details is superior to that of control interviews. Nonetheless, both studies neglected to compare the MCI to a full CI. Further studies testing the efficacies of a full CI and MCIs (omitting components or using a combination of components) found that compared to a SI, various modifications (e.g., CIs omitting one mnemonic technique, CI with an enhanced rapport phase, combination of CRI + RA or RA + CO) produced more correct recall of details than the SI (Holliday & Albon, 2004; Verkampt & Ginet, 2010). Interestingly these studies did not find an advantage of a full CI in recall of correct

details. Verkamp and Ginet (2010) argue that perhaps a CI is too long for young children. Nonetheless, the authors make mention to Miller's (1990) paper, which explains that young children make a great effort to follow some memory strategies (as could be the CO and CP) and are therefore left with very little resources to actually recall the event. It should also be noted that although Verkamp and Ginet tested several combinations of the CI mnemonics, the full CI did not produce more correct details than some of these combinations; although the full CI included all these combinations. If the CI were too long for young children we would find them without motivation to complete it (this was not mentioned in the study) and we would expect to find similar number of correct details in the full CI and the combinations of techniques, but perhaps more incorrect or confabulated details due to the multiple retrieval attempts and the complexity of the task it represents to very young children.

The use of MCIs with older adults has also revealed benefits. Mello and Fisher (1996) compared recall of details with a MCI omitting CP against a CI and a SI with older adults. Mello and Fisher omitted the CP mnemonic as older adults have difficulties with performing two mental operations concurrently (see Herman & Coyne, 1980); therefore they have poor perspective taking ability to do so. They found that the CI elicited more correct details than the SI, although a significant increment in incorrect details also accrued. The MCI and the CI did not differ in the number of correct details, incorrect details or accuracy rate. The authors attributed this effect to the sample of older adults (they had relatively high verbal skills and were well educated, median level college graduate); perhaps these older adults were not in need of the assistance of a MCI, which catered to older adults who have difficulties performing two mental operations at the same time. Wright and Holliday (2007a) conducted a similar study, omitting the CP in the MCI. Their results showed that the CI reported more correct details than the MCI, with the latter resulting in more correct details recalled by participants compared to the SI. These results differ from Mello and Fisher's (1996), in which no differences between the CI and MCI were found. Nonetheless both agree that a MCI is more effective at retrieving correct information than a SI in older adults. These studies prompted a suggestion to be cautious in the use of the CP mnemonic technique with older adults.

When interviewing cognitively impaired older adults, Wright and Holliday (2007b), tested a MCI (omitting CP), a CI and a SI. They found that both the MCI and the CI enhanced report of correct details compared to the SI. Moreover, the MCI and the CI did not report an increase in the number of incorrect or confabulated details. These results indicate that possibly, cognitively impaired older adults can understand and use the mnemonic techniques of the CI effectively. Although some authors have argued that older adults have difficulties performing two mental operations at the same time (Herman & Coyne, 1980) and several studies have accommodated this by omitting the CP mnemonic of the CI (Wright & Holliday, 2007a; 2007b; Mello & Fisher, 1996), the lack of differences between the number of correct, incorrect or confabulated details make this modification unnecessary.

Overall, MCI and shortened versions have proven to be just as efficient (Wright & Holliday, 2007a; 2007b; Mello & Fisher, 1996; Bensi et al, 2011; Davis et al, 2005) and sometimes more effective (Verkampt & Ginet, 2010) at retrieving correct details than a CI, without a significant increase of incorrect details and consistently superior to the SI. As the need to find shortened version of the CI or modifications that cater to age group needs raises, it comes as no surprise that in Memon et al.'s (2010) review and meta-analysis of the CI and its various modifications, 45% of the studies included employed some form of MCI or shortened CI. The possibility of using a MCI or shortened version of the CI, with similar or superior effects as the CI, would be surely welcomed by the police forces, yet further research is required before such an advice can be given.

1.3.4.4. Duration of the Cognitive Interview

There are two main issues regarding the duration of the CI. The first is related to the additional time it takes to conduct a CI compared to a SI. The second is whether the CI enhances memory recall simply because it allows the individual more time to report the narrative. In first instance, police officers were concerned that the CI took longer to administer than a SI (Kebbell et al., 1999). Effectively the CI is longer in duration than a SI (Centofanti & Reece, 2006; Holliday, 2003a; Holliday et al., 2012; Mello & Fisher, 1996; Memon, Wark, Holley, Bull, & Koehnken, 1997). It should be expected for the CI to take longer to administer, as it contains mnemonic techniques that the SI does not. In addition the typical increase in eyewitnesses' reporting of information means that it

takes longer to narrate and finally as the instructions are more complex; the eyewitness might take longer to respond (Memon et al., 1997). Therefore, although the CI takes longer to administer than the SI it produces more correct information, with similar accuracy as a SI (see Memon et al, 2010; Köhnken et al, 1999 for meta-analysis). This can have a positive impact in police investigations as each witness could potentially provide more correct information, reducing the number of interviews needed to be conducted on each witness and saving resources in the long run.

The second issue with the duration of the CI revolves around the argument that the enhanced memory effect present in the CI is due to the additional time it takes to complete. However, several arguments are against this proposition. Mello and Fisher (1996) discarded the possibility of extended time as the cause for the superiority of the CI over the SI. Nonetheless, they did not provide empirical evidence to support their statement. They argued that the control interview, in this case the SI, was conducted slowly and was not concluded until after the eyewitness could recall no more details.

To counter this argument, some studies have opted to employ duration of the interview as a covariate in the analyses performed for memory recall (e.g., Dando, Wilcock, Behnkle, & Milne, 2011; Holliday, 2003a; Holliday, 2003b; Holliday & Albon, 2004; Holliday et al., 2012; Milne, 1997; A. M. Wright & Holliday, 2007b). According to statistical analyses, duration as a covariate can be used to adjust the values related to memory recall (see Howell, 2009 for further explanations on the use of covariates). Most of these studies found that duration did not affect values (such as means of correct, incorrect, and confabulated details) accounting for memory recall, therefore they dropped the use of duration as a covariate. The studies that did find memory recall means affected by duration (A. M. Wright & Holliday, 2007a; Milne, 1997) used it as a covariate. These studies found that with young adults, after the means for correct, incorrect and confabulated values had been adjusted by duration, the CI or modified CI (omitting the CP) elicited more correct details than the SI. Although, this was not found for Milne's (1997) study with children. The use of duration as a covariate adjusted the means of correct details as to find that there were no differences between the number of correct details between the CI and the SI. These findings by Milne were not explained any further, potentially blocking the opportunity to gain a better understanding of the CI and the SI when duration for interviews is employed as a covariate.

1.3.5. The Cognitive Interview around the world and the need to test it in Mexico

Studies using the CI methodology soon expanded from the USA (where it originated) to various countries: the UK (Holliday, 2003b; Holliday et al., 2012; Memon et al., 1995; Memon et al., 1997; Memon et al., 1997; Milne & Bull, 2001; Milne & Bull, 2002), Canada (Peace & Porter, 2004), Australia (Centofanti & Reece, 2006; Davis et al., 2005), Italy (Bensi et al., 2011), France (Colomb & Ginet, 2012; Colomb, Ginet, Wright, Demarchi, & Sadler, 2013; Ginet et al., 2014; Verkamp & Ginet, 2010), Spain (Campos & Alonso-quecuty, 1999), Germany (Köhnken et al., 1994; Köhnken et al., 1999), and Brazil (Stein & Memon, 2006).

After many years of studies demonstrating the success of the CI in different laboratories around the world, the CI slowly found its place in interviewing processes used by police forces. Countries such as the USA (see many examples in Geiselman & Fisher, 2014), Canada (Canadian police college, Forensic interviewing, 2015-09-11), the UK (see PEACE and TIER programs in ACPO, 2009; Dando, Wilcock, & Milne, 2009; Griffiths & Milne, 2006), Norway (KREATIV training program based on the PEACE model, Fahsing & Rachlew, 2012), Denmark (training program building on KREATIV, Fahsing & Rachlew, 2012), Iceland (based on the PEACE model, Fahsing & Rachlew, 2012), and Sweden (based on the PEACE model, Fahsing & Rachlew, 2012) are now implementing some form or elements of the CI into their training and practice. Incorporation of the CI to police training has been slow and built into different training programs.

The vast majority of countries that have done research and incorporated the CI or some of its elements in the investigative interviews conducted by police officers (see countries above), are highly developed and have law enforcement regulations in place. Research in developing countries, with a low social-economic background is rare. An exception is Brazil, where Stein and Memon (2006) conducted a study examining the effects of a CI on memory recall against a standard interview. Their aim was to test whether a CI had application in Brazil to allow for this interview to be introduced to police forces. They tested a group of working women from a low social-economic background, with minimal education. The sample was chosen as a great number of

witnesses from Brazil are from a very poor background and don't have a college education. The participants viewed an event and, a week later, were interviewed in the CI or standard interview condition. The results showed no differences in accuracy rates between the CI and the standard interview. Nonetheless, the CI elicited significantly more correct details than the standard interview, specifically person and action details. Furthermore, the CI did not increase the report of incorrect or confabulated details.

The study reported by Stein and Memon (2006) has some limitations. As only one experiment was conducted, with a sample of woman from a low socio-economic background, the results cannot be reliably generalized. The aim of Stein and Memon's study was to introduce the CI to police forces in Brazil after testing the CI in an ecologically valid experiment. Therefore no other variables were tested besides type of interview (CI; standard interview). In addition, it didn't compare the performance of the CI in Brazil against another country where the CI has been found successful (e.g., the UK). Further studies in developing countries also need to focus on testing additional variables that have long been tested in affluent countries but some have yet to reach a conclusive result, for example: mnemonic techniques, modified versions of the CI, the misinformation effect.

The questions remains, can the results of Stein and Memon's (2006) study be replicated in other developing countries? It is difficult to generalize the results of one single study in a developing country to other countries due to the limitations mentioned above. Therefore, the next section considers another developing country, Mexico, in terms of the potential use of the CI.

1.3.5.1. Mexico's current situation

Mexico has seen an ever increasing wave of violent crimes in the last few years (Asfura-Heim & Espach, 2013). Since 2006, according to the Global Conflict Tracker, an estimated 60 thousand people, including civilians, police officers, politicians and soldiers have been killed by criminal cartels in Mexico (Violence in Mexico.2014, Jan). Drug trafficking has moved from a peaceful equilibrium to a savage one. Violence in the form of killings emerged due to competition between drug cartels and an attempt at enforcement of the law by the police forces (Rios, 2013).

Not only have drug related crimes been on the rise in the last years, property crimes, such as theft from the person, car theft, house burglary and assault, have also increased (Martinez & Cortez-Yactayo, 2015). According to Martinez and Cortez-Yactayo's study which included both reported and not reported crimes, in Mexico, crime incidence went from 4,412 victims per 100,000 inhabitants in 2001 to 12,000 victims per 100,000 inhabitants in 2008. The authors also reported that property crime victims that have been targeted once are likely to be targeted again. People with higher education and higher income are more likely to be the victims of property crime, as they can be seen as more economically viable victims than people with a low income and/or low level of education. Although these statistics presented by Martinez and Cortez-Yactayo are important, they cannot be generalized as the sample employed is mainly of urban and border cities, majorly excluding rural areas, leaving sectors of the population out of the statistics. Martinez and Cortez-Yactayo go on to explain that although the population may take self-protection measures (e.g., protection bars for windows and doors, alarm systems on property), these measures are not completely reliable and thus these members of society can become re-occurring victims of property crime. Anyone of these victims that is willing to report the crime and provide a witness narrative can help further the police's actions to deter crime. Nonetheless, re-victimization could impact on willingness to report crime leaving fewer opportunities for police officers to get victim/witness statements.

The violence and crime present in this country has created levels of insecurity that encompass a wider area of impact. For example, journalists and reporters can no longer fully report crimes for fear of retaliation (Relly & González, 2014) and citizens are no longer willing to testify on crimes witnessed (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013). In 2013, a national survey on victimization and perception of public security found that a 92.1% of the population was unwilling to report crimes. This was found to be due to either distrust of authorities or the perception that testifying was a waste of time (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013). Although it would have been beneficial to know what types of crimes victims were less willing to report due to distrust of authorities or viewing it as a waste of time, the *Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, (2013)* did not provide such information. Knowing whether a property crime (or other type of crime) is less likely to

be reported than other types of crime due to distrust in authorities or being perceived as a waste of time could help police officers plan a strategy to overcome this issue.

In a 2007 Criminal Victimization in International Perspective report (Van Dijk, et al, 2007) it was found that victims only report 16% of crimes related to theft from a car, theft of a bicycle, burglary, attempted burglary and theft of personal property. Van Dijk et al.'s report shows double the percentage of crimes reported than does the Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, (2013). Nonetheless, this 2013 national survey was comprised of a wider number of crimes including verbal abuse, sexual violence, extortion, verbal threats and fraud. The variety of crimes could therefore explain the differences in crime reporting percentages between the above studies. For example, in Mexico, there is a tendency for people to report a larger proportion of property crimes (e.g., theft of vehicle) than violent crimes (mugging/theft from person, verbal threats), although the absolute number of crimes is much higher for violent crimes than property crimes (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013). In contrast, in England victims tend to report a larger proportion of violent crimes than property crimes (Tarling & Morris, 2010). In Van Dijk et al.'s report it was found that victims in England and Wales report 61% of crime and victims in the UK report 59% of crimes. The difference in percentages for crime reporting could potentially show an unwillingness to report crime in Mexico. There is no doubt that the levels of crime reporting in Mexico are lower than those of an affluent country.

The small percentage of victims and/or eyewitnesses that is willing to report a crime need to be interviewed. Nonetheless there seems to be a lack of protocol in Mexican law enforcement related to the interviewing of victims and/or eyewitnesses; at the very least, as a researcher it is difficult to gain accessibility to this information. Access to the General Office of Justice in the state of Sinaloa (Procuraduria General de Justicia del Estado de Sinaloa), is restricted to police officers, other law enforcers and state workers. Therefore, it is not possible to gather information on protocols or manuals for interviewing victims/eyewitnesses of crimes.

The best approximation to a manual/protocol was located on the internet and corresponds to an Action protocol for those who administer justice in cases involving

children and adolescents (*Protocolo de actuacion para quienes imparten justicia en casos que afectan a niñas, niños y adolescentes*.2012). This protocol provides a guideline to the humane treatment of children that have been victims of crime. It states that whichever type of interview is used to recount the crime; it should be appropriate for children's and adolescents' cognitive development, employ the use of a free recall technique, use appropriate questions and support materials. This protocol neglects to provide an interview type or more specific interviewing techniques. It therefore leaves law enforcers free to conduct whichever type of interview or interrogation technique they consider appropriate. A more ambiguous Police investigation protocol for crimes against women (*Protocolo de investigacion policial: Investigacion de delitos contra la mujer*.2015) mentions what type of information must be recollected by the law enforces but neglects to provide any information on appropriate interviewing techniques. These two examples of police protocols show that police officers in Mexico are not using the CI. In fact it is difficult to know whether a specific interview technique is being used at all and whether the protocols are simply made available or a training program is provided. Due to the low reporting rate of crimes mentioned above, it is vital for investigative interviews to be as good as possible in order to ensure that the best available evidence through eyewitnesses' and victims' testimony is collected.

Additionally information on interviewing techniques for Mexican law enforcers in libraries is also scarce. For example in the law and law enforcement section of the library at the Autonomous University of Sinaloa (the largest university in the state) only one book concerning interviewing techniques can be found. Not only is there a lack of books on this topic, but also, the existing book is very out-dated despite its rather recent publication. In addition, it is unlikely that police officers have read this material. The book, with a manual format, (Benavente Chorrer, 2010) aims to instruct its reader on appropriate interviewing techniques. The interview type that it describes is identified as a standard interview (see section above on control interviews). It consists of a free recall phase followed by a questions phase. The questions phase has a set of topics it must cover (e.g., physical appearance, names, numbers and conversations heard) and then some specific questions (e.g., who do you suspect, what type of person might have done this, why do you think it happened, people say you were involved). The interview described includes suggestive and incriminating questions, which are known to have a negative impact on an individual's memory recall (Wells & Loftus, 2003). The

interview described also lacks instructions or guidance on appropriate communication skills. Finally, although it makes a brief reference to the CI, it does not provide the reader with sufficient information to allow for its application. It only describes the CI mnemonic techniques, without mentioning appropriate communication skills or the questions phase (perhaps it described the original CI and not the enhanced version, which at the time of publication had been used for over 18 years).

Mexico also has another reason why an appropriate investigative interview is necessary. Many states in Mexico are now implementing oral trials, as opposed to written ones (Vazquez Marin, 2008). During oral trials witnesses are required to be present in the court room and give their testimony orally. In written trials, witnesses were interviewed by a law enforcer; the interview was transcribed and then handed over to the judge and jury in order for them to give a verdict. Therefore law enforcers could conduct any type of interview and as they were written out, unwanted sections could be potentially left out (e.g., suggestive and incriminating questions). In oral trials, inappropriate interviewing techniques will no longer be acceptable. With lawyers, judges and other law enforcers present during the trial, suggestive and incriminating questions will not be tolerated by either party. The importance of implementing effective interviewing techniques for the Mexican population is therefore highlighted.

In Mexico, a developing country, the need for an appropriate investigative interview is made evident by the mentioned circumstances. The CI is not appropriately incorporated to any interviewing manuals and research testing its efficacy in a Mexican sample has not been found. In addition, change towards oral trials will increase the need for appropriate investigative interviews. Previous research has shown that the CI can be an effective interviewing technique, enhancing memory more so than other types of interview (Memon, et al, 2010). The implementation of the CI in Mexico could help gain a significant number of details from the few witnesses that choose to report a crime. Therefore providing law enforcers with a significant number of details reported from a small number of witnesses. Nonetheless, before recommendations to incorporate the CI techniques to existing police protocols can be issued, adequate research testing the efficacy of the CI in Mexico needs to be carried out.

1.4. The present thesis

The previous section makes it clear that a rise in violence in crime has occurred in the last years in Mexico. It also provides evidence to support the notion that individuals in Mexico are less willing to report a crime than individuals in affluent countries such as the UK. A lack of willingness to report crime can have serious consequences on law enforcement. If there is a reluctance to report crime in Mexico, police forces will have a lower number of testimonies given by victims and/or eyewitnesses. It is therefore important to gather as much information as is possible from the victim/eyewitness that is willing to report the crime. The current interviewing techniques used by police forces in Mexico are unclear and the population, in general, feels a distrust of authorities and have the perception that reporting a crime is a waste of time (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013). This leads to a problematic situation: many crimes are being committed, few crimes are being reported and so the information gleaned from witnesses or victims of those that are reported could be incomplete as police officers lack effective interviewing techniques.

An effective investigative interview is needed by police forces in Mexico. The CI for many years has been tested and deemed to be an effective memory enhancing technique by experts. In addition, the CI has been incorporated into interview training for police officers in affluent countries, for example the UK. Although there are still improvements that need to be made to the training police officers in the UK receive, some of the CI techniques are being successfully used (Dando et al, 2009). In Mexico, the CI could help obtain more information about the crime than other investigative interviews which would be crucial in situations where victims/eyewitnesses are few. Nonetheless, before the CI can be advised for use by police forces in Mexico, adequate testing through laboratory experiments need to be carried out. As such, this thesis will attempt to determine the utility of the CI amongst a Mexican population by undertaking a cross-cultural comparison of its effectiveness using Mexican and UK participants.

Before this can be undertaken, however, it first will be necessary to undertake a direct comparison of crime reporting rates between the two countries. Existing research on crime reporting habits is not easily comparable between countries as studies include

different type of data, from different years and different population samples. The first study presented in this thesis focuses on comparing willingness to report crime between Mexican and UK participants. An understanding of crime reporting habits in Mexico and the UK can help determine whether a reluctance to report crime in Mexico exists and/or if crime reporting levels in a developing country are lower than in an affluent country.

If Mexican participants are less willing to report a crime than UK participants that would indicate a cultural difference that renders CI research from the UK un-applicable in Mexico. As such, in order to test willingness to report crime and the effectiveness of a CI in Mexican participants a series of experiments comparing samples of participants from Mexico and the UK were undertaken.

The aims of this thesis are to: a) compare crime reporting rates in Mexican and UK participants, b) compare the effectiveness of the CI on memory recall in samples of students from the UK and Mexico, c) explore the efficacy of the CI mnemonic techniques in memory recall in participants from the UK and Mexico, d) test the efficacy of a modified CI (omitting the CP) against a SI in participants from the UK and Mexico, e) explore the effects different emotional to-be remembered events have on memory recall in participants from the UK and Mexico, f) examine the effects of misleading postevent information in memory recall when using a CI in participants from Mexico, and g) compare memory recall between a CI and a SI in a sample of Mexican participants.

To achieve this, four studies were undertaken. Part One of this thesis focuses on comparing crime reporting rates in participants from Mexico and the UK. Part Two presents the studies testing recall within the CI research. The CI studies followed well-established methodology and techniques within the CI research.

In Study 1 (Chapter 2), crime reporting rates between participants from the UK and Mexico were compared. In addition, the reasons for not reporting a crime in participants from these samples were explored.

During Study 2 (Chapter 4), the efficacy of the CI was compared between participants from the UK and Mexico. Additionally, amongst these populations, combinations of the CI mnemonic techniques were compared to a full CI.

The purpose of Study 3 (Chapter 5) was to understand the effects of an MCI versus a SI in recall of event details between participants from the UK and Mexico. An MCI, omitting the CP mnemonic technique was used as it has proven it can be as effective as a CI, additionally the CP technique is the least used by police officers. In addition, this study examined recall of different types of emotional events: positive, neutral, and negative.

Study 4 (Chapter 6) focused on a sample of students from Mexico. The objective of this study was to further explore the effectiveness of the CI amongst the Mexican population by comparing it against an SI. Also, this study examined the effect of postevent misleading information on participants' memory reports.

PART ONE. Crime reporting rates

CHAPTER 2. Study 1. Willingness to report crime

2.1. Introduction

When a crime occurs, police and other law enforcers often rely on the victims (Murphy & Barkworth, 2014) and eyewitnesses (Greene & Loftus, 1984) to establish what has happened. Reporting a crime therefore is highly important to the criminal justice system as it can be the only lead in solving a crime. When a victim/ witness reports a crime it helps police and law enforcers fulfil its objective (Skogan, 1976). Nonetheless, not all victims/witnesses report crime to the police. Crime report studies that focus on crime trends rely on the reports given to the police by victims/witnesses (Baumer & Lauritsen, 2010). Surveys collecting data on crime and the reports of crime are often undertaken in countries around the world (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013; Baumer & Lauritsen, 2010; Kääriäinen & Sirén, 2011; Skogan, 1976; Tarling & Morris, 2010; Van Dijk et al., 2007). They focus on the frequency with which victims and witnesses report crimes to authorities. Additionally many of these studies are interested in understanding the reasons a respondent is willing or rather reluctant to report a crime (Nicksa, 2014; Skogan, 1976; Tarling & Morris, 2010; Van Dijk et al., 2007).

Major differences have been found in crime reporting between affluent countries and developing countries (Van Dijk et al., 2007). The highest reporting rates correspond to affluent countries, such as Austria, Belgium, Sweden and Switzerland, which have reporting rates of 70% to 60%. These are followed by other affluent countries which have reporting rates of 60% to 45%, e.g., Germany, the UK, Denmark, France, Japan, Norway, Australia, the USA, and Italy. The lowest reporting rates are found in

developing countries. The reporting rates for countries such as Brazil, Cambodia, Peru, Mexico and Mozambique are all below 20%. It isn't clear why reporting rates are lower for developing countries, with it being an unexplored issue in research.

The types of crimes that are reported to the police and other authorities vary from country to country. The general method for studies testing reporting rates is via surveys. These studies are usually conducted through surveys where the participant is asked a series of demographic questions followed by questions related to being a victim and/or witness of a crime in the last six months/year, the type of crime that occurred and whether it was reported to the authorities. The percentage of crimes reported is then calculated (see Tarling & Morris, 2010 for an example).

The types of crimes reported seem to differ by country. For example, in England and Wales victims and/or witnesses are more likely to report violent crimes than property crimes (Tarling & Morris, 2010) regardless of which type of crime occurred more often. On the other hand, in Finland, a survey found that a larger percentage of the sample of participants had suffered property crimes than they had suffered violent crimes and that the victims and/or witnesses were more likely to report crimes against property than crimes of violence (Kääriäinen & Sirén, 2011). Similarly, in Mexico, victims and/or witnesses are more likely to report property crimes (e.g., theft of vehicle) than violent crimes (mugging/theft from person, verbal threats), although the absolute number of crimes (those reported and those not reported) is much higher for violent crimes than property crimes (*Encuesta nacional sobre victimización y percepción sobre seguridad pública, 2013*.2013). In the USA, a higher proportion of violent crimes (e.g., sex offenses and family violence) are being reported in the last 30 years (Baumer & Lauritsen, 2010). In accordance, a study by Nicksa (2014) in the USA found that participants who read a narrative of a mock crime stated that if they were to witness said event they would be more willing to report a physical assault than theft.

Some studies have focused on what makes victims/witnesses more willing to report a crime. A study by Skogan (1976) stated that reporting of crime varies according to age and income. This study asked participants to report whether or not they had been victim of a crime in the last six months and whether it was reported to the authorities. The results show that young people are less likely to report a crime they have been a victim

of/witnessed than older adults. Nonetheless, the study included data of people as young as 12 years to 19 years old clustered into the same age group. This represented a young age group and it is not clear what type of crimes they had suffered and/or reported. The type of crime suffered by a minor could be different to the type of crime suffered by an adult. Skogan's study also found that adults that have a high income are more likely to report crime than low income victims. Although Skogan's study shows some interesting trends in crime reporting, the data cannot be reliably accepted 40 years after the study took place. Murphy and Barkworth (2014) conducted a more recent study with Australian participants. They tested participants' perception of outcome favourability, procedural justice, police effectiveness and willingness to report a crime. They found that willingness to report crime was influenced by the perception of appropriate procedural justice and/or police effectiveness. If participants considered police effectiveness to be high then they were more willing to report a crime. Nonetheless, procedural justice was considered more important for willingness to report a crime, leaving police effectiveness in second place.

The studies above show trends in reporting of crimes in different countries and reasons why victims/witnesses are more willing to report a crime. Nonetheless, there are also a great number of crimes that go unreported. These unreported crimes come to form what is known as the "dark figure", and although at times it might seem as though crime is changing over time (e.g., more violent crimes occurring than property crimes), it could just be fluctuations of the dark figure (Skogan, 1976). As the reporting of crimes can be an essential tool for police and other authorities, understanding victims' and eyewitnesses' unwillingness or reluctance to report a crime has received attention from various researchers. These studies have found that, in some instances, victims are unwilling to report crimes due to distrust of police (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013.2013*; Kääriäinen & Sirén, 2011), the victim perceiving the offense not being serious enough to warrant a report (Murphy & Barkworth, 2014; Tarling & Morris, 2010) or because reporting a crime seems like a waste of time (e.g., long process, no results) (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013.2013*).

The studies mentioned in the paragraphs above indicate that affluent and developing countries have different rates of reporting crime. Even though affluent countries tend to

have higher crime reporting rates than developing countries, differences in reporting amongst affluent countries are still found. In addition, the types of crimes being reported differ from country to country. It is therefore possible that differences between countries in relation to their reasons for not reporting a crime exist (cf., *Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013; Tarling & Morris, 2010). Although there are surveys that have compared the reasons for reporting (or not reporting) of crimes in different countries (e.g., Van Dijk et al., 2007), the results aren't always presented for individual countries. For example, Van Dijk et al, show in a single figure the percentages corresponding to the reasons victims give for not reporting a crime. That is, the reasons for not reporting a crime on the International crime victim survey and the 2005 European survey on crime and safety are not specified by country, all countries are presented together. Therefore, the specific reasons victims from each country give for not reporting a crime are undecipherable. The way these authors present the results is disappointing as it does not allow the readers to distinguish whether victims from different countries have differing reasons to not report a crime. There is a lack of research addressing the reasons why victims/witnesses would be reluctant to report a crime. The report from Van Dijk et al, has not separated the countries out in a manner that permits analysis of individual countries, this too needs to be addressed with further research.

Understanding why a victim or witness is reluctant to report a crime can help improve police efforts in gaining higher levels of crime reports. For example, if victims/witnesses fear retaliation, measures to protect their anonymity could be useful. In a different scenario, victims/witnesses that feel reporting a crime is a waste of time can benefit from campaigns raising awareness on how and when to report a crime. Baumer and Lauritsen (2010) speculate that reporting of crimes increased in the USA after social and legal reforms raised awareness of the importance of reporting family violence and sexual offences. Additionally, tools like interviewing, used by the police to help solve crimes can be employed more successfully. For example, the interview process could be simplified if victims/witnesses feel reporting a crime is a complicated and long process.

This particular study is interested in the reporting rates of the UK and Mexico. Mexico has faced a difficult situation in the last years. There is a high and increasing level of

violence in the country (Asfura-Heim & Espach, 2013). This can place individuals as the victim or witnesses of crimes that occur on daily bases. For many instances, the report of the victim/witness is the only evidence police officers have to solve a crime (Greene & Loftus, 1984). Therefore the importance of crime reporting is highlighted. What do we know about crime reporting in the UK and Mexico? In the Criminal Victimization in International Perspective report of 2007 (Van Dijk et al., 2007), it was found that victims from the UK report crime more often than victims in Mexico, regardless of the amount of crimes that occurred. The results showed that victims in the UK reported 59% of crimes related to theft from a car, theft of a bicycle, burglary, attempted burglary and theft of personal property. For the same crimes, victims in Mexico only reported 16% of these crimes. This indicates that roughly 41% of the aforementioned crimes go unreported in the UK and 84% of these crimes go unreported in Mexico.

Similar to other studies (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013; Tarling & Morris, 2010) Van Dijk et al (2007) used a questionnaire to gather information. The questionnaire consisted of a series of questions about being a victim of different types of crimes, how often it occurred in the last five years, whether or not the crime was reported to the authorities and their satisfaction with the police response. Nonetheless, the results from this study perhaps generate more questions than answers. The data corresponding to the UK was collected via telephone interviews in 2004, whereas the data from Mexico was collected via in-person interviews in 2003 raising issues of comparability. Further, even though the survey gathered information regarding reasons to not report a crime, it isn't possible to detect which was the main reason for not reporting a crime in the UK and whether it was the same reason in Mexico, as this data was presented as a single value for all the countries tested (see previous paragraphs). Furthermore, the crimes that are least reported are not stated clearly, nor are the reasons for not reporting each type of crime. It is clear that more cross-cultural research needs to be conducted to fully understand willingness to report and/or reasons to not report crimes in affluent and developing countries.

A study exclusive of the British population shows slightly different results from Van Dijk et al's (2007) report. Victims who responded to the British Crime Survey² (BCS) in 2007/08 (Tarling & Morris, 2010) indicated that 39.3% of crimes were reported, whereas victims from the Van Dijk et al study reported 59% of crimes. A strict comparison cannot be made between the studies, however, as the data were collected in different years and there are differences between the types of crimes that are taken into account in each study. In addition, sampling differences can also be found. In the BCS of 2007/08 the highest percentage for reported crime was for theft of vehicle (92.8), followed by burglary (63.6) and violence, specifically wounding (59.5). The lowest percentages were found for theft from person (mugging, 31.8) and vandalism (34.9). The main reasons why crimes were not reported was because victims thought that a) the crime was too trivial/ there was no loss, b) police would not be interested and c) the crime was a private matter and therefore they dealt with it themselves. Tarling and Morris make an effort to expand on the reasons why victims are unwilling to report specific types of crimes. For example, they state that 22% of burglary victims don't report the crime because they consider it a private matter, whereas 35% of violent offences aren't reported for the same reasons. A 12% of personal theft is reported to other authorities and not the police (e.g., credit card issuer, mobile phone network company). Although Tarling and Morris make an effort to expand on the reasons why victims are unwilling to report certain crimes, clear data is still missing. Additional data explaining the reasons for not reporting each type of crime would allow for a better understanding of victims unwillingness to report crimes.

In Mexico, a national survey on victimization and perception of public security (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013.2013*) stated that 92.1% of the respondents were reluctant to report a crime. That leaves less than 8% of victims and/or witnesses of a crime willing to report it. This study presents an even lower percentage of crime reporting than Van Dijk et al (2010), who stated that 16% of crimes are reported. The differences found between these two studies can be attributed to the different year when data was recollected (see section 1.3.4.1. Mexico's current situation, for details on increasing violence in Mexico) as well

² The BCS is now named the Crime Survey of England and Wales. Although this survey is repeated annually and the participants are asked about crimes even if they weren't reported, it is not possible to separate the number of crimes reported and those that weren't. Therefore the Tarling and Morris (2010) study provides the most recent statistics on the matter.

as a difference in sample characteristics. The respondents of the national survey on victimization and perception of public security mentioned that the main reasons for not wanting to report a crime were a) distrust of authorities and b) perceiving it as a waste of time. Although this study presents tabulated data for different types of crimes that were not reported, the reasons for not reporting each type of crime are unclear. They are presented in categories a) reasons attributed to the authorities (e.g., fear of extortion, waste of time, long and complicated procedures, distrust of authorities, authorities' hostile attitude) and b) other reasons (e.g., fear of the aggressor, crime of low importance, lack of evidence). It is unclear what the main reason for not reporting a type of crime is, other than identifying the category it is placed within. That is, if we want to know why a victim would not report theft from a vehicle, the results of the survey would only state the category the reason falls within not the specific answer. Additionally, these categories are perhaps too general, for example considering reporting a crime to be a waste of time or a long and complicated procedure could indicate the victim/witness' lack of motivation to report a crime or it could indicate an issue with the procedure (i.e. an issue linked to the authorities). Existing studies give an idea as to why victims/witnesses are unwilling to report a crime; nonetheless the picture is still unclear. The use of overarching categories to express reasons for not reporting a crime prevents the reader from fully understanding the issues. Therefore, further studies that can explain in more detail the reasons for not reporting a particular crime to the authorities are needed.

The findings of the studies discussed in this section are difficult to compare across countries. Although some do precisely that (see Van Dijk et al., 2007), the results are not always detailed enough to compare freely. Those that focus on reporting of crime in specific countries (see *Encuesta nacional sobre victimización y percepción sobre seguridad pública, 2013*.2013; Tarling & Morris, 2010) tend to have utilised different surveys/methods which makes comparisons difficult. In addition, the data presented corresponds to different years and crime reporting varies from year to year (Baumer & Lauritsen, 2010; Tarling & Morris, 2010; Van Dijk et al., 2007). It becomes clear that in order to understand differences in crime reporting in the UK and Mexico, if such exist, a single survey targeting both populations and employing the same procedure is necessary.

2.1.1. The current study

The observed percentages of crime reporting in the UK and Mexico vary greatly. In addition, the reasons why victims and/or witnesses do not report a crime are also reported to be different. However, the studies mentioned previously do not provide a reliable source of comparison between these two countries. Due to the level of crime reporting being different between developed (e.g., the UK) and developing countries (e.g., Mexico), a necessity to further understand the reasons behind this behaviour is important. The following paragraphs attempt to explain the importance of understanding willingness to report crime.

As the police and law enforcers often depend on the report of victims and/or witnesses to understand the crime that has happened (Greene & Loftus, 1984; Murphy & Barkworth, 2014), the reporting rates of crimes are important. The willingness of victims/witnesses to report a crime becomes crucial in solving the case, as they are expected to narrate what has happened (Greene & Loftus, 1984). In addition, the testimony of the victim or an eyewitness may be the only information police forces have to solve a crime.

Understanding whether differences in willingness to report crime in the UK and Mexico exist, can allow for further research, particularly in the field of investigative interviewing. If there are differences found in willingness to report crimes between participants from the UK and Mexico, would this affect the number of details reported during an interview? Could participants willing to report a crime provide more details during an investigative interview, such as the Cognitive Interview, than participants who are reluctant to report a crime? In addition, if individuals are reluctant to report a crime, police forces are faced with a small number of victims/witnesses willing to give testimony. It then becomes imperative to gather as much reliable information (through successful interviewing techniques) as possible from those that are willing to provide it.

The present study will focus on exploring the willingness of participants to report a crime. In addition, the reasons why a crime might not be reported will also be explored. It was predicted that the participants from the UK are more willing to report crime than the participants from Mexico. Specifically, it was predicted that participants from the

UK are more willing to report both property crimes and violent crimes than participants from Mexico. The research also aimed to explore the reasons for not reporting property crimes and violent crimes in participants from the UK and participants from Mexico.

2.2. Method

The methodology used in this study is similar to that in Nicksa's (2014) study on willingness to report crime. Nicksa had university students attending a class to voluntarily answer a survey concerning willingness to report crime under specific circumstances. Similar to this, the present study had university students complete a survey, albeit online, regarding their willingness to report crime.

2.2.1. Participants

A total of 206 university students (female and male), all psychology undergraduates from either first or second year participated in the study; 112 in the UK (M age = 19.62, SD = 2.27) and 94 in Mexico (M age = 19.79, SD = 2.20), t (204) = -.55, p > .05. They all received course credits for their participation. All participants were native to the country where they were tested and their first language was either English (in the UK) or Spanish (in Mexico). The study (including recruitment, consent forms, surveys and any other communication between researcher and participant) was conducted in the language native to the participants, i.e. English for participants from the UK, Spanish for participants from Mexico. Participants in the UK were recruited via the EPR (Experimental Participant Requirement) subject pool system. This system requires students to participate a certain number of hours in any experiments being undertaken in the School of Psychology at the University of Leicester. In Mexico participants were recruited through open invitations to classrooms of first year and second year students at the School of Psychology at the Autonomous University of Sinaloa.

2.2.2. Materials

A series of questions relating to demographic information such as gender and age were asked. A survey (see the Appendix A) assessing participants' willingness to report crime was employed. The survey consisted of two sections. The first section was composed of a series of five items used to assess willingness to report a crime should they be a witness to one (e.g., If you witnessed a crime, how likely would you be to report it to the police?) based on the *Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013* (2013) and Murphy and Barkworth's (2014) survey. The five items were as follows: if you were the victim of a crime, how likely would you be to report it to the police?, if you witnessed a crime, how likely would you be to report it to the police?, if you witnessed a crime, how likely would you be to willingly assist police if asked?, if you witnessed a crime, how likely would you be to help police find someone suspected of committing a crime by providing them with information?, and if the situation arose, how likely would you be to report dangerous or suspicious activities to the police? The items' responses were in a Likert scale and were measured from 1 (very unlikely) to 5 (very likely) scale.

The second section focused on willingness to report specific types of crimes if a witness to them. The types of crimes included in this section were divided into property crimes (theft of vehicle, theft from vehicle, burglary and mugging) and violent crimes against the person (verbal abuse, assault, sexual crime, and rape). The crimes included in the property crime category were based on the types of crimes reported in Tarling and Morris' (2010) study and Van Dijk et al's (2007) report. The violent crimes against a person were modelled after the studies by Tarling and Morris (2010) and the *Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013* (2013). For each type of crime, the participant was asked to state his/her willingness to report the crime if they witnessed it. This was answered in a Likert scale format ranging from 1 (very unlikely) to 5 (very likely) (e.g., if you witnessed theft of a vehicle, how likely would you be to report it to the police?). For each type of crime an item was created using that particular crime). In addition each type of crime was paired with a question focusing on the reasons why they might not report a crime if they witnessed it. These questions had a series of seven possible answers (Fear of retaliation/ extortion, A crime of low importance/ too trivial/ no loss, Complicated and long process/ waste of time,

Police could do nothing/ would not be interested, Distrust of authorities/ hostile attitude from the authorities, No physical evidence, Other [open to add any other reason]) based on the reasons for not reporting a crime given in the *Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*(2013) in Mexico and the British Crime Survey of 2007/08 (Tarling & Morris, 2010) in the UK.

The survey was first written in English and then translated to Spanish by the researcher who is a native Spanish speaker. The survey in English was given to three native English speakers for feedback and to keep track of the time it took to complete. The same was done with the Spanish version; although five Spanish speakers completed the task.

2.2.3. Procedure

The survey was made available through an online website dedicated to surveys (SurveyMonkey.com). Participants from Mexico completed the Spanish version and participants from the UK completed the English version. As indicated above, the participants from the UK were recruited via the EPR system. Upon signing up for the study the participants were immediately directed to the online survey. The participants from Mexico were recruited via invitations to students in classrooms. The students were provided with the web link to the online survey and given the opportunity to complete the survey online if they wished to do so. All participants were awarded course credits for participating in the study.

At the beginning of the survey, all participants were presented with the consent form. It described the study and participants were asked whether they agreed to participate. They were informed that their responses were confidential and anonymous, and that they could withdraw from the study up until the end of the survey. Additional information regarding ethical approval provided by the University of Leicester for participants in the UK and the School of Psychology at the Autonomous University of Sinaloa for participants in Mexico was included. Once the participants completed the survey, they were presented with a debriefing form and contact information of the researcher.

2.3. Results

2.3.1. Willingness to report crime scale

The first section of the survey formed the willingness to report crime scale, which was measured on a 1 (very unlikely) to 5 (very unlikely) Likert type scale. The willingness to report crime scale was found to be reliable (5 items, Cronbach's $\alpha = .82$). The score of the five items was then summed up and divided by five to create an overall score of the participants' willingness to report crime.

As assumptions of normality were not met (unequal sample sizes, negatively skewed data and significant Kolmogorov-Smirnov test), the non-parametric test, Mann-Whitney was used in replacement of the more common t-test to compare differences between groups (Field, 2009). The results of the Mann-Whitney test show a significant difference between UK and Mexican participants' willingness to report crime, $U = 3497.50$, $z = -4.16$, $p. < .001$, $r = -0.29$. The participants from the UK ($Mdn = 4.00$) were more willing to report crime than the participants from Mexico ($Mdn = 3.40$). As predicted, the participants from the UK are more willing to report crime than the participants from Mexico.

2.3.2. Willingness to report property crime and violent crimes against the person

The second section of the survey tested participants' willingness to report specific types of crimes and explored the possible reasons for not reporting that crime. The crimes tested were divided into two categories: property crimes and violent crimes against the person. The types of crimes included in property crimes are theft of vehicle, theft from a vehicle (e.g., car parts, accessories, tools), burglary and mugging. In the violent crimes against the person category, the crimes of verbal abuse, assault, sexual crimes and rape were included. Each participant was asked how willing they were to report a specific crime on a 1 (very unlikely) to 5 (very unlikely) Likert type scale.

The following sections show the results in each category. As the assumptions of normality were not met, the non-parametric test, Mann-Whitney was used in replacement for the t-test to compare differences between groups. This was done in all the following analyses.

2.3.2.1. Property crimes

The results of the Mann-Whitney Test show that the participants from the UK ($Mdn = 4.00$) were significantly more willing to report theft of a vehicle than participants from Mexico ($Mdn = 3.00$), $U = 3789.00$, $z = -3.57$, $p. < .001$, $r = -0.25$. Likewise, participants from the UK ($Mdn = 3.00$) were significantly more willing to report theft from a vehicle than participants from Mexico ($Mdn = 2.50$), $U = 3788.00$, $z = -3.56$, $p. < .001$, $r = -0.25$.

Significant results were also found for participants' willingness to report a burglary, $U = 3810.00$, $z = -3.57$, $p. < .001$, $r = -0.25$, although participants from the UK ($Mdn = 4.00$) and Mexico ($Mdn = 4.00$) had the same median score. By observing the sum of ranks in the participants from the UK (sum of ranks = 13046) and the sum of ranks from the participants in Mexico (sum of ranks = 8275), we can conclude that the participants from the UK were more willing to report a burglary than participants from Mexico. Finally, participants' willingness to report a mugging was significantly different, $U = 3114.00$, $z = -5.19$, $p. < .001$, $r = -0.36$, participants from the UK ($Mdn = 4.00$) were more willing to report a mugging than participants from Mexico ($Mdn = 3.00$).

The results so far show that the participants from the UK are more willing to report different types of property crimes than the participants from Mexico. This is in congruence with the prediction that participants from the UK are more willing to report property crime than participants from Mexico.

2.3.2.2. Violent crimes against the person

A Mann-Whitney Test revealed significant differences in participants' willingness to report verbal abuse, $U = 4239.00$, $z = -2.32$, $p. < .05$, $r = -0.16$, participants from Mexico ($Mdn = 2.00$) were more willing to report verbal abuse than participants from

the UK ($Mdn = 1.00$). In addition, a significant difference was found for participants' willingness to report assault, $U = 4161.00$, $z = -2.44$, $p. < .05$, $r = -0.17$. In this case, participants from the UK ($Mdn = 4.00$) were more willing to report assault than participants from Mexico ($Mdn = 3.00$).

Contrary to the previous significant differences, willingness to report a sexual crime was not significantly different, $U = 4554.00$, $z = -1.59$, $p. > .05$, $r = -0.11$, in participants from the UK ($Mdn = 5.00$) and Mexico ($Mdn = 4.50$). Also, there were no significant differences found between participants' willingness to report rape, $U = 4549.00$, $z = -1.87$, $p. > .05$, $r = -0.13$, between the participants from the UK ($Mdn = 5.00$) and participants from Mexico ($Mdn = 5.00$).

Although it was predicted that participants from the UK would be more willing to report violent crimes than participants from Mexico, this was only found to be true for willingness to report assault. Willingness to report verbal abuse was higher in the participants from Mexico than the participants from the UK. Finally, willingness to report sexual crimes and rape was the same in both the UK and Mexico.

2.3.3. Reasons for not reporting property crimes and violent crimes against the person.

The reasons a person might have for not reporting a specific type of crime (within property crimes and violent crimes against the person) were also explored individually in each category. This was done as the possible reasons for not reporting a crime to police forces may vary according to the type of crime, especially in a country like Mexico where property crimes are reported more frequently although violent crimes are more common (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013). See Table 1 for percentages found for each of the reasons for not reporting a property crime or a violent crime by country.

Table 1. Percentages found for each of the reasons for not reporting a specific type of crime in the UK and Mexico

	Reasons for not reporting a crime						
	Fear of retaliation/ extortion	A crime of low importance/ too trivial/ no loss	Complicated and long process/ waste of time	Police could do nothing/ would not be interested	Distrust of authorities/ hostile attitude from the authorities	No physical evidence	Other*
	%	%	%	%	%	%	%
Theft of vehicle							
UK	14.3	2.7	32.1	17.9	4.5	16.1	12.5
Mexico	42.6	0.0	28.7	3.2	7.4	16.0	2.1
Theft from a vehicle							
UK	7.1	17.9	32.1	18.8	4.5	11.6	8.0
Mexico	13.8	24.5	23.4	22.3	2.1	11.7	2.1
Burglary							
UK	25.9	0.9	29.5	11.6	8.0	10.7	13.4
Mexico	45.7	2.1	6.4	17.0	13.8	14.9	0.0
Mugging							
UK	24.1	1.8	18.8	31.3	6.3	8.9	8.9
Mexico	50.0	7.4	13.8	9.6	10.6	7.4	1.1
Verbal abuse							
UK	5.4	33.9	25.9	21.4	4.5	5.4	3.6
Mexico	18.5	22.8	16.3	21.7	5.4	8.7	6.5
Assault							
UK	25.9	6.3	21.4	22.3	5.4	5.4	13.4
Mexico	44.6	5.4	9.8	14.1	12.0	9.8	4.3
Sexual crime							
UK	20.5	0.0	22.3	10.7	14.3	10.7	21.4
Mexico	59.8	0.0	4.3	8.7	20.7	5.4	1.1
Rape							
UK	18.8	0.0	21.4	12.5	15.2	12.5	19.6
Mexico	58.7	0.0	3.3	8.7	18.5	8.7	2.2

Note. - *Other. In this answer participants could add any reason they considered for not reporting the crime in questions. Most common answers included: would definitely report, private matter, does not apply.

2.3.3.1 Property crimes.

When participants were asked for the reason they might not report the theft of a vehicle, significant differences were found between the participants from the UK and Mexico, $\chi^2(6) = 35.44, p < .001$. The main reason for potentially not reporting the theft of vehicle in the UK was: it is a long and complicated process/ waste of time (32.1 %), whereas in Mexico the reason is: fear of retaliation/ extortion (42.6%). Conversely, there were no significant differences found for the reasons to not report theft from a car between the participants from the UK and Mexico, $\chi^2(6) = 9.18, p > .05$.

The main reason participants from the UK gave for not reporting a burglary was: it is a long and complicated process/ waste of time (29.5%), in Mexico it was: fear of retaliation/ extortion (45.7%), these were significantly different, $\chi^2(6) = 36.65, p < .001$. Likewise, significant differences between the UK and Mexico were found for the reasons behind potentially not reporting a mugging, $\chi^2(6) = 32.53, p < .001$. In the UK participants' main reason for not reporting a crime was: the police could do nothing/ would not be interested (31.3%), in Mexico the main reason was: fear of retaliation/ extortion (50%).

2.3.3.2. Violent crimes against the person

The reasons for potentially not reporting verbal abuse were significantly different, $\chi^2(6) = 13.84, p < .05$. The main reasons for not reporting verbal abuse in the UK were: a crime of low importance/ too trivial/ no loss (33.9%) followed by: a complicated and long process/ waste of time (25.9%), in Mexico they were: a crime of low importance/ too trivial/ no loss (22.8%), followed closely by: the police could do nothing/ would not be interested (21.7%).

The main reasons for potentially not reporting assault in the UK were: fear of retaliation/extortion (25.9%) followed by: the police could do nothing/ would not be interested (22.3%). Where as in Mexico the main reason for not reporting an assault was: fear of retaliation (44.6%), leaving other reasons with a low percentage. This

difference in reasons for not reporting an assault in the UK and Mexico were significantly different, $\chi^2(6) = 19.67, p < .005$.

The reasons for potentially not reporting a sexual crime are significantly different in the UK and Mexico, $\chi^2(5) = 51.97, p < .001$. The main reasons for not reporting a sexual crime in the UK were: it is a long and complicated process/ waste of time (22.3%), followed closely by: others (would definitely report was the most common reason added by participants) (21.4%) and fear of retaliation/ extortion (20.5%). Whereas in Mexico, the main reason for not reporting a sexual crime was: fear of retaliation/extortion (59.8%). In addition, the reasons for potentially not reporting a rape in the UK and Mexico were significantly different, $\chi^2(5) = 49.31, p < .001$. The participants from the UK expressed that the main reason for not reporting a rape was: it is a long and complicated process/ waste of time (21.4%), followed by: others (would definitely report was the most common reason added by participants) (19.6%) and fear of retaliation/ extortion (18.8%). In Mexico, the most common reason for not reporting rape was: fear of retaliation/ extortion (58.7%).

These results show that for most of the crimes tested, participants from the UK and participants from Mexico differ in the reasons for potentially not reporting a crime if they witnessed it. Out of all the reasons participants from the UK expressed for potentially not reporting a crime if they witnessed it, the one that appeared most frequently and with the highest percentage was: it is a long and complicated process/ waste of time. Whereas participants from Mexico expressed that: fear of retaliation/ extortion would be the main reason for not reporting a crime.

2.4. Discussion

The results confirm the prediction that participants from the UK are more willing to report a crime than participants in Mexico. The present study found that a brief, yet reliable scale measuring participants' willingness to report crime finds variation

according to the country from where the sample was taken. The results are in agreement with previous studies that have found willingness to report crime is higher in affluent countries than developing countries (Van Dijk et al., 2007).

It was predicted that participants from the UK would be more willing to report both property crime and violent crime than participants from Mexico. This followed the findings of previous research which shows that participants from affluent countries are more willing to report crime in general (including both property and violent crimes) than participants from developing countries (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013; Tarling & Morris, 2010; Van Dijk et al., 2007). The present study found that participants from the UK were significantly more willing to report property crimes (theft of vehicle, theft from vehicle, burglary and mugging) than participants from Mexico. The results found in this study are in accordance with the previous studies mentioned which have found that witnesses from the UK report 20% to 40 % more crimes than participants from Mexico.

Nonetheless, the results were less clear for willingness to report violent crimes. Although it was hypothesized that participants from the UK would be more willing to report violent crimes than participants from Mexico, the results did not always find this. The only instance where the participants from the UK were more willing to report a violent crime than the participants from Mexico corresponds to reporting assault. Participants from both samples were equally willing to report sexual crimes and rape. Surprisingly, the participants from Mexico were more willing to report verbal abuse than participants. Previous research shows that witnesses from the UK are more willing to report violent crimes than participants from Mexico (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013; Tarling & Morris, 2010), and the current research predicted that such a trend would be found, this was not so. Although these results are contrary to what was expected, it is important to keep in mind that crime trends (Rosenfeld & Goldberger, 2008) and thus crime reporting rates (Baumer & Lauritsen, 2010) change over the years. With the ever changing panorama in Mexico, with crimes on the rise (Martinez & Cortez-Yactayo, 2015), it is, perhaps, understandable to find a shift in witnesses' willingness to report crime from that seen in previous research.

The present study found that the reasons that could potentially deter a witness from the UK from reporting a crime are different from the reasons a witness from Mexico would have. This is in accordance with previous research (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013; Tarling & Morris, 2010). It is important to keep in mind that while Tarling and Morris are reporting data for real crimes, the present study presented participants with hypothetical crimes. Notwithstanding, Tarling and Morris state that the main reasons for not reporting crimes are due to the crime being too trivial, a private matter or considering that police would not be interested, this was not found in the present study. In the present study, for most of the property crimes, participants from the UK mentioned that the reason they might not report it was due to the long and complicated process / waste of time. A similar trend was found for the reasons to not report violent crimes against the person, although a mixture of responses like fear of retaliation, a crime of low importance and the idea that police could do nothing or would not be interested was found. The reasons for potentially not reporting a crime, in Mexico, whether a property or a violent crime, were very clear: fear of retaliation/ extortion.

Although, the present study has helped gather some very important information regarding willingness to report crime in the UK and Mexico, there are some limitations. The sample of participants was small considering the study is based on an on-line survey. It would have been more beneficial to conduct a survey on a much larger and varied sample of participants. Unfortunately, due to limited resources this was not possible. Instead the sample of Psychology students from first or second year was chosen to enable comparisons between both samples by having participants with similar characteristics.

There are also some important contributions of this study. It suggests that witnesses from developing countries are less willing to report a crime than witnesses from affluent countries. Therefore it highlights the need for police enforcers from developing countries to get the most out of the witnesses that are willing to provide testimony.

In order for this to happen, police enforcers need to have appropriate interviewing techniques, which will allow for this/these witnesses to report as many accurate details from the event as is possible. It also highlights the critical situation witnesses from

Mexico are living; they are in fear of retaliation/ extortion which hinders their willingness to report crimes. In this case, not only are appropriate interviewing techniques necessary, but perhaps identity protection for witness who are willing to provide testimony of the event would be advantageous.

In conclusion, this study highlights the disadvantage developing countries have when attempting to solve crime. Unlike developing countries, affluent countries have witnesses that are willing to report a crime. This was found in the participants from the UK (also see Tarling & Morris, 2010; Van Dijk et al., 2007). The reasons that could potentially prevent witnesses from the UK from reporting a crime revolve around the long and complicated process/ waste of time that involves reporting a crime. Another advantage of an affluent country like the UK, is that it has appropriate interviewing techniques that aid memory performance, such as the CI (see Chapter 1, Literature Review for a list of countries and research). Developing countries like Mexico, on the other hand have witnesses that are reluctant to report crime (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013; Van Dijk et al., 2007). The reasons that could potentially prevent witnesses from Mexico reporting a crime are geared toward fear of retaliation and fear of extortion. In addition, the police authorities lack appropriate interviewing techniques. It is time for developing countries, such as Mexico, to follow in the footsteps of Brazil, a developing country that has tested and found benefits of a CI above a SI (Stein & Memon, 2006). The following studies within this thesis will focus on exploring the effectiveness of a CI in Mexico while comparing the results to samples from the UK. If participants from Mexico are less willing to report a crime than participants from the UK, will it follow that they will also be less willing to provide details of an event witnessed?

PART TWO. Cognitive Interview research

CHAPTER 3. General Methods

This chapter aims to give an overview of the methodology that was followed throughout the CI studies conducted. It describes the recruitment of participants, the materials used, the procedure followed and the analysis strategy.

3.1. Participants

The participants were university students (female and male), all psychology undergraduates from either first or second year. They were distributed uniformly across conditions. They all received course credits for their participation. All participants were native to the country where they were tested and their first language was either English (in the UK) or Spanish (in Mexico). The study (including recruitment, consent forms, interviews and any other communication between researcher and participant) was conducted in the language native to the participants, i.e. English for participants from the UK, Spanish for participants from Mexico. Participants in the UK were recruited via the EPR (Experimental Participant Requirement) subject pool system. This system requires students to participate a certain number of hours in any experiments being undertaken in the School of Psychology at the University of Leicester. In Mexico participants were recruited through open invitations to classrooms of first year and second year students at the School of Psychology at the Autonomous University of Sinaloa.

The sample of university students selected as participants and not individuals from the general population follows several arguments. First, the participants share similarities

that would have been difficult to pair had the sample been chosen from the general population, for example similar education level, age, and gender distributions. Second, due to ethical constrictions in Mexico it is not possible to pay participants to take part in a study. Third, unavailable funds and time limitations prevented paying participants in the UK and recruiting volunteers in Mexico from the general population. Finally, student samples are not uncommon in CI research (see Memon et al., 2010 for a review). Thus the participants were recruited as mentioned above.

3.2. Materials

The videos for the studies were custom made videos lasting about 1 minute and contained a large number of quantifiable details. The videos were presented on 19 inch screens and used headphones to reproduce sound.

3.2.1. Description of videos

The videos were specifically designed for these studies. A story board and script were created for the videos. The videos were filmed in a coffee shop in an art gallery; giving a range of different surroundings and objects in each of the scenes. The videos contained four scenes, the first two were identical throughout, while the last two differed in content. Four actors were paid to perform, the two main actors were professionals and the others had previous experience in acting. The actors were carefully selected according to their appearance, allowing the videos to be used in both the UK and Mexico without creating a culture shock. The audio was also controlled so that no speaking was heard, yet common background noise for a coffee shop was maintained. Additionally, a producer was hired to help give the videos the professionalism required and support in the editing process.

3.2.2. Description of questionnaire.

A questionnaire was used for the purpose of misleading participants into thinking that the study was examining responses to emotional videos, and thus distract them from the original purpose of the study. The questionnaire used was elaborated in a Likert scale format (see Appendix B). It was developed based on Levine and Burgess (1997) Questionnaire for specific emotions and Izard, Libero, Putnam and Haynes (1993) Differential Emotions Scale IV (DES IV). The emotional items chosen for the questionnaire employed in the present study were divided into positive (happy and excited), neutral (okay and calm) and negative (sad and angry) emotional valence, adding a total of 8 items. These were rated in a 7 point scale. The participants were asked to think about the video they watched (i.e. the event witnessed) and rate the emotions according to how the video made them feel, 1 being “not at all” that emotion and 7 being “very much” of that emotion.

3.3. Procedure

The studies were conducted by the researcher (a female in her late 20s), who attended a 5 week summer training with an experienced interviewer, learning the theory and the techniques employed in the CI. A number of practice interviews were also done, as well as practice in transcribing, coding and scoring of interviews.

The studies were conducted in two different laboratories, one for watching the video and the other for interviewing to prevent CRI effects from forming spontaneously (Milne & Bull, 2002). All participants were tested individually in two phases over two days. Phase 1 took place in a small quiet lab room, with a PC and a 19 inch screen monitor, participants were seated 60cm from the monitor and had a pair of headphones to use while viewing the video. At the beginning of this phase, participants were misled to believe that the purpose of the study was to measure their emotional response to a video and weren't informed that they would be interviewed. Participants were told that the video they were to watch might contain some emotional scenes, that they were to

pay close attention to it and try and picture themselves as part of the video. They were then instructed to put on the headphones and watch the video, while the researcher stepped out of the lab and thus insure transfer of control during the interview phase (cf. similar procedures by Benski et al., 2011; Fisher & Geiselman, 1992). Transfer of control allows the participants to feel in charge during the interview, making it clear that it is him/her who has the information related to the event and not the interviewer. Participants then completed the questionnaire that measured emotions as part of the misleading.

Phase 2 took place after a 24 hour lapse, in a lab with few distractions. Distractions were minimized to avoid interrupting participants' narrative as to not lessen their reports and description of the event (Fisher & Geiselman, 1992). Participants were informed that they had been misled and the task at hand was an interview regarding what they remember of the video. They were given the option to leave the study while keeping the course credits offered for participating (all participants agreed to stay and go ahead with the interview). They were then interviewed by the researcher, with random assignment to an interview condition. The participant sat across the table from the researcher to help create an appropriate environment (where the interviewer is not invading the participants' personal space) for interviewing (Oldfield, 1947). All interviews were recorded and began with a 5 minute rapport building (Holliday et al., 2012; see Oldfield, 1947 for additional information on rapport) and instructions phase, followed by a free recall phase and a questioning phase. Participants were then debriefed as to the objectives of the study.

3.3.1. Instructions for the Cognitive Interview

All the instructions for the interviews were read verbatim to ensure that the interviewer followed the same procedure throughout and did not transfer CI techniques to the SI (Benski et al., 2011; Davis et al., 2005; Milne & Bull, 2002). The instructions were read slowly with pauses to allow participants to concentrate on each request. The CI began with a rapport phase, during this phase the interviewer asked the participant to talk about him/herself guiding them with some questions. This was followed by transfer of control and the introduction of the aims of the interview. Participants were then

reminded that they were going to be audio-recorded and were given some final guidance before the interview. Any questions the participant had were answered. Then the free recall phase began.

The interviewer began the free recall phase with the instructions for CRI. The interviewer paused after each instruction to allow the participant to focus on their thoughts and answer the questions. Once the participant answered the question, the interviewer made a pause to allow any afterthoughts to be expressed by the participant. The interviewer then went on with the RA instructions. The interviewer allowed the participant to recall the video without interruption. When the participant finished reporting the events of the video, the CO instructions followed. Finally the CP instructions were introduced. To conclude with this phase a prompt to elicit more information was given. Once the participant could recall no more information, the interviewer continued with the questions phase.

During the questions phase, the questions followed the order of the narrative of the participant. The questions were based on the information the participant gave during free recall. The participants were instructed to close their eyes and form a mental image of the object in question. Once the interviewer exhausted all the information available for questions, a final prompt was added. When the participant finished recalling any further details, the interviewer continued with the closure phase, thanking them for their participation and ending the interview. See Appendix C for the interview protocol used for the CI.

3.3.2. Instructions for the Structured Interview

The SI followed the basic guidelines from the CI, excluding the CI mnemonics techniques and instructions (i.e., transfer of control, CRI, RA, CO, CP and forming mental images before questions). After rapport was established, the participant was introduced to the aims of the interview. Participants were then reminded that they were going to be audio-recorded and given some final guidance before the interview began.

During the free recall phase, participants were left to recall the video and were not interrupted. Once they finished, a prompt was given to elicit any other information. The questions phase then began, asking only about information given in the free recall phase, in the order reported. When the interviewer finished asking questions a final prompt was added. The closure phase followed the same procedure as the CI. See Appendix D for the interview protocol used for the SI.

3.4. Transcribing, coding and scoring of the interviews

3.4.1. Transcribing

All the interviews were transcribed verbatim by a research assistant (except study 3, where the researcher transcribed all interviews), excluding the rapport phase. The research assistant was blind to the experimental aims and was given a two hour training, which consisted of reviewing examples of previous transcribed interviews, a brief practice of transcribing an example interview and a questions/answers section. The transcriptions were divided into free recall phase and questions phase. The total number of questions asked was recorded, likewise, the duration of each interview was noted.

Number of questions asked refers to the specific probes the interviewer gave the participant to allow a more elaborate account of the event, these in the form of questions (e.g., what was the man wearing?) If a question was repeated because the participant did not hear it or did not comprehend, it was only counted as a question the first time it was asked (cf. similar procedures by Dando et al., 2011; A. M. Wright & Holliday, 2007a). In the instance that the interviewer was interrupted by the participant's narration and did not have time to formulate a complete question but rather was left only with the beginning of the question (e.g., You mentioned there was a waitress behind the bar, I'd like you to make a mental image of this waitress...), it was counted as a question as this also served the purpose of a probe to elicit more information.

Duration was defined as the amount of time in minutes it took the participant to complete the interview, excluding the rapport phase and the time taken to read the initial instructions that set the tone for the interview and give CI instructions (cf. similar procedures by McMahon, 2000; A. M. Wright & Holliday, 2007a).

3.4.2. Coding

In order to complete the coding section a template of each video was made (see Appendix E). Each template consisted of a list of details of every scene that appeared in each video including descriptions of the characters, objects, their actions and the surroundings. These details were classified into four groups as follows: person (e.g., descriptions of the actors' appearances and clothing), object (e.g., items that are used: cup, flower bouquet, handbag, etc.), action (e.g., actions that happened such as walking, pushing, smelling) and surroundings (e.g., details of the surroundings such as walls, windows, doors, left side of the bar, right side of the staircase, to her left). This yielded an exhaustive list of details that were central and not central to the plot. This resulted in a uniquely long list of details.

It is important to point out that although following common procedures when creating the template (Dando et al., 2011, Holliday et al., 2012; Ginet et al, 2014); it consisted of a very exhaustive list of details, more so than templates of other studies. Perhaps the inclusion of details that were not central to the plot of the video increased its length. Regardless, this template was created in order to accommodate for differences in forensically relevant details in the UK and in Mexico.

Each detail reported during the interview was coded independently. For example, if the participant said: "The woman in black, carrying a white handbag, comes into the bar." then the coder gave each detail a code according to the type of information that was given, person (P), object (O), scenery/location (S) or action (A), for example: The woman (1- P) in black (1- P), carrying (1- A) a white (1- O) handbag (1- O), comes into (1- A) the bar (1- S). In this example "the woman" is coded as 1- P point because she is the author of the actions, if the actions were to change author then a point for person will be designated to the appropriate people, and "in black" as 1- P since it is describing

what the woman's attire looked like; "carrying" and "comes into" are 1- A point respectively as they are actions; "white" and "handbag" are coded as a 1- O point each since the handbag is considered an accessory and not something elemental to her dressing and finally "the bar" is coded as 1-S point as it refers to the surroundings.

3.4.3. Scoring

The coded details were then scored as correct, incorrect or confabulated. When the details coded coincided with the information on the template of the video they were scored as correct (e.g., carrying a bag, when this was shown in the video), if they differed from the video they were scored as incorrect (e.g., if the participant said the woman was dressed in red, when she was really dressed in black) and if the coded detail did not appear in the video at all, then it was scored as confabulated (e.g., the woman had a pushchair, when this never appeared in the video).

The interviews were coded and scored by the researcher and a research assistant which allowed for inter-rater reliabilities to be calculated (see experimental chapters for further details on coding and scoring of interviews as well as inter-rater reliabilities). The research assistant was blind to the experimental aims and was given a three hour training, which consisted of reviewing examples of previous coded and scored interviews, practice of coding and scoring of example interviews and a questions/answers section. The information reported during the interview was only coded and scored the first time it appeared. Details that referred to opinions or subjective information (e.g., I think the woman looked lonely) were ignored (cf. similar procedure by Geiselman et al., 1985; Geiselman et al., 1986), along with sentences that were accompanied by a doubt (e.g., I am not sure if she had a scarf). Measures of inter-rater reliabilities were calculated for the total number of correct, incorrect and confabulated details.

3.5. Analysis strategy

For each study the total number of correct, incorrect and confabulated details by interview, interview phases (free recall phase, questions phase) and specific details (person, object, action, scenery) were analysed using ANCOVAs. The covariates employed are number of questions asked and duration. In this section a brief overview of the use of covariates will be outlined.

Duration and questions asked could potentially affect the results found. The increased length of the CI could be responsible for a greater number of details reported. In addition, an increase in questions asked could also result in more details being recalled. Duration and questions asked as covariates have not been widely employed. Only a handful of studies have tested whether duration or questions asked as covariates affect the results of total correct, incorrect and confabulated details (e.g., Dando et al., 2011; Holliday, 2003a; Holliday, 2003b; Holliday & Albon, 2004; Holliday et al., 2012; Milne, 1997; A. M. Wright & Holliday, 2007a). Most of these studies found no effect of the covariates duration and questions asked on total number of correct, incorrect and confabulated details, hence they were omitted from subsequent analyses. Nonetheless, in A. M. Wright & Holliday's (2007a) study, they found an effect of duration as a covariate on the total number of correct, incorrect and confabulated details, and employed this covariate throughout the analyses. They found that even with duration used as a covariate, the enhanced CI and the modified CI (omitting the CP mnemonic) produced more correct details in the free recall phase than a SI. Contrariwise, in Milne's (1997) first and second studies with children, when duration as a covariate was used, no difference was found between the CI and the SI for the total number of correct details reported. Nonetheless in a third study with adults, Milne found that even with duration as a covariate a significant difference in the total number of correct details was still found, the CI produced more correct details than the SI. The studies mentioned all used duration as a covariate because they found it to have a direct effect on the number of details recalled.

Researchers have yet to agree whether including variables that are affected by the treatment as covariates is appropriate. Some researchers argue that the covariate must

not be affected by the treatment (Evans & Anastasio, 1968; Miller & Chapman, 2001; A. C. Porter & Raudenbush, 1987; Smith, 1957; Sprott, 1970). The reason behind this is that if the covariate and the treatment are not independent, then the adjustment of the regression slope may obscure an effect of the treatment (Kachigan, 1991; Miller & Chapman, 2001). In other words the covariates used in ANCOVA, in this case, duration and questions asked, should not be affected by the type of interview. Nonetheless, in cases where the experimenter is looking to eliminate the effect of a covariate from the experimental variable, employing this covariate can be appropriate in order to achieve the aims of the experiment (Sprott, 1970). In addition, when participants have been randomly assigned to the experimental condition and the covariate is affected by the treatment, ANCOVAs can still be performed but greater care to the interpretation of results must be given (Howell, 2009).

The use of duration and questions asked as covariates for the studies presented in this thesis is not common. The decision to incorporate these covariates followed a need to explore the effect of duration of interview and number of questions asked on the number of details reported. This was done in order to test whether the enhanced effect of the CI is due to the extended duration of the interview or the number of questions asked.

CHAPTER 4. Study 2. Testing the efficacy of the Cognitive Interview and its mnemonic techniques amongst participants from the UK and Mexico

4.1. Introduction

The vast majority of research on CI has been conducted in highly developed countries (see section 1.3.4. The Cognitive Interview around the world and the need to test it in Mexico for more details). Brazil is the only developing country where research using the CI has been undertaken (Stein & Memon, 2006). The results found were favourable; showing that the CI improved recall of correct details compared to a standard interview. Can these results be found in other developing countries? Mexico, a developing country, is in need of appropriate interviewing techniques. The violence that has enwrapped the country for the past years has made crimes an everyday occurrence (Asfura-Heim & Espach, 2013). Eyewitnesses of these crimes need to be appropriately interviewed in order to enhance their report of the event witnessed. The violence that is present in Mexico, however, can affect victims/witnesses willingness to report crime. The results from Study 1 show that participants from Mexico are less willing to report a crime than participants from the UK. Therefore a smaller number of victims/witness will be willing to provide a testimony. Police officers then need to gather as much reliable information as possible from those that are willing to report a crime. Typically police officers will interview victims/witnesses of a crime. In some affluent countries the use of a CI has proven to be a successful interviewing technique (see section 1.3.4. The Cognitive Interview around the world and the need to test it in Mexico for more details). Nonetheless, little research has been done in developing countries. In addition, the results found in Study 1, where willingness to report crime is lower in a developing country compared to an affluent country, may mean that the CI is less useful amongst these populations.

This study will test the effectiveness of a CI with Mexican participants by comparing it against participants from the UK. In addition, this study will compare the efficacy of the CI mnemonic techniques amongst participants in the UK and Mexico. The following paragraphs briefly explain the issues found in the current literature.

The original CI is composed of four cognitive mnemonic techniques and additional interviewing techniques. It aims to retrieve more correct information than other interview procedures (Geiselman et al., 1985; Geiselman et al., 1986) (see section 1.3. The Cognitive Interview). It has been found to improve memory recall of correct and accurate details more so than control interviews (see Köhnken et al., 1999; Memon & Bull, 1991; Memon et al., 2010 for reviews). Many affluent countries have tested the CI and even incorporated some of its techniques into interviewing protocols and manuals for police officers and other law enforcers. Brazil, a developing country, also tested the CI and found it to be more efficient (it elicited more correct details without an increase in incorrect or confabulated details) than a SI. Other developing countries have not yet tested the CI. Mexico, with its low crime reporting rates, its increasing violence and lack of interview protocols for police officers would likely benefit from such an interview. Nonetheless before a recommendation to incorporate the CI into police protocols it is important to test its efficacy in a Mexican sample. This study will attempt to assert the effectiveness a CI has on recall of details amongst participants from Mexico by comparing their performance against participants from the UK.

This study will also seek to understand the contribution each mnemonic technique has towards the CI. There are some inconsistencies in the studies that test the efficacy of the CI mnemonic techniques. The evidence found by various studies is conflicting and thus they don't allow for definitive conclusions to be reached. Some researchers agree that it is the combination of the four mnemonic techniques that make the CI superior to other control interviews (Geiselman et al., 1986; Milne & Bull, 2002). The following paragraphs provide an overview of studies that have attempted to further understand the role each mnemonic technique has within the CI (for more details on these studies see section 1.3.4.2. Analysis of the individual components of the Cognitive interview).

One of the first studies that evaluated some of the mnemonic techniques was Geiselman et al.'s (1986) study, experiment 2. In this study the authors evaluate just the CRI and

RA techniques against a full CI and a control interview. They found that the full CI was more successful at retrieving correct information than the control interview as were the CRI and the RA techniques. The results prompted the authors to state that the CI was more effective than the CRI and the RA techniques, while all were more effective than the control interview. Nonetheless this study had some methodological drawbacks in that it did not test the efficacy of the CO and CP techniques. The authors stated that the CO and CP mnemonics required no further testing, as evidence was found in the audio (recording of the interviews) that proved their success. No evidence was provided in their study to confirm this statement hence the current study will examine this issue.

Other studies have tested each technique paired with a free narrative against a control interview (Memon et al., 1995; Milne & Bull, 2002), finding that the mnemonic techniques perform no better than the control instruction. Nonetheless, they have failed to compare these to a full CI and as such these experiments are not a true test of the cognitive interview as it is intended to be undertaken.

Several studies show that a combination of the CRI and RA techniques in addition to CI instructions are more efficient than an SI and less time consuming than a CI (Bensi et al., 2011; Davis et al., 2005; Milne & Bull, 2002). Furthermore a CI omitting the CO and CP techniques plus an additional retrieval attempt perform better than a SI (Davis et al., 2005; Ginet & Verkamp, 2007). Although these results are promising, showing that a CRI and RA techniques combined perform better than a SI, the additional retrieval attempts used need to be tested further before they can be widely employed. The main criticism of the CI by practitioners is the time it takes to administer it, therefore, a shorter version could be more appealing to the police.

In studies testing the mnemonic techniques, the efficacy of the CO technique is unclear. Although the CO technique has been omitted in some studies (see above), benefits of the CO technique have also been found. For example, it enhances correct recall of script inconsistent details (details that would not be expected as part of the event sequence) while eliciting fewer errors than other techniques (Ginet et al., 2014), and it has a higher accuracy rate than other interview types (Davis et al., 2005). In contrast to these studies, Dando et al., (2011) have found that the CO mnemonic produces more confabulated details and Dando et al. along with Davis et al. have both found it elicits less correct

details than RA instructions. So far these studies have provided some conflicting conclusions on the effectiveness and contribution of the mnemonic techniques in a CI.

Research on the mnemonic techniques has also classified the type of information that the different mnemonics, and combinations of mnemonics, elicit. The details are commonly classified into location/scenery, action, person, temporal order and objects. This classification helps better understand the type of details the CI enhances compared to other interview types. Memon et al. (1995) found that the CP mnemonic helps elicit more location details than the CRI mnemonic. Bensi et al. (2011) found that more person details were reported with a RA + mental imagery and a RA + CRI + mental imagery interviews than the RA + CRI combination. They also found that a full CI elicits more action details than the combinations tested and a SI. Verkampt and Ginet (2010) found that more location, person and action details were reported when employing the full CI or some modification of it (eliminating one of the following components: CO, CRI, RA) than the SI. Although these results are promising, they are inconclusive and contradicting. While Verkampt and Ginet found that all their variations of the CI elicited more location, action and person details than the SI, Bensi et al. found that RA + mental imagery, RA + CRI + mental imagery with a SI and the full CI produces more person details than a RA + CRI. These studies found conflicting results. Verkampt and Ginet's study found the SI was outperformed and Bensi et al found the SI elicits more details than certain combinations of CI mnemonics. Although these results are different and invite for a detailed examination of them, a strict comparison cannot be undertaken as the studies had different participant age groups and different time intervals between viewing the event and the interview.

A need to continue testing the mnemonic techniques of the CI is still imperative for several reasons. First, the results from various studies mentioned above are contradictory. Some researchers point towards an equal contribution of each of the mnemonic techniques to the CI superiority (Milne & Bull, 2002, Memon et al, 1995). Others show that a combination of the CRI + RA techniques along with appropriate rapport, appropriate communication skills and appropriate questioning is superior to a SI (Davis et al, 2005; Verkampt & Ginet, 2007). In addition, whether the CO technique is efficient or actually hinders recall is still unclear (Dando et al, 2011; Ginet et al, 2014).

The second issue is related to inadequate testing procedures. For example, the studies testing the efficacies of the mnemonic techniques are difficult to compare between each other as they are so different. While Milne and Bull (2002) and Memon et al. (1995) tested each mnemonic individually, they were paired with a free narrative instruction, which is not part of a typical CI and no other studies follow this pattern. In addition the instructions for the free narrative in Milne and Bull's study are unclear and Memon et al. provided prompts if the participant had neglected to report information concerning the perpetrator. These prompts in Memon et al.'s study could have given participants an advantage if they failed to report information in any interview condition (although they were intended to do the opposite) or unintentionally suggested someone else was part of the event (if the participant did not notice the perpetrator or something the perpetrator did). In other words, Memon et al., provided prompts for the participants to help them remember an important part of the event or a main character of the event. These prompts were given to participants in any interview condition; therefore it is possible that while one interview condition did not help the report of a certain character, the prompt helped the participant remember. In addition, studies that test combinations of techniques usually employ additional recall instructions in the form of additional retrieval attempts (Davis et al, 2005; Colomb & Ginet, 2012), mental imagery (Bensi et al., 2011), and cued recall (Verkampt & Ginet, 2010). Direct comparisons of the findings relating to these additional attempts are difficult as they have different instructions and hence are not comparable.

Third, related to more applied issues, it was found that not all studies classify the details reported into specific details (i.e., person, object, action, location/scenery, and temporal order). The studies that have attempted to classify these types of details report inconsistent results (Memon et al., 1995; Bensi et al., 2011). In addition, the number of studies that have classified specific types of details are limited. Thus making it difficult to understand which mnemonic technique or combination of techniques is best at eliciting certain types of specific details. Having a clear idea of which, if any, mnemonic technique is best at enhancing correct recall of a specific type of detail could help police officers in time restricted situations decide which technique to use in case person, object, action or scenery details is relevant.

Finally, police officers have reported that the CI takes longer to conduct than a SI and as they experience shortage of time to do their job, employing a full CI becomes more difficult (Kebbell et al., 1999; A. M. Wright, 2004). Police officers' reports concerning time are well supported; many studies have demonstrated that a CI indeed takes more time to complete than a SI (Bensi et al., 2011; Holliday et al., 2012; Mello & Fisher, 1996; Memon et al., 1995; Memon et al., 1997; Memon et al., 1997; A. M. Wright & Holliday, 2007a). In addition, studies show that police officers view the CO and CP mnemonic techniques as being the least effective from their perspective, and are therefore the least used (Dando et al., 2008; Kebbell et al., 1999). To address this issue some studies omit the CO and CP techniques, but add additional retrieval attempts (Davis et al., 2005; Ginet & Verkampt, 2007) finding these modified interviews superior to SI. Nonetheless, other studies show that the CO can be useful in retrieving script inconsistent details while eliciting fewer errors than other techniques (Ginet et al., 2014). It is therefore unclear whether omitting these mnemonics is beneficial. Thus the issue remains: which component/s account for the superiority of the CI over a SI?

The studies mentioned above are not only inconclusive as to which mnemonic technique makes the CI superior to the SI; they are also specific to developed countries. As mentioned previously, research on the CI techniques, has not been expanded to developing countries; Brazil is the only exception (Stein & Memon, 2006), but this research did not examine the individual mnemonic techniques merely the full CI. Therefore a need to test the CI and its mnemonic techniques for potential use in a country such as Mexico exists. Identifying which mnemonic technique proves most useful in aiding memory recall in participants from Mexico can help model a CI adapted to the population's needs.

4.1.1. The current study

The previous study (Study 1) showed that participants in Mexico are less willing to report a crime than participants from the UK. This represents an issue for police officers and other law enforcers in Mexico where interview protocols are scarce. If the CI is to be recommended for its use in Mexico, a series of studies testing its efficacy should be done. Although participants from Mexico are less willing to report a crime than

participants from the UK, does it follow that given the opportunity to report the crime; they would be unwilling to provide information as well? A comparison between participants' recall of a negative event (a crime) in the UK and Mexico was proposed. If Mexican people are less willing to report a crime (as found in Study 1), does this mean that they are less likely to give full accounts of the crime when they do report it, for example in a CI? In addition, are there certain mnemonic techniques of the CI that are more/less effective in the two populations? To begin a CI was conducted with both population samples. Additionally, as a further understanding of the contribution of each CI mnemonic technique to the complete interview was needed, combinations of the CI mnemonic techniques were tested.

The introduction of this current chapter outlines how the studies testing the efficacy of the CI mnemonic techniques are inconclusive and are difficult to compare between each other. In addition, most studies test the techniques paired with other instructions making it difficult to understand the contribution of each technique. The current study tested combinations of the CI mnemonic techniques: CRI + RA, RA + CO and RA + CP. These combinations eliminated the need for free narratives or additional retrieval attempts in order to conduct the CO and CP mnemonics, thus eliminating confusing results due to the additional instructions. In addition, this study compared these combinations of mnemonic techniques to a full CI.

Following the results found in study 1, where participants from Mexico are less willing to report crime than participants from the UK, a series of predictions were made concerning the effectiveness of the CI. It was predicted that participants from the UK would perform better during a CI than participants from Mexico. More specifically, it was predicted that participants from the UK would a) be more accurate, b) be more complete, c) report more correct details, d) report fewer incorrect details, and e) report fewer confabulated details than participants from Mexico.

In order to test the efficacy of mnemonic techniques in participants from the UK and Mexico, the previously mentioned combinations of techniques were created. A series of predictions were made concerning the effectiveness of these interview conditions. It was predicted that differences would be found between the combinations of mnemonic techniques and a full CI regarding the a) accuracy rate, b) completeness, c) number of

correct details, d) number of incorrect details and e) number of confabulated details. The direction of these differences is not specified as these are exploratory analyses.

This study also classified the details reported into free recall phase and questions phase. This allows to further understanding of the results obtained in the interview as a whole and helps determine where the source of effects is coming from (either the free recall phase or the questions phase) (Ginet & Verkampt, 2007). The details provided by the participant in the free recall phase form the basis of the questions for the questions phase; the questions are phrased using the same vocabulary and order of the narrative given during the free recall phase and are based solely on the information provided. Therefore if the participant fails to mention a person that appeared in the video, the interviewer cannot ask any questions regarding this person (even if the interviewer were familiar with the event). Hence, the questions phase depends directly on the free recall phase (Holliday & Albon, 2004; Holliday et al., 2012). Finally dividing the details reported into those provided within the free recall and questions phases has become common in multiple peer-reviewed studies testing the CI in order to more fully understand the results (Ginet & Verkampt, 2007; Holliday & Albon, 2004, Holliday et al., 2012, Holliday, 2003a, 2003b; A. M. Wright & Holliday, 2007a, 2007b; Dando et al., 2011; Dando et al., 2009).

In addition to classifying the details reported into free recall phase and questions phase, this study classified the reported information into person, object, action and scenery details (cf. similar procedures by Memon et al., 1995; Bensi et al., 2011). These classifications allow for more in-depth analyses. It was therefore predicted that differences would be found between the interview conditions according to type of details (person, object, action and scenery) for a) accuracy rate, b) completeness, c) number of correct details, d) number of incorrect details and e) number of confabulated details. These are exploratory analyses and therefore lack direction of prediction.

4.2 Method

4.2.1. Design

A 4 (Interview type: CI, CRI + RA, RA + CO, RA + CP) X 2 (Sample: UK, Mexico) between subjects factorial design was used.

4.2.2. Participants

A total of 120 university students (female and male), all psychology undergraduates from either first or second year participated in the study. There were 60 participants from the UK (M age = 20.15, SD = 4.68) and 60 participants from Mexico (M age = 19.37, SD = 2.80) distributed equally across conditions. They all received course credits for their participation. See CHAPTER 3. General Methods, for more details on the recruiting process.

4.2.3. Materials

The materials used for this study are outlined in CHAPTER 3. General Methods. Any differences will be mentioned. The video depicting a bag snatching was used, which contained a large number of quantifiable details. The video was presented on 19 inch screens and used headphones to reproduce sound. Also a questionnaire that measured emotions and audio-recorder were used.

4.2.3.1. Description of video

The video depicted a bag snatching. It began with a young woman coming up to a counter and being given a cup by the shopkeeper. The young woman then sits at a table and in the next scene she is looking at a painting on the wall. At this moment a young man appears, approaches her and snatches her bag. The young woman falls to the floor, the man leaves with her bag and in the end an older lady aids the young woman.

4.2.3.2. Description of questionnaire on emotions

The questionnaire used is described in CHAPTER 3. General Methods (see Appendix B). It served the purpose of misleading the participants into thinking that the study was examining responses to emotional videos, and thus distract them from the original purpose of the study. As it has no value for the present study, the results will not be presented or discussed.

4.2.3.3. Interview structures

The interviews followed a pre-set structure according to the mnemonic techniques they were to test (see Appendix F for interview protocols used). All interviews had a rapport phase, instructions (including transfer of control), a free recall phase (which included the appropriate mnemonic techniques for the given interview condition), a prompt (remember more?), a questions phase, a second prompt and a closure. Table 2 demonstrates the combinations of mnemonic techniques in each interview type.

Table 2. Use of mnemonic techniques by interview type

	Interview type			
	CI	CRI + RA	RA + CO	RA + CP
Free recall phase				
Context Reinstatement	X	X		
Report all	X	X	X	X
Change order	X		X	
Change perspective	X			X

4.2.4. Procedure

The present study was conducted by the researcher (a female in her late 20's). All participants were tested individually in two phases over two days. The study was conducted in two different laboratories, one for watching the video and the other for interviewing to prevent CRI effects from forming spontaneously (Milne & Bull, 2002). During Phase 1 participants filled out a consent form where they were informed about

the study, but they were misled to believe that the purpose of the study was to measure their emotional response to a video and weren't informed that they would be interviewed. Participants were instructed to watch the video while the researcher stepped out of the room. Participants then completed the questionnaire on emotions and were asked to return the following day.

Phase 2 took place after a 24 hour lapse. Participants were informed that they had been misled and that they were going to be interviewed about what they remember of the video. They were offered the alternative to leave the study while still keeping the course credits offered for participating (all participants agreed to stay and go ahead with the interview). They were then interviewed by the researcher, with random assigning to interview condition. Participants were then debriefed as to the objectives of the study, thanked for their participation and finally the researcher offered to answer any questions they might have about the study.

4.2.4.1. Instructions for the full Cognitive Interview

All the instructions for the interviews were read verbatim to ensure that the interviewer followed the same procedure throughout and did not transfer CI techniques from one interview type to the other. The instructions were given slowly with pauses to allow participants to concentrate on each request. The CI began with a rapport phase, followed by transfer of control and then the aims of the interview were introduced. The interviewer began the free recall phase with the instructions for CRI, followed by the RA, the CO and the CP instructions. To conclude with this phase a prompt to elicit more information was given.

The questions asked during questions phase were based on the information the participant gave during free recall phase. The participants were instructed to close their eyes and form a mental image of the object in question. Once the interviewer exhausted all the information available for questions, a final prompt was added. After no more information could be recalled, the researcher proceeded with the closure.

4.2.4.2. Instructions for the CRI + RA

The CRI + RA interview followed the same instructions and structure of the CI, except it omitted the CO and the CP mnemonic techniques. Once the participant concluded with the RA mnemonic, the researcher continued with the prompt. The questions phase, second prompt and closure were the same as in the CI.

4.2.4.3. Instructions for the RA + CO

The RA + CO interview followed the same procedure as the CI, except it omitted the CRI instruction at the beginning of the free recall phase and the CP at the end of this phase. All the rest of the instructions were the same as the CI.

4.2.4.4. Instructions for the RA + CP

With the exception of the CRI and the CO techniques, the RA + CP interview was identical to the CI. It omitted the previously mentioned techniques but included the RA and the CP. The questions phase followed the same procedure as the CI.

4.2.5. Transcribing, coding and scoring of the interviews

During the transcribing, coding and scoring of the interviews, a similar procedure as in Chapter 2, General Methods was followed, therefore only the differences will be highlighted.

Transcribing. All the interviews, excluding the rapport phase, were transcribed verbatim by a research assistant. The research assistant was blind to the experimental aims and was given a two hour training. A total of 12 transcribed interviews (10% of interviews selected randomly) were reviewed by the researcher to ensure proper transcribing was done.

Coding and scoring. The interviews were coded and scored by the researcher, following the procedure described in Chapter 2, General Methods. A research assistant coded and

scored 2 interviews of each condition to allow for inter-rater reliabilities to be calculated. The 16 interviews coded (2 interviews from each condition) and scored by the research assistant were selected randomly. The research assistant had been previously trained and was blind to the experimental aims of the study. Measures of inter-rater reliabilities were calculated for the total number of correct, incorrect and confabulated details, $r = .94$, $p < .001$, $r = .92$, $p < .001$ and $r = .94$, $p < .001$ respectively.

4.3. Results

4.3.1. Interview Analyses

Initially, to determine whether factors such as number of questions asked and duration of the interview were interfering with the results that were found, three separate ANCOVAs were performed. A series of three 4 (Interview type: CI, CRI + RA, RA + CO, RA + CP) X 2 (Sample: UK, Mexico) ANCOVAs with number of questions asked and duration as covariates were performed for total number of correct, incorrect and confabulated details.

The results of the ANCOVAs showed no significant effect of number of questions asked for total number of correct details, $F(1, 110) = 3.74$, $p > .05$, $\eta^2_p = .033$, incorrect details, $F(1, 110) = .01$, $p > .05$, $\eta^2_p = .000$ or confabulated details $F(1, 110) = .11$, $p > .05$, $\eta^2_p = .001$. Consequently the covariate number of questions asked was omitted in all the following analyses (cf. similar procedures by Dando et al., 2011; A. M. Wright & Holliday, 2007a). However a main effect of duration on the total number of correct details, $F(1, 110) = 65.57$, $p < .001$, $\eta^2_p = .363$, incorrect details, $F(1, 110) = 17.55$, $p < .001$, $\eta^2_p = .138$ and confabulated details, $F(1, 110) = 25.48$, $p < .001$, $\eta^2_p = .188$ was found.

To further investigate the duration effect, a 4 (interview type) X 2 (sample) ANOVA was performed on duration, and a main effect was found for interview type, $F(3, 112) =$

21.73, $p < .001$, $\eta^2_p = .368$, but not for sample, $F(1, 112) = .50$, $p > .05$, $\eta^2_p = .005$. Additionally, the interview type X sample interaction was not statistically significant, $F(3, 112) = .69$, $p > .05$, $\eta^2_p = .018$. A pairwise comparison of the means for each interview condition was performed. Bonferroni corrected post hoc tests were employed for these purposes, using the Bonferroni adjustment procedure in SPSS³, all significant values at $p < .05$. The full CI was significantly longer in duration ($M = 14.77$, $SE = 0.54$, 95% CI [13.70, 15.83]) than the other interview variations, CRI + RA ($M = 11.03$, $SE = 0.53$, 95% CI [9.97, 12.10]), RA + CO ($M = 9.83$, $SE = 0.53$, 95% CI [8.77, 10.90]) and the RA + CP ($M = 9.13$, $SE = 2.39$, 95% CI [8.07, 10.20]) (See Table 33 for adjusted means). Given the differences observed across interview type, duration will be included as a covariate in all of the analyses that follow. All the values displayed forthwith correspond to adjusted means by duration, SE and 95% CI [...,...] that will be expressed with squared brackets only (e.g., [...,...]).

4.3.2. Accuracy

During the interview, participants recalled what happened during the witnessed event. The degree to which this information corresponds to what really happened is referred to as accuracy (Fisher et al., 2002). Following Holliday et al. (2012) and Holliday's (2003a) procedure, the accuracy rate for each interview was calculated by dividing the proportion of the total correct details by the proportion of total details in each interview type and population. The proportion of total correct details was calculated by dividing the total number of correct details recalled by the total number of details from the template (the list of every detail present in the video). The proportion of total details was calculated by dividing the total overall number of details recalled by the total number of details from the template.

³ In SPSS calculations of pair-wise comparisons, using the Bonferroni post hoc tests, have adjusted p values. SPSS will multiply the p value of the Least Significant differences (LSD) by the number of pair-wise tests performed and produce a new p value that can be safely interpreted adhering to the $p < .05$ criterion.

Table 3. Adjusted mean (*SE*) duration by interview type and sample

Duration (minutes)	Sample								
	UK			Mexico			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
CI	15.13	(0.76)	[13.63, 16.64]	14.40	(0.76)	[12.89, 15.91]	14.77	(0.54)	[13.70, 15.83]
CRI + RA	11.00	(0.76)	[9.49, 12.51]	11.07	(0.76)	[9.56, 12.58]	11.03	(0.54)	[9.97, 12.10]
RA + CO	9.33	(0.76)	[7.86, 10.84]	10.33	(0.76)	[8.83, 11.84]	9.83	(0.54)	[8.77, 10.90]
RA + CP	8.53	(0.76)	[7.03, 10.04]	9.73	(0.76)	[8.23, 11.24]	9.13	(0.54)	[8.07, 10.20]
Total	11.00	(0.38)	[10.25, 11.75]	11.38	(0.76)	[10.63, 12.14]			

$$Accuracy = \frac{(Total\ correct\ details \div Total\ details\ template)}{(Total\ overall\ details \div Total\ details\ template)}$$

A 4 (interview type) X 2 (sample) ANCOVA was performed on accuracy with duration as a covariate. A main effect was found for interview type, $F(3, 111) = 2.94, p < .05, \eta^2_p = .074$. The main effect for sample was not significant, indicating that there was no difference in accuracy across samples $F(1, 111) = .45, p > .05, \eta^2_p = .004$. Additionally, the interview type X sample interaction was also not significant, $F(3, 111) = .30, p > .05, \eta^2_p = .008$.

To examine the interview effect in more detail, mean accuracy for each of the interview conditions was compared pairwise. Bonferroni corrected post hoc tests were employed for these purposes. Table 3 provides adjusted means for each type of interview. The RA + CP interview had a higher accuracy rate ($M = .85, SE = .01, [0.82, 0.88]$) than the RA + CO ($M = .80, SE = .01, [0.77, 0.82]$). No other pairwise comparisons were significant.

To understand where these differences in accuracy rates are coming from, the interviews were divided into two phases, free recall phase and questions phase (see section 4.1.1. The current study, for a thorough explanation). Accuracy rates were then tested for each interview phase. Table 4 provides the adjusted means for accuracy rates across interview phases and for each interview type.

$$Free\ recall\ phase\ accuracy = \frac{(Total\ free\ recall\ correct\ details \div Total\ details\ template)}{(Total\ overall\ details \div Total\ details\ template)}$$

$$Questions\ phase\ accuracy = \frac{(Total\ questions\ phase\ correct\ details \div Total\ details\ template)}{(Total\ overall\ details \div Total\ details\ template)}$$

Table 4. Adjusted mean (*SE*) accuracy rates and completeness by interview type and sample

	Sample								
	UK			Mexico			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Accuracy									
CI	0.82	(0.20)	[0.78, 0.86]	0.81	(0.20)	[0.77, 0.85]	0.82	(0.02)	[0.79, 0.85]
CRI + RA	0.83	(0.18)	[0.79, 0.87]	0.81	(0.18)	[0.77, 0.84]	0.82	(0.01)	[0.79, 0.84]
RA + CO	0.80	(0.19)	[0.77, 0.84]	0.79	(0.18)	[0.75, 0.83]	0.80	(0.01)	[0.77, 0.82]
RA + CP	0.84	(0.02)	[0.81, 0.88]	0.86	(0.02)	[0.82, 0.89]	0.85	(0.01)	[0.82, 0.88]
Accuracy FR									
CI	0.54	(0.03)	[0.49, 0.59]	0.53	(0.02)	[0.49, 0.58]	0.54	(0.02)	[0.50, 0.58]
CRI + RA	0.49	(0.02)	[0.45, 0.53]	0.50	(0.02)	[0.46, 0.54]	0.49	(0.01)	[0.46, 0.52]
RA + CO	0.53	(0.02)	[0.49, 0.57]	0.49	(0.02)	[0.44, 0.53]	0.51	(0.02)	[0.48, 0.54]
RA + CP	0.51	(0.02)	[0.47, 0.55]	0.49	(0.02)	[0.45, 0.53]	0.50	(0.02)	[0.47, 0.53]
Accuracy QP									
CI	0.25	(0.02)	[0.21, 0.30]	0.26	(0.02)	[0.22, 0.30]	0.26	(0.02)	[0.23, 0.29]
CRI + RA	0.35	(0.02)	[0.30, 0.39]	0.31	(0.02)	[0.27, 0.35]	0.33	(0.02)	[0.30, 0.36]
RA + CO	0.29	(0.02)	[0.25, 0.33]	0.31	(0.02)	[0.27, 0.35]	0.30	(0.02)	[0.27, 0.33]
RA + CP	0.35	(0.02)	[0.31, 0.40]	0.37	(0.02)	[0.33, 0.42]	0.36	(0.02)	[0.33, 0.39]
Completeness									
CI	0.07	(0.01)	[0.06, 0.08]	0.06	(0.01)	[0.05, 0.07]	0.07	(0.00)	[0.06, 0.07]
CRI + RA	0.07	(0.00)	[0.07, 0.09]	0.07	(0.00)	[0.06, 0.08]	0.08	(0.00)	[0.07, 0.08]
RA + CO	0.08	(0.01)	[0.07, 0.09]	0.08	(0.00)	[0.07, 0.09]	0.08	(0.00)	[0.07, 0.09]
RA + CP	0.08	(0.01)	[0.07, 0.09]	0.08	(0.00)	[0.07, 0.09]	0.08	(0.00)	[0.07, 0.09]

Note. FR refers to free recall. QP refers to questions phase.

Two separate 4 (interview type) X 2 (sample) ANCOVAs were performed on accuracy for the free recall phase and the questions phase, with the duration of each phase as the covariate. In order to achieve this, duration was computed separately for the free recall phase and for the questions phase. Each duration type was paired with its appropriate interview phase (free recall phase accuracy with duration free recall and questions phase accuracy with duration questions phase). Free recall phase accuracy did not significantly differ in relation to interview type, $F(3, 111) = 1.17, p > .05, \eta^2_p = .031$, or sample, $F(1, 111) = 1.01, p > .05, \eta^2_p = .009$. Additionally, the interview type X sample interaction was also not significant, $F(3, 111) = .61, p > .05, \eta^2_p = .016$.

For questions phase accuracy, a main effect was found for interview type, $F(3, 111) = 9.25, p < .001, \eta^2_p = .200$. Pairwise comparisons, applying Bonferroni post hoc tests revealed that the CRI + RA interview had a higher questions phase accuracy ($M = .33, SE = .02, [0.30, 0.36]$) than the CI ($M = .26, SE = .02, [0.23, 0.29]$). Additionally the RA + CP interview had a higher questions phase accuracy ($M = .36, SE = .02, [0.33, 0.39]$) than the CI and the RA + CO ($M = .30, SE = .02, [0.27, 0.33]$). No significant effect was found for sample, $F(1, 111) = .04, p > .05, \eta^2_p = .000$ or the interview type X sample interaction, $F(3, 111) = .72, p > .05, \eta^2_p = .019$.

4.3.3. Completeness

In order to calculate the completeness of each interview type the total number of correct details recalled by each participant was divided by the total number of possible details from the template (c.f. similar procedures by Holliday, 2003b; Holliday et al., 2012). The results of the analyses of completeness of interview could be confusing for police officers or other professionals interested in conducting a CI, as the values of completeness are very low as a result of the long list of possible details that could be reported. Nonetheless, the way completeness was measured allows for comparisons to be done between the UK and Mexico.

$$\text{Completeness} = \frac{\text{Total number of correct details}}{\text{Total details from template}}$$

A 4 (interview type) X 2 (sample) ANCOVA was conducted on the completeness of each interview with duration as a covariate. No significant effect was found for interview type, $F(3, 111) = 2.59, p > .05, \eta^2_p = .065$, sample, $F(1, 111) = 2.47, p > .05, \eta^2_p = .022$ or the interview type X sample interaction, $F(3, 111) = .75, p > .05, \eta^2_p = .020$. (See Table 4 for adjusted means).

Contrary to what was predicted, the results so far have not found any differences between the UK and Mexican samples in relation to accuracy rates or completeness (either in the full CI or in the other mnemonic combinations). Nonetheless, with regards to differences between interview conditions, the analyses performed indicate that the full CI takes longer to complete but does not have a higher accuracy rate than the other interviews using combinations of the CI mnemonics. The RA + CP interview has shown to have a high overall accuracy rate and a higher questions phase accuracy than the full CI and the RA + CO interviews. The CRI + RA interview also had a higher questions phase accuracy than the full CI. Yet, no differences were found for completeness of interview.

4.3.4. Recall of total number of details by interview type and sample

To further examine the performance of each type of interview, analyses of the total number of correct, incorrect and confabulated details by interview type and sample were conducted. These analyses allow further understanding of recall of detail type throughout interview type. Three separate 4 (interview type) X 2 (sample) ANCOVAs were performed on the total number of correct, incorrect and confabulated details collapsed across interview phases, with duration as a covariate. Table 5 shows the adjusted means for these details.

Table 5. Adjusted mean (*SE*) number of correct, incorrect and confabulated details across interview phases by interview type and sample

	Sample								
	UK			Mexico			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Correct details									
CI	67.90	(4.67)	[58.63, 77.17]	58.94	(4.52)	[49.99, 67.90]	63.42	(3.51)	[56.47, 70.37]
CRI + RA	73.33	(4.20)	[65.00, 81.66]	68.99	(4.20)	[60.66, 77.31]	71.16	(2.97)	[65.27, 77.05]
RA + CO	75.45	(4.31)	[66.91, 69.53]	77.90	(4.22)	[86.99, 86.27]	76.67	(3.05)	[70.62, 82.72]
RA + CP	78.97	(4.42)	[70.21, 87.74]	71.12	(4.27)	[62.66, 79.58]	75.05	(3.16)	[68.79, 81.31]
Total	73.91	(2.10)	[69.75, 78.08]	69.24	(2.10)	[65.07, 73.40]			
Incorrect details									
CI	14.47	(1.87)	[10.77, 18.18]	13.92	(1.81)	[10.33, 17.50]	14.20	(1.40)	[11.42, 16.97]
CRI + RA	14.64	(1.68)	[11.31, 17.96]	14.38	(1.68)	[11.05, 17.71]	14.51	(1.19)	[12.15, 16.86]
RA + CO	15.70	(1.72)	[12.28, 19.11]	18.62	(1.69)	[15.27, 21.97]	17.16	(1.22)	[14.74, 19.58]
RA + CP	13.47	(1.77)	[9.96, 16.97]	12.28	(1.71)	[8.90, 15.66]	12.87	(1.26)	[10.37, 15.38]
Total	14.57	(0.84)	[12.90, 16.23]	14.80	(0.84)	[13.13, 16.46]			
Confabulated details									
CI	0.87	(1.01)	[-1.14, 2.87]	-1.05	(0.98)	[-2.98, 0.87]	-0.09	(0.76)	[-1.59, 1.41]
CRI + RA	0.71	(0.91)	[-1.09, 5.51]	1.27	(0.91)	[-0.53, 3.07]	0.99	(0.64)	[-0.28, 2.26]
RA + CO	3.07	(0.93)	[1.22, 4.92]	2.23	(0.91)	[0.42, 4.04]	2.65	(0.66)	[1.34, 3.96]
RA + CP	3.33	(0.96)	[1.43, 5.22]	0.91	(0.92)	[-0.92, 2.73]	2.12	(0.68)	[0.77, 3.47]
Total	1.99	(0.45)	[1.09, 2.89]	0.84	(0.45)	[-0.06, 1.74]			

Correct details. No significant effect was found for total number of correct details by interview type, $F(3, 111) = 2.59, p > .05, \eta^2_p = .065$, or sample, $F(1, 111) = 2.47, p > .05, \eta^2_p = .022$. Additionally, no significant interaction of interview type X sample interaction, $F(3, 111) = .75, p > .05, \eta^2_p = .020$ was found.

Incorrect details. No significant effect was found for total number of incorrect details recalled by interview type, $F(3, 111) = 2.28, p > .05, \eta^2_p = .058$, sample, $F(1, 111) = .04, p > .05, \eta^2_p = .000$ or the interview type X sample interaction, $F(3, 111) = .60, p > .05, \eta^2_p = .016$.

Confabulated details. No main effect was found for total number of confabulated details recalled by interview type $F(3, 111) = 2.48, p > .05, \eta^2_p = .063$ or sample, $F(1, 111) = 3.22, p > .05, \eta^2_p = .028$. Additionally, no interaction effect of interview type X sample was found, $F(3, 111) = 1.06, p > .05, \eta^2_p = .028$.

Contrary to what was predicted, the analyses showed no differences in overall recall of correct, incorrect or confabulated details by interview type or sample. Nonetheless, as reported above, differences in accuracy rates were found between interview conditions. These differences in accuracy rates hinted at the possibility that differences between reporting of correct, incorrect and confabulated details by interview condition could exist. Therefore, recall of correct, incorrect and confabulated details in the free recall phase and questions phase were analysed.

4.3.5. Recall within specific interview phases: free recall phase and questions phase

To understand the contribution of each interview phase to overall performance of the interview, the total number of correct, incorrect and confabulated details was calculated independently for each interview phase. The free recall phase and questions phases were therefore analysed separately.

A series of 4 (interview type) X 2 (sample) ANCOVAs were performed on the total number of correct, incorrect and confabulated details recalled in the free recall phase and in the questions phase with duration as a covariate. Once again duration was calculated in minutes for each interview phase and included in the appropriate analysis (i.e., duration free recall was included in the free recall phase analysis and duration questions phase was included in the analysis of questions phase).

4.3.5.1. Free recall phase

Correct details. In the analysis of the free recall phase, a main effect was found for the total number of correct details recalled by interview type, $F(3, 111) = 7.13, p < .001, \eta^2_p = .162$. To examine the interview type effect in more detail, mean total number of correct details for each of the interview conditions was compared pairwise, employing Bonferroni corrected post hoc tests. The participants from the RA + CO interview recalled more correct details in the free recall phase ($M = 51.11, SE = 1.90, [47.35, 54.86]$) than the participants from the CI ($M = 35.73, SE = 2.44, [30.88, 40.57]$) and the CRI + RA ($M = 42.91, SE = 1.78, [39.39, 46.43]$) interviews. No other pairwise comparisons were significant. Table 6 shows the adjusted means for total number of correct, incorrect and confabulated details in the free recall phase.

Additionally a main effect of sample was also found, $F(1, 111) = 5.27, p < .05, \eta^2_p = .045$. Pairwise comparison, employing Bonferroni corrected post hoc tests, revealed that the participants from the UK remembered more correct details ($M = 46.32, SE = 1.25, [43.84, 48.80]$) than the participants from Mexico ($M = 42.25, SE = 1.25, [39.76, 44.73]$). No significant effect was found for total number of correct details recalled as a function of interview type X sample interaction $F(3, 111) = 1.05, p > .05, \eta^2_p = .028$.

Incorrect details. There was no significant effect for the total number of incorrect details recalled in the free recall phase by interview type $F(3, 111) = 1.78, p > .05, \eta^2_p = .046$, or sample $F(1, 111) = 1.74, p > .05, \eta^2_p = .015$. Additionally, the interview type X sample interaction was not significant, $F(3, 111) = .948, p > .05, \eta^2_p = .025$.

Table 6. Adjusted mean (*SE*) number for correct, incorrect and confabulated details in free recall phase by interview type and sample

	Sample								
	UK			Mexico			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Correct									
CI	39.52	(3.10)	[33.38, 45.65]	31.94	(2.94)	[26.10, 37.77]	35.73	(2.44)	[30.88, 40.57]
CRI + RA	43.80	(2.52)	[38.81, 48.78]	42.03	(2.51)	[37.07, 46.99]	42.91	(1.78)	[39.39, 46.43]
RA + CO	51.21	(2.62)	[46.02, 56.39]	51.00	(2.57)	[45.91, 56.10]	51.11	(1.90)	[47.35, 54.86]
RA + CP	50.76	(2.71)	[45.39, 56.13]	44.02	(2.60)	[38.87, 49.17]	47.39	(1.97)	[43.49, 51.29]
Total	46.32	(1.25)	[43.84, 48.80]	42.25	(1.25)	[39.76, 44.73]			
Incorrect									
CI	5.12	(1.08)	[2.98, 7.27]	4.13	(1.03)	[2.09, 6.17]	4.67	(0.86)	[2.93, 6.32]
CRI + RA	5.30	(0.88)	[3.55, 7.04]	4.63	(0.88)	[2.89, 6.36]	4.96	(0.62)	[3.73, 6.19]
RA + CO	6.24	(0.92)	[4.43, 8.05]	6.90	(0.90)	[5.12, 8.69]	6.57	(0.66)	[5.26, 7.86]
RA + CP	5.98	(0.95)	[4.10, 7.86]	3.71	(0.91)	[1.90, 5.51]	4.84	(0.69)	[3.48, 6.21]
Total	5.66	(0.44)	[4.79, 6.53]	4.84	(0.44)	[3.97, 5.71]			
Confabulated									
CI	-0.68	(0.46)	[-1.59, 0.22]	-1.35	(0.44)	[-2.22, -0.49]	-1.02	(0.36)	[-1.73, -0.30]
CRI + RA	0.24	(0.37)	[-0.50, 0.98]	0.58	(0.37)	[-0.16, 1.31]	0.41	(0.26)	[-0.11, 0.93]
RA + CO	1.80	(0.39)	[1.03, 2.56]	1.30	(0.38)	[0.55, 2.05]	1.55	(0.28)	[0.99, 2.10]
RA + CP	1.59	(0.40)	[0.80, 2.38]	0.73	(0.38)	[-0.03, 1.49]	1.16	(0.29)	[0.59, 1.74]
Total	0.74	(0.19)	[0.37, 1.10]	0.31	(0.19)	[-0.5, 0.68]			

Confabulated details. A main effect was found for the total number of confabulated details by interview type, $F(3, 111) = 8.86, p < .001, \eta^2_p = .193$. Pairwise comparisons, employing Bonferroni correct post hoc tests, showed that the participants from the CRI + RA interview confabulated more ($M = 0.41, SE = 0.26, [-0.11, 0.93]$) than the participants from the CI ($M = -1.02, SE = 0.36, [-1.73, -0.30]$). Additionally, the participants from the RA + CO interview had a higher number of confabulated details ($M = 1.55, SE = 0.28, [0.99, 2.10]$) than the participants from the CI and the CRI + RA interviews. Also, the participants from the RA + CP interview confabulated more ($M = 1.16, SE = 0.29, [0.59, 1.74]$) than the participants from the CI. No significant effect was found for the total number of confabulated details by sample $F(1, 111) = 2.60, p < .05, \eta^2_p = .023$ or the interview type X sample interaction $F(3, 111) = 1.02, p > .05, \eta^2_p = .027$.

4.3.5.2. Questions phase

Correct details. In the questions phase, no significant effect was found for the total number of correct information recalled by interview type, $F(3, 111) = 1.70, p > .05, \eta^2_p = .044$ or sample, $F(1, 111) = .08, p > .05, \eta^2_p = .001$. In addition, the interview type X sample interaction was not significant, $F(3, 111) = .63, p > .05, \eta^2_p = .017$. See Table 7 for adjusted means.

Incorrect details. No main effect was found for total number of incorrect details recalled by interview type, $F(3, 111) = 1.30, p > .05, \eta^2_p = .034$ or sample, $F(1, 111) = 1.25, p > .05, \eta^2_p = .011$. Additionally, no interaction effect of interview type X sample $F(3, 111) = .19, p > .05, \eta^2_p = .005$ was found.

Confabulated details. No significant effect for the total number of confabulated details reported by interview type, $F(3, 111) = .49, p > .05, \eta^2_p = .013$ or sample $F(1, 111) = 1.73, p > .05, \eta^2_p = .015$ was found. In addition, no interaction effect of interview type X sample, $F(3, 111) = .68, p > .05, \eta^2_p = .018$ was found.

Table 7. Adjusted mean (*SE*) number for correct, incorrect and confabulated details in the questions phase by interview type and sample

	Sample								
	UK			Mexico			Total		
	M	(SE)	95% CI	M	(SE)	95% CI	M	(SE)	95% CI
Correct									
CI	24.31	(2.63)	[19.11, 29.51]	23.45	(2.62)	[18.26, 28.63]	23.88	(1.86)	[20.20, 27.56]
CRI + RA	30.64	(2.62)	[25.45, 35.84]	27.02	(2.61)	[21.84, 32.20]	28.83	(1.85)	[25.17, 32.50]
RA + CO	25.52	(2.62)	[20.33, 30.72]	29.01	(2.62)	[23.83, 34.20]	27.27	(1.85)	[23.60, 30.93]
RA + CP	29.73	(2.64)	[24.50, 34.96]	28.65	(2.62)	[23.47, 33.83]	29.19	(1.86)	[25.51, 32.88]
Total	27.55	(1.31)	[24.96, 30.14]	27.03	(1.31)	[24.44, 29.62]			
Incorrect									
CI	8.76	(1.31)	[6.16, 11.35]	9.36	(1.30)	[6.78, 11.95]	9.06	(0.93)	[7.26, 10.89]
CRI + RA	9.36	(1.31)	[6.77, 11.95]	9.77	(1.30)	[7.18, 12.35]	9.56	(0.92)	[7.74, 11.39]
RA + CO	9.71	(1.31)	[7.12, 12.30]	11.89	(1.31)	[9.31, 14.48]	10.80	(0.92)	[8.98, 12.63]
RA + CP	7.85	(1.32)	[5.24, 10.46]	8.77	(1.30)	[6.19, 12.35]	8.31	(0.93)	[6.47, 10.15]
Total	8.92	(0.65)	[7.63, 10.21]	9.95	(0.65)	[8.66, 11.24]			
Confabulated									
CI	2.02	(0.68)	[0.68, 3.37]	0.65	(0.68)	[-0.69, 1.99]	1.34	(0.48)	[0.38, 2.29]
CRI + RA	0.57	(0.68)	[-0.77, 1.91]	0.67	(0.68)	[-0.67, 2.01]	0.62	(0.48)	[-0.33, 1.57]
RA + CO	0.97	(0.69)	[-0.37, 2.32]	0.98	(0.68)	[-0.37, 2.32]	0.97	(0.49)	[0.03, 1.92]
RA + CP	1.27	(0.68)	[-0.08, 2.62]	0.01	(0.68)	[-1.33, 1.35]	0.64	(0.48)	[-0.31, 1.59]
Total	1.21	(0.34)	[0.54, 1.88]	0.58	(0.34)	[-0.09, 1.25]			

In sum the analyses by each interview phase found that the participants from the UK reported more correct details than the participants from Mexico, but only in the free recall phase. The analyses also revealed that in the free recall phase the RA + CO interview, elicited more correct details than in the full CI and the CRI + RA interview. The CI reported fewer confabulated details compared to the CRI + RA, the RA + CO and the RA + CP interviews. Additionally the RA + CO reported more confabulated details than the CRI + RA. As no differences were found in relation to correct, incorrect and confabulated details in the questions phase, no further analyses on questions phase data will be done (cf. similar procedures by Ginet et al., 2014).

4.3.6. Recall of specific types of details in the free recall phase

The present study failed to find differences in total correct, incorrect and confabulated details in the interview as a whole and in the questions phases. Therefore following Ginet et al.'s (2014) procedure where the interview as a whole was not analysed in favour of analysing the free recall phase in-depth, analyses of recall of specific types of details of the present study will only include the free recall phase.

To further understand how the different interview types contribute to recall of specific types of details, a classification of type of details was done. The details recalled by the participants were divided into person, object, action and scenery (see explanation as to why the information was divided into these specific details in the introduction section). The total number of correct, incorrect and confabulated details recalled during the free recall phase was further analysed as a function of detail type: person, object, action and scenery (c.f. similar procedures by Holliday et al., 2012; Memon et al., 1997; Prescott, Milne, & Clarke, 2011)

A series of 4 (interview type) X 2 (sample) ANCOVAs was performed on the total number of correct, incorrect and confabulated details recalled in the free recall phase for each specific type of information: person, object, action and scenery, with the duration of the free recall entered as a covariate. Table 8 shows the adjusted means for these details.

Table 8. Adjusted mean (*SE*) number of specific types of details in the free recall phase by interview type and sample

	Sample								
	UK			Mexico			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Correct person									
CI	12.26	(1.45)	[9.39, 15.13]	8.10	(1.38)	[5.37, 10.82]	10.18	(1.14)	[7.91, 12.44]
CRI + RA	16.65	(1.18)	[14.32, 18.98]	14.86	(1.17)	[12.54, 17.18]	15.76	(0.83)	[14.11, 17.40]
RA + CO	19.34	(1.22)	[16.91, 21.76]	19.66	(1.20)	[17.28, 22.05]	19.50	(0.87)	[17.74, 21.26]
RA + CP	20.44	(1.27)	[17.93, 22.95]	16.09	(1.22)	[13.69, 18.50]	18.27	(0.92)	[16.44, 20.09]
Total	17.17	(0.59)	[16.01, 18.33]	14.68	(0.59)	[13.52, 15.84]			
Correct object									
CI	5.66	(0.89)	[3.89, 7.43]	6.64	(0.85)	[4.95, 8.32]	6.15	(0.71)	[4.75, 7.55]
CRI + RA	6.55	(0.73)	[5.11, 7.99]	7.25	(0.72)	[5.82, 8.69]	6.90	(0.51)	[5.89, 7.92]
RA + CO	6.67	(0.76)	[5.17, 8.16]	6.54	(0.74)	[5.07, 8.01]	6.60	(0.55)	[5.52, 7.69]
RA + CP	6.38	(0.78)	[4.83, 7.93]	6.52	(0.75)	[5.04, 8.01]	6.45	(0.57)	[5.32, 7.58]
Total	6.31	(0.36)	[5.60, 7.03]	6.74	(0.36)	[6.02, 7.45]			
Correct action									
CI	14.06	(1.12)	[11.85, 16.28]	12.92	(1.06)	[10.81, 15.03]	13.49	(0.88)	[11.74, 15.24]
CRI + RA	13.21	(0.91)	[11.41, 15.01]	15.38	(0.91)	[13.59, 17.17]	14.29	(0.64)	[13.02, 15.57]
RA + CO	16.44	(0.95)	[14.57, 18.31]	18.23	(0.93)	[16.79, 20.47]	17.53	(0.68)	[16.18, 18.89]
RA + CP	16.70	(0.98)	[14.76, 18.63]	15.07	(0.94)	[13.21, 16.93]	15.89	(0.71)	[14.48, 17.29]
Total	15.10	(0.45)	[14.20, 15.99]	15.50	(0.45)	[14.60, 16.40]			
Correct scenery									
CI	7.54	(0.87)	[5.80, 9.27]	4.29	(0.83)	[2.64, 5.94]	5.91	(0.69)	[4.54, 7.28]
CRI + RA	7.39	(0.71)	[5.98, 8.79]	4.54	(0.71)	[3.14, 5.94]	5.96	(0.50)	[4.97, 6.96]
RA + CO	8.77	(0.74)	[7.30, 10.23]	6.17	(0.73)	[4.73, 7.61]	7.47	(0.54)	[6.41, 8.53]
RA + CP	7.25	(0.77)	[5.74, 8.77]	6.33	(0.73)	[4.88, 7.78]	6.79	(0.56)	[5.69, 7.89]
Total	7.74	(0.35)	[7.03, 8.44]	5.33	(0.35)	[4.63, 6.03]			

Table 8. Adjusted mean (*SE*) number of specific types of details in the free recall phase by interview type and sample

	Sample								
	UK			Mexico			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Incorrect person									
CI	1.82	(0.58)	[0.66, 2.97]	0.79	(0.55)	[-0.31, 1.88]	1.30	(0.46)	[0.39, 2.21]
CRI + RA	1.82	(0.47)	[0.88, 2.76]	1.51	(0.47)	[0.57, 2.44]	1.66	(0.33)	[1.00, 2.33]
RA + CO	2.26	(0.49)	[1.29, 3.24]	2.65	(0.48)	[1.69, 3.61]	2.45	(0.36)	[1.75, 3.16]
RA + CP	2.63	(0.51)	[1.29, 3.64]	1.20	(0.49)	[0.23, 2.17]	1.92	(0.37)	[1.18, 2.65]
Total	2.12	(0.24)	[1.66, 2.60]	1.54	(0.24)	[1.07, 2.00]			
Incorrect object									
CI	0.75	(0.32)	[0.13, 1.38]	1.12	(0.30)	[0.53, 1.72]	0.94	(0.25)	[0.44, 1.44]
CRI + RA	0.70	(0.26)	[0.19, 1.21]	0.87	(0.26)	[0.37, 1.38]	0.79	(0.18)	[0.43, 1.15]
RA + CO	0.70	(0.27)	[0.17, 1.23]	0.81	(0.26)	[0.29, 1.34]	0.76	(0.19)	[0.37, 1.14]
RA + CP	0.41	(0.28)	[-0.14, 0.96]	0.43	(0.27)	[-0.10, 0.95]	0.42	(0.20)	[0.02, 0.82]
Total	0.64	(0.13)	[0.39, 0.90]				0.81	(0.13)	[0.56, 1.06]
Incorrect action									
CI	1.45	(0.51)	[0.48, 2.49]	1.41	(0.48)	[0.46, 2.37]	1.45	(0.40)	[0.66, 2.24]
CRI + RA	1.90	(0.41)	[1.09, 2.72]	1.91	(0.41)	[1.10, 2.72]	1.91	(0.29)	[1.33, 2.48]
RA + CO	2.58	(0.43)	[1.73, 3.43]	2.89	(0.42)	[2.05, 3.72]	2.76	(0.31)	[2.12, 3.35]
RA + CP	2.44	(0.44)	[1.56, 3.32]	1.58	(0.43)	[0.74, 2.43]	2.01	(0.32)	[1.37, 2.65]
Total	2.10	(0.21)	[1.70, 2.51]	1.95	(0.21)	[1.54, 2.36]			
Incorrect scenery									
CI	1.06	(0.28)	[0.52, 1.61]	0.81	(0.26)	[2.29, 1.33]	0.94	(0.22)	[0.50, 1.37]
CRI + RA	0.88	(0.22)	[0.43, 1.32]	0.34	(0.22)	[-0.11, 0.78]	0.61	(0.16)	[0.29, 0.92]
RA + CO	0.70	0.23	[0.23, 1.16]	0.56	0.23	[0.10, 1.01]	0.63	(0.17)	[0.29, 0.96]
RA + CP	0.51	(0.24)	[0.03, 0.98]	0.49	(0.23)	[0.03, 0.95]	0.50	(0.18)	[0.15, 0.85]
Total	0.79	(0.11)	[0.56, 1.01]	0.55	(0.11)	[0.33, .77]			

Table 8. Adjusted mean (*SE*) number of specific types of details in the free recall phase by interview type and sample

	Sample								
	UK			Mexico			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Confabulation person									
CI	-0.29	(0.19)	[-0.66, 0.08]	-0.48	(0.18)	[-0.83, -0.12]	-0.38	(0.15)	[-0.68, -0.01]
CRI + RA	0.08	(0.15)	[-0.22, 0.38]	0.15	(0.15)	[-0.15, 0.44]	0.11	(0.11)	[-0.10, 0.33]
RA + CO	0.83	(0.16)	[0.52, 1.15]	0.45	(0.16)	[0.14, 0.76]	0.64	(0.11)	[0.41, 0.87]
RA + CP	0.45	(0.16)	[0.13, 0.77]	0.21	(0.16)	[-0.10, 0.52]	0.33	(0.12)	[0.10, 0.57]
Total	0.27	(0.08)	[0.12, 0.42]	0.08	(0.08)	[-0.07, 0.23]			
Confabulation object									
CI	-0.02	(0.07)	[-0.15, 0.11]	-0.02	(0.06)	[-0.14, 0.10]	-0.02	(0.05)	[-0.12, 0.08]
CRI + RA	0.00	(0.05)	[-0.10, 0.11]	0.00	(0.05)	[-0.10, 0.11]	0.00	(0.04)	[-0.07, 0.08]
RA + CO	0.08	(0.06)	[-0.03, 0.19]	0.14	(0.05)	[0.03, 0.25]	0.11	(0.04)	[0.03, 0.19]
RA + CP	0.01	(0.06)	[-0.10, 0.13]	0.01	(0.06)	[-0.10, 0.12]	0.01	(0.04)	[-0.07, 0.09]
Total	0.02	(0.03)	[-0.04, 0.07]	0.03	(0.03)	[-0.02, 0.09]			
Confabulation action									
CI	-0.21	(0.17)	[-0.55, 0.13]	-0.28	(0.16)	[-0.61, 0.05]	-0.25	(0.14)	[-0.52, 0.03]
CRI + RA	0.06	(0.14)	[0.21, 0.79]	0.21	(0.14)	[0.18, 0.75]	0.13	(0.10)	[-0.06, 0.33]
RA + CO	0.50	(0.15)	[0.21, 0.79]	0.47	(0.14)	[0.18, 0.75]	0.49	(0.11)	[0.28, 0.70]
RA + CP	0.50	(0.15)	[0.20, 0.80]	0.16	(0.15)	[-0.13, 0.44]	0.33	(0.11)	[0.11, 0.55]
Total	0.21	(0.07)	[0.07, 0.35]	0.14	(0.07)	[-0.00, 0.28]			
Confabulation scenery									
CI	-0.16	(0.17)	[-0.49, 0.17]	-0.58	(0.16)	[-0.90, -0.26]	-0.37	(0.13)	[-0.63, -0.11]
CRI + RA	0.10	(0.14)	[-0.17, 0.38]	0.22	(0.14)	[-0.05, 0.49]	0.16	(0.10)	[-0.03, 0.35]
RA + CO	0.38	(0.14)	[0.10, 0.67]	0.25	(0.14)	[-0.03, 0.52]	0.32	(0.10)	[0.11, 0.52]
RA + CP	0.63	(0.15)	[0.34, 0.92]	0.36	(0.14)	[0.08, 0.64]	0.49	(0.11)	[0.28, 0.71]
Total	0.24	(0.07)	[0.11, 0.38]	0.06	(0.07)	[-0.08, 0.20]			

Correct person details. A main effect of interview type was found for the total number of correct person details, $F(3, 111) = 11.54, p < .001, \eta^2_p = .238$. Pairwise comparisons employing Bonferroni corrected post hoc tests, showed that the participants from the RA + CO interview recalled more correct person details ($M = 19.50, SE = 0.89, [17.74, 21.26]$) than the CRI + RA interview ($M = 15.75, SE = 0.83, [14.11, 17.40]$). Moreover the CRI + RA, the RA + CO and the RA + CP ($M = 18.27, SE = 0.92, [16.44, 20.09]$) interviews all recalled more correct person details than the CI ($M = 10.18, SE = 1.14, [7.91, 12.44]$).

In addition a main effect of sample was found, $F(1, 111) = 9.03, p < .005, \eta^2_p = .075$, a pairwise comparison, employing Bonferroni post hoc tests, revealed that the participants from the UK remembered more correct person details ($M = 17.17, SE = 0.59, [16.01, 18.33]$) than the participants from Mexico ($M = 14.68, SE = 0.59, [13.52, 15.84]$). No significant effect of interview type X sample interaction was found for the total number of correct person details recalled, $F(3, 111) = 1.78, p > .05, \eta^2_p = .046$.

Correct object details. No significant effect of interview type, $F(3, 111) = .30, p > .05, \eta^2_p = .008$, sample, $F(1, 111) = .68, p > .05, \eta^2_p = .006$, or interview type X sample interaction, $F(3, 111) = .24, p > .05, \eta^2_p = .006$ was found for the total number of correct object details.

Correct action details. A significant effect of interview type was found for the total number of correct action details, $F(3, 111) = 5.11, p < .005, \eta^2_p = .121$. Pairwise comparisons, applying Bonferroni post hoc tests showed that the RA + CO interview reported more correct action details ($M = 17.53, SE = 0.68, [16.18, 18.89]$) than the CI ($M = 13.49, SE = 0.88, [11.74, 15.24]$) and the CRI + RA ($M = 14.29, SE = 0.64, [13.02, 15.57]$) interviews. No other pairwise comparisons were significant. No significant effect on the total number of correct action details recalled by sample, $F(1, 111) = .39, p > .05, \eta^2_p = .003$ or the interview type X sample interaction, $F(3, 111) = 2.61, p > .05, \eta^2_p = .066$ was found.

Correct scenery details. No main effect was found for interview type, $F(3, 111) = 1.60, p > .05, \eta^2_p = .041$ for the total number of correct scenery details. However, a significant difference of sample was found for the total number of correct scenery details recalled,

$F(1, 111) = 22.99, p < .001, \eta^2_p = .172$. Pairwise comparisons employing Bonferroni post hoc tests revealed that the UK participants recalled more correct scenery details ($M = 7.74, SE = 0.35, [7.03, 8.44]$) than the participants from Mexico ($M = 5.33, SE = 0.35, [4.63, 5.03]$). No significant effect was found for the total number of correct scenery details recalled by interview type X sample interaction, $F(3, 111) = 1.04, p > .05, \eta^2_p = .027$.

Incorrect person details. No significant difference of interview type, $F(3, 111) = 1.34, p > .05, \eta^2_p = .035$, sample, $F(1, 111) = 3.19, p > .05, \eta^2_p = .028$ or interview type X sample interaction, $F(3, 111) = 1.45, p > .05, \eta^2_p = .038$ was found for the total number of incorrect person details.

Incorrect object details. No significant effect of interview type, $F(3, 111) = .98, p > .05, \eta^2_p = .026$, sample, $F(1, 111) = .86, p > .05, \eta^2_p = .008$ or interview type X sample interaction, $F(3, 111) = .16, p > .05, \eta^2_p = .004$ was found for the total number of incorrect object details.

Incorrect action details. No significant difference was found for the total number of incorrect action details by interview type, $F(3, 111) = 2.26, p > .05, \eta^2_p = .058$, sample, $F(1, 111) = .28, p > .05, \eta^2_p = .003$ or interview type X sample interaction, $F(3, 111) = .72, p > .05, \eta^2_p = .019$.

Incorrect scenery details. There was no significant difference of interview type, $F(3, 111) = .67, p > .05, \eta^2_p = .018$, sample, $F(1, 111) = 2.26, p > .05, \eta^2_p = .020$ or interview type X sample interaction, $F(3, 111) = .51, p > .05, \eta^2_p = .014$ found for the total number of incorrect scenery details.

Confabulated person details. A significant difference of interview type was found for the total number of confabulated person details recalled, $F(3, 111) = 8.50, p < .001, \eta^2_p = .187$. Pairwise comparisons, employing Bonferroni post hoc tests, revealed that the participants from the RA + CO interviews reported more confabulated details ($M = .64, SE = 0.11, [0.41, 0.87]$) than the participants from the CI ($M = -.38, SE = 0.15, [-0.68, -0.09]$) and the CRI + RA ($M = .11, SE = 0.11, [-0.10, 0.33]$) interviews. In addition, the RA + CP ($M = .33, SE = 0.12, [0.10, 0.57]$) interview reported more confabulated

details than the CI. No significant effect of sample, $F(1, 111) = 2.94, p > .05, \eta^2_p = .026$ or interview type X sample interaction, $F(3, 111) = .79, p > .05, \eta^2_p = .021$ was found for the total number of confabulated person details.

Confabulated object details. No main effect of interview type, $F(3, 111) = 1.88, p > .05, \eta^2_p = .048$, or sample, $F(1, 111) = .17, p > .05, \eta^2_p = .001$ was found. In addition, no interaction effect of the interview type X sample, $F(3, 111) = .19, p > .05, \eta^2_p = .005$ was found for the total number of confabulated object details.

Confabulated action details. A main effect of interview type, $F(3, 111) = 4.99, p < .005, \eta^2_p = .119$ was found for the total number of confabulated action details recalled. Pairwise comparisons, employing Bonferroni post hoc tests, showed that the participants from the RA + CO ($M = .49, SE = 0.11, [0.28, 0.70]$) and the RA + CP ($M = .33, SE = 0.11, [0.11, 0.55]$) interviews confabulated more than the participants from the CI ($M = -.25, SE = 0.14, [-0.52, 0.03]$). No other pairwise comparisons were significant. No significant effect of sample, $F(1, 111) = .57, p > .05, \eta^2_p = .005$ or interview type X sample interaction, $F(3, 111) = 1.07, p > .05, \eta^2_p = .028$ was found for the total number of confabulated action details.

Confabulated scenery details. A significant difference of interview type was found for the total number of confabulated scenery details recalled, $F(3, 111) = 6.69, p < .001, \eta^2_p = .153$. Pairwise comparisons, employing Bonferroni post hoc tests, revealed that the participants from the CRI + RA ($M = .16, SE = 0.10, [-0.03, 0.35]$), the RA + CO ($M = .31, SE = 0.10, [0.11, 0.52]$) and the RA + CP ($M = .49, SE = 0.11, [0.28, 0.71]$) interviews reported more confabulated details than the participants from the CI ($M = -.37, SE = 0.13, [-0.63, -0.11]$). No significant effect of sample, $F(1, 111) = 3.46, p > .05, \eta^2_p = .030$ or interview type X sample interaction, $F(3, 111) = .139, p > .05, \eta^2_p = .036$ was found for the total number of confabulated person details.

The analyses of person, object, action and scenery types of details in the free recall phase found some significant results. As was predicted the participants from the UK reported more correct details than the participants from Mexico, specifically person and scenery details. In addition, it was found that the full CI was outperformed by the RA + CO interview in relation to correct action details. No differences were found in relation

to incorrect details by interview type and specific details. Nonetheless, the full CI was found to protect against person and action confabulated details. Finally, the CRI + RA, RA + CO and the RA + CP have all shown that they improve participants' recall of correct person details, yet they all increase participants report of confabulated details, relative to the full CI.

4.4. Discussion

This study tested the effects of the CI and combinations of its mnemonic techniques on samples from different populations, namely Mexico and the UK. In addition, it examined the efficacy of mnemonic techniques of the full CI in order to determine which combination of CI mnemonic provides the best results in recall of details from the witnessed event. Initially there were no differences found in the number of questions asked across the four interview types and the two samples, nonetheless differences were found for duration of interview in minutes. As is commonly found (e.g., Bensi et al., 2011; Holliday et al., 2012; Mello & Fisher, 1996; Memon et al., 1995; Memon et al., 1997; A. M. Wright & Holliday, 2007a) , the CI proved to take longer to complete than other interview types, this comes as no surprise as the other interview types only included the RA instruction and one of either the CRI, CO or CP mnemonic technique instructions. Duration was included as a covariate to control for any differences that could be due to the additional time it takes to complete the CI thus giving the participant more opportunity to recall and report the event (see Howell, 2009 for explanation on covariates).

4.4.1. Recall amongst participants from the UK and Mexico

Initially, no differences were found for memory recall in the CI between the participants from the UK and Mexico. In addition, no differences between the combinations of mnemonics were found in the UK and Mexican participants, although a general tendency for participants from the UK to report more details regardless of interview

type (CI, CRI + RA, RA + CO, RA + CP) was found. The following paragraphs discuss these results in more depth.

Regardless of interview type there were no differences found in the total number of correct, incorrect and confabulated details recalled by participants in the UK and Mexico. This is in direct contrast with what was predicted. It provides evidence that the CI can potentially be used as a successful interviewing technique in participants from Mexico. Previous research has shown that the CI is effective with British participants (Holliday, 2003b; Holliday et al., 2012; Memon et al., 1995; Memon et al., 1997; Memon et al., 1997; Milne & Bull, 2001; Milne & Bull, 2002) therefore finding no differences in recall between the two samples tentatively suggests the CI may be effective in a Mexican population. In addition no differences were found for accuracy rates and completeness of interview between Mexican and UK participants. This again suggests that the CI techniques could be successful amongst the Mexican population, despite their reluctance to report crime.

However, a difference was found as a function of sample for the total correct details reported in the free recall phase, where participants volunteer information freely. The participants from the UK recalled a greater number of correct details than the participants from Mexico. Why has this happened in the free recall phase and not for the overall interview? A possible explanation stems from the ever present violence that enwraps the country of Mexico (Mexico security memo: Rising violence in Cancun, 2013; Asfura-Heim & Espach, 2013) where not even journalists can report the crimes that are happening without fear of retaliation (Relly & González, 2014). Furthermore, as was found in Study 1, participants from Mexico are less willing to report a crime than participants from the UK. To support the findings in the present study and Study 1, we need only observe that during 2012, an astonishing 92.1% of crimes went unreported, either because the population distrusted the authorities or because it was considered a waste of time (*Encuesta nacional sobre victimización y percepción sobre seguridad pública, 2013*, 2013). This reinforces the findings that eyewitnesses are reluctant to give testimony of the events they witnessed either for fear of retaliation or the idea that their testimony is irrelevant to the justice system. Could this be extended in the population to such degree that not even participants in controlled laboratory studies are willing to testify? The answer to this question requires a study

and reflection of its own. However, an exploration of this nature is outside the scope of this study.

Interestingly, more correct person and scenery details were recalled in the sample from the UK than the sample from Mexico during the free recall phase. Again these results lead to a belief that participants from Mexico might be withholding information. The results of Study 1 can be drawn upon here; the main reason stated by participants from Mexico for not reporting a crime is fear of retaliation/extortion. Reluctance to report person details could therefore be seen as a protective measure for the victim/witness. Unwillingness to report scenery details could potentially follow the same pattern of self-protection.

Having failed to find differences in memory recall across interview phases, and finding participants from the UK reporting more correct details in the free recall phase would then imply that the questions phase is critical for participants from Mexico, as this is where the lack of correct details reported in the free recall phase is countered. It would therefore be expected to find Mexican participants performing well in the questions phase. Nonetheless, no differences were found between the report of correct, incorrect and confabulated details amongst the participants from the UK and Mexico. These incongruences can perhaps be explained by the duration of the questions phase interview. If participants from Mexico took longer to report information during the questions phase than did the participants from the UK, the use of duration as a covariate could have over clouded the effect of interview type so as to not show an effect (Kachigan, 1991; Miller & Chapman, 2001).

4.4.2. Interview types

As was predicted, differences were found between the CI mnemonic techniques and the full CI. Results showed that accuracy was higher in the RA + CP interview than in the RA + CO interview, this is consistent with Milne & Bull (2002), who found that the CP instruction had the highest accuracy rate.

Regardless of interview type, there were no differences found in the total number of correct, incorrect and confabulated details recalled or completeness of interview. The null finding reported here is in direct contrast with Geiselman et al.'s (1986) study where the full CI produced more correct details than CRI and RA interviews. Failing to find differences between the combination of mnemonic techniques was rather expected as Milne and Bull (2002) and Memon et al. (1995) found no differences in recall of correct or incorrect details across interview conditions (CRI, RA, CO or CP paired with an initial free narrative).

In the present study when duration is controlled as a covariate, it was found that the CRI, CO and CP mnemonic components, in combination with the RA, perform at the same level of completeness and total number of correct, incorrect and confabulated details recalled as a full CI. These results suggest that it is possible to conduct an effective modified version of the CI, omitting some mnemonic techniques.

During the free recall phase, the full CI did not produce more correct details the combinations of techniques tested. In fact, it performed worse than the RA + CO interview in relation to correct details. Nonetheless, it did help lower the report of confabulated details. The CI produced less confabulated information compared to the CRI + RA, the RA + CO and the RA + CP interview types. Specifically, it lowered the report of person and action confabulated details during the free recall phase.

Regarding the results found for the combinations of mnemonic techniques during the free recall phase, participants recalled a greater number of correct details in the RA + CO interview than in the CRI + RA interview. The results found in the current study support Tulving's (1974) Multiple Retrieval Paths theory; where recalling the event in reverse order can potentially activate different retrieval clues leading to additional information being reported. In addition, the results concur with Bensi et al. (2011) who found that a second recall in reverse order (i.e., CO) improves report of correct details compared to a motivated recall and is direct contrast with Dando et al (2011) who found that the interviews that included the CO techniques elicited less correct information. On the other hand Ginet et al. (2014), found a CRI instruction elicited more correct information than a Report everything (i.e., RA), a CO and a CP instructions in a second free recall, moreover, Davis et al.'s (2005) study shows that a motivated retrieval

attempt elicited more correct information than a CO instruction, although these results are collapsed across interview phases. There are various methodological (sample, procedure, time retention intervals) and analytical strategy (analyses across interview, specific details) similarities between the current study and Bensi et al.'s that can explain similar results, while more differences are found between the present study and Ginnet et al.'s and Davis et al.'s (different retention interval, analysis strategy).

Although it was expected to find differences for the total number of incorrect details reported amongst combination of techniques, this was not found. However, differences for the total number of confabulations were found. The CRI + RA produced less confabulated information than the RA + CO. These results do not support the findings of Bensi et al. (2011) and Colomb & Ginnet (2012), who reported no differences in confabulations across their interview types. It is important to point out that the interview types (shortened versions of CI) from these studies differ from the ones tested here (combinations of CI mnemonic techniques), thus a strict comparison cannot be made.

In order to understand where the differences were coming from in the free recall phase, further analyses of the types of details recalled were performed. Few studies that test the efficacy of the CI mnemonic components categorize and analyse specific details of person, action, object and scenery (see Bensi et al., 2011; Colomb & Ginnet, 2012; Memon et al., 1995; Verkampt & Ginnet, 2010). Differences were found for the total number of correct person details, after controlling for duration free recall as a covariate, the CRI + RA, the RA + CO and the RA + CP interviews all reported more details than the CI, additionally the RA + CO interview reported more details than the CRI + RA interview. It is possible that the CI performed worse than the other interview conditions due to the use of duration as a covariate. Contrary to these findings, Bensi et al. (2011) stated that a Report everything + CRI interview reported fewer person details than a CI across interview phases, but found no such differences in a first recall attempt. Bensi et al.'s results should be interpreted with caution, as the study did not control for duration as a covariate.

During the free recall phase a greater number of correct action details was found in the RA + CO interview than in the CI and the CRI + RA interview. These results differ from other studies (Bensi et al., 2011; Colomb & Ginnet, 2012; Colomb & Ginnet, 2012;

Verkampt & Ginet, 2010) where a full CI and a partial CI with guided peripheral focus report more correct action details than other combinations of CI techniques. It comes as no surprise that the CO mnemonic technique improves recall of correct person and action details, as this technique enables multiple retrieval pathways that allow recall of details otherwise forgotten, forming a more complete report of the event (Tulving, 1974). In other words, as the CO and CP are intended to activate multiple retrieval paths that traditional forward recall and/or first person perspective might not achieve, they therefore can aid in the recall of person and/or action details that could have otherwise been overlooked. The CRI and the RA, on the other hand, are intended to create an overlap of cues available to activate memory traces (Memon & Bull, 1991) based on the Encoding Specificity Principle (Tulving & Thomson, 1973) and tend to aid in the retrieval of a more holistic narrative. Hence it could be assumed that the CRI and the RA are less likely to increase specific person and/or action details.

In this study, the use of duration as a covariate could have adjusted the values to a degree where the CI did not produce as many correct action details as the RA + CO interview, even though the CI includes both the RA and the CO techniques. However, it is precisely the RA + CO interview type that produced more confabulated person and action details than a CI, even more confabulated person details than the CRI + RA. This is attributed to the increase in reports of person and action details in general that the CO mnemonic produces.

Overall, the findings of the present study provide an insight into the use of the CI and its mnemonic technique in Mexico as well as the UK. It provides evidence that participants from Mexico are less willing to freely report information (as was found in the free recall phase) regarding a crime to police, or a researcher as an authority figure. Nonetheless, the CI cannot be discarded as a successful interviewing technique amongst participants from Mexico. Failing to find differences in the overall interview between participants from the UK and Mexico, hints towards the efficacy of the CI in participants from Mexico.

This study has also allowed further understanding of the role of each mnemonic technique in the report of specific types of details. The CRI +RA and RA + CO interviews help elicit correct person and action details. While the RA + CP does not

particularly help with specific types of details, it provides for a more accurate interview. It was found that certain combinations of mnemonic techniques from the CI can lead to higher questions phase accuracy rates (CRI + RA and RA + CP), a larger number of correct details in the free recall phase (RA + CO), as well as person (CRI + RA, RA + CO, RA + CP) and action (RA + CO) details reported in the free recall phase than a CI, after duration has been controlled for as covariate. Nonetheless, it is also these combinations that report increased number of confabulations during free recall phase (CRI + RA, RA + CO, RA + CP), particularly confabulations of person (RA + CO, RA + CP), action (RA + CO, RA + CP) and scenery (CRI + RA, RA + CO, RA + CP) details compared to the CI. In broader terms, some combinations of mnemonic techniques produce more correct person and action details than the full CI. However, these combinations also produce more confabulated details than the full CI.

It is important to note that the use of duration as a covariate, could be at least partially responsible for the different combinations of mnemonic techniques outperforming the full CI as the use of a covariate can obscure the effect of the treatment (in this case the CI) (Kachigan, 1991; Miller & Chapman, 2001). In particular the RA + CO interview reported a high number of correct overall details in the free recall phase, along with an increase in correct specific person and action details in said phase. This leads us to believe that this certain combination of mnemonics is successful in retrieving information, while keeping the interview duration shorter than a full CI. Yet, it was also this combination of RA + CO that reported a high number of overall confabulations in the free recall phase, with an increase for person, action and scenery confabulated details in this phase.

It is unfortunate, but necessary, that the RA mnemonic technique was combined to other mnemonic techniques and could not be tested individually. The RA is one of the most used mnemonics by police officers and perhaps the technique that requires less training. It is therefore recommended that police officers continue employing the RA technique in all interviews combining with the CRI or the CO when person or action details are crucial, or CP when accuracy is most important.

The present study has found that the participants from the UK and Mexico do not differ in accuracy or completeness of interview. The differences found between the two

samples were in the free recall phase. During this the participants from the UK reported more overall correct details, person details and scenery details than the participants from Mexico. Nonetheless no differences in reporting of details were found between the two samples in the questions phase. The similar accuracy rates, completeness and lack of differences in reporting of details in the questions phase between Mexico and the UK indicate that there is a potential use for the CI in Mexico. The results suggest that the questions phase of the CI is crucial in a Mexican population. Therefore it is recommended that police officers and other law enforcers in Mexico always employ an exhaustive questions phase. The type of interview (full CI or a combination of its techniques) employed should depend on the needs of the investigation.

The current study found no overall differences between the UK and Mexican participants in relation to accuracy rates and completeness. This implies that the CI has potential use for Mexican participants. Additionally, it found that participants from Mexico freely provided less information regarding a crime during an interview than participants from the UK. This was found in the free recall phase, but it was not found for the interviews as a whole or during the questions phase. This prompted the conclusion that participants from Mexico are not willing to freely provide details for a crime, but perhaps are more comfortable with answering questions about a crime. Could a CI questions phase help unwilling participants to report more details than a questions phase from a control interview? Research has shown that a CI outperforms a SI for participants in the UK (e.g., Clarke, Prescott, & Milne, 2013; Holliday et al., 2012; Memon et al., 1997; Milne, 1997; Milne, Sharman, Powell, & Mead, 2013). However, further testing is required amongst the Mexican population before such results can be generalized.

CHAPTER 5. Study 3. Comparing the effectiveness of a Modified Cognitive Interview and a Structured Interview amongst participants from the UK and Mexico

5.1. Introduction

Study 1 found participants from Mexico were less willing to report a crime than participants from the UK. It also found that the main reason participants from Mexico were reluctant to report a crime was fear of retaliation/extortion. The previous chapter (Study 2) compared the performance of participants from the UK and Mexico on the CI and combinations of its mnemonic techniques. It found no differences between the overall and the questions phase performance of the CI in participants from both countries. Nonetheless it did find that participants from the UK tended to report more details in the free recall phase than participants from Mexico. This suggests that Mexican participants may be reluctant to report information freely but provide details when asked specific questions.

In order to further test the efficacy of the CI in participants from Mexico, it is necessary to compare it to a SI. The CI needs to be compared to an appropriate control interview before it can be considered efficient (see section 1.3.4.1. An appropriate control interview). In previous research the CI has been compared to standard interviews, hypnosis interviews and SIs. The SI has become the most common control interview in more recent years as it has a defined structure and shares effective communication skills with the CI (Memon et al., 2010). In addition, studies testing the efficacy of the CI in the UK consistently employ the SI as a control technique (Holliday & Albon, 2004; Holliday et al., 2012; Prescott et al., 2011; A. M. Wright & Holliday, 2007a; A. M. Wright & Holliday, 2007b). The SI is similar to that used by police officers in the UK to interview children in the 1990's, the Memorandum of Good Practice guidelines for interviews (Davies & Westcott, 1999). In addition the SI contains interviewing techniques that are considered good practice by law enforcers in general.

Although the results from Study 2 suggest that there were no differences in accuracy and completeness between Mexican and UK participants when subjected to a CI, further research is required to test its efficacy amongst Mexican participants with respect with a control interview. Stein and Memon (2006) tested the efficacy of a CI in participants from Brazil against a standard interview. They described the standard interview as containing a series of who, where, when and how questions. No mention of a free recall phase or a questions phase was made. The questions asked began as open-ended and were followed by closed questions. Stein and Memon found the CI produced more correct details than the standard interview. No differences for incorrect or confabulated details were found as a function of interview type. These results were found in the interviews as a whole. A comparison between free recall and questions phase was possible given the type of standard interview employed.

The present study aimed to test a modified CI (omitting the CP) against a SI amongst participants from the UK and Mexico. Study 2 found no differences in accuracy rates, completeness or recall of details during the questions phase between British and Mexican participants amongst interview type. As the CI contains techniques (e.g., mental imagery) in the questions phase that the SI does not, it is important to explore whether the techniques of the questions phase of the CI help participants report more details than those of a SI. Therefore a comparison of a MCI against a SI can help further understand the efficacy of a CI in a Mexican population. The present study also aimed to compare the questions phase of a CI and a SI. Unlike Stein and Memon's (2006) study, a SI was chosen because it allows for comparisons in the free recall phase and questions phase of both the CI and the SI.

5.1.1. The effect of emotional events on memory

Study 1 suggests participants from Mexico are less likely to report a crime than participants from the UK, would Mexican participants be more willing to report a different type of event? For example a neutral event or a positive event as opposed to a negative one (crime). A study of this type has not been done before. In addition to comparing a MCI (omitting the CP) to a SI between participants from the UK and Mexico, the present study aimed to test the effect different types of events have on

participants' recall. It employed three different emotional to-be remembered events, positive, neutral and negative. The following section provides a brief overview of research on emotions and memory that helps further understand the need to use different emotional events in this study.

Research on emotions and memory shows that emotional events can be remembered better than non-emotional ones (Adelman & Estes, 2013; Ginot & Verkamp, 2007; Hulse, Allan, Memon, & Read, 2007; Kensinger & Corkin, 2003; Kensinger & Schacter, 2008; Levine & Burgess, 1997; Levine & Bluck, 2004). Additionally, memory for emotional events is felt particularly vivid and remembered in more detail compared to neutral events (Kensinger & Schacter, 2008). Yet Levine & Pizarro (2004) found that though people feel more confident about emotional memories, and claim to have vivid exact memories of them, these are not exempt to errors. The results from these studies indicated that memory can be affected by emotions. Nonetheless, it does not indicate the how emotions can impact memory recall. What can clearly be stated is that emotion will make memory stronger, but this does not imply that it will make it error-free.

Overall, research shows that recall of different stimulus is enhanced by both positive and negative emotions compared to neutral stimulus. In addition, various types of details are affected differently by emotions. Research shows inconsistent results of memory recall for central and peripheral details of a given emotional stimuli. There are studies that show both central and peripheral details of an emotional stimulus are enhanced by emotion (Hulse et al., 2007; Laney, Campbell, Heuer, & Reisberg, 2004). Other studies have found that emotion improves memory recall for central details while recall for peripheral details is impaired (Christianson, 1992; Kensinger, Piguot, Krendl, & Corkin, 2005; Levine & Edelstein, 2009). In addition, a couple of studies only find impaired memory recall of peripheral negative details, (S. Porter, Spencer, & Birt, 2003; Van Damme & Smets, 2014). An important difference between these studies that may account for the various results is the type of material (stimuli) tested. In Hulse et al.'s study participants viewed either a negative or neutral video. In contrast Kensinger, et al. presented participants with neutral and negative while Van Damme and Smets showed participants positive, neutral and negative images. The videos seem to have enhanced

both central and peripheral memory of the emotional event, while the images impaired memory for peripheral details.

There has been a lot of research regarding memory and emotions, yet most of it does not include the use of CIs. Only two studies were found that have actively tested the effects of emotion on participants recall comparing a CI to other interviewing methods. Peace & Porter (2004) compared recall of traumatic experiences (an experience that involved injury, threats or death that caused psychological distress) and positive experiences (positive emotional experience). They had participants recall a personal traumatic and positive experience (lived within the past year) using either a free narrative, a CI, guided imaginary or a written narrative followed by recall of a positive experience. Three months later, the participants were asked to narrate both experiences through free recall (regardless of the first type of interview they had the first phase). The results show better recall of traumatic experiences compared to positive ones, independent of interview style. Although the authors expected to find the CI to produce less consistent narratives over time due to the use of CRI and CO (mental imagery exercises like these were thought to create memory reconstructions that could alter their account of the event), this was not found. This suggests that the CI does not distort memory recall over time. Unfortunately, the main focus of this study was to further understand the role of emotions on memory recall and not the effectiveness of interview style. Therefore typical methodology employed in the CI literature was not followed. Furthermore, the study did not provide information on the interviewers or whether they received any training. This can be seen as a missed opportunity to implement the techniques of the CI in areas other than forensic interviewing.

Ginet & Verkampt (2007) induced arousal (in a negative emotional state) by having the participants believe that they would receive electric shocks while watching a negative video. Participants were later interviewed with either a CI or a SI. The study found that participants under the high arousal condition recalled more details than those in the control condition. In addition, the CI elicited more correct details compared to the SI. Although this study aims to test whether the CI performance is affected by emotions, it does not test this per se. Emotion is generally defined as the degree of pleasure or discontent caused by experiencing an event, while arousal is the degree of excitement or pacification elicited by an event (Kensinger & Schacter, 2008). Therefore Ginet and

Verkampt tested the effect high and low arousal has on participants' recall of negative events rather than emotion.

As can be seen research using CI and emotions is scarce and rather lacking of appropriate methodology (in the first study mentioned, interview type was not the focus of the analyses, in the second study having participants believe they would receive electric shocks is un-ethical).

5.1.2. The current study

The present study aims to compare a MCI and a SI amongst British and Mexican participants. The SI has been commonly used as a comparison interview in CI research. By comparing a MCI and a SI the results will indicate whether the mnemonic techniques and instructions of the CI can enhance memory performance in participants from Mexico more so than the SI (this has already been found in participants from the UK, e.g., Holliday & Albon, 2004; Holliday et al., 2012). Unlike the CI, the SI does not include the CI mnemonic techniques, nor does it give clear instructions to report everything the participants remember. The SI asks participants to report the event in the free recall phase and then continues straight on to the questions phase. The CI and the SI also differ in the instructions of the questions phase.

A MCI, omitting CP, was chosen for the current study. Although the CP mnemonic technique had a high accuracy rate in Study 2, there are several reasons why it was omitted. First although the CP mnemonic has a high accuracy rate, it elicits fewer correct details than other mnemonics (CRI, CO) combined with the RA technique. The additional details that are elicited from the CRI, RA and CO combinations could lead to a potential perpetrator or an additional eyewitness. Second, police officers find the CP mnemonic to be the least useful mnemonic technique (Kebbell et al., 1999) and therefore use it rarely (Dando et al., 2008; Kebbell et al., 1999). Third, in events that are rather simple (bag snatching involving perpetrator, victim and eyewitness) the CP is not as helpful as it would be in more complex crimes (Fisher & Geiselman, 1992). Finally, it is considered better practice to omit a technique that the interviewer finds difficult to implement than risk poor management of it (Fisher & Geiselman, 1992).

As seen in the previous section, research using CIs and different emotional events is unsatisfactory. There is a lack of research regarding the effects of emotional events on participants' recall performance when using a CI. Memon et al's (2010) review shows that the majority of studies use negative to-be remembered events, a lower number of studies show neutral events; positive to-be remembered events are not mentioned. Memon et al. highlight the need to continue exploring the effects different emotional events have on participants' recall. Memory recall is affected by emotions, thus it is important to understand how different types of interviews aid recall of an emotional event. It is unclear whether appropriate interviewing techniques enhance memory performance irrelevant of the type of event.

As Study 1 found participants from Mexico less willing to report a crime and Study 2 reported fewer details being provided by the Mexican participants compared to those from the UK, the present study aimed to understand the efficacy of a MCI against a SI in Mexican participants by comparing them to British participants. In addition, because Study 1 indicated that the participants from Mexico were reluctant to report a crime, the use of events that are not negative and/or crimes were used for this study to try to understand whether participants from Mexico would be more willing to report a non-crime related event.

According to previous research on CIs and the results found in Study 1 and 2, a series of hypotheses were outlined. It was predicted that participants from the UK would a) be more complete, b) report more correct details, c) report more incorrect details and d) report more confabulated details than the participants from Mexico. Nonetheless, no differences were expected between the participants from the UK and Mexico according to accuracy rates. These predictions were established as Study 1 found participants from Mexico more reluctant to report crimes. Study 2 found participants from the Mexico provided fewer details than the participants from the UK. Therefore it was expected to find the participants from the UK reporting a great number of details, but not necessarily being more accurate.

It was hypothesized that the MCI would a) be more accurate, b) be more complete, c) produce more correct details, d) produce less incorrect details and e) produce less

confabulated details than the SI. In addition, it was predicted that the positive and negative events would be a) more accurate, b) more complete, c) produce more correct details, d) produce less incorrect details and e) produce less confabulated details than the neutral event.

With regards to event type it was also expected that for the negative event, participants from the UK would a) be more accurate, b) report more correct details, c) report more incorrect details and d) report more confabulated details than participants from Mexico. It was not expected to find such differences for the positive and neutral videos amongst participants from the UK and Mexico. This was hypothesised following the results from Study 1 that found participants from Mexico are less willing to report a crime than participants from the UK. However, it is not clear whether participants from Mexico would also be reluctant to report a positive or neutral event.

As Study 2 found participants from the UK reported more correct details in the free recall phase than participants from Mexico, it was considered important to explore whether this would be found across interview type (MCI vs. SI). In addition, as Study 2 failed to find differences in the reporting of details between British and Mexican participants in the questions phase, the present study tested the questions phase of the MCI against the SI. It was predicted that in the free recall phase the participants from the UK would a) be more accurate, b) report more correct details, d) report fewer incorrect details and e) report fewer confabulated details than the participants from Mexico. Nonetheless, it was expected to find similar reports of a) accuracy rate, b) correct details, c) incorrect details and d) confabulated details in participants from the UK and Mexico in the questions phase. See Study 2 section 4.1.1. The current study for further reasoning regarding analyses of recall phase and questions phase.

To summarise then, this study predicted the following:

Accuracy. The MCI would be more accurate than the SI, the positive and negative events would be more accurate than the neutral event, and in the free recall phase the participants from the UK would be more accurate than the participants from Mexico.

Completeness of interview. It was predicted that the participants from the UK would be more complete than the participants from Mexico, the MCI would be more complete than the SI, and the positive and negative events would be more complete than the neutral event.

Details for the overall interview. Correct. The UK participants would report more correct details than the Mexican participants, the MCI would produce more than the SI, the positive and negative events would produce more than the neutral event and the participants from the UK in the negative event condition would report more than the participants from Mexico in the same condition.

Incorrect. The participants from the UK would report more incorrect details than the participants from Mexico, the MCI would produce more than the SI, the positive and negative events would produce more than the neutral event and participants from the UK in the negative event condition would report more than the participants from Mexico in the same condition.

Confabulated. It was predicted that the participants from the UK would report more confabulated details than the participants from Mexico, the MCI would produce more than the SI, the positive and negative events would produce more than the neutral event and the participants from the UK in the negative condition would produce more than the participants from Mexico in the same condition.

Details for the free recall phase. Correct. It was predicted that during the free recall phase the participants from the UK would report more correct details than the participants from Mexico.

Incorrect. It was predicted that the participant from the UK would produce less incorrect details than the participants from Mexico.

Confabulated. It was predicted that the participants from the UK would report less confabulated details during the free recall phase than the participants from Mexico.

There were some analyses where it was not expected to find differences. For example, no differences were expected in accuracy between participants from the UK and Mexico and the positive and neutral events for participants from the UK and Mexico. Also no differences were expected in the questions phase for accuracy, report of correct, incorrect or confabulated details amongst participants from the UK and Mexico.

5.2. Method

5.2.1. Design

A 3 (Event: positive, neutral, negative) X 2 (Interview type: MCI, SI) X 2 (Sample: UK, Mexico) between-subjects factorial design was used.

5.2.2. Participants

A total of 179 university students (female and male), all psychology undergraduates from either first or second year participated in the study; 89 in the UK (M age = 20.35, SD = 4.60) and 90 in Mexico (M age = 19.26, SD = 1.20) 15 in each condition (except the negative SIs in the UK, which had 14 participants). They all received course credits for their participation. See CHAPTER 3, General Methods for more details on the recruiting process.

5.2.3. Materials

The materials used for this study derive from CHAPTER 3, General Methods, any differences will be mentioned. Three custom made videos, each video designed to induce positive, negative or neutral emotions, varying slightly in length (1-min 04-sec, 54-sec and 55-sec respectively) and containing a large number of quantifiable details were used. The use of specific videos for the induction of each different emotional states is common practice in emotion and memory research, and has of late been incorporated to the study of eyewitness memory and misinformation (Porter et al., 2010; Block et al.; 2009). The videos were presented on 19 inch screens and used headphones to reproduce sound. Also interview guides for the MCI and SI, an audio-recorder and a questionnaire that measures emotions were employed.

5.2.3.1. Description of videos.

All videos consisted of four scenes; the first two were identical for all three videos. They began with a young woman coming up to a counter and being given a cup by the shopkeeper. The second scene shows the young woman then sitting at a table. The third and fourth scenes are different for each video varying according to the emotion they are intended to evoke, however they are all set in the same scenery. The third scenes show a painting on a wall which the young woman is looking at and the fourth scenes show a different set of paintings, a stair case and some windows.

The video that depicts a positive event intended to produce positive emotions. In this video, during the third scene a young man approaches the young woman with a bouquet of flowers which she takes. In the last part an older lady comes up to the young woman and admires the flowers she was given.

During the third scene of the video depicting a neutral event, the young man walks past the young woman. In the fourth scene the young woman is standing at the same place when an older lady appears and stands at her side admiring a painting on the wall.

The video intended to transmit negative emotions, shows the young man walking towards the young woman and taking her handbag, there is a brief struggle over the item, then the man pushes the young woman towards the ground, she falls, losing grip of the handbag and giving the man the opportunity to run away with it. In the final scene you see the young woman on the floor when an older lady comes into the scene sees her on the floor and hurries towards her.

5.2.3.2. Pilot study of videos

The videos (positive, neutral, negative) were piloted in the UK. An on-line pilot study allowed for a total of 74 participants, all University of Leicester students from various departments, distributed across the three video conditions (25 for positive and negative videos, 24 for the neutral video). Participants were asked to watch a video, pay close attention to it and instructed to “try and picture themselves as part of the video”. They were then asked to complete the questionnaire (see Appendix B) regarding the emotions

they felt while watching the video/event (from now on, the video will be referred to as event).

A one-way event (3: positive, neutral, negative) MANOVA was performed to determine whether there was a significant effect of event on participants' happy, excited, OK, calm, sad and angry emotions. A main effect of event was found, $F(12, 132) = 4.39, p < .001$, Wilks' $\lambda = .511, \eta^2_p = .285$. Separate one-way ANOVAs were performed to examine the effect of event (positive, neutral, negative) on the participants' happy, excited, OK, calm, sad and angry emotions. There was a main effect of event on all the emotions: happy, $F(2, 71) = 14.36, p < .001, \eta^2_p = .288$, excited, $F(2, 71) = 5.45, p < .01, \eta^2_p = .133$, OK, $F(2, 71) = 6.93, p < .005, \eta^2_p = .163$, calm, $F(2, 71) = 3.71, p < .05, \eta^2_p = .095$, sad, $F(2, 71) = 5.46, p < .01, \eta^2_p = .133$ and angry, $F(2, 71) = 14.35, p < .001, \eta^2_p = .288$.

Pairwise comparisons, employing Bonferroni corrected post hoc tests revealed that the participants who viewed the positive ($M = 3.64, SE = .24$) and neutral ($M = 2.83, SE = .24$) events rated higher on the happy emotion than the participants who viewed the negative ($M = 1.84, SE = .24$) event. Additionally the participants who viewed the positive ($M = 2.80, SE = .24$) event rated higher on the excited emotion than the participants who viewed the negative ($M = 1.68, SE = .25$) event. For the OK emotion the participants from the positive ($M = 4.20, SE = .28$) and neutral ($M = 3.96, SE = .29$) event rated higher than the participants from the negative ($M = 2.80, SE = .30$) event. Likewise the participants who viewed the neutral ($M = 3.63, SE = .31$) event rated higher on calm than the participants who viewed the negative ($M = 2.56, SE = .30$) event. However the participants who viewed the negative ($M = 3.96, SE = .31$) event rated higher on the sad emotion than the participants who viewed the positive ($M = 2.52, SE = .31$) event. In addition, the participants who viewed the negative ($M = 4.16, SE = .33$) event rated higher on angry emotion than the participants who viewed the positive ($M = 1.68, SE = .33$) and the neutral ($M = 2.75, SE = .34$) events.

The results of the pilot study were sufficient to confirm that the videos were eliciting the emotions that were sought. Therefore each event produced the effect expected (i.e., the positive event elicited happy and excited emotions, the neutral event produced OK and calm emotions and the negative event provoked sad and angry emotions).

5.2.3.3. Description of questionnaire

The questionnaire used is described in CHAPTER 3, General Methods (see Appendix B). The participants were asked to think about the video they watched (i.e. the event witnessed) and rate the emotions according to how the video made them feel, 1 being “not at all” that emotion and 7 being “very much” of that emotion.

5.2.4. Procedure

The study was conducted by the researcher in two different laboratories, one for watching the video and the other for interviewing to prevent CRI effects from forming spontaneously (Milne & Bull, 2002) . All participants were tested individually in two phases over two days. During Phase 1 participants were misled to believe that the purpose of the study was to measure their emotional response to a video and weren’t informed that they would be interviewed. They were then instructed to watch the video, while the researcher stepped out of the lab to ensure transfer of control during the interview phase (cf. similar procedures by Bensi et al., 2011; Fisher & Geiselman, 1992). Participants watched one of three events (positive, neutral, negative) assigned randomly and afterwards completed the questionnaire that measured emotions

Phase 2 took place after a 24 hr. lapse. Participants were informed that they had been misled and the task at hand was an interview regarding what they remember of the video. They were then interviewed by the researcher using either a MCI or a SI. Participants were then debriefed as to the objectives of the study.

5.2.4.1. Instructions for the Modified Cognitive Interview

All the instructions for the interviews were read verbatim to ensure that the interviewer followed the same procedure throughout and did not transfer MCI techniques to the SI (Bensi et al., 2011; Davis et al., 2005; Milne & Bull, 2002). The instructions were given slowly and pauses were made to allow participants to concentrate on each request. The MCI began with a rapport phase, followed by transfer of control and the aims of the interview. The interviewer began the free recall phase with the instructions for CRI,

followed by the RA and the CO instructions. To conclude with this phase a prompt to elicit more information was given.

The questions asked during questions phase were based on the information the participant gave during free recall phase. The participants were instructed to close their eyes and form a mental image of the object in question. Once the interviewer exhausted all the information available for questions, a final prompt was added. After no more information could be recalled, the researcher proceeded with the closure. See Appendix G for an interview protocol of the MCI used.

5.2.4.2. Instructions for the Structured Interview

The SI followed the basic guidelines from the MCI, excluding the CI mnemonics (i.e., transfer of control, CRI, CO and forming mental images before questions). Rapport was established and the participant was introduced to the aims of the interview. During the free recall phase participants were instructed to narrate what they remembered from the video they saw.

In the questions phase the interviewer only asked about information given in the free recall phase, in the order reported. The closure followed the same procedure as the MCI. See Appendix D for an interview protocol of the SI used.

5.2.5. Transcribing, coding and scoring of the interviews

The transcribing, coding and scoring of the interviews followed a similar procedure as in CHAPTER 3, General Methods. Therefore only the differences will be highlighted.

Transcribing. All the interviews were transcribed verbatim by the researcher, excluding the rapport phase. The transcriptions were divided into free recall phase and questions phase. The total number of questions asked was recorded. Likewise, the duration of each interview was noted.

Coding and scoring. All the interviews were coded and scored by the researcher and a research assistant, who was blind to the experimental aims of the study. The coding and scoring of interviews followed the procedure described in CHAPTER 3, General Methods. Measures of inter-rater reliabilities were calculated for the total correct, incorrect and confabulated details, $r = .95, p < .001$, $r = .93, p < .001$ and $r = .98, p < .001$ respectively.

5.3. Results

5.3.1. Effect of the witnessed event (manipulation check)

To examine whether each event (positive, neutral, negative) witnessed by the participants during the video had the expected effect, a questionnaire that measured emotions was applied. The results from the Likert scale questionnaire were analysed. A one-way event (3: positive, neutral, negative) MANOVA was performed to determine whether there was a significant effect of event on participants' happy, excited, OK, calm, sad and angry emotions. The results show that there was a significant effect, $F(12, 342) = 22.67, p < .001$, Wilks' $\lambda = .310, \eta^2_p = .443$.

A series of separate one-way event (positive, neutral, negative) ANOVAs were performed on the emotions happy, excited, OK, calm, sad and angry. A main effect of event was found for each of the emotions, happy, $F(2, 176) = 40.86, p < .001, \eta^2_p = .317$, excited, $F(2, 176) = 11.70, p < .001, \eta^2_p = .117$, OK, $F(2, 176) = 47.10, p < .001, \eta^2_p = .349$, calm, $F(2, 176) = 35.30, p < .001, \eta^2_p = .286$, sad, $F(2, 176) = 33.44, p < .001, \eta^2_p = .275$ and angry, $F(2, 176) = 111.98, p < .001, \eta^2_p = .560$. In order to understand which event accounted for the main effect on the emotions, post hoc tests were performed.

Pairwise comparisons were employed, using the Bonferroni corrected post hoc tests adjustment procedure in SPSS⁴, all significant values at $p < .05$. They revealed that the positive ($M = 3.58$, $SE = .18$, 95% CI [3.22, 3.95]) event had a higher happy emotion than the neutral ($M = 2.30$, $SE = .18$, 95% CI [1.94, 2.66]) and negative ($M = 1.24$, $SE = .18$, 95% CI [0.87, 1.60]) events⁵. For the excited emotion, the pairwise comparisons showed that the positive ($M = 3.05$, $SE = .19$, [3.22, 3.95]) event rated higher than both the neutral ($M = 2.13$, $SE = .19$, [1.76, 2.51]) and negative ($M = 1.78$, $SE = .19$, [1.40, 2.16]) event. In the OK emotion, the positive ($M = 4.77$, $SE = .20$, [4.38, 5.16]) and neutral ($M = 4.45$, $SE = .20$, [4.06, 4.84]) events showed a higher OK rate than the negative ($M = 2.27$, $SE = .20$, [1.88, 2.66]) event. Likewise for the calm emotion, both the positive ($M = 5.00$, $SE = .22$, [4.57, 5.43]) and neutral ($M = 4.88$, $SE = .22$, [4.45, 5.31]) events had higher calm rates than the negative ($M = 2.70$, $SE = .22$, [2.26, 3.13]) event. For the sad emotion, the negative ($M = 3.78$, $SE = .20$, [3.39, 4.17]) event rated higher than both the positive ($M = 1.83$, $SE = .20$, [1.45, 2.22]) and neutral ($M = 1.78$, $SE = .20$, [1.40, 2.17]) videos. Similarly, the angry emotion rated higher in the negative ($M = 4.61$, $SE = .18$, [4.26, 4.96]) event than in the positive ($M = 1.42$, $SE = .18$, [1.07, 1.77]) and neutral ($M = 1.28$, $SE = .18$, [0.93, 1.63]) events. No other pairwise comparisons were significant. See Table 9 for adjusted mean and SE of emotion by event.

The analyses show that there was an effect of the event witnessed on the participants' emotions. The positive event elicited a higher rate of the happy and excited emotions than the neutral and the negative events. Both the neutral and the positive event showed higher OK and Calm emotions than the negative event. Lastly, the negative event elicited higher rates of sad and angry emotions than the positive and the neutral videos. These were the results expected in order to confirm that the events witnessed had the appropriate emotional responses (i.e., the positive event elicited happy and excited emotions, as well as calm and OK, the neutral event elicited Ok and calm emotions and the negative event elicited sad and angry emotions).

⁴ In SPSS calculations of pairwise comparisons, using the Bonferroni post hoc tests, have adjusted p values. SPSS will multiply the p value of the Least Significant differences (LSD) by the number of pairwise tests performed and produce a new p value that can be safely interpreted adhering to the $p < .05$ criterion.

⁵ From here and onwards, all 95% CI will be expressed with squared brackets only (e.g., [...,...])

Table 9. Adjusted mean (SE) emotion by event

Emotion	Type of event								
	Positive			Neutral			Negative		
	M	(SE)	95% CI	M	(SE)	95% CI	M	(SE)	95% CI
Happy	3.58	(0.18)	[3.22, 3.95]	2.30	(0.18)	[1.94, 2.66]	1.24	(0.19)	[0.87, 1.60]
Excited	3.05	(0.19)	[2.67, 3.43]	2.13	(0.19)	[1.76, 2.51]	1.78	(0.19)	[1.40, 2.16]
OK	4.77	(0.20)	[4.38, 5.16]	4.45	(0.20)	[4.06, 4.84]	2.27	(0.20)	[1.88, 2.66]
Calm	5.00	(0.22)	[4.57, 5.43]	4.88	(0.22)	[4.45, 5.31]	2.70	(0.22)	[2.26, 3.13]
Sad	1.83	(0.20)	[1.45, 2.22]	1.78	(0.20)	[1.40, 2.17]	3.78	(0.20)	[3.39, 4.17]
Angry	1.42	(0.18)	[1.07, 1.77]	1.28	(0.18)	[0.93, 1.63]	4.61	(0.18)	[4.26, 4.96]

5.3.2. Interview Analyses

In order to determine if factors such as number of questions asked and duration of the interview were interfering with the results that were found, three separate ANCOVAs were performed. A series of three 3 (Event: positive, neutral, negative) X 2 (interview type: CI, SI) X 2 (Sample: UK, Mexico) ANCOVAs with number of questions asked and duration as covariates were performed for each total number of correct, incorrect and confabulated details.

The results of the ANCOVAs showed no significant effect of number of questions asked for total number of correct details, $F(1, 165) = .01, p > .05, \eta^2_p = .000$, incorrect details, $F(1, 165) = .83, p > .05, \eta^2_p = .005$ or confabulated details $F(1, 165) = 2.01, p > .05, \eta^2_p = .012$. Therefore, the covariate number of questions asked was omitted in all the following analyses (cf. similar procedures by Dando et al., 2011; A. M. Wright & Holliday, 2007a). However a significant main effect of duration on the total number of correct details, $F(1, 165) = 89.27, p < .001, \eta^2_p = .351$, incorrect details, $F(1, 165) = 33.97, p < .001, \eta^2_p = .171$ and confabulated details, $F(1, 165) = 7.54, p < .01, \eta^2_p = .044$ was found.

As a main effect of duration was found, a 3 (event) X 2 (interview type) X 2 (sample) ANOVA was performed to further investigate the duration effect. A significant difference was found for interview type, $F(1, 167) = 86.48, p < .001, \eta^2_p = .341$, but not for event, $F(2, 167) = 1.01, p > .05, \eta^2_p = .012$ or sample, $F(1, 167) = 3.22, p > .05, \eta^2_p = .019$.

Additionally, no statistically significant difference was found for any of the interactions, event X interview, $F(2, 167) = .03, p > .05, \eta^2_p = .000$, event X sample, $F(2, 167) = .06, p > .05, \eta^2_p = .001$, interview type X sample, $F(1, 167) = 2.67, p > .05, \eta^2_p = .016$ and event X interview type X sample interaction $F(2, 167) = 1.00, p > .05, \eta^2_p = .012$. A pairwise comparison of the means for each interview type was performed. Bonferroni corrected post hoc tests were employed for these purposes, The MCI was significantly longer in duration ($M = 9.79, SE = 0.23, [9.33, 10.25]$) than the SI, ($M = 6.72, SE = 0.23, [6.25, 7.18]$). See Table 10 for adjusted means. Given the differences observed across interview type, duration will be included as a covariate in all of the

Table 10. Adjusted mean (*SE*) duration by event, interview type and sample

Duration (minutes)	Event											
	Positive			Neutral			Negative			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
MCI												
UK	10.33	(0.57)	[9.21, 11.46]	10.33	(0.57)	[9.21, 11.46]	10.40	(0.57)	[9.27, 11.53]	10.36	(0.33)	[9.71, 11.01]
Mexico	9.07	(0.57)	[7.94, 10.19]	8.80	(0.57)	[7.67, 9.93]	9.80	(0.57)	[8.67, 10.93]	9.22	(0.33)	[8.57, 9.87]
Total	9.70	(0.40)	[8.90, 10.50]	9.57	(0.40)	[8.77, 10.36]	10.10	(0.40)	[9.30, 10.90]	9.79	(0.23)	[9.33, 10.25]
SI												
UK	6.80	(0.57)	[5.67, 7.93]	6.07	(0.57)	[4.94, 7.19]	7.36	(0.59)	[6.19, 8.52]	6.74	(0.33)	[6.08, 7.40]
Mexico	6.67	(0.57)	[5.54, 7.79]	6.73	(0.57)	[5.61, 7.86]	6.67	(0.57)	[5.54, 7.79]	6.69	(0.33)	[6.04, 7.34]
Total	6.73	(0.40)	[5.94, 7.53]	6.40	(0.40)	[5.60, 7.20]	7.01	(0.41)	[6.20, 7.82]	6.72	(0.23)	[6.25, 7.18]
Sample												
UK	8.57	(0.40)	[7.77, 9.36]	8.20	(0.40)	[7.40, 9.00]	8.88	(0.41)	[8.07, 9.69]	8.55	(0.23)	[8.09, 9.01]
Mexico	7.87	(0.40)	[7.07, 8.66]	7.77	(0.40)	[6.97, 8.56]	8.23	(0.40)	[7.44, 9.03]	7.96	(0.23)	[7.50, 8.42]
Total	8.22	(0.29)	[7.65, 8.78]	7.98	(0.29)	[7.42, 8.55]	8.56	(0.29)	[7.99, 9.12]			

analyses that follow. All the means, *SE* and 95% CI [...,...] displayed forthwith correspond to adjusted values by duration.

5.3.3. Accuracy

In the interview participants were required to recall what happened in the event they witnessed. The degree to which the information recalled corresponds to what really happened is referred to as accuracy (Fisher et al., 2002). Following common procedures (Holliday, 2003a; Holliday, 2003b; Holliday et al., 2012) an accuracy rate for each interview was calculated by dividing the proportion of the total correct details by the proportion of total details in each interview type and sample. The proportion of total correct details was calculated by dividing the total number of correct details recalled by the total number of details from the template (the list of every detail present in the video). The proportion of total details was calculated by dividing the total overall number of details recalled by the total number of details from the template. Table 11 provides adjusted means for accuracy by event, interview type and sample variables.

$$Accuracy = \frac{(Total\ correct\ details \div Total\ details\ template)}{(Total\ overall\ details \div Total\ details\ template)}$$

A 3 (event) X 2 (interview type) X 2 (sample) ANCOVA was performed on accuracy with duration as a covariate. A significant effect was found for event, $F(2, 166) = 6.53$, $p < .005$, $\eta^2_p = .073$ and interview X sample interaction, $F(1, 166) = 4.83$, $p < 0.05$, $\eta^2_p = .028$. No main effect was found for interview type, $F(1, 166) = .68$, $p > .05$, $\eta^2_p = .004$ or sample, $F(1, 166) = .76$, $p > .05$, $\eta^2_p = .005$. Additionally, no other interaction was significant, event X interview, $F(2, 166) = .09$, $p > .05$, $\eta^2_p = .001$, event X sample $F(2, 166) = 1.46$, $p > .05$, $\eta^2_p = .017$ and event X interview X sample, $F(2, 166) = 1.73$, $p > .18$, $\eta^2_p = .020$.

Table 11. Adjusted mean (*SE*) accuracy rates by event, interview type and sample

Accuracy	Event											
	Positive			Neutral			Negative			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
MCI												
UK	0.82	(0.02)	[0.79, 0.86]	0.76	(0.02)	[0.73, 0.80]	0.82	(0.02)	[0.79, 0.86]	0.80	(0.01)	[0.78, 0.82]
Mexico	0.81	(0.02)	[0.77, 0.84]	0.78	(0.02)	[0.75, 0.81]	0.78	(0.02)	[0.75, 0.81]	0.79	(0.01)	[0.77, 0.81]
Total	0.82	(0.01)	[0.79, 0.84]	0.77	(0.01)	[0.75, 0.79]	0.80	(0.01)	[0.78, 0.83]	0.80	(0.01)	[0.78, 0.81]
SI												
UK	0.79	(0.02)	[0.76, 0.82]	0.78	(0.02)	[0.75, 0.81]	0.80	(0.02)	[0.77, 0.84]	0.79	(0.01)	[0.77, 0.81]
Mexico	0.85	(0.02)	[0.82, 0.89]	0.79	(0.02)	[0.76, 0.83]	0.82	(0.02)	[0.78, 0.85]	0.82	(0.01)	[0.80, 0.84]
Total	0.82	(0.01)	[0.80, 0.85]	0.79	(0.01)	[0.76, 0.81]	0.81	(0.01)	[0.79, 0.83]	0.81	(0.01)	[0.79, 0.82]
Sample												
UK	0.81	(0.01)	[0.78, 0.83]	0.77	(0.01)	[0.75, 0.79]	0.81	(0.01)	[0.79, 0.84]	0.80	(0.01)	[0.78, 0.81]
Mexico	0.83	(0.01)	[0.81, 0.86]	0.79	(0.01)	[0.76, 0.81]	0.80	(0.01)	[0.78, 0.82]	0.81	(0.01)	[0.79, 0.82]
Total	0.82	(0.01)	[0.80, 0.84]	0.78	(0.01)	[0.76, 0.79]	0.81	(0.01)	[0.79, 0.82]			

To examine the effect of event and interview X sample interaction⁶ on accuracy more effectively, a set of pairwise comparisons employing Bonferroni corrected post hoc tests were used. The positive event had a higher accuracy rate ($M = .82$, $SE = .01$, [0.80, 0.84]) than the neutral event ($M = .78$, $SE = .01$, [0.76, 0.79]). No other pairwise comparisons were significant. Nonetheless, when looking at the adjusted means, on the SI the participants from Mexico ($M = .82$) seem to perform better than the participants from the UK ($M = .79$). In addition, the means of the Mexican participants for the MCI ($M = .79$) are also lower than those for the SI.

To further explore accuracy rates, the interviews were divided into two phases, free recall phase and questions phase. The free recall phase and questions phases were analyzed separately as the free recall phase forms the basis for questions asked. Hence, the questions phase depends directly on the free recall phase (Holliday & Albon, 2004; Holliday et al., 2012). In addition, the free recall phase and the questions phase from the CI and the SI differs in the instructions given to the participants which may, in itself, influence the findings. Accuracy rates were then analyzed for each interview phase. Table 12 provides the adjusted means for accuracy rates for each interview phase.

$$\text{Free recall phase accuracy} = \frac{(\text{Total free recall correct details} \div \text{Total details template})}{(\text{Total overall details} \div \text{Total details template})}$$

$$\text{Questions phase accuracy} = \frac{(\text{Total questions phase correct details} \div \text{Total details template})}{(\text{Total overall details} \div \text{Total details template})}$$

Two separate 3 (event) X 2 (interview type) X 2 (sample) ANCOVAs were performed on accuracy for the free recall phase and the questions phase, with the duration of each phase as the covariate. In order to achieve this, duration was computed separately for the free recall phase and for the questions phase. Each duration type was paired with its

⁶ In order to perform the pairwise comparisons on the interaction effects, a new variable containing those that were part of the interaction was created (Howitt & Cramer, 2011). The pairwise comparisons applying the Bonferroni corrected post hoc tests have adjusted p-values to avoid Type I.

Table 12. Adjusted mean (*SE*) free recall phase accuracy and questions phase accuracy by event, interview type and sample

	Event											
	Positive			Neutral			Negative			Total		
	M	(SE)	95% CI	M	(SE)	95% CI	M	(SE)	95% CI	M	(SE)	95% CI
<i>Free recall</i>												
MCI												
UK	0.45	(0.02)	[0.40, 0.49]	0.44	(0.02)	[0.39, 0.49]	0.47	(0.02)	[0.43, 0.52]	0.45	(0.02)	[0.43, 0.48]
Mexico	0.41	(0.02)	[0.36, 0.45]	0.45	(0.02)	[0.40, 0.50]	0.42	(0.02)	[0.37, 0.47]	0.43	(0.01)	[0.40, 0.45]
Total	0.43	(0.02)	[0.39, 0.46]	0.45	(0.02)	[0.41, 0.48]	0.45	(0.02)	[0.41, 0.48]	0.44	(0.01)	[0.42, 0.46]
SI												
UK	0.37	(0.02)	[0.32, 0.42]	0.42	(0.02)	[0.37, 0.47]	0.39	(0.03)	[0.34, 0.44]	0.39	(0.02)	[0.37, 0.42]
Mexico	0.48	(0.02)	[0.43, 0.53]	0.43	(0.02)	[0.39, 0.48]	0.48	(0.02)	[0.44, 0.53]	0.46	(0.01)	[0.44, 0.49]
Total	0.42	(0.02)	[0.39, 0.46]	0.43	(0.02)	[0.39, 0.46]	0.44	(0.02)	[0.40, 0.47]	0.43	(0.01)	[0.41, 0.45]
Sample												
UK	0.41	(0.02)	[0.38, 0.44]	0.43	(0.02)	[0.40, 0.46]	0.43	(0.02)	[0.40, 0.47]	0.42	(0.01)	[0.41, 0.44]
Mexico	0.44	(0.02)	[0.41, 0.47]	0.44	(0.02)	[0.41, 0.47]	0.45	(0.02)	[0.42, 0.48]	0.44	(0.01)	[0.43, 0.46]
Total	0.43	(0.01)	[0.40, 0.45]	0.44	(0.01)	[0.41, 0.46]	0.44	(0.01)	[0.42, 0.46]			
<i>Questions phase</i>												
MCI												
UK	0.36	(0.02)	[0.31, 0.40]	0.29	(0.02)	[0.25, 0.34]	0.33	(0.02)	[0.28, 0.37]	0.33	(0.01)	[0.30, 0.35]
Mexico	0.40	(0.02)	[0.35, 0.44]	0.31	(0.02)	[0.27, 0.35]	0.35	(0.02)	[0.30, 0.39]	0.35	(0.01)	[0.33, 0.38]
Total	0.38	(0.02)	[0.34, 0.41]	0.31	(0.02)	[0.28, 0.34]	0.33	(0.02)	[0.30, 0.37]	0.34	(0.01)	[0.32, 0.36]
SI												
UK	0.44	(0.02)	[0.39, 0.48]	0.38	(0.02)	[0.34, 0.43]	0.43	(0.02)	[0.38, 0.48]	0.42	(0.01)	[0.39, 0.44]
Mexico	0.39	(0.02)	[0.35, 0.44]	0.38	(0.02)	[0.33, 0.42]	0.35	(0.02)	[0.30, 0.40]	0.37	(0.01)	[0.35, 0.40]
Total	0.42	(0.02)	[0.38, 0.45]	0.38	(0.02)	[0.35, 0.41]	0.39	(0.02)	[0.36, 0.42]	0.39	(0.01)	[0.38, 0.41]
Sample												
UK	0.40	(0.02)	[0.37, 0.43]	0.34	(0.02)	[0.31, 0.37]	0.38	(0.02)	[0.35, 0.41]	0.37	(0.01)	[0.35, 0.39]
Mexico	0.39	(0.02)	[0.34, 0.43]	0.35	(0.02)	[0.32, 0.38]	0.35	(0.02)	[0.31, 0.38]	0.36	(0.01)	[0.34, 0.38]
Total	0.40	(0.01)	[0.37, 0.42]	0.34	(0.01)	[0.32, 0.37]	0.36	(0.01)	[0.34, 0.38]			

appropriate interview phase (free recall phase accuracy with duration free recall and questions phase accuracy with duration questions phase). A significant effect of interview type X sample interaction in the free recall phase, $F(1, 166) = 13.58, p < .001, \eta^2_p = .076$ was found. Pairwise comparisons employing Bonferroni corrected post hoc tests revealed that the UK participants in the MCI condition ($M = .45, SE = .02, [0.43, 0.48]$) had a higher accuracy rate than the UK participants in the SI condition ($M = .39, SE = .02, [0.37, 0.42]$). In addition the participants from Mexico in the SI condition ($M = .46, SE = .01, [0.44, 0.49]$) had a higher accuracy rate than the UK participants in the SI condition. No other pairwise comparisons were significant. Although not reaching significance, the adjusted means for accuracy rate in the MCI for participants in Mexico ($M = .44$) was higher than the accuracy rate for participants from the UK in the MCI ($M = .42$).

No main effect was found for free recall phase accuracy by event $F(2, 166) = .50, p > .05, \eta^2_p = .006$, interview type, $F(1, 166) = .42, p > .05, \eta^2_p = .002$ or sample, $F(1, 166) = 2.48, p > .05, \eta^2_p = .015$. Additionally, no other interaction was significant, event X interview, $F(2, 166) = .14, p > .05, \eta^2_p = .002$, events X sample, $F(2, 166) = .23, p > .05, \eta^2_p = .003$ and event X interview X sample, $F(2, 166) = 3.08, p > .05, \eta^2_p = .036$.

A significant effect was found for questions phase accuracy by event, $F(2, 166) = 5.80, p < .005, \eta^2_p = .065$ and interview type, $F(1, 166) = 13.36, p < .001, \eta^2_p = .075$, as well as interview type X sample interaction, $F(1, 166) = 7.51, p < .01, \eta^2_p = .043$. No other significant main effect or interaction was found, sample, $F(1, 166) = 0.39, p > .05, \eta^2_p = .002$ event X interview type interaction, $F(2, 166) = .53, p > .05, \eta^2_p = .006$ event X sample, $F(2, 166) = .96, p > .05, \eta^2_p = .011$ and event X interview type X sample, $F(2, 166) = .47, p > .05, \eta^2_p = .006$.

Pairwise comparisons, applying Bonferroni post hoc tests revealed that the positive event had a higher questions phase accuracy ($M = .40, SE = .01, [0.37, 0.42]$) than the neutral event ($M = .34, SE = .01, [0.32, 0.37]$). The SI interview had a higher questions phase accuracy ($M = .39, SE = .01, [0.38, 0.41]$) than the MCI ($M = .34, SE = .01, [0.32, 0.36]$). Additionally, the participants from the UK in the SI condition ($M = .42, SE = .01, [0.39, 0.44]$) had a higher accuracy rate than the participants from the UK in the MCI condition ($M = .32, SE = .01, [0.29, 0.35]$) and the participants from Mexico in the

MCI condition ($M = .35$, $SE = .01$, $[0.33, 0.38]$). No other pairwise comparison was significant.

5.3.4. Completeness

Participants are required to recall the event they have witnessed giving as many details as possible, to evaluate how many details of the event they can remember a variable of completeness was created. In order to calculate the completeness of each interview type the total number of correct details recalled by each participant was divided by the total number of possible details from the template (c.f. similar procedures by Holliday, 2003b; Holliday et al., 2012). The templates for the videos used consisted of a very exhaustive list of details, including those that were not central to the plot of the video, this resulted in a uniquely long list of details (see Appendix E) (see Study 2 section 4.3.3. Completeness, for further explanation on the way completeness was calculated). As three different videos were employed, three templates were created and each was paired appropriately (i.e. the interviews from the participants that witnessed the positive event were paired with the template corresponding to the positive video, and so on).

$$Completeness = \frac{\text{Total number of correct details}}{\text{Total details from template}}$$

A 3 (event) X 2 (interview type) X 2 (sample) ANCOVA was conducted on the completeness of each interview with duration as a covariate. A significant effect of event, $F(2, 166) = 4.88$, $p < .01$, $\eta^2_p = .056$, sample, $F(1, 166) = 10.37$, $p < .005$, $\eta^2_p = .059$ and event X sample, $F(2, 166) = 6.25$, $p < .005$, $\eta^2_p = .070$ was found. No significant differences were found for interview, $F(1, 166) = .00$, $p > .05$, $\eta^2_p = .000$ event X interview interaction, $F(2, 166) = .12$, $p > .05$, $\eta^2_p = .001$ interview X sample interaction, $F(1, 166) = 1.24$, $p < .05$, $\eta^2_p = .007$ and event X interview X sample interaction, $F(2, 166) = .31$, $p > .05$, $\eta^2_p = .004$.

Pairwise comparisons, employing Bonferroni post hoc test showed that participants from the positive event ($M = .07$, $SE = .00$, $[0.07, 0.08]$) had higher levels of

completeness than the participants from the neutral event ($M = .06$, $SE = .00$, [0.06, 0.07]). The participants from the UK sample ($M = .07$, $SE = .00$, [0.07, 0.08]) had higher levels of completeness than the participants from Mexico ($M = .06$, $SE = .00$, [0.06, 0.07]). The participants from the UK in the positive event ($M = .07$, $SE = .00$, [0.07, 0.08]) had higher levels of completeness than the participants from Mexico in the negative event ($M = .06$, $SE = 0.00$, [0.05, 0.07]). In addition, the participants from the UK in the negative event ($M = .08$, $SE = .00$, [0.07, 0.08]) had higher levels of completeness than the participants from the UK in the neutral event ($M = .06$, $SE = .00$, [0.06, 0.07]) and participants from Mexico in the neutral event ($M = .06$, $SE = .00$, [0.06, 0.07]) and the negative event ($M = .06$, $SE = .00$, [0.05, 0.07]). No other pairwise comparisons were significant. See Table 13 for adjusted means and SE .

The analyses performed so far demonstrate that the MCI has a longer duration in minutes than the SI. Therefore duration has been used as a covariate. Contrary to what was predicted, no differences were found between the accuracy rates of the participants from the UK and Mexico. As predicted, the participants from the UK reported a higher completeness rate than the participants from Mexico. Contrary to what was expected, across samples the SI had a higher questions phase accuracy than the MCI. Finally, as predicted the participants that witnessed the positive event have shown to have a higher overall accuracy and questions phase accuracy rate than the participants who witnessed the neutral event.

5.3.5. Recall of total number of details by event, interview type and sample

In order to examine the nature of the information reported by the participants in the various conditions, analyses of the total number of correct, incorrect and confabulated details by event, interview type and sample were carried out. For this purpose, three separate 3 (event) X 2 (interview type) X 2 (sample) ANCOVAs were performed on the total number of total correct, incorrect and confabulated details collapsed across interview phases, with duration as a covariate. Table 14 shows the adjusted means for these details.

Table 13. Adjusted mean (*SE*) completeness by event, interview type and sample

Completeness	Event											
	Positive			Neutral			Negative			Total		
	M	(SE)	95% CI	M	(SE)	95% CI	M	(SE)	95% CI	M	(SE)	95% CI
MCI												
UK	0.07	(0.00)	[0.07, 0.08]	0.07	(0.00)	[0.06, 0.07]	0.08	(0.00)	[0.07, 0.09]	0.07	(0.00)	[0.07, 0.08]
Mexico	0.07	(0.00)	[0.06, 0.08]	0.06	(0.00)	[0.06, 0.07]	0.06	(0.00)	[0.05, 0.07]	0.06	(0.00)	[0.06, 0.07]
Total	0.07	(0.00)	[0.07, 0.08]	0.06	(0.00)	[0.06, 0.07]	0.07	(0.00)	[0.06, 0.07]	0.07	(0.00)	[0.06, 0.07]
SI												
UK	0.08	(0.00)	[0.07, 0.08]	0.06	(0.00)	[0.05, 0.07]	0.08	(0.00)	[0.07, 0.08]	0.07	(0.00)	[0.07, 0.08]
Mexico	0.07	(0.00)	[0.06, 0.08]	0.07	(0.00)	[0.06, 0.07]	0.06	(0.00)	[0.05, 0.07]	0.07	(0.00)	[0.06, 0.07]
Total	0.07	(0.00)	[0.07, 0.08]	0.06	(0.00)	[0.06, 0.07]	0.07	(0.00)	[0.06, 0.07]	0.07	(0.00)	[0.06, 0.07]
Sample												
UK	0.07	(0.00)	[0.07, 0.08]	0.06	(0.00)	[0.06, 0.07]	0.08	(0.00)	[0.07, 0.08]	0.07	(0.00)	[0.07, 0.08]
Mexico	0.07	(0.00)	[0.06, 0.08]	0.06	(0.00)	[0.06, 0.07]	0.06	(0.00)	[0.05, 0.07]	0.06	(0.00)	[0.06, 0.07]
Total	0.07	(0.00)	[0.07, 0.08]	0.06	(0.00)	[0.06, 0.07]	0.07	(0.00)	[0.07, 0.07]			

Table 14. Adjusted mean (*SE*) number of correct, incorrect and confabulated details across interview phases by event, interview type and sample

	Event											
	Positive			Neutral			Negative			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
<i>Correct details</i>												
MCI												
UK	69.48	(3.62)	[63.32, 76.23]	56.94	(3.62)	[49.79, 64.10]	75.44	(3.63)	[68.27, 82.61]	67.29	(2.25)	[62.86, 71.72]
Mexico	65.16	(3.51)	[58.24, 72.09]	55.10	(3.50)	[48.19, 62.00]	58.68	(3.56)	[47.77, 61.84]	58.35	(2.06)	[54.28, 62.43]
Total	67.32	(2.56)	[62.27, 72.37]	56.02	(2.54)	[51.00, 61.04]	65.12	(2.62)	[59.96, 70.29]	62.82	(1.60)	[59.67, 65.97]
SI												
UK	70.28	(3.56)	[63.26, 77.30]	53.90	(3.64)	[46.72, 61.09]	71.76	(3.64)	[64.58, 78.93]	65.31	(2.16)	[61.05, 69.58]
Mexico	66.14	(3.57)	[59.10, 73.19]	57.31	(3.56)	[50.28, 64.34]	58.68	(3.57)	[51.63, 65.72]	60.71	(2.15)	[56.47, 64.95]
Total	68.21	(2.57)	[63.14, 73.28]	55.61	(2.62)	[50.44, 60.77]	65.22	(2.58)	[60.13, 70.31]	63.01	(1.61)	[59.84, 66.18]
Sample												
UK	69.88	(2.47)	[65.00, 74.75]	55.42	(2.47)	[50.55, 60.29]	73.60	(2.53)	[68.61, 78.59]	66.30	(1.44)	[63.46, 69.14]
Mexico	65.65	(2.47)	[60.77, 70.54]	56.20	(2.48)	[51.31, 61.09]	56.74	(2.47)	[51.87, 61.61]	59.53	(1.43)	[56.71, 62.36]
Total	67.76	(1.74)	[64.32, 71.21]	55.81	(1.75)	[52.36, 59.26]	65.17	(1.770)	[61.69, 68.65]			
<i>Incorrect details</i>												
MCI												
UK	13.38	(1.63)	[10.17, 16.59]	19.72	(1.63)	[16.51, 22.93]	15.63	(1.63)	[12.42, 18.85]	16.25	(1.01)	[14.26, 18.23]
Mexico	14.34	(1.58)	[11.23, 17.45]	16.13	(1.57)	[13.03, 19.23]	15.77	(1.60)	[12.61, 18.93]	15.41	(0.93)	[13.59, 17.24]
Total	13.86	(1.15)	[11.59, 16.13]	17.93	(1.14)	[15.67, 20.18]	15.70	(1.17)	[13.39, 18.02]	15.83	(0.72)	[14.41, 17.25]
SI												
UK	17.72	(1.60)	[14.57, 20.87]	14.82	(1.63)	[11.60, 18.05]	16.89	(1.63)	[13.67, 20.11]	16.48	(0.97)	[14.57, 18.39]
Mexico	12.02	(1.60)	[8.86, 15.18]	14.61	(1.60)	[11.45, 17.76]	13.35	(1.60)	[10.19, 16.52]	13.33	(0.96)	[11.42, 15.23]
Total	14.87	(1.15)	[12.59, 17.15]	14.71	(1.18)	[12.39, 17.03]	15.12	(1.16)	[12.84, 17.41]	14.90	(0.72)	[13.48, 16.33]

Table 14. Adjusted mean (*SE*) number of correct, incorrect and confabulated details across interview phases by event, interview type and sample

	Event											
	Positive			Neutral			Negative			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Sample												
UK	15.53	(1.11)	[13.36, 17.74]	17.27	(1.11)	[15.08, 19.46]	16.26	(1.13)	[14.02, 18.50]	16.36	(0.65)	[15.09, 17.64]
Mexico	13.18	(1.11)	[10.99, 15.37]	15.37	(1.11)	[13.17, 17.56]	14.56	(1.11)	[12.38, 16.75]	14.37	(0.64)	[13.10, 15.64]
Total	14.37	(0.78)	[12.82, 15.91]	16.32	(0.79)	[14.77, 17.87]	15.41	(0.79)	[13.85, 16.98]			
Confabulated details												
MCI												
UK	0.80	(0.44)	[-0.07, 1.66]	-0.07	(0.44)	[-0.94, 0.80]	0.25	(0.44)	[-0.62, 1.12]	0.33	(0.27)	[-0.21, 0.86]
Mexico	1.14	(0.43)	[0.30, 1.98]	0.45	(0.42)	[-0.39, 1.28]	-0.50	(0.43)	[-0.90, 0.80]	0.51	(0.25)	[0.02, 1.00]
Total	0.97	(0.31)	[0.35, 1.58]	0.19	(0.31)	[-0.42, 0.80]	0.10	(0.32)	[-0.52, 0.73]	0.42	(0.19)	[0.04, 0.80]
SI												
UK	0.50	(0.43)	[-0.35, 1.35]	1.02	(0.44)	[0.15, 1.89]	0.93	(0.44)	[0.06, 1.80]	0.82	(0.26)	[0.30, 1.34]
Mexico	0.52	(0.43)	[-0.33, 1.38]	0.31	(0.43)	[-0.54, 1.17]	0.26	(0.43)	[-0.60, 1.11]	0.37	(0.26)	[-0.15, 0.88]
Total	0.51	(0.31)	[-0.10, 1.13]	0.67	(0.32)	[0.04, 1.29]	0.59	(0.31)	[-0.02, 1.21]	0.59	(0.20)	[0.21, 0.98]
Sample												
UK	0.65	(0.30)	[0.06, 1.24]	0.48	(0.30)	[-0.11, 1.07]	0.59	(0.31)	[-0.01, 1.20]	0.57	(0.17)	[0.23, 0.92]
Mexico	0.83	(0.30)	[0.24, 1.42]	0.38	(0.30)	[-0.21, 0.97]	0.10	(0.30)	[-0.49, 0.69]	0.44	(0.17)	[0.10, 0.78]
Total	0.74	(0.21)	[0.32, 1.16]	0.43	(0.21)	[0.01, 0.85]	0.35	(0.21)	[-0.07, 0.77]			

Correct details. A significant effect was found for total number of correct details by event, $F(2, 166) = 12.92, p < .001, \eta^2_p = .135$, sample, $F(1, 166) = 11.02, p < .001, \eta^2_p = .062$, and event X sample interaction, $F(2, 166) = 6.72, p < .005, \eta^2_p = .075$. No significant effect of interview type, $F(1, 166) = .01, p > .05, \eta^2_p = .000$, event X interview type interaction, $F(2, 166) = .04, p > .05, \eta^2_p = .000$, interview type X sample interaction, $F(1, 166) = p > .05, \eta^2_p = .007$, or event X interview type X sample interaction $F(2, 166) = .29, p > .05, \eta^2_p = .003$ was found.

Pairwise comparisons employing Bonferroni post hoc tests showed that the participants from the positive ($M = 67.76, SE = 1.74, [64.32, 71.21]$) and negative ($M = 65.17, SE = 1.77, [61.69, 68.65]$) event recalled more correct information than the participants from the neutral event ($M = 55.81, SE = 1.75, [52.36, 59.26]$). Additionally the participants from the UK sample recalled more correct details ($M = 66.30, SE = 1.44, [63.46, 69.14]$) than the participants from Mexico ($M = 59.53, SE = 1.43, [56.71, 62.36]$). Regarding the interactions, the participants from the UK in the positive event ($M = 69.87, SE = 2.44, [65.06, 74.69]$) recalled more correct details than the participants from the UK in the neutral event ($M = 55.42, SE = 2.44, [50.62, 60.23]$) the participants from Mexico in both the neutral event ($M = 52.21, SE = 2.44, [51.39, 61.03]$) and negative event ($M = 56.74, SE = 2.44, [51.93, 61.55]$). In addition, the participants from the UK in the negative event ($M = 73.66, SE = 2.49, [68.74, 78.47]$) recalled more correct details than the participants from the UK in the neutral event and the participants from Mexico in both the neutral event and the negative event (see adjusted values above). No other pairwise comparisons were significant.

Incorrect details. A main effect was found for total number of incorrect details recalled by sample, $F(1, 166) = 4.74, p < .05, \eta^2_p = .028$. No other significant effect was found, event, $F(2, 166) = 1.56, p > .05, \eta^2_p = .018$, interview type, $F(1, 166) = .69, p > .05, \eta^2_p = .004$, event X interview type interaction, $F(2, 166) = 1.85, p > .05, \eta^2_p = .022$, event X sample interaction, $F(2, 166) = .05, p > .05, \eta^2_p = .001$, interview type X sample interaction, $F(1, 166) = 1.62, p > .05, \eta^2_p = .010$, and event X interview type X sample interaction, $F(2, 166) = 2.69, p > .05, \eta^2_p = .031$. Pairwise comparisons using Bonferroni post hoc test demonstrated that the participants for the UK sample reported more incorrect details ($M = 16.32, SE = .65, [15.09, 17.64]$) than the participants from Mexico ($M = 14.37, SE = .64, [13.10, 15.64]$).

Confabulated details. No main effect was found for total number of confabulated details recalled by event, $F(2, 166) = .96, p > .05, \eta^2_p = .011$, interview type $F(1, 166) = .33, p > .05, \eta^2_p = .002$ or sample, $F(1, 166) = .30, p > .05, \eta^2_p = .002$. Additionally, no significant effect was found for the following interactions: event X interview type, $F(2, 166) = 1.64, p > .05, \eta^2_p = .019$, event X sample, $F(2, 166) = .63, p > .05, \eta^2_p = .007$, interview type X sample, $F(1, 166) = 1.67, p > .05, \eta^2_p = .010$, or event X interview type X sample, $F(2, 166) = .36, p > .05, \eta^2_p = .004$.

As predicted, the participants from the UK recalled more correct details than the participants from Mexico and they also report more incorrect details than the participants from Mexico but they did not report more confabulated details. Contrary to what was expected, there were no differences found as a function of interview type for the total number of correct, incorrect or confabulated details. According to event type, as predicted, the participants that viewed either the positive or the negative event recall more correct details than the participants that viewed the neutral one, but no differences were found for the number of incorrect and confabulated details.

5.3.6. Recall within specific interview phases: free recall phase and questions phase

To further understand where the differences in recall of details were coming from, the total number of correct, incorrect and confabulated details from each interview phase (free recall phase and questions phase) were analyzed. In order to achieve this, the total number of correct, incorrect and confabulated details was calculated independently for each interview phase.

A series of 3 (event) X 2 (interview type) X 2 (sample) ANCOVAs were performed on the total number of correct, incorrect and confabulated details recalled in the free recall phase and in the questions phase with duration as a covariate. Duration was calculated in minutes for each interview phase and included in the appropriate analysis.

5.3.6.1. Free recall phase

Correct details. A main effect was found for the total number of correct details recalled by event, $F(2, 166) = 6.70, p < .005, \eta^2_p = .075$, and sample, $F(1, 166) = 8.23, p < .005, \eta^2_p = .047$. Additionally there were significant interactions effects of event X sample, $F(2, 166) = 6.35, p < .005, \eta^2_p = .071$, and interview type X sample, $F(1, 166) = 12.09, p < .005, \eta^2_p = .068$. No significant difference was found for interview type, $F(1, 166) = 1.85, p > .05, \eta^2_p = .011$, event X interview type interaction, $F(2, 166) = .09, p > .05, \eta^2_p = .001$ or event X interview type X sample interaction, $F(2, 166) = .23, p > .05, \eta^2_p = .003$.

To examine the effect of event and sample on the total number of correct details from the free recall phase, pairwise comparisons employing Bonferroni post hoc tests were performed. The positive ($M = 35.38, SE = 1.17, [33.07, 37.69]$) and negative ($M = 36.22, SE = 1.18, [33.89, 38.55]$) events elicited more correct details than the neutral event ($M = 30.60, SE = 1.17, [28.29, 32.90]$). The participants from the UK recalled more correct details ($M = 36.01, SE = .96, [34.11, 37.90]$) than the participants from Mexico ($M = 32.12, SE = .95, [30.24, 34.01]$). The participants from the UK in the negative event ($M = 41.54, SE = 1.68, [38.22, 44.86]$) recalled more correct details than the participants from the UK in the neutral event ($M = 30.26, SE = 1.66, [29.99, 33.53]$) and the participants from Mexico in both the neutral event ($M = 30.94, SE = 1.66, [27.66, 30.21]$) and negative event ($M = 30.89, SE = 1.66, [27.62, 34.17]$). In addition, the participants from the UK in the MCI condition ($M = 39.51, SE = 1.49, [36.59, 42.45]$) recalled more details than the participants from the UK in the SI condition ($M = 32.49, SE = 1.48, [29.57, 35.41]$) and the participants from Mexico in both the MCI condition ($M = 30.88, SE = 1.39, [28.13, 33.63]$) and the SI condition ($M = 33.37, SE = 1.41, [30.58, 36.16]$). No other pairwise comparisons were found. Table 15 shows the adjusted means for total number of correct, incorrect and confabulated details in the free recall phase.

Incorrect details. A main effect of event was found for the total number of incorrect details reported in the free recall phase, $F(2, 166) = 3.93, p < .05, \eta^2_p = 0.45$. Pairwise comparisons applying Bonferroni post hoc tests demonstrated that the participants who viewed the neutral event reported more incorrect details ($M = 5.02, SE = .39, [4.25,$

Table 15. Adjusted mean (*SE*) number for correct, incorrect and confabulated details in free recall phase by event, interview type and sample

	Event											
	Positive			Neutral			Negative			Total		
	M	(SE)	95% CI	M	(SE)	95% CI	M	(SE)	95% CI	M	(SE)	95% CI
<i>Correct details</i>												
MCI												
UK	39.82	(2.38)	[35.12, 44.53]	33.07	(2.48)	[28.17, 37.96]	45.67	(2.41)	[40.93, 50.42]	39.52	(1.49)	[36.59, 42.45]
Mexico	32.59	(2.35)	[27.95, 37.23]	30.26	(2.35)	[25.61, 34.90]	28.78	(2.39)	[25.06, 34.51]	30.88	(1.39)	[28.13, 33.63]
Total	36.21	(1.69)	[32.87, 39.55]	31.66	(1.74)	[28.23, 35.10]	37.73	(1.74)	[34.29, 41.16]	35.20	(1.07)	[33.09, 37.31]
SI												
UK	32.61	(2.39)	[27.89, 37.33]	27.46	(2.40)	[22.71, 32.20]	37.40	(2.50)	[32.46, 42.34]	32.49	(1.48)	[29.57, 35.41]
Mexico	36.48	(2.39)	[31.76, 41.20]	31.61	(2.39)	[26.89, 36.33]	32.01	(2.35)	[27.37, 36.64]	33.37	(1.41)	[30.58, 36.16]
Total	34.55	(1.73)	[31.14, 37.96]	29.53	(1.74)	[26.11, 32.96]	34.70	(1.74)	[31.27, 38.14]	32.93	(1.08)	[30.80, 35.06]
Sample												
UK	36.22	(1.65)	[32.96, 39.48]	30.26	(1.66)	[26.99, 33.53]	41.54	(1.68)	[38.22, 44.86]	36.01	(0.96)	[34.11, 37.90]
Mexico	34.54	(1.66)	[31.26, 37.81]	30.94	(1.66)	[27.66, 34.21]	30.89	(1.66)	[27.62, 34.17]	32.12	(0.95)	[30.24, 34.01]
Total	35.37	(1.17)	[33.07, 37.69]	30.60	(1.17)	[28.29, 32.90]	36.22	(1.18)	[33.89, 38.55]			
<i>Incorrect details</i>												
MCI												
UK	3.96	(0.79)	[2.40, 5.52]	5.15	(0.82)	[3.52, 6.77]	3.01	(0.80)	[1.44, 4.59]	4.04	(0.49)	[3.07, 50.2]
Mexico	3.25	(0.78)	[1.71, 4.79]	4.79	(0.78)	[3.24, 6.33]	3.65	(0.80)	[2.08, 5.22]	3.90	(0.46)	[2.98, 4.81]
Total	3.61	(0.56)	[2.50, 4.72]	4.97	(0.58)	[3.83, 6.11]	3.33	(0.58)	[2.19, 4.48]	3.79	(0.36)	[3.27, 4.67]
SI												
UK	4.38	(0.79)	[2.81, 5.95]	3.89	(0.80)	[2.31, 5.46]	3.34	(0.83)	[1.69, 4.98]	3.87	(0.49)	[2.90, 4.84]
Mexico	3.78	(0.79)	[2.21, 5.35]	6.25	(0.79)	[4.68, 7.82]	4.25	(0.78)	[2.71, 5.79]	4.76	(0.47)	[3.83, 5.69]
Total	4.08	(0.57)	[2.95, 5.21]	5.07	(0.58)	[3.93, 6.21]	3.79	(0.58)	[2.65, 4.93]	4.31	(0.36)	[3.61, 5.02]

Table 15. Adjusted mean (*SE*) number for correct, incorrect and confabulated details in free recall phase by event, interview type and sample

	Event											
	Positive			Neutral			Negative			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Sample												
UK	4.17	(0.55)	[3.09, 5.25]	4.52	(0.55)	[3.43, 5.61]	3.18	(0.56)	[2.07, 4.28]	3.95	(0.32)	[3.32, 4.58]
Mexico	3.52	(0.55)	[2.43, 4.60]	5.52	(0.55)	[4.43, 6.06]	3.95	(0.55)	[2.86, 5.04]	4.33	(0.32)	[3.70, 4.95]
Total	3.84	(0.39)	[3.08, 4.61]	5.02	(0.39)	[4.25, 5.78]	3.56	(0.39)	[2.79, 4.34]			
Confabulated details												
MCI												
UK	0.24	(0.16)	[-0.06, 0.55]	-0.16	(0.16)	[-0.48, 0.16]	0.02	(0.16)	[-0.29, 0.33]	0.04	(0.10)	[-0.16, 0.23]
Mexico	-0.05	(0.15)	[-0.35, 0.25]	0.15	(0.15)	[-0.15, 0.45]	0.10	(0.16)	[-0.21, 0.41]	0.07	(0.10)	[-0.11, 0.24]
Total	0.10	(0.11)	[-0.12, 0.31]	-0.01	(0.11)	[-0.23, 0.22]	0.06	(0.11)	[-0.16, 0.28]	0.05	(0.07)	[-0.09, 0.19]
SI												
UK	0.10	(0.16)	[-0.21, 0.40]	0.37	(0.16)	[0.07, 0.68]	0.27	(0.16)	[-0.05, 0.59]	0.25	(0.10)	[0.06, 0.44]
Mexico	0.16	(0.16)	[-0.14, 0.47]	0.16	(0.16)	[-0.14, 0.47]	0.05	(0.15)	[-0.25, 0.35]	0.13	(0.09)	[-0.06, 0.31]
Total	0.13	(0.11)	[-0.09, 0.35]	0.27	(0.11)	[0.05, 0.49]	0.16	(0.11)	[-0.07, 0.38]	0.19	(0.07)	[0.05, 0.32]
Sample												
UK	0.17	(0.11)	[-0.04, 0.38]	0.11	(0.11)	[-0.11, 0.32]	0.15	(0.11)	[-0.07, 0.36]	0.14	(0.06)	[0.02, 0.26]
Mexico	0.06	(0.11)	[-0.16, 0.27]	0.16	(0.11)	[-0.06, 0.37]	0.07	(0.11)	[-0.14, 0.29]	0.10	(0.06)	[-0.03, 0.22]
Total	0.11	(0.08)	[-0.04, 0.26]	0.13	(0.08)	[-0.02, 0.28]	0.11	(0.08)	[-0.04, 0.26]			

than the participants who viewed the negative event ($M = 3.56$, $SE = .39$, [2.79, 4.34]). No other pairwise comparison was significant.

There was no significant effect for the total number of incorrect details recalled in the free recall phase by interview type $F(1, 166) = .39$, $p > .05$, $\eta^2_p = .002$, or sample $F(1, 166) = .69$, $p > .05$, $\eta^2_p = .004$. Additionally, no interaction effect was significant, event X interview type, $F(2, 166) = .07$, $p > .05$, $\eta^2_p = .001$, event X sample, $F(2, 166) = 1.33$, $p > .05$, $\eta^2_p = .016$, interview type X sample, $F(1, 166) = 1.29$, $p > .05$, $\eta^2_p = .008$ and event X interview type X sample, $F(2, 166) = .89$, $p > .05$, $\eta^2_p = .011$.

Confabulated details. No main effect was found for the total number of confabulated details by event, $F(2, 166) = .03$, $p > .05$, $\eta^2_p = .000$, interview type, $F(2, 166) = 1.57$, $p > .05$, $\eta^2_p = .009$ or sample, $F(1, 166) = .26$, $p > .05$, $\eta^2_p = .002$. Additionally, no significant effect of interactions was found, event X interview type, $F(2, 166) = .67$, $p > .05$, $\eta^2_p = .008$, event X sample, $F(2, 166) = .31$, $p > .05$, $\eta^2_p = .004$, interview type X sample, $F(1, 166) = .73$, $p > .05$, $\eta^2_p = .004$, and event X interview type X sample, $F(2, 166) = 2.26$, $p > .05$, $\eta^2_p = .027$.

5.3.6.2. Questions phase

Correct details. In the questions phase, a significant effect was found for the total number of correct information recalled by event, $F(2, 166) = 11.40$, $p < .001$, $\eta^2_p = .121$, and sample, $F(1, 166) = 6.14$, $p < .05$, $\eta^2_p = .06$. In addition, there was significant interaction effect for event X sample interaction, $F(2, 166) = 3.34$, $p < .05$, $\eta^2_p = .039$, and interview type X sample interaction, $F(1, 166) = 4.51$, $p < .05$, $\eta^2_p = .026$.

Pairwise comparisons employing Bonferroni post hoc tests demonstrated that the participants from the positive ($M = 32.64$, $SE = 1.15$, [30.37, 34.92]) and negative ($M = 29.11$, $SE = 1.17$, [26.80, 31.41]) events recalled more correct details than the participants from the neutral ($M = 24.83$, $SE = 1.16$, [22.55, 27.12]) event. Also, the participants from the UK ($M = 30.54$, $SE = .95$, [28.66, 32.42]) reported more correct details than the participants from Mexico ($M = 27.18$, $SE = .95$, [25.31, 29.06]). With regards to the interactions, the participants from the UK in the positive event ($M = 34.13$, $SE = 1.64$, [30.90, 37.36]) recalled more correct details than the participants from

the UK in the neutral event ($M = 33.00$, $SE = 1.69$, [29.68, 36.33]) and participants from Mexico in the neutral event ($M = 25.18$, $SE = 1.64$, [21.95, 28.41]) and the negative event ($M = 25.22$, $SE = 1.63$, [21.99, 28.44]). The participants from the UK in the negative event reported more correct details than the participants from the UK in the neutral event and participants from Mexico in the neutral event and the negative event (see values above). In addition, the participants from the UK in the SI condition ($M = 33.42$, $SE = 1.39$, [30.67, 36.16]) recalled more correct details than the participants from the UK in the MCI condition ($M = 27.66$, $SE = 1.45$, [24.79, 30.53]) and the participants from Mexico in the MCI condition ($M = 27.15$, $SE = 1.35$, [24.49, 29.82]) and the SI condition ($M = 27.22$, $SE = 1.41$, [24.43, 30.00]).

No significant effect of interview type, $F(1, 166) = 3.46$, $p > .05$, $\eta^2_p = .020$, event X interview type interaction, $F(2, 166) = .07$, $p > .05$, $\eta^2_p = .001$, or event X interview type X sample interaction, $F(2, 166) = .92$, $p > .05$, $\eta^2_p = .011$ was found. See Table 16 for adjusted means of the total correct, incorrect and confabulated details of the questions phase.

Incorrect details. A significant effect of sample, $F(1, 166) = 9.02$, $p < .005$, $\eta^2_p = .052$, and interview type X sample interaction, $F(1, 166) = 5.23$, $p < .05$, $\eta^2_p = .031$ was found for the total number of incorrect details in the questions phase. Pairwise comparisons employing Bonferroni post hoc test showed that the participants from the UK sample ($M = 12.40$, $SE = .55$, [11.32, 13.49]) reported more incorrect details in the questions phase than the participants from Mexico ($M = 10.05$, $SE = .55$, [8.97, 11.13]). In addition, the participants from the UK in the SI condition ($M = 12.86$, $SE = .81$, [11.26, 14.46]) recalled more incorrect details than the participants from Mexico in the SI condition ($M = 8.77$, $SE = .82$, [7.15, 10.38]). No other pairwise comparisons were significant.

No significant effect of event, $F(2, 166) = .92$, $p > .05$, $\eta^2_p = .011$, interview type, $F(1, 166) = .91$, $p > .05$, $\eta^2_p = .005$, event X interview type interaction, $F(2, 166) = 2.00$, $p > .05$, $\eta^2_p = .024$, event X sample interaction, $F(2, 166) = .19$, $p > .05$, $\eta^2_p = .002$, and event X interview type X sample interaction, $F(2, 166) = 1.88$, $p > .05$, $\eta^2_p = .022$, for the total number of incorrect details in the questions phase was found.

Table 16. Adjusted mean (*SE*) number for correct, incorrect and confabulated details in the questions phase by event, interview type and sample

	Event											
	Positive			Neutral			Negative			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
<i>Correct details</i>												
MCI												
UK	30.20	(2.40)	[25.46, 34.94]	22.84	(2.35)	[18.20, 27.48]	29.95	(2.39)	[25.23, 34.67]	27.66	(1.45)	[24.79, 30.53]
Mexico	32.43	(2.31)	[27.86, 37.00]	24.36	(2.31)	[19.80, 28.91]	24.67	(2.34)	[20.05, 29.29]	27.15	(1.35)	[24.49, 29.82]
Total	31.31	(1.69)	[27.98, 34.65]	23.60	(1.65)	[20.34, 26.86]	27.31	(1.71)	[23.94, 30.68]	27.41	(1.03)	[25.38, 29.43]
SI												
UK	38.05	(2.33)	[33.45, 42.66]	26.14	(2.40)	[21.40, 30.88]	36.06	(2.39)	[31.35, 40.77]	33.42	(1.39)	[30.67, 36.16]
Mexico	29.88	(2.34)	[25.26, 34.51]	26.00	(2.34)	[21.39, 30.62]	25.76	(2.38)	[21.07, 30.45]	27.22	(1.41)	[24.43, 30.00]
Total	33.97	(1.68)	[30.66, 37.28]	26.07	(1.71)	[22.69, 29.45]	30.91	(1.69)	[27.58, 34.24]	30.32	(1.03)	[28.28, 32.35]
Sample												
UK	34.13	(1.64)	[30.90, 37.36]	24.49	(1.63)	[21.27, 27.71]	33.00	(1.69)	[29.68, 36.34]	30.54	(0.95)	[28.66, 32.42]
Mexico	31.16	(1.64)	[27.93, 34.38]	25.18	(1.64)	[21.95, 28.41]	25.22	(1.63)	[21.99, 28.44]	27.18	(0.95)	[25.31, 29.06]
Total	32.64	(1.15)	[30.37, 34.92]	24.83	(1.16)	[22.55, 27.12]	29.11	(1.17)	[26.80, 31.41]			
<i>Incorrect details</i>												
MCI												
UK	9.25	(1.39)	[6.51, 11.98]	14.21	(1.36)	[11.52, 16.89]	12.39	(1.38)	[9.66, 15.12]	11.95	(0.84)	[10.29, 13.61]
Mexico	10.98	(1.34)	[8.33, 13.62]	11.23	(1.33)	[8.60, 13.86]	11.90	(1.35)	[9.23, 14.57]	11.37	(0.78)	[9.83, 12.91]
Total	10.11	(0.98)	[8.19, 12.04]	12.72	(0.96)	[10.83, 14.60]	12.15	(0.99)	[10.20, 14.10]	11.66	(0.59)	[10.49, 12.83]
SI												
UK	13.56	(1.35)	[10.90, 16.22]	11.16	(1.39)	[8.42, 13.89]	13.86	(1.38)	[11.14, 16.58]	12.86	(0.81)	[11.27, 14.45]
Mexico	8.45	(1.36)	[5.78, 11.13]	8.57	(1.35)	[5.90, 11.24]	9.18	(1.37)	[6.47, 11.89]	8.74	(0.82)	[7.13, 10.34]
Total	11.04	(0.97)	[9.09, 12.92]	9.86	(0.99)	[7.91, 11.82]	11.52	(0.98)	[9.60, 13.45]	10.80	(0.60)	[9.62, 11.97]

Table 16. Adjusted mean (*SE*) number for correct, incorrect and confabulated details in the questions phase by event, interview type and sample

	Event											
	Positive			Neutral			Negative			Total		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Sample												
UK	11.40	(0.95)	[9.53, 13.27]	12.68	(0.94)	[10.82, 14.54]	13.13	(0.98)	[11.20, 15.05]	12.40	(0.55)	[11.32, 13.49]
Mexico	9.71	(0.94)	[7.85, 11.58]	9.90	(0.95)	[8.03, 11.77]	10.54	(0.94)	[8.68, 12.40]	10.05	(0.55)	8.97, 11.13]
Total	10.56	(0.67)	[9.24, 11.87]	11.29	(0.67)	[9.97, 12.61]	11.83	(0.68)	[10.50, 13.17]			
Confabulated details												
MCI												
UK	0.59	(0.36)	[-0.13, 1.31]	0.12	(0.36)	[-0.58, 0.83]	0.27	(0.36)	[-0.45, 0.98]	0.33	(0.22)	[-0.11, 0.76]
Mexico	1.20	(0.35)	[0.51, 1.89]	0.31	(0.35)	[-0.39, 1.00]	-0.13	(0.36)	[-0.83, 0.58]	0.46	(0.21)	[0.06, 0.87]
Total	0.89	(0.26)	[0.39, 1.40]	0.21	(0.25)	[-0.28, 0.71]	0.07	(0.26)	[-0.44, 0.58]	0.39	(0.16)	[0.09, 0.70]
SI												
UK	0.38	(0.36)	[-0.32, 1.08]	0.61	(0.37)	[-0.11, 1.33]	0.65	(0.36)	[-0.06, 1.37]	0.55	(0.21)	[0.13, 0.97]
Mexico	0.33	(0.36)	[-0.37, 1.04]	0.13	(0.36)	[-0.58, 0.83]	0.18	(0.36)	[-0.53, 0.90]	0.21	(0.21)	[-0.21, 0.64]
Total	0.36	(0.26)	[-0.15, 0.86]	0.37	(0.26)	[-0.15, 0.88]	0.42	(0.26)	[-0.09, 0.92]	0.38	(0.16)	[0.07, 0.69]
Sample												
UK	0.49	(0.25)	[-0.01, 0.98]	0.37	(0.25)	[-0.12, 0.86]	0.46	(0.26)	[-0.05, 0.96]	0.44	(0.15)	[0.15, 0.72]
Mexico	0.77	(0.25)	[0.28, 1.26]	0.22	(0.25)	[-0.28, 0.71]	0.03	(0.25)	[-0.46, 0.52]	0.34	(0.14)	[0.05, 0.62]
Total	0.63	(0.18)	[0.28, 0.97]	0.29	(0.18)	[-0.06, 0.63]	0.24	(0.18)	[-0.11, 0.59]			

Confabulated details. No significant effect for the total number of confabulated details reported by event, $F(2, 166) = 1.41, p > .05, \eta^2_p = .017$, interview type, $F(1, 166) = .00, p > .05, \eta^2_p = .000$, or sample, $F(1, 166) = .24, p > .05, \eta^2_p = .001$ was found. Additionally, no significant interaction effect was found, event X interview type, $F(2, 166) = 1.75, p > .05, \eta^2_p = .021$, event X sample, $F(2, 166) = 1.04, p > .05, \eta^2_p = .012$, interview type X sample, $F(1, 166) = 1.32, p > .05, \eta^2_p = .008$, and event X interview type X sample, $F(2, 166) = .22, p > .05, \eta^2_p = .003$.

As hypothesized, the participants from the UK sample recalled more correct details than the participants from Mexico in the free recall phase. However, contrary to what was expected, in the questions phase the participants from the UK also reported more correct details than the participants from Mexico. In addition, the participants from the UK also reported more incorrect details in the questions phase than participants from Mexico. According to interview type during free recall, the MCI produced more correct details in the UK participants than the SI in both UK and Mexican participants and also participants from Mexico in the MCI condition. Contrary to what was expected, during the questions phase, the participants from the UK reported more correct and incorrect information in the SI than the MCI. Finally, as predicted, the participants who viewed the positive or negative event recalled more correct details than those who viewed the neutral one. This was true for both the free recall phase and the questions phase.

5.4. Discussion

The present study aimed to understand the effect a MCI and a SI had on recall of an event amongst participants from the UK and Mexico. In addition, this study employed three emotional events, positive, neutral and negative; to explore the effect they had on memory recall. The following sections discuss the results found.

5.4.1. Recall amongst participants from the UK and Mexico

It was expected to find some differences between reporting of details amongst participants from the UK and Mexico. As predicted, results of the interviews as a whole found that participants from the UK were more complete and reported more correct and incorrect details than the participants from Mexico. However no differences were found for accuracy rates between samples. This re-enforced the hypothesis based on studies 1 and 2 that participants from Mexico are less willing to report an event. Nonetheless it does not follow that they would be less accurate than participants from the UK.

In study 2, during the free recall phase participants from the UK reported more correct details than participants from Mexico. It was therefore hypothesized that similar results would be again found. Indeed these results were once again replicated. During the free recall phase where participants volunteer information about the event freely, the participants from the UK reported more details than the participants from Mexico. In accordance with the results from Study 1 the participants from Mexico seem to be unwilling to provide details about an event witnessed. For a further discussion as to the possible explanations based on the violence in lived in Mexico for these results see section 4.4.1. Recall amongst participants from the UK and Mexico from Study 2.

Contrary to what was predicted differences in the reporting of details were found in the questions phase amongst participants from the UK and Mexico. The participants from the UK reported more correct details in the questions phase than did participants from Mexico. This was not expected, as it had not been previously found in Study 2. Nonetheless participants from the UK also reported more incorrect details than participants from Mexico. This indicates that the participants from Mexico are not reporting many correct details compared to the UK participants, but they are not reporting many incorrect details either.

The results so far suggest that participants from Mexico who are known to be less willing than UK participants to report a crime are also likely to provide fewer details regarding the crime during interview than UK participants. As speculated before, the ever increasing violence that is found in the country might play a role in creating a general reluctance to report crime related information which may be evidenced both

through initial reporting and the provision of fewer details when interviewed (Mexico security memo: Rising violence in Cancun, 2013; Asfura-Heim & Espach, 2013).

5.4.2. Interview type

Initial analysis confirmed that the MCI takes longer to complete than a SI (see Memon et al., 1997), this was expected as the MCI contains more retrieval attempts than the SI, allowing the participants an opportunity to elicit more information. Contrary to what was predicted, no significant differences were found for overall accuracy rates or completeness by interview type. Nonetheless a tendency for higher accuracy rate in the SI for participants in Mexico was found compared to participants of the UK in the same condition and participants from Mexico in the MCI. During the free recall phase, accuracy rates were found higher for participants from the UK in the MCI condition compared to those of the SI (Holliday et al., 2012; Prescott et al., 2011; A. M. Wright & Holliday, 2007a). In contrast a higher accuracy rate for participants from Mexico was found in the SI condition compared to the MCI in the free recall phase. Of particular interest was the higher questions phase accuracy rate in the SI than in the MCI, particularly in the UK. Although higher accuracy rates for the CI have been previously found (Holliday et al., 2012; Prescott et al., 2011; A. M. Wright & Holliday, 2007a), some studies do not support these findings (Dornburg & McDaniel, 2006; Ginet & Verkampt, 2007; Mello & Fisher, 1996; Stein & Memon, 2006). Low accuracy rates in the MCI indicated that the increase of correct details reported was offset by the increase of incorrect details. These results imply that investigative interviewers need to consider whether the increase in correct detail (accompanied by increase of incorrect details) outweighs the importance of accuracy in testimonies.

During the free recall phase, it was found that the participants from the UK in the MCI condition recalled more correct details than participants in the SI condition in both samples. This was an expected result as previous research show that a CI or a MCI is more successful at producing correct information than a SI (see Memon et al., 2010 for a review). Unfortunately it was found that the MCI in Mexico did not improve the reporting of correct details as was expected. Could the reluctance to report a crime (as found in Study 1) be so rooted in Mexican participants that they do not report details

even in laboratory situations such as this? Or is it possible that the participants from Mexico report fewer details, because they remember fewer details? The latter seems unlikely as there is no evidence to suggest that participants from the UK have a better memory capacity than participants from Mexico. The former explanation seems more plausible. After years of living in constant violence, and suffering an ever increasing amount of crime (Mexico security memo: Rising violence in Cancun, 2013; Asfura-Heim & Espach, 2013), the individuals from Mexico seem to present a pronounced attitude of reluctance to report crime or the details of such events

During the questions phase, a main effect of interview type was found (i.e. difference between the MCI and SI). Questions phase accuracy was higher for the SI than the MCI. In addition, the SI produced more correct details than the MCI in both participants from the UK and Mexico. Why did the SI perform better than the MCI in the questions phase? These results could be due to the use of duration as a covariate (see CHAPTER 3, General Methodology, section 3.5. Analysis strategy). The use of covariates that are directly affected by the treatment (in this case interview type) can potentially adjust the values to a degree where the treatment effect (type of interview) can be obscured (Kachigan, 1991; Miller & Chapman, 2001). In some studies the use of duration as a covariate has had this effect (see Milne, 1997, studies 1 and 2). The results found in this study, point to the need of further studies being carried out to test the appropriateness of duration as a covariate. Another potential reason for the SI to have produced more correct details in the questions phase is due to the MCI producing more correct details in the free recall phase. Therefore there may be fewer additional details to report during the questions phase of the MCI.

Another potential explanation for the SI performing better than the MCI is the use of emotional events. Extensive research in recall of emotional items shows that memory for emotional events are better remembered than neutral events (Kensinger & Schacter, 2008; see Levine & Pizarro, 2004; Levine & Edelstein, 2009 for reviews on memory and emotion). Thus there is a possibility that since the events vary in emotional charge, the difference of interview type has been overshadowed by it. For instance while the positive and negative events may provide a large number of details reported, this is not the case for the neutral event. The differences between the details reported by type of event could have outweighed the differences reported by type of interview.

Finally, it is important to recapitulate the findings of interview type in participants from Mexico. The results of interview type suggest that participants from Mexico might not report many overall details, but those they do report are not deficient in accuracy rate. Although Stein and Memon (2006) found participants from Brazil to report more correct details in the CI than in the standard interview this was not the case for the present study. However, Stein and Memon's study, like the present study failed to find differences in reporting of incorrect details. Overall, Stein and Memon concluded that the CI has the potential to enhance report of correct details more so than a standard interview in a sample of participants from a developing country. The present study did not find such results. Nonetheless there are several differences between Stein and Memon's study and the present one that can account for the diverging results. Firstly, the study in Brazil compared a CI and a standard interview, the present employed a SI. The standard interview used by Stein and Memon was modeled after typical police interview in Brazil. The standard interview did not have a clear free recall phase or references to a rapport building, it allowed the interviewer to interrupt participants' narrative when considered necessary and it focused on specific questions. Comparing a standard interview, like the one described, to a CI allows for a more ecologically valid study and a more applied view. As long as the CI performs better than the standard interview it can be deemed beneficial to police forces (Köhnken et al., 1999). On the other hand a SI allows for a more theoretical approach. As police officers lack interview training, a CI compared to a standard interview lacks validity as the training it takes to learn to conduct a CI can account for interview differences alone (Köhnken et al., 1999). Therefore differences between a CI and a SI are more likely to be caused by the use of mnemonic techniques. Finally a comparison of the CI with a typical interview conducted by police officers in Mexico might have elicited more differences as the interviewing techniques used currently in the country are less refined than those of a SI.

5.4.3. Event type

Before fully discussing the effects of event type, it is important to point out that three different videos (events) were employed to account for different effects of emotion (positive, neutral and negative). These videos differed slightly on the number of details contained, the actions portrayed and duration of the video. The negative video had a

larger number of details than both the positive and neutral video (although, the negative video had only 11 more details than the positive). The positive and negative videos each outnumbered the neutral video by more than 50 details (see Appendix E). These differences could potentially influence the number of details reported as well as completeness. For example, the negative event had the highest number of details shown in the video; therefore perhaps the participants report more details from the negative event than the positive or neutral. Taking this into account, the results found according to type of event are carefully discussed.

It was found that the positive event elicited a higher overall accuracy and questions phase accuracy rates than the neutral event, as well as a higher completeness rate. Overall, the positive and negative events reported more total number of correct details, across interview phases, than the neutral event. Although these results could be due to the positive and negative events having more details in the video than the neutral event, these results are supported by many studies where positive and negative events are better recalled than neutral ones (Adelman & Estes, 2013; Bradley, Greenwald, Petry, & Lang, 1992; Hulse et al., 2007; Kensinger & Corkin, 2003). In addition, similar results are found for correct details recalled in the free recall phase and the questions phase. Both positive and negative events elicited more correct details than the neutral event. Consistent with some studies (e.g., Kensinger & Corkin, 2004; Pesta, Murphy, & Sanders, 2001) the neutral emotion elicited more incorrect details than the negative emotion, particularly, during the free recall phase. These results indicate that emotional events can be remembered in great detail. This is of particular importance for law enforcers where witness testimony may be the only clue to solving a crime.

According to event type and sample, the participants from the UK that viewed the negative event recalled more correct details than the participants from the UK that viewed the neutral event and the participants from Mexico that viewed the neutral event or negative event. These two findings confirm the prediction that participants from the UK would report more details of the negative event than participants from Mexico. These findings follow from the results from Study 1 where participants from Mexico were found to be less willing to report a crime compared to participants from the UK. It also shows that violence and crime (Mexico security memo: Rising violence in

cancun.2013; Asfura-Heim & Espach, 2013) may influence individuals' willingness to provide details of a crime witnessed.

Differences between reporting of the negative event and reporting of a positive event were found amongst participants from the UK and Mexico. The negative event (a crime) was well reported by participants from the UK, but not in participants from Mexico. The report of the positive event, however, did not differ amongst participants from the UK and Mexico. This later result offers some understanding of memory performance in the Mexican participants. Mainly it suggests that the differences found in report of details do not follow discrepancy in memory capacity between the samples tested. The differences found could potentially be due to cultural circumstances (specifically violence levels) and unwillingness to report crime between the countries tested. In other words, the results found are not likely due to differences in memory capacity between the two samples, but could be due to cultural circumstances.

The results found in this study indicate that the type of event witnessed can affect memory recall in participants. Positive and negative events helped participants report more correct details than the neutral event. The most important finding of this study is the differences in memory performance between the participants from the UK and Mexico. The present results help understand the results found in Study 2. In Study 2, the participants from the UK reported more details than the participants from Mexico, regardless of interview type (CI, CRI + RA, RA + CO, RA + CP). The explanation was based on the violence lived in the country and the unwillingness Mexicans to report crimes. The results found in this study, where the participants from the UK report more details than the participants from Mexico in the neutral and negative events, but not the positive event suggests that the differences found follow a difference in cultural circumstances and not memory capacity.

If participants from Mexico are unwilling to report a crime or provide details of the crime witnessed it makes the work of law enforcers more difficult as they are faced with limited witness testimonies' to solve crime. Furthermore it reinforces the need for appropriate interviewing techniques that will allow for a greater number of details being reported by each willing eyewitness. In practice, it may mean that police officers have to work harder at finding witnesses who are willing to provide a testimony. In addition,

law enforcers are urged to train police officers and other investigative interviewers in the use of adequate interviewing techniques.

As mentioned previously, the use of duration as a covariate could have obscured the effect of interview type. This would account for having found little evidence of main effects of type of interview. Although this issue represents a limitation to the present study, it can also be seen as an opportunity for future studies to incorporate the use of covariates to control for some variables. In addition, the use of separate videos to portray different emotions also represents a limitation. It is possible that differences found across type of detail are due to the videos and not the impact of emotions on memory. Regardless, the results of this study replicate those found in previous emotion and memory research and hence suggest that the impact of this limitation has perhaps not been too great.

The results from studies 1 and 2 indicated that participants from Mexico were unwilling to report a crime. The present study shows that events with a positive emotion are reported by the Mexican participants with similar number of details as the participants from the UK. This suggests that both participants from the UK and Mexico have the same memory capacity and the differences in reporting of details come from the type of event they are reporting. The results highlight the need for appropriate interviewing techniques, such as the CI, to be tested before recommendations for its use in Mexico can be done. This takes us to a final study, which can help further understand the efficacy of the CI in a Mexican sample. It's focused on comparing a CI against a SI when misinformation has been provided to the participants.

CHAPTER 6. Study 4. The Cognitive Interview, does it help protect against the effects of misleading information on memory recall?

6.1. Introduction

In Study 1 of the present thesis, it was found that the participants from Mexico were less willing to report a crime than participants from the UK. In order to explore the potential implications of this reluctance to report a crime in the Mexican population, studies 2 and 3 tested the efficacy of a series of interviews (CI, MCI, combinations of mnemonic techniques) between samples from the UK and Mexico. Study 2 found that, after viewing a video of a crime, participants from Mexico provided fewer correct details in the full CI and combinations of the mnemonic techniques during free recall than the participants from the UK. Study 3 showed similar results but only for a negative event (a crime) and a neutral event, this was found irrelevant of interview type: MCI, SI. When participants viewed a positive event, participants from Mexico and the UK provided a similar number of correct details for both the MCI and the SI. These results were expected as Study 1 showed that participants from Mexico were less willing to report crime.

The results from the previous studies show that participants from Mexico are more reluctant to report crime and provide fewer details during a CI than participants from the UK. Nonetheless it remains unclear whether a CI can enhance memory recall in participants from Mexico more so than a SI. Thus, additional testing of the efficacy of the CI in the Mexican population was considered necessary and so the present study aimed to test the efficacy of a CI against a SI in participants from Mexico. In addition, the present study explored the effects of postevent misleading information on participants' memory due to the impact postevent information can have on people's memory. The lack of guidance available to police in Mexico on good interview techniques may lead police officers to unintentionally introduce misleading information during questioning. In addition, postevent (potentially misleading) information can be encountered in a number of scenarios, e.g., news articles, narratives of the event by

other witnesses. While there is good evidence for the impact on misinformation on memory recall in the UK and other Western countries (Gabbert et al., 2004; Holliday et al., 2012; S. Porter et al., 2010; Titcomb & Reyna, 1995), this has not been examined in Mexico. The following paragraphs provide a broader explanation of the importance of study misinformation effects.

As was seen in CHAPTER 1. Literature Review, memory is concerned with the encoding, storage and retrieval of information (Melton, 1963), but it is far from precise or error free (Loftus, 1991). From the vast array of factors that can influence, change and/or impair memory the present study is interested in the misinformation effect. The misinformation effect happens when memory of an original event is affected by erroneous postevent information (Blank, 1998; Holliday et al., 2002; Loftus et al., 1978; Loftus & Hoffman, 1989). This misleading information can alter memory and so impair recall of the original event (Loftus & Hoffman, 1989).

Research on the misinformation effect has been based on Loftus et al.'s (1978) three-stage paradigm. This paradigm begins with the participants witnessing an event. Afterwards the participant is subjected to misleading information and finally the participant undergoes a memory test for the original event. This information is generally provided in a narrative (Belli, 1989; Centofanti & Reece, 2006; Holliday et al., 2012; McCloskey & Zaragoza, 1985) or as suggestive questions (Loftus et al., 1978; Verkampt & Ginet, 2010), although some studies have other eyewitnesses/participants/confederates providing the information (Gabbert et al., 2003; Gabbert et al., 2004). Extensive research has shown that participants who have been misled report more misinformation as part of the original event than those participants who have not been misled. This effect is found in both adults (Belli, 1989; Centofanti & Reece, 2006; Gabbert et al., 2004; Holliday et al., 2012; Loftus & Hoffman, 1989) and children (Ceci & Bruck, 1993; Holliday & Hayes, 2000; Holliday, 2003a; Holliday & Albon, 2004), and irrespective of how the misleading information is presented. As eyewitness testimonies are a crucial investigative tool for police officers (Kebbell et al., 1999), it is important to explore how postevent information impacts their narratives.

Some research has investigated the impact of the CI on the misinformation effect. It is suggested that due to the CI techniques, this interview might help protect against the

misinformation effect (Centofanti & Reece, 2006; Holliday, 2003a; Holliday & Albon, 2004). For example, the CRI asks participants to reinstate in their mind the context of where the event took place, therefore allowing the participant to focus on the source of the information. The RA, CO and CP all ask for a narrative of the event witnessed, which should enhance the strength of the original event.

Research on the CI and the misinformation effect has focused mainly on children, with less recent research being carried out in young and older adults. Studies have found that a CI, unlike a SI, can help shield children against the misinformation effect when conducted after exposure to misleading details (Holliday, 2003a; Holliday, 2003b; Holliday & Albon, 2004). The studies show that children that have been exposed to misinformation and were then interviewed with the CI, were less likely to incorporate misinformation into their narratives and/or accept misinformation in yes/no recognition tests than children interviewed with a SI.

A study with young adults yielded opposing findings from those found in children. A CI applied after misleading information presented in a postevent narrative did not shield against a misinformation effect (Centofanti & Reece, 2006). Although, Holliday (2003b) and Holliday and Albon (2004) presented the misinformation to children in postevent narratives before the CI and found that the CI helped shield against the misinformation effect, this did not occur with Centofanti and Reece, with young adults.

Whilst the differences in results found in Holliday (2003b), Holliday and Albon (2004) and Centofanti and Reece (2006) are puzzling (CI shielding the misinformation effect in children but not young adults) a deeper analysis of the methodology used in these studies can help understand these findings. In Holliday's and Holliday and Albon's studies, the postevent narrative was introduced to the children in two different ways, self-generated mislead information (where the participant helped fill in parts of the event as the experimenter read the narrative) and mislead-read information (where the participant heard the narrative being read by an experimenter). The results showed that children who had self-generated mislead information were less likely to incorporate misleading details to their narrative during the CI interview and the yes/no recognition test than children that had mislead-read information. Simply put, the CI helped shield against the misinformation effect only for self-generated mislead details. For mislead-

read details, neither the CI nor the SI helped shield against the misinformation effect. In the Centofanti and Reece study misleading information was introduced in a narrative that the young adults read themselves. The results from their study showed that participants incorporated misleading details to their narratives regardless of interview type, CI or SI. So far it seems that the misinformation effect can be found in children and young adults for misleading information that has been read to participants or that participants read themselves, but not for self-generated-misleading information. Although it is of theoretical value to find that self-generated misleading information is not generally linked to a misinformation effect, it becomes difficult to find a practical implication for it. Therefore, the information that has been read by the participants or the information that a research assistant has read to them is the most ecologically valid and so it is these results that are of concern.

Further complicating our understanding of the effects of the CI on misinformation are results found with older adults. Holliday et al. (2012) found that older adults report fewer misleading details during a modified CI (eliminating the CP mnemonic technique) than during a SI, and that participants who had been interviewed with a modified CI were less likely to accept misleading information in the yes/ no recognition test than participants in the SI. These results along with those found In Geiselman et al.'s (1986) study, again indicate that the CI (in this case a modified CI) helped shield against the misinformation effect, this time with older adults. Although the results found by Holliday et al, are contradictory to those found by Holliday and Albon (2004) in children, where the CI did not help shield against the misinformation effect. The question still remains, can the CI help shield against the negative effects of misleading information more so than a SI in young adults from Mexico?

6.1.1. The current study

As previously explained, the results from studies 2 and 3, where the UK participants provided more details of the witnessed event compared to the participants from Mexico, prompted a further study testing the efficacy of the CI in a sample of Mexican participants. Currently in Mexico there is a lack of protocols for interviewing techniques police officers should follow. Training in appropriate interviewing techniques does

seem to be delivered to police. This could potentiate the likelihood of police officers unintentionally introducing suggestive questions and therefore creating a misinformation effect. In addition, several types of situations where the individual can encounter post-event information could also lead to a misinformation effect (e.g., a talk with another witness, news on the media, hearing a police officer narrate what happened). As seen above, postevent misinformation can cause a negative impact on participants' memory causing the misinformation effect. The misinformation effect paired with the CI has already been studied in the UK (see Holliday, 2003a; 2003b; Holliday & Albon, 2004; Holliday et al, 2012, Geiselman et al, 1986), but it has not been done in Mexico. Therefore, the present study focused on the effect of the CI on misleading information in participants from Mexico.

Understanding whether postevent misleading information affects memory and whether interview type (CI, SI) can protect against it, can help improve interviewing techniques for future use in Mexico. For this purpose a modification of the standard three-stage paradigm first used by Lotus et al (1978) was used. Originally, in this paradigm, participants 1) witness an event, 2) are exposed to misinformation and 3) complete a memory test for the original event. In the present study participants (1) witnessed the event, (2) were exposed to postevent misleading information, (3) were interviewed using a CI or a SI (see similar procedures by Centofanti & Reece, 2006; Holliday & Albon, 2004; Holliday et al., 2012) and (4) completed a yes/no recognition memory test.

It was predicted that the CI would be more efficient than a SI, as has been found in previous reviews of the CI (Köhnken et al., 1999; Memon et al., 2010); specifically the participants in the CI condition will a) be more accurate, b) be more complete, c) report more correct details, d) report fewer incorrect details and f) report fewer confabulated details than the participants in the SI condition. In addition, this study also classified the details reported into free recall phase and questions phase. The reasons behind this classification were twofold. First to allow for further understanding of the results obtained in the interview as a whole. Second, as the CI and SI have different instructions in both the free recall and questions phase, it was deemed important to test for differences among recall in these phases. It was predicted that the free recall and questions phase of the CI will a) be more accurate, b) be more complete, c) produce

more correct details, d) produce fewer incorrect details and f) produce fewer confabulated details than the SI.

With regard to the misinformation effect, it was predicted that the CI would aid in preventing misinformation intrusions in participants' recall of the event, whereas the SI would not. In addition, it was predicted that during the recognition memory test participants in the CI condition would be more accurate at rejecting misinformation than participants from the SI condition, thus the misinformation effect would not be present in participants in the CI condition.

6.2. Method

6.2.1. Design

A one factor (interview type: CI, SI) between-subjects factorial design was used for the first set of analyses. In the second set a 2 (Interview type: CI vs. SI) x 2 (recognition test item type: control vs. misleading) factorial design with the first factor between-subjects and the second within-subjects was used.

6.2.2. Participants

For the present study, the UK sample was dropped to allow a closer inspection of the results exclusively from Mexico. In addition, the effect a CI has on the misinformation effect amongst participants from the UK has been previously tested (Gabbert et al., 2004; Holliday & Albon, 2004; Holliday et al., 2012; Memon et al., 2006). A total of 40 university students (female and male), all psychology undergraduates from first year participated in the study (M age = 19.10, SD = 1.30). The sample of participants came from Mexico and was recruited through open invitations to classrooms. The participants were distributed uniformly across conditions and all received course credits for their participation.

6.2.3. Materials

The materials used for this study derive from CHAPTER 3, General Methods, any differences will be mentioned. The negative video depicting a bag snatching was used, which contained a large number of quantifiable details. The video was presented on 19 inch screens and used headphones to reproduce sound. Also a questionnaire that measures emotions and an audio-recorder were used. Interview protocols for a full CI and a SI were followed. Two postevent narratives and recognition tests were used for counterbalancing purposes (cf. similar procedures by Holliday, 2003a; Holliday et al., 2012; Memon et al., 2006).

6.2.3.1. Video employed

The video was custom made and it depicted a bag snatching. It began with a young woman coming up to a counter and being given a cup by the shopkeeper. The young woman then sits at a table and in the next scene she is looking at a painting on the wall. At this moment a young man appears, approaches her and snatches her bag. The young woman falls to the floor, the man leaves with her bag and in the end an older lady aids the young woman.

6.2.3.2. Questionnaire on emotions

The questionnaire used is described in CHAPTER 3, General Methods, section 3.2.2. Description of questionnaire, (see Appendix B). It served the purpose of misguiding the participants into thinking that the study was examining responses to emotional videos, and thus distract them from the original purpose of the study.

6.2.3.3. Postevent narratives and recognition tests

Two postevent narratives were created for counterbalancing purposes (Holliday & Hayes, 2001; Memon et al., 2006). Each narrative consisted of a summary of the film viewed, recounted in the same temporal order. The narratives were created based on previous accounts of the event by participants from Mexico in study 2. Each narrative contained six control items (correct information that was depicted in the video) and six

misleading items (incorrect information about the video). The misleading items were congruent with the events that happened in the video and were based on incorrect information given by participants in study 2.

The postevent narratives served as basis for the recognition tests. These consisted of a series of 12 yes/no questions; six questions contained misleading information from the postevent narrative and the other six questions contained accurate information present in the event (control items). See Appendix H for postevent narratives and yes/no recognition test questions.

6.2.4. Procedure

The present study was conducted by the researcher and a research assistant (female in her mid-20s.). The viewing of the video and all interviews were conducted by the researcher. The research assistant read the postevent narrative and conducted a distracter task. The distracter task consisted of a series of Tangram puzzles (geometrical shapes that are arranged to create a figure). All participants were tested individually in four phases over two days. The study was conducted in three different laboratories, one for watching the video, another for the reading of the postevent narrative and a third for interviewing to prevent CRI effects from forming spontaneously (Milne & Bull, 2002).

During Phase 1, participants filled out a consent form where they were informed about the study, but they were misled to believe that the purpose of the study was to measure their emotional response to a video and weren't informed that they would be interviewed. Participants were instructed to watch the video while the researcher stepped out of the room to allow participants to watch the video on their own and thus ensure transfer of control during the interview phase (cf. similar procedures by Bensi et al., 2011; Fisher & Geiselman, 1992). Participants then completed the questionnaire on emotions and were asked to return the following day.

Phase 2 took place after a 24 hr. lapse and was conducted by the research assistant. Participants were informed that they would engage in some other activities before engaging with the main researcher to continue with the emotion questionnaires (part of

the deception to conceal the real purpose of the study). The research assistant informed the participants that she would read a narrative about the event they viewed the day before (without informing them it contained misleading details). After the research assistant read one of the postevent narratives, the participants were asked to complete a filler task. The filler task consisted of 12 tangram puzzle designs that participants had to build. Each participant worked on the filler task for 20 minutes and was then instructed to go to the next lab for the following phase of the study.

In Phase 3 participants were informed that they had been deceived as to the purpose of the study and that they were going to be interviewed about what they remembered of the video. They were offered the alternative to leave the study while keeping the course credits offered for participating (all participants agreed to stay and go ahead with the interview). Participants were interviewed by the researcher, using either a CI or a SI depending on condition. All interviews were audio recorded for later transcription, coding and scoring. During the interview the participants were asked to report what they remember from the video they saw the day before. Extra care was taken to not over emphasize on the source of the information (video rather than the narrative) to avoid leading the participants into thinking that discrepancies between the video and narrative existed, as this could interfere with the result (Blank, 1998).

After the interview, during Phase 4, participants were asked to complete a yes/no recognition memory test to assess acceptance of original details of the video (control items) and the postevent narrative misinformation (misleading items). They were told that the questions contained some old and some new details and they were to respond “yes” if they remembered the detail being present in the video (control items) and “no” if they did not remember the details from the video (misleading items). Finally participants were completely debriefed as to the objectives of the study, thanked for their participation and the researcher offered to answer any questions regarding the study.

6.2.4.1. Instructions for the Cognitive Interview

As in studies 2 and 3, all the instructions for the interviews were read verbatim to ensure that the interviewer followed the same procedure throughout and did not transfer CI

techniques from one interview type to the other. The instructions were given slowly with pauses to allow participants to concentrate on each request. The CI began with a rapport phase, followed by transfer of control and then the aims of the interview were introduced. The interviewer began the free recall phase with the instructions for CRI, followed by RA, CO and CP instructions. The instructions were identical to those of the CI in study 2.

The questions asked during the questions phase were based on the information the participant gave during free recall phase. The participants were instructed to close their eyes and form a mental image of the object in question. Once the interviewer exhausted all the information available for questions, a final prompt was added. After no more information could be recalled, the researcher proceeded with the closure. See Appendix C for instructions on the CI.

6.2.4.2. Instructions for the Structured Interview

The SI (see Appendix D) followed the same instructions as in study 3. After rapport was established, the participant was introduced to the aims of the interview. The free recall phase was followed by a questions phase. During this phase, the questions were based on the information given in the free recall phase, without forming mental images of the object in question. The closure phase followed the same procedure as the CI.

6.2.5. Transcribing, coding and scoring of the interviews

The transcribing, coding and scoring of the interviews followed a similar procedure as in CHAPTER 3, General Methods. Therefore only the differences will be highlighted.

Transcribing. All the interviews, excluding the rapport phase, were transcribed verbatim by a research assistant. The research assistant was blind to the experimental aims and was given a two hour training. A total of eight transcribed interviews (selected randomly) were reviewed by the researcher to ensure proper transcribing was done.

Coding and scoring. The interviews were coded and scored by the researcher, following the same procedure as in CHAPTER 3, General Methods. A research assistant coded and scored 2 interviews of each condition to allow for inter-rater reliabilities to be calculated. The 8 interviews (20% of the total) coded and scored by the research assistant were selected randomly from each condition. The research assistant had been previously trained and was blind to the experimental aims of the study. Measures of inter-rater reliabilities were calculated for the total correct, incorrect and confabulated details, $r = .98, p < .001$, $r = .99, p < .001$ and $r = .99, p < .001$ respectively.

6.3. Results

The first sections of the results correspond to the analyses of interviews type (CI, SI), a between-subjects factorial design. The last section of the results corresponds to the effect of misleading information. It is a 2 (interview type: CI, SI) X 2 (item type: control, misleading) factorial design with the first factor between-subjects and the second within-subjects.

6.3.1. Interview Analyses

To determine whether factors such as number of questions asked and duration of the interview were interfering with the results that were found, three separate ANCOVAs were performed. A series of ANCOVAs comparing the two interview types (CI, SI) with number of questions asked and duration as covariates were performed for each total number of correct, incorrect and confabulated details.

The results showed no significant effect of number of questions asked for total number of correct details, $F(1, 36) = .31, p > .05, \eta^2_p = .008$, incorrect details, $F(1, 36) = 2.16, p > .05, \eta^2_p = .057$ or confabulated details $F(1, 36) = .14, p > .05, \eta^2_p = .004$. Therefore, the covariate number of questions asked was omitted in all the following analyses (cf. similar procedures by Dando et al., 2011; A. M. Wright & Holliday, 2007a). On the other hand a main effect of duration on the total number of correct details, $F(1, 36) =$

13.24, $p < .005$, $\eta^2_p = .269$, incorrect details, $F(1, 36) = 7.19$, $p < .05$, $\eta^2_p = .166$ and confabulated details, $F(1, 36) = 10.07$, $p < .005$, $\eta^2_p = .219$ was found.

The main effect of duration found required further analysis. An independent t-test was conducted to compare duration by interview type. The CI was significantly longer in duration ($M = 10.70$, $SD = 2.03$) than the SI, ($M = 6.95$, $SD = 1.85$), $t(38) = 6.11$, $p < .001$. Given the differences in duration observed across interview type, duration was included as a covariate in all of the analyses that follow. All the values displayed forthwith correspond to adjusted means, *SE* and 95% Confidence Intervals (displayed in brackets [...]) by duration.

6.3.2. Accuracy

Participants are required to recall what happened in the event they witnessed throughout the interview. Accuracy is the degree to which the information recalled corresponds to what really happened (Fisher et al., 2002). Following common procedures (Holliday, 2003a; Holliday, 2003b; Holliday et al., 2012), the accuracy rate for each interview was calculated by dividing the proportion of the total correct details by the proportion of total details in each interview type and population. The proportion of total correct details was calculated by dividing the total number of correct details recalled by the total number of details from the template (the list of every detail present in the video). The proportion of total details was calculated by dividing the total overall number of details recalled by the total number of details from the template.

$$Accuracy = \frac{(Total\ correct\ details \div Total\ details\ template)}{(Total\ overall\ details \div Total\ details\ template)}$$

An ANCOVA comparing interview type (CI, SI) was performed on accuracy with duration as a covariate. No main effect was found for interview type, $F(1, 37) = .51$, $p > .05$, $\eta^2_p = .014$. See Table 17 for adjusted values.

Table 17. Adjusted mean (*SE*) accuracy rates by interview type

	Interview type					
	Cognitive Interview			Structured Interview		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Accuracy	0.85	(0.02)	[0.81, 0.89]	0.83	(0.02)	[0.79, 0.97]
Accuracy free recall phase	0.51	(0.04)	[0.44, 0.58]	0.57	(0.04)	[0.50, 0.64]
Accuracy questions phase	0.31	(0.02)	[0.26, 0.35]	0.29	(0.02)	[0.25, 0.34]

To further explore accuracy rates throughout the interview, these were divided into two phases; free recall phase and questions phase (see CHAPTER 4, Study 2, section 4.1.1. The current study, on explanation as to why the interview was divided into free recall and questions phase). Accuracy rates were then analysed for each interview phase.

$$\text{Free recall phase accuracy} = \frac{(\text{Total free recall correct details} \div \text{Total details template})}{(\text{Total overall details} \div \text{Total details template})}$$

$$\text{Questions phase accuracy} = \frac{(\text{Total questions phase correct details} \div \text{Total details template})}{(\text{Total overall details} \div \text{Total details template})}$$

Two ANCOVAs comparing interview type (CI, SI) were performed on accuracy for the free recall phase and the questions phase, with the duration of each phase as the covariate. Duration was calculated separately for the free recall phase and for the questions phase. Each duration type was paired with its appropriate interview phase (free recall phase accuracy with duration free recall and questions phase accuracy with duration questions phase). No main effect was found for free recall phase accuracy by interview type, $F(1, 37) = 1.22$, $p > .05$, $\eta^2_p = .032$. Additionally, no main effect of questions phase accuracy by interview type, $F(1, 37) = .19$, $p < .005$, $\eta^2_p = .055$ was found.

6.3.3. Completeness

In order to evaluate how many details of the event participants recalled, a variable of completeness was created. To calculate the completeness of each interview type the total number of correct details recalled by each participant was divided by the total number of possible details from the template (c.f. similar procedures by Holliday, 2003b; Holliday et al., 2012). As the templates for the video used consisted of a very exhaustive list of details, including those that were not central to the plot of the video, the resulting list was very extensive (see section 4.3.3. Completeness from Study 2 for further explanation on the way completeness was calculated).

$$\text{Completeness} = \frac{\text{Total number of correct details}}{\text{Total details from template}}$$

An ANCOVA comparing interview type (CI, SI) was conducted on the completeness of each interview with duration as a covariate. No main effect of interview type, $F(1, 37) = .35, p > .05, \eta^2_p = .009$ was found (CI: $M = 0.06, SE = 0.00, [0.06, 0.07]$; SI: $M = 0.07, SE = 0.00, [0.06, 0.08]$).

So far, the analyses performed demonstrate that the CI has a longer duration in minutes than the SI, therefore duration has been used as a covariate. Accuracy rates for the CI and the SI have not differed significantly across interview phases, in the free recall phase or questions phase. In addition, no significant difference of interview type was found for completeness.

6.3.4. Recall of total number of details by interview type

The details recalled by the participants were scored as correct, incorrect and confabulated. In order to examine the type of details recalled by interview, the total number of correct, incorrect and confabulated details reported throughout the interview were analysed. A series of ANCOVAs comparing interview type (CI, SI) were performed on the total number of correct, incorrect and confabulated details collapsed

across interview phases by interview type, with duration as a covariate. See Table 18 for adjusted mean and (*SE*).

Table 18. Adjusted mean (*SE*) number of correct, incorrect and confabulated details recalled by interview type

	Interview type					
	Cognitive Interview			Structured Interview		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Correct	61.28	(4.00)	[53.18, 63.38]	65.12	(4.00)	[57.02, 73.23]
Incorrect	9.93	(1.48)	[6.93, 12.92]	12.37	(1.48)	[9.38, 15.37]
Confabulated	0.40	(0.66)	[-0.93, 1.73]	2.30	(0.66)	[0.97, 3.63]

Correct details. No main effect of correct details by interview type $F(1, 37) = .35, p > .05, \eta^2_p = .009$ was found.

Incorrect details. There was no significant effect found for the total number of incorrect details recalled by interview type, $F(1, 37) = 1.03, p > .05, \eta^2_p = .027$.

Confabulated details. No main effect was found for total number of confabulated details recalled by interview type $F(1, 37) = 3.16, p > .05, \eta^2_p = .079$.

Contrary to the predictions, the analyses performed so far, demonstrate that the participants from the CI and the SI did not differ in recall of correct, incorrect or confabulated details collapsed across interview phases. The analyses performed included duration as a covariate, therefore the means of the total details have been adjusted.

6.3.5. Recall within specific interview phases: free recall phase and questions phase

The total number of correct, incorrect and confabulated details from each interview phase (free recall phase and questions phase) was analysed. To achieve this, the total

number of correct, incorrect and confabulated details was calculated independently for each interview phase. The free recall phase and questions phases were analysed separately as the free recall phase forms the basis for questions asked. Hence, the questions phase depends directly on the free recall phase (Holliday & Albon, 2004; Holliday et al., 2012).

A series of ANCOVAs comparing interview type (CI, SI) were performed on the total number of correct, incorrect and confabulated details recalled in the free recall phase and in the questions phase with duration as a covariate. Duration was calculated in minutes for each interview phase and included in the appropriate analysis (i.e., duration free recall was included in the free recall phase analysis and duration questions phase was included in the analysis of questions phase). See Table 19 for adjusted values.

Table 19. Adjusted mean (*SE*) number of correct, incorrect and confabulated details recalled by interview type

	Interview type					
	Cognitive Interview			Structured Interview		
	M	(<i>SE</i>)	95% CI	M	(<i>SE</i>)	95% CI
Free recall phase						
Correct	32.26	(2.85)	[26.48, 38.04]	48.59	(2.85)	[42.81, 54.37]
Incorrect	2.87	(0.80)	[1.25, 4.49]	5.58	(0.80)	[3.96, 7.20]
Confabulated	0.24	(0.31)	[-0.38, 0.86]	0.31	(0.31)	[-0.31, 0.93]
Questions phase						
Correct	25.06	(2.14)	[20.74, 29.39]	20.49	(2.14)	[16.16, 24.52]
Incorrect	7.25	(1.02)	[5.17, 9.32]	6.61	(1.02)	[4.53, 8.68]
Confabulated	0.88	(0.53)	[-0.20, 1.96]	1.27	(0.53)	[0.19, 2.35]

6.3.5.1. Free recall phase

Correct details. A main effect was found for the total number of correct details recalled by interview type, $F(1, 37) = 10.96$, $p < .005$, $\eta_p^2 = .229$. The participants from the SI ($M = 48.59$, $SE = 2.85$, [42.81, 54.37]) recalled more correct details in the free recall phase than participants from the CI ($M = 32.26$, $SE = 2.85$, [26.48, 38.04]).

Incorrect details. No main effect of interview type was found for the total number of incorrect details reported in the free recall phase, $F(1, 37) = 3.82, p > .05, \eta^2_p = .094$.

Confabulated details. There was no main effect found for the total number of confabulated details by interview type, $F(1, 37) = .02, p > .05, \eta^2_p = .001$.

6.3.5.2. Questions phase

Correct details. In the questions phase, no main effect of interview type, $F(1, 37) = 2.12, p > .05, \eta^2_p = .054$, was found.

Incorrect details. No main effect of interview type, $F(1, 37) = .18, p > .05, \eta^2_p = .005$, was found for the total number of incorrect details in the questions phase.

Confabulated details. No significant effect for the total number of confabulated details reported by interview type, $F(1, 37) = .25, p > .05, \eta^2_p = .007$ was found.

The analyses show that the participants from the SI recall more correct details in the free recall phase than the participants from the CI. No other analyses have shown differences between the interview types when duration is used as a covariate.

6.3.6. Effects of misinformation

In order to analyse the effects of misleading information in participants' recall, a postevent narrative containing control and misleading information was read to the participants. To determine whether the information provided to them created misinformation intrusions and/or a misinformation effect, the following analyses were performed.

6.3.6.1. Misinformation Intrusions during the interviews

During the postevent narrative, the participants were provided with control and misleading details. When the participants reported these misleading details during the

interview as something that happened in the event, these were defined as misinformation intrusions (Holliday et al., 2012). The number of misinformation intrusions reported by each participant in the interview was calculated.

An ANCOVA comparing interview type (CI, SI) was performed on the total number of misinformation intrusions, with duration as a covariate. No main effect of interview type was found, $F(1, 37) = .00, p > .05, \eta^2_p = .000$. There were no differences found between the number of misinformation intrusions in the CI ($M = 0.82, SE = 0.33, [0.16, 1.49]$) and the SI ($M = 0.83, SE = 0.33, [0.16, 1.49]$).

6.3.6.2. Recognition memory tests, the misinformation effect

The total number of correct responses to control items and misleading items in the yes/no recognition test was calculated. That is, if the participants correctly accepted a control item or a participant correctly rejected a misleading item it was coded as a correct response (cf. similar procedures by Holliday, 2003a; Holliday et al., 2012). Correctly accepted control items are those that happened in the event and no misleading information related to them was presented (participants responded “yes” as the information having been present in the event). Correctly rejected misleading items are those that the participant received misleading information on, but in the recognition test they responded as “no” the information was not present in the event (thus correctly identifying it as incorrect information). The misinformation effect is present in yes/no recognition tests when participants have a higher accuracy for control items than accuracy for misleading items (Holliday et al., 2012; Payne, Toglia, & Anastasi, 1994); that is, participants correctly accept significantly more control items than they correctly reject more misleading items. This means that they accepted misleading information, thus a misinformation effect happens. As the total number of incorrect responses (rejecting control items or accepting misleading items) were irrelevant for the purpose of this study, no analyses were conducted for these variables.

To determine whether the postevent narrative versions (A or B) influenced participants’ performance, independent t-tests were performed on the total number of correct control items and correct misleading items. No significant difference was found between narrative version A ($M = 4.95, SD = 0.89$) and B ($M = 4.35, SD = 1.27$) for the total

number of correct control items, $t(38) = 1.73$, $p > .05$. Additionally no difference was found between narrative version A ($M = 3.75$, $SD = 1.25$) and B ($M = 3.60$, $SD = 1.67$) for the total number of correct misleading items, $t(38) = 0.32$, $p > .05$. Consequently all analyses were performed after collapsing for postevent narrative version (cf. similar procedures by Holliday, 2003a; Holliday, 2003b; Holliday et al., 2012; Memon et al., 2006).

A 2 (interview type) X 2 (item type) ANOVA with interview type as a between subjects factor and item type as a within subjects factor was performed on the correct responses. A main effect for item type was found, $F(1, 38) = 10.87$, $p < .005$, $\eta^2_p = .222$, for the total number of correct responses across interview type. Correct recognition of control items ($M = 4.65$, $SE = 0.18$, [4.29, 5.01]) was significantly higher than correct recognition of misleading items ($M = 3.68$, $SE = 2.23$, [3.20, 4.15]). Therefore, as a difference in means of correct recognition of control items and misleading items was found, a misinformation effect occurred (Ceci & Bruck, 1993; Holliday, 2003a; Holliday et al., 2012). There were no main effect of interview type, $F(1, 38) = 0.07$, $p > .05$, $\eta^2_p = .002$, evidence that the misinformation effect did not vary according to interview type. In addition, there was no significant interaction of interview type X item type, $F(1, 38) = 0.01$, $p > .05$, $\eta^2_p = .000$.

6.4. Discussion

The present study explored the effects of the CI on memory recall of young Mexican adults compared to recall in a SI. In addition it examined whether a misinformation effect was present in young Mexican adults. Consistent with the findings of study 3, as well as previous research (e.g., Centofanti & Reece, 2006; Holliday et al., 2012; Memon et al., 1997), it was found that the CI was longer in duration than the SI. Therefore duration of interviews was used as a covariate (see Howell, 2009, for explanation on covariates) and thus the means were adjusted to what would have been if the duration had not varied between interview types.

6.4.1. Interview type

Initially, no differences were found in accuracy rates between the CI and the SI (see Dornburg & McDaniel, 2006; Ginet & Verkampt, 2007; Mello & Fisher, 1996; Stein & Memon, 2006). Mello and Fisher attributed not finding differences in accuracy rates between the CI and SI to the increase of details being reported in the CI. As the report of correct details increased, so did the report of incorrect details. Therefore the increase of correct details was cancelled out by the incorrect details, resulting in no differences being found for accuracy rates between the CI and the SI. In the present study however, this was not the case; there were no differences in the reporting of correct, incorrect or confabulated details between the CI and the SI. Memon, Holley, Milne, Köhnken and Bull (1994) also found no benefit of the CI in recall of correct, incorrect or confabulated details.

Although differences between the total number of correct, incorrect and confabulated details were not found for the overall interview, one difference was found in the free recall phase. In the free recall phase, the participants from the SI recalled a greater number of correct details than the participants from the CI. These results are in contrast with previous research on the CI (see Köhnken et al., 1999; Memon & Bull, 1991; Memon et al., 2010 for meta-analysis and reviews). To the best of the author's knowledge, no reports of fewer correct details in the CI compared to the SI have been published.

One main difference between the present study and previous research has been the use of duration as a covariate. In studies 2 and 3 it was mentioned how the use of covariates can overcloud the effect of the treatment (Kachigan, 1991; Miller & Chapman, 2001). In this study the use of duration as a covariate could have annulled the effect of interview type. Therefore, the efficacy of the CI and SI can appear similar. Duration as a covariate has not been widely employed; only a handful of studies have tested whether duration affects the results of total correct, incorrect and confabulated details (e.g., Dando et al., 2011; Holliday, 2003a; Holliday, 2003b; Holliday & Albon, 2004; Holliday et al., 2012; Milne, 1997; A. M. Wright & Holliday, 2007a). Most of these studies found no effect of duration on total number of correct, incorrect and confabulated details; hence the variable was not included as a covariate were in subsequent analyses. Nonetheless, in

A. M. Wright & Holliday's (2007a) study, they found an effect of duration on the total number of correct, incorrect and confabulated details, and employed this covariate throughout the analyses. They found that even with duration used as a covariate, the enhanced CI and the modified CI (omitting the CP mnemonic) that were employed produced more correct details in the free recall phase than a SI. Contrariwise, in Milne's (1997) first and second studies with children, when duration as a covariate was used, no difference was found between the CI and the SI for the total number of correct details reported. Nonetheless in a third study with adults, Milne found that even with duration as a covariate a significant difference in the total number of correct details was still found, the CI produced more correct details than the SI..

It is difficult to draw conclusions from comparisons of a few studies, more so if the studies differ in key aspects such as the sample of participants. A. M. Wright & Holliday's (2007a) study had three age groups, young, young-old and old-old adults, nonetheless increased correct recall in the enhanced CI and the modified CI were found compared to the SI in all age groups. Milne's (1997) second study compared recall of children with and without learning disabilities, whereas the third study compared adults with and without a learning disability. The duration of interviews also varied.

Regardless of the reasons these differences were found, it is clear that further research needs to be done in order to explore whether duration of the interview and number of questions asked during the interview are appropriate covariates. In the present study, the effect of the treatment (interview type) could have been masked up by the adjustment of the covariate (duration). The differences found in duration between the CI and the SI can influence the outcome of the analyses.

6.4.2. Misinformation effect

The present study also examined whether a misinformation effect was present in young Mexican adults when they had been administered a CI or an SI. After a 24 hour lapse of the participants having viewed the event, they were exposed to misleading information. Both misinformation intrusions during the interviews and misinformation effects during the recognition test were explored. Although misinformation intrusions (i.e. details

reported in the interview that participants had been misinformed on) were present in participants' reports in both interview conditions, there was no significant difference found in the number of intrusions reported between the CI and the SI. Thus the prediction that the CI would reduce reports of misleading details in the participants' narrative compared to the SI was rejected. This is in accordance with Holliday et al (2012) and Centofanti & Reece (2006), where young adults showed no differences between reports of misinformation intrusions in a modified CI/CI and a SI. Thus misinformation intrusions were not reduced when participants were subjected to a CI. Holliday et al. neglect to discuss these findings and only discuss the findings of young adults regarding the results from the yes/no recognition test, whereas Centofanti and Reece accept a misinformation effect has occurred regardless of interview type and attribute their results to the trace-alteration theory.

The trace-alteration theory (Loftus et al., 1978; Loftus & Hoffman, 1989), within the misinformation theoretical accounts, proposes that the new information (postevent information) alters the original information, therefore making it inaccessible. In the present study, the CI did not reduce the effect of postevent misinformation in the participants' narrative of the event (intrusions) and neither did the SI. If the original information were still accessible, then mnemonic techniques such as the CRI should help participants locate the original information and report it. This, however, did not happen which seems to indicate that trace-alteration could be responsible for such an effect.

The misinformation effect is present in yes/no recognition tests when participants have a higher accuracy for control items than accuracy for misleading items (Holliday et al., 2012; Payne et al., 1994). The present study found a misinformation effect in the yes/no recognition test, participants correctly responded to more control items than they did to misleading items regardless of interview type. This is in direct contrast to the results found by Holliday et al (2012), where young adults presented no misinformation effects in the yes/no recognition test, irrelevant of interview type (modified CI vs. SI). Although a handful of studies have shown that a CI can help reduce the negative impact of misleading information on recall of a witnessed event (Holliday, 2003b; Holliday & Albon, 2004; Holliday et al., 2012), other studies, like the present study have not found such results (Centofanti & Reece, 2006; Holliday, 2003a).

Overall, the present study found that the participants from Mexico perform similarly in a CI and a SI. Contrary to expectations, the CI did not enhance participants' recall compared to a SI. The results of this study suggest that reluctance to report crime (as was found in Study 1) perhaps inhibits participants' willingness to provide details of a crime irrespective of interview type. Violence in the country (Asfura-Heim & Espach, 2013) and fear of retaliation and extortion (see Study 1) have possibly rendered individuals from Mexico to be against reporting a crime and/or providing details of a crime. In addition, regardless of interview type Mexican participants were all susceptible to the misinformation effect. Therefore post-event encountered information can cause a misinformation effect. This is of particular importance for police officers and other law enforcers. There is a lack of police training in the use of appropriate interviewing techniques in Mexico. Consequently, police officers can inadvertently introduce misinformation during an interview. The results of the present study highlight the need to continue testing interviewing techniques in participants from Mexico in order to find an interview that can help enhance memory recall and potentially shield against the misinformation effect.

CHAPTER 7. General Discussion

7.1. Introduction

The purpose of the present thesis was to further our understanding of the CI in a developing country. It did so by running several studies: 1) comparing willingness to report crime in the UK and Mexico, 2) comparing performance in the CI and combinations of mnemonic techniques in the UK and Mexico, 3) comparing a MCI and an SI when different emotional events were viewed in the UK and Mexico and 4) comparing a full CI and an SI when misleading information has been introduced in participants from Mexico. The results found shed light on differences in the reporting of details between the UK and Mexico when employing a CI. First it has highlighted that participants from the UK are more willing to report a crime than participants from Mexico. Second, it found that participants from the UK provided more correct details than participants from Mexico when they were interviewed after witnessing a crime. Third, this thesis found that combinations of mnemonic techniques, such as the RA + CO, can help participants recall a great amount of correct details or have a high accuracy rate, like the RA + CP, while being shorter in duration than a full CI. Fourth, it was found that a MCI can help provide more correct details than a SI in the free recall phase for participants in the UK, although this was not found for the participants in Mexico. Fifth, it highlighted the role of negative, neutral and positive events in memory recall. Mainly participants that viewed the negative or positive event recalled more correct details than those that viewed the neutral event. In addition, the participants from the UK that viewed a negative event recalled more correct details than those that viewed a neutral event and participants from Mexico that viewed the negative or the neutral event. Sixth, participants from the UK and Mexico did not differ in reporting of correct details for the positive event. Finally, in the study with only the Mexican participants, the SI seems to perform better than a MCI, although neither the SI nor the MCI help protect against the harmful effect of misleading information. The following sections of this chapter will discuss these findings in more depth. Additionally, the

limitations and further research directions will be highlighted. Finally the conclusions of the present thesis will be discussed.

7.2. Summary of general findings

7.2.1. Willingness to report crime

In many instances police officers rely on victims/witnesses report to solve a crime (Greene & Loftus, 1984; Murphy & Barkworth, 2014). Crime reporting is therefore very important to the criminal justice system. Previous studies have found that affluent countries have a higher crime reporting rate than developing countries (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013.2013*; Tarling & Morris, 2010; Van Dijk et al., 2007). As Mexico has seen an increase in violence and crime (Asfura-Heim & Espach, 2013) victims/witnesses are found to be reluctant to report a crime due to distrust of police or considering crime reporting to be a waste of time (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013.2013*).

Study 1 tested willingness to report crime amongst participants from the UK and Mexico. Following previous studies (Van Dijk et al., 2007) it was predicted that participants from Mexico would be less willing to report a crime than participants from the UK. This was only partially supported. Specifically participants from the UK were willing to report more property crimes (theft of vehicle, theft from vehicle, burglary and mugging) than participants from Mexico. However, the same results were not found for reporting of violent crime. Participants from Mexico were more willing to report verbal abuse than participants from the UK, whereas participants from the UK were more willing to report assault than participants from Mexico. Finally no differences were found between samples for willingness to report sexual crimes and rape. The differences in willingness to report different types of violent crimes between the UK and Mexican participants could be attributed to crime reporting fluctuations over the years (Baumer & Lauritsen, 2010) and variability according to age and income (Skogan, 1976).

Study 1 also found that participants from the UK and Mexico have different reasons for not reporting a crime. It was generally found that participants from the UK would be reluctant to report a crime because they considered it to be a long and complicated process/waste of time. Tarling and Morris (2010) did not find such results, they found that reasons for not reporting a crime in a sample of British participants was because crime reporting was considered to be too trivial to be of interest to the police or it was considered a private matter. The different results found in the present study for the UK sample to the one conducted by Tarling and Morris could be due to the participants and type of data. While Tarling and Morris had a sample of participants from the general population, the present study had a sample of university students. In addition, the present study tested participants' response to hypothetical cases, while Tarling and Morris analysed responses from data of actual crime.

The main reason for not reporting a crime amongst participants in Mexico was due to fear of retaliation/extortion. Although previous studies have not found this to be the main reason for not reporting a crime (*Encuesta nacional sobre victimización y percepción sobre seguridad pública, 2013*.2013), it is known that journalists and reports do not release full information on crimes covered to the media due to the fear of retaliation (Relly & González, 2014). It is therefore understandable, that this fear has impregnated the general population and they are therefore less willing to report a crime.

The differences found between willingness to report crime amongst the participants from the UK and Mexico have direct implications for law enforcers. In the UK, police officers are most likely working alongside individuals who are willing to report and testify, where as in Mexico police officers face a difficult challenge with individuals unwilling to report crimes or testify. Police officers in the UK have the possibility to interview witnesses/victims employing the interviewing techniques they have available, some modelled after the CI techniques (see PEACE and TIER programs in ACPO, 2009; Dando et al., 2009; Griffiths & Milne, 2006) whereas in Mexico police officers might need to work harder to convince witnesses/victims to report a crime besides dealing with an apparent lack of appropriate interviewing techniques. In addition, interviewing techniques such as the CI might not be as effective when conducted with unwilling individuals, as the CI was intended for use with cooperative witnesses (Geiselman et al., 1984). Therefore, police officers in Mexico need to take full

advantage of the information willing witnesses/victims can provide, employing the best interviewing methods available.

Overall, this first study presented a base line that enabled further testing. If participants from Mexico were reluctant to report a crime compared to participants from the UK, would it follow that they would also be less willing to provide information on an event witnessed?

7.2.2. The CI in Mexico

The need for an appropriate interview to be used with eyewitnesses in a violence struck country such as Mexico has become critical. Over the past years, Mexico has seen an increase in violent crimes (Asfura-Heim & Espach, 2013). These crimes often go unreported (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*, 2013). In addition, there has been a recent change from written trails to oral trials (Vazquez Marin, 2008). Moreover, there is a lack of appropriate interviewing techniques set in place, which highlights the urgency to test appropriate interviewing techniques that can successfully be used in the Mexican population.

The studies in the present thesis aimed to shed some light on the effectiveness that a CI and its components have in participant samples from Mexico. Samples of participants from the UK and Mexico were compared in Studies 2 and 3, while study 4 only had participants from Mexico.

In Study 1, the results found evidence that the participants from Mexico were less willing to report a crime than the participants from the UK. This finding could have influenced the amount of details participants reported during the CI. In Studies 2 and 3, the participants from Mexico recalled fewer correct overall details than the participants from the UK. Particularly, in Study 2 the participants from the UK recalled more correct details in the free recall phase than Mexico, regardless of the combination of CI mnemonic techniques. Nonetheless, there were no differences in the overall report of details in the UK and Mexico across the whole interview. In Study 3, the participants from the UK that viewed the negative event reported more correct details in the free

recall phase and questions phase than the participants from Mexico that viewed the negative or neutral events. In Study 4, the usual enhanced memory recall of correct details with a CI was not found. In fact, a tendency for the SI to perform better than the CI was found. The results found could reflect the use of durations as a covariate. There is a possibility that the effect of the treatment (interview type) could have been masked up by the adjustment of the covariate (duration). Additionally the type of interview (CI or SI) showed no benefit in the reduction of the misinformation effect.

The reluctance to report a crime in the Mexican participants draws attention to the violence that the country is living (Mexico security memo: Rising violence in Cancun, 2013; Asfura-Heim & Espach, 2013); where fear of retaliation after testifying against criminals or criminal organizations (Relly & González, 2014) has become an issue. According to cross-cultural memory research (Gutchess & Indeck, 2009; Yoon, Hasher, Feinberg, Rahhal, & Winocur, 2000), there should be no difference in recall of details between the participants from the UK and those from Mexico, as both countries are part of western cultures that focus on object based information when engaging in memory performance tasks (Gutchess & Indeck, 2009). Therefore any differences found are most likely due to cultural circumstances, and not memory performance, such as differences in the willingness to report crime, as was shown in Study 1. The violence and high crime rate in the country has created an impact in society where citizens are no longer interested or willing to testify regarding a crime (*Encuesta nacional sobre victimización y percepción sobre seguridad pública, 2013*, 2013). In addition, the fear of retaliation after testifying against criminals prevents eyewitnesses from feeling safe to report a crime (Relly & González, 2014).

The results from Study 3 comparing different types of events, provides additional information that emphasizes the reluctance to report a crime. Participants from Mexico reported fewer details relating to the negative event (a video of a crime) than participants from the UK. Nonetheless, with respect to the positive event, there were no significant differences in the amount of detail provided by participants from Mexico or the UK. These results indicate that participants from Mexico are able to report just as many details from an event as the participants from the UK (i.e. they have the memory capacity) but that for some reason Mexican participants report fewer details of those events that are akin to crime. It is suggested here that it is the cultural circumstances

present in Mexico (for example, the high level of violence and crime rate, fear of retaliation, lack of interest to report crimes) that could be, in part, responsible for the observed differences in recall between Mexican and UK participants when exposed to a negative event.

Unfortunately the use of the CI and its mnemonic techniques in the Mexican sample did not aid in the reporting of details compared to the SI as was expected. It was mostly found that the CI or the MCI performed no better than the SI. Furthermore, there were two occasions when the SI performed better than the CI or the MCI; in Study3, the SI had a higher accuracy rate in the questions phase than the MCI and in Study 4, where the SI provided more correct details in the free recall phase than the CI. The results of the present thesis are in direct contrast to what Stein and Memon (2006) found in Brazil. Stein and Memon (2006) compared the CI to a standard interview, and found that the CI produced more correct details than the standard interview, without increasing the number of incorrect or confabulated details. Their results suggested that the CI can enhance memory performance compared to a standard interview. Stein and Memon therefore recommended the use of the CI amongst police forces as an appropriate memory enhancing technique. Furthermore, many studies in developing countries have found that the CI produces more correct details and less confabulated details, while maintaining the same number of incorrect details or less than a SI or other control interviews (see Köhnken et al., 1999; and Memon et al., 2010 for reviews). The contrasting findings in Mexico could be explained by reluctance to report a crime being more important than whether it is remembered or not. The CI is intended for willing eyewitnesses and/or victims, and so the results found for participants from Mexico could indicate that the CI is not as successful with reluctant participants. The reluctance to report a crime in the participants from Mexico could perhaps explain why the CI did not outperform the SI as was expected, but this is not the case for the participants from the UK. The results found for participants in the UK and in Mexico could be an effect of the use of duration as a covariate as was mentioned above.

The studies presented in this thesis have highlighted the need to attend to the low level of reporting crimes in Mexico. There is a strong wave of crime enveloping the country in the last years, where crimes are committed on a daily basis (Mexico security memo: Rising violence in Cancun.2013). With eyewitness unwilling to provide information of

the witnessed event (*Encuesta nacional sobre victimizacion y percepcion sobre seguridad publica, 2013*.2013) the job of law enforcers becomes more difficult, as the main lead or the only evidence for solving a crime can sometimes be the reports of the eyewitnesses (Greene & Loftus, 1984). Law enforcers therefore have to ensure that the interviews conducted with the few witnesses willing to testify are as complete and accurate as possible. Although more research is needed in developing countries surrounding the use of the CI, it is recommended that the CI be incorporated to the existing interviewing methods (if any). The CI can help provide a structured interview, respectful of the eyewitness' narrative of the event, avoiding misleading questions and adaptable to the needs of the interviewer and/or interviewee.

7.2.3. The Cognitive Interview and its mnemonic techniques

Each of the CI mnemonic techniques is focused on enhancing recall based on memory theories. The CRI and the RA are grounded on the Encoding Specificity principal (Tulving & Thomson, 1973). The CO and the CP are founded on the theory on Multiple Retrieval Paths (Tulving, 1974). The effectiveness of each mnemonic technique had previously been tested; however, no clear conclusion, as to which if any mnemonic technique was more efficient than another, had been reached.

The results from Study 2 (CHAPTER 4) suggest that some combinations of CI mnemonic techniques can lead to enhanced recall while being shorter in duration than a complete CI. The CRI helps the eyewitness to mentally reconstruct the environment present at encoding, enabling memory traces to be activated and thus enhancing recall. Evidence of the success of the CRI was found in the CRI + RA interview (cf. similar results to Boon & Noon, 1994; Ginet et al., 2014) which enhanced questions phase accuracy, as well as correct recall of person details in the free recall phase compared to the CI.

The CP mnemonic technique enables cues that might not be accessible through the typical recall process by requesting the eyewitness to report the event from a different perspective from his/her own. The RA + CP interview was found to be efficient at providing a higher accuracy and questions phase accuracy rates than the CI, while taking less time to complete. This is in direct contrast to Boon and Noon's (1994)

findings. They found that a RA + CP was less accurate than a RA + CRI or an RA + CO. Study 2 found that the RA + CP not only had a higher accuracy rate, it also contributed to a higher number of correct person details in the free recall phase than the CI. The differences between the results found in Study 2 and Boon and Noon's could be due to the differences in retention intervals. While the former had a 24 hour lapse, the later had a 48+ hour lapse. In addition, the participants from Boon and Noon's study received oral instructions for each interview condition but provided a written report of what they remembered, whereas in Study 2 both the instructions and participants recall were oral. The high accuracy rate of the RA + CP and the short time it takes to complete, provides police officers with an interview that can be conducted in time constricted situations that does not compromise accuracy.

The RA + CO interview gave evidence of the effectiveness of the CO mnemonic technique, as has been found previously (Bensi et al., 2011; Davis et al, 2005). This technique, which enables retrieval cues to be activated by narrating the event in a different temporal order, had a higher number of correct details in the free recall phase than the CI. Other studies have not found such results (Dando et al, 2011). In fact, Dando et al., found that the CO + RA technique produced more confabulated details and a less complete interview than a RA + RA interview. Retention interval differences between Dando et al's study and Study 2 can possibly account for such discrepancies regarding the CO effectiveness. Overall, the RA + CO took less time to conduct and provided more correct person and action details in the free recall phase than the CI.

Unfortunately, these combinations of techniques also had a higher number of confabulations in the free recall phase compared to the CI. Specifically, more confabulated person, action and scenery details were reported in the RA + CO and RA + CP, with the CRI + RA reporting more confabulated scenery details than the CI. Although this raises concerns, appropriate instructions given to the eyewitness regarding not making anything up and not guessing information could help reduce the report of incorrect and confabulated details and increment the accuracy rates (Fisher, 2010; Memon et al., 2010).

All the mnemonic technique components have a function in the CI. The CRI + RA improves correct recall of person details in the free recall phase, correct action details

and accuracy during the questions phase, while only increasing confabulations in the free recall phase. The RA + CP improves accuracy and questions phase accuracy, but it increases confabulations in free recall. The RA + CO improves recall of correct details in the free recall phase, along with details of person and action, but also increases confabulations.

Although previous analyses of the CI mnemonic techniques affirmed that these techniques used separately are no more successful than a control interview (Geiselman et al., 1986; Memon et al., 1995; Milne & Bull, 2002), not all studies have compared them to a full CI. Studies that did compare combinations of CI techniques to a complete CI, found that certain combinations can be just as successful as a CI and be less time consuming (Davis et al., 2005; Ginet & Verkamp, 2007). In the present study, however, some of the combinations of mnemonics used were actually *more* successful than a full CI. It would have been expected to find the full CI more effective than combinations of two of its mnemonic techniques. The adjustment of values due to the covariate of duration might have obscured the effect of the treatment (i.e. the interview condition). As the CI is longer in duration than the combination of mnemonic techniques, the control effect of the covariate is greater; therefore the values of reported details have been greatly adjusted. Nonetheless, employing duration as a covariate allowed us to clearly understand the role each mnemonic technique plays in the full CI without them being overshadowed by the results of the full CI.

The results of Study 2 supported the theory that each mnemonic technique brings a benefit to the CI (Geiselman et al., 1986; Milne & Bull, 2002). Although some studies compare the mnemonic techniques to a control interview (Geiselman et al., 1986; Memon et al., 1995; Milne & Bull, 2002), the present study did not. This hindered the possibility to discuss whether a combination of mnemonic techniques could be more successful than the current interviewing techniques employed by police officers in Mexico. Although it is difficult to establish what type of interview is being used by police officers in Mexico due to the lack of information available. Regardless, from an applied perspective, law enforcers or professionals that need to conduct successful interviews that are shorter in duration than a complete CI could benefit from a combination of mnemonic techniques according to their needs. First of all keeping the RA technique in all interviews conducted is imperative, as the RA technique sets the

basis for the CO and CP techniques and it is one of the most used by police officers (Dando et al., 2008; Kebbell et al., 1999). The use of other techniques could vary depending on time limitations and objectives of the interview. Where the need to gather correct information about the event, specifically person and action details the use of the CO mnemonic technique is useful. If a short accurate interview is needed, the RA + CP interview is ideal. For interviews looking to increase the number of correct person details in the free recall phase, a CRI + RA is beneficial, it would additionally provide a high accuracy in the questions phase.

7.2.4. Memory of emotional events

In study 3, recall of positive, neutral and negative events was assessed using either a MCI or an SI. Most studies on the CI research employ negative or neutral to be remembered events (see Köhnken et al., 1999; Memon & Highman, 1999; Memon et al., 2010 for reviews). To the best of the researcher's knowledge this is the first study to include a positive event alongside both negative and neutral ones. The results indicate that the general emotion of the event plays a role in the participants' ability to recall the event. Regardless of the type of interview, those that viewed the negative event or the positive event reported more correct details than those that viewed the neutral event.

Many researchers have found that emotional events are not only recalled in greater detail or more accurately than neutral events, but they also provide the subject with a greater sense of vividness (Levine & Edelstein, 2009; Reisberg & Heuer, 2004; Rimmele, Davachi, & Phelps, 2012) and confidence in their retrieval (Levine & Pizarro, 2004; Rimmele et al., 2012). Furthermore, subjects recalling negative events report a greater sense of vividness of the memory, while subjects recalling a positive event report a feeling of familiarity of the event (Ochsner, 2000). Study 3 (CHAPTER 5) found that participants in the positive and negative events produced a higher number of correct details recalled than participants in the neutral event. Similar results have been found in many studies carried out where recall of emotional stimuli is superior to recall of neutral stimuli (Adelman & Estes, 2013; Bradley et al., 1992; Hulse et al., 2007; Kensinger & Corkin, 2003).

In regard to incorrect information reported, participants witnessing the neutral event reported more incorrect details than those who witnessed the negative one. This is in line with studies that have found poorer memory (more false recalls, incorrect recognitions) for neutral events than for emotional ones (e.g., Kensinger & Corkin, 2004; Pesta et al., 2001). Emotional events frequently promote memory more so than neutral events (Reisberg & Heuer, 2004); therefore participants have a less accurate memory when witnessing a neutral event, which could lead to more mistakes in recall and recognition tests.

As has been found numerous times, the CI and its techniques help enhance memory recall more so than control interviews (see Köhnken et al., 1999; Memon & Highman, 1999; Memon et al., 2010 for reviews), with a small or no increase of incorrect and confabulated details reported. Nonetheless, in study 3, an enhanced recall effect was not found for the MCI. The lack of enhanced memory recall in the MCI may be due to the emotional valence of the event. A possible interpretation is that the positive and negative emotions could have over-clouded the effects of interview type. Nonetheless a significant effect of the interaction between emotions and interview type was not found. Another plausible explanation is the use of duration as a covariate. The covariate duration adjusted the values for memory recall of interview type, making them comparable. This in turn could result in adjustments made to memory values that correspond to the influence of interview type, potentially eliminating their effect (Miller & Chapman, 2001). So part of the enhanced memory effect (if there existed one for this study) of the MCI could have been eliminated due to the use of duration as a covariate. Nonetheless, regardless of the type of interview employed, an emotional event will enhance memory recall compared to a neutral event.

Although the results regarding the manipulation of interview type were not the expected ones, important implications arise from these results. For example, in the law enforcement field, when a person has witnessed a crime that has provoked a negative emotion, it may be that a well conducted interview could provide useful details. Perhaps the emotional impact of the witnessed event itself could help enhance the report of details. On the other hand, witnesses who do not realize a crime is being committed and therefore have a neutral emotional response to the event are still in need of interviewing techniques that can help enhance memory recall. In any case, the importance of

appropriate interviewing techniques and training in their use is vital. It is recommended that police officers and other law enforcers are adequately trained in the application of the CI, to improve the number of details reported by the witnesses of neutral events. In addition, the CI requires adequate communication skills, which in turn could provide for a useful tool in all investigative interviews.

7.2.5. Misinformation effect

The misinformation effect consists of a distortion of memory due to the introduction of postevent information (Blank, 1998; Holliday et al., 2002; Loftus et al., 1978; Loftus & Hoffman, 1989). It is particularly relevant for law enforcers to understand how misinformation impacts eyewitness memory, as their testimonies are essential to police officers (Kebbell et al., 1999) who are looking to solve crimes. The idea that a CI can help reduce the negative effects of misleading information is certainly appealing.

The results found in Study 4 (CHAPTER 6) show that a misinformation effect happened when participants were exposed to postevent misleading information. The participants reported misleading information during the interviews (both CI and SI) and during a yes/no recognition test. Centofanti and Reece (2006) found similar results in their study; regardless of interview type (CI or SI), participants incorporated misleading postevent information into their narratives. Holliday (2003a) found a misinformation effect in a yes/no recognition tests regardless of prior interview type.

The results of this study can be explained within the misinformation theoretical accounts. The memory trace-alteration theory states that new information can alter or bury original information (Loftus et al., 1978; Loftus & Hoffman, 1989), therefore regardless of interview type (CI, SI), the original information cannot be accessed as it has been made inaccessible. If the information on the original event was still accessible, mnemonic techniques of the CI such as CRI should have helped retrieve the original information. Thus the postevent misinformation should have been rejected. During the SI, no such technique exists, so it is expected to find a misinformation effect. Results showed no significant differences between the misinformation reported during CI and SI, therefore supporting the trace alteration account. Additionally, the memory trace-

strength account can also help explain the misinformation effect found during the interviews (Brainerd & Reyna, 2005; Holliday et al., 1999; Titcomb & Reyna, 1995). The postevent misleading information present in the narrative was congruent with the original event. Therefore, as the postevent misinformation does not directly contradict gist memory, overtime (due to the rapid decline of verbatim memory) participants could have accepted this information as part of the original event.

The misinformation effect present in the yes/no recognition tests can be explained by the previously stated misinformation accounts as well as within the source-monitoring framework and the strategic-effect account, specifically the type of test paradigm. The source-monitoring framework (Johnson et al., 1993; Lindsay & Johnson, 1987), explains the misinformation effect due to participants' failure to attribute the details of memory to the correct source (original event, postevent). Hence participants were unable to distinguish where the information present in the recognition test came from. In addition, within the strategic-effects account, the type of test paradigm (McCloskey & Zaragoza, 1985) could argue that it is the type of recognition test (including the mislead item instead of a novel one as the authors employed) that caused a misinformation effect.

The results from the study seem to indicate that it was not a single mechanism responsible for the misinformation effect, but rather a combination of several of them. If the trace-alteration theory were the only responsible for the misinformation effect then more errors would be expected during the yes/no recognition test. Perhaps all the items that were testing the misinformation effect would have been answered incorrectly, but this was not the case. Therefore other mechanisms that explain the misinformation effect are also responsible for the results. For example, the source-monitoring framework could be responsible for the lack of accuracy in attributing the information to the event viewed or the postevent information received. The same reasoning stands for the misinformation effect found in the form of intrusions during the interviews. Although it cannot be expected for the participants to recall all the details from the video or the postevent information during their narrative, more intrusions would be expected if the trace-alteration were the only mechanism in place. These results suggest that there were a series of mechanism responsible for the misinformation effect, such as

the trace-alteration theory, the source-monitoring frame work and perhaps the trace-strength account along with the strategic-effects account also contributed to the effect.

Although study 4 failed to reduce the misinformation effect employing a CI, an important observation to the methods (cf. similar methodology by Holliday et al., 2012) used can be made. Essentially, the participant was instructed to narrate all that happened in the video that was seen and special care was taken to not over-emphasize on the source of the information. Participants were to remain naïve to the fact that they had been given misleading information, as this could interfere with the results (Blank, 1998). Perhaps clear instructions to narrate only what happened during the event, leaving out any information other people or sources could have contributed, can prove successful. This in turn could be beneficial for not only CIs but other interview types as well.

It is therefore recommended that law enforcers take special care when interviewing eyewitnesses as human memory is fallible and can be affected by postevent information. Law enforcers and other investigative interviewers should be specific about where the information the witness provides comes from. Clearly stating that the witness is to narrate only what they remembered that happened, leaving out any other information from different sources. Finally special care must be taken when formulating questions as to ensure that suggestions are not introduced.

7.3. Practical implications

The results found throughout the various studies conducted in this thesis have some practical applications. The fields that benefit from the results are mostly in law enforcement and CI research with direct applications to the work of investigative interviewers. Each study conducted in this thesis contributes to practical implications and these are outlined below.

Regarding participants' willingness to report crime, Study 1 found that participants from an affluent country are more willing to report a crime than those of a developing country. It is therefore recommended that police officers in developing countries take full advantage of any opportunity where a victim/witness is willing to report a crime, as it could be the only lead to solving a crime. Police forces are encouraged to maximize the available resources to gather a complete narrative of the event that happened. The use of appropriate interviewing techniques is also highly recommended as it could enable a witness to report more accurate and complete versions of the event than other interviewing techniques. Law enforcers are urged to train police officers and other investigative interviewers in the use of adequate interviewing techniques. In addition, as it was found that participants from Mexico are reluctant to report a crime, mainly due to fear of retaliation/extortion, it is recommended that law enforcers consider identity protection services for witnesses that are willing to report a crime.

The results from Study 2 allow for a series of recommendations to be made regarding the CI mnemonic techniques. First it was found that the RA technique is one of the most used and beneficial mnemonic techniques and it is therefore recommended that police officers always include it in their interviews. Second, the CRI and the CO are recommended to help produce more person and action details, while the CP is recommended for use in cases where accuracy is more important. Lastly, it also highlights the possibility for police officers to conduct a shorter version of the CI employing some of the mnemonic techniques in time constricted situations.

In Study 3, reluctance of participants from Mexico to report details of a crime was again found, but this was not so for a non-crime event (i.e., a positive event). Law enforcers from Mexico and other developing countries where victims/witnesses are unwilling to report a crime are urged to set in place adequate interviewing techniques along with sufficient training in conducting interviews. The use of the CI is recommended to improve the number of details reported by the witness.

Lastly, in Study 4, a misinformation effect was found for all participants regardless of interview type. It is therefore recommended that interviewers clearly explain to the witness that their narrative should contain information of the event they witnessed, leaving out any other source of information. In addition, it is advised that police officers

take special care as to not introduce misleading information in the form of questions or any other form.

7.4. Limitations found in the present thesis

There are several general limitations to the studies presented in this thesis. Some correspond to methodological issues, while others correspond to broader aspects of the research. They are discussed below.

A general limitation found in all the studies conducted, that makes comparison between the present studies of this thesis to others, corresponds to the analyses of the data, in particular the use of duration of the interview as a covariate. As seen in CHAPTER 3, General Methods, duration has not been widely used as a covariate, only a few studies who have considered it (Dando et al., 2011; Holliday, 2003a; Holliday, 2003b; Holliday & Albon, 2004; Holliday et al., 2012; Milne, 1997; A. M. Wright & Holliday, 2007a). In most of these studies, the use of duration as a covariate was omitted after initial analyses, which showed no effect of the covariate on the number of details reported. Only A. M. Wright and Holliday (2007a) and Milne (1997) used this covariate throughout the analyses. A. M. Wright and Holliday found that even after adjusting memory recall means, a MCI (omitting the CP) and an ECI enhanced memory recall during the free recall phase compared to a SI. Milne found similar results in a study with adults, where a difference between total recall of correct details was found between a CI and a SI (the CI reported more details than the SI) after adjusting for duration. On the other hand, in her two studies with children no such results were found, children reported a comparable number of details in a CI and a SI.

Although the present studies used duration as a covariate to allow for comparisons between interview conditions, the nature of the CI calls for more time in interviewing (due to its additional mnemonic techniques and enhanced interviewing techniques). This extended time has been a concern for police officers and other law enforcers (Kebbell et al., 1999). A suggestion that arises from this complicated matter is for police officers and other interviewers to use shortened versions (Bensi et al., 2011; Davis et al., 2005)

or modified versions of the CI (Ginet & Verkampt, 2007; Holliday, 2003b; Holliday & Albon, 2004; Holliday et al., 2012; Mello & Fisher, 1996; Verkampt & Ginet, 2010)

The unintentional impact the researcher as the main interviewer, transcriber, coder and scorer of the interviews could have had on the results, corresponds to a further limitation. Due to limited resources available for the present thesis to be undertaken, the alternative to train multiple interviewers (Memon et al., 1997; Milne & Bull, 2002; Stein & Memon, 2006) was not available. Instead, in an effort to minimize researcher bias, the instructions were read verbatim for each interview and the interview protocol was kept in hand at all times. Additionally, a percentage of the interviews were coded and scored by a research assistant, blind to the experimental hypothesis, to allow for inter-rater reliabilities to be calculated. Additionally, in developing countries, it is typically found that the police interviewer is male (Stein & Memon, 2006). Therefore it would have been more ecologically valid to employ a male research assistant to conduct the interviews. This was also not possible, however, due to limited resources.

An additional impact of limited resources corresponds to the sample of participants chosen. Ideally, participants would have been chosen from the general population and paid to participate, which would have provided more ecologically valid studies. Nonetheless, funds were not available to pay a large number of participants to undertake the study in the UK. Furthermore, in Mexico it is not considered ethical to pay participants, making recruitment difficult. The alternative was to recruit University students. The EPR system at the School of Psychology at the University of Leicester, UK, allowed recruitment of participants with the benefit of giving them course credits. In the same manner, participants from the Faculty of Psychology at the Universidad Autónoma de Sinaloa, Mexico, were also given course credits for participating. Although having a sample of university students as participants may not be representative of the general population, it comes with benefits. For example, the participants had similar education levels, as well as similar age and gender distribution, thus reducing differences between the samples and allowing for better comparisons.

The videos used throughout all the studies could have potentially affected the results. First the videos were filmed indoors, in a café and in an art gallery, although both countries have these facilities the participants' familiarity with them could vary.

Second, as the actors in the video did not speak both English and Spanish, conversations did not take place, nonetheless appropriate general background noise was heard throughout the videos. In addition, it is unknown if different videos, with similar emotions, would have produced the same results (McMahon, 2000). Also, it is possible that some of the results could have been influenced by differences between the videos rather other than those intended. For example, the positive event and the negative event videos were focused on different situations; the positive event was mainly focused on people and objects (flowers) within the video, whereas the negative event was focused on the actions committed by the people in the event (bag snatching). Finally the number of to be remembered details that each video contained also varied. For example, the negative video had slightly more details than the positive video, and both the positive and the negative video had more details than the neutral video. It is possible that these differences could have influenced the differences in report of details and the variation in the type of detail recalled within the interview.

7.5. Further research directions

To address the limitations of the studies presented in this thesis, further research directions are suggested. Overall, it is recommended to use duration and/or other elements that might influence memory recall (e.g., number of questions asked, duration /quality of rapport) as covariates and contrast these findings to those analyses done without them. This could improve researchers' understanding of the CI against other control interviews. For example, it could help to further understand whether the extended duration of the CI is partly responsible for its success, or whether the quality or the duration of the rapport phase in the CI is better or longer than the control interviews and therefore influences the outcome of the interviews.

Specific issues that should be further examined correspond to the general methodology. Whenever possible, research assistants should be trained in the use of the CI to help reduce unintended researcher bias. It could be beneficial having an interviewer (preferably naïve to the research aims) focus on conducting all the CIs and another in

the control interviews. This would minimize transferring CI techniques to the control interview. Additionally special attention to the gender of the interviewer might be necessary in some cases (see Stein & Memon, 2006).

Further research on the CI in Mexico could potentially include training male interviewers (see Stein & Memon, 2006 for study conducted in Brazil). Typically, police officers and other law enforcers are males, therefore the importance of having interviewers of that gender. Perhaps a male interviewer could be seen as a more authoritarian figure than a female interviewer. Therefore, the participants could potentially feel more pressure to provide details of the event witnessed.

The to-be remembered event used in the present studies of this thesis could possibly be improved in future research, for example the use of more realistic events. The events shown in the videos here were controlled for cultural differences, which in turn could have made them look staged. This was needed as the videos were used in both the UK and Mexico. In future studies, videos that include conversations and more adequate sceneries for each country should be used. Nonetheless, cross-cultural comparisons using different videos would be difficult.

In order to achieve the aims of the studies conducted in this thesis, a delay of 24 hours between witnessing the event and an interview was considered appropriate. Further researchers should consider having longer delays (perhaps several days) between the event and the interview, as this could potentially happen in real life scenarios (Fisher, 2010). In addition, longer delays might be particularly important when testing for the misinformation effect.

7.6. Conclusions

The present thesis aimed to expand our understanding of the CI in a developing country, specifically its effectiveness in a sample of participants from Mexico. It compared willingness to report crime and memory performance between participants from the UK

and Mexico. Additionally it explored the effectiveness of CI mnemonic techniques, as well as the impact of misinformation and different emotional events on memory recall. The results showed that participants from Mexico are more reluctant to report a crime and when they do report one, they provide fewer details of the witnessed event than participants from the UK. Also, combinations of mnemonic techniques can help enhance memory recall, while maintaining a shorter duration than a CI. Moreover, positive and negative emotional events enhance memory recall compared to a neutral event regardless of interview type. In addition the participants from Mexico reported fewer details than the participants from the UK for negative events but a similar number of details were reported for the positive event amongst both samples. Finally a misinformation effect can be found when subjects are exposed to misleading postevent information. It is suggested for further research to explore the use of covariates in the analyses as well as employing interviewers naïve to the research aims. Furthermore, additional research using the CI is needed in Mexico before a final conclusion can be reached regarding its effectiveness with this population. There is still a lot to be done in the field of CI.

Appendix A

Willingness to report crime survey

Please read the following statements carefully. They ask about your willingness to report crime in general. If you are very unlikely to act in the way stated pick “Very unlikely, 1”, if you are very likely to act in the way stated pick “Very likely, 5” or pick any box in-between that fits best.

	Very unlikely 1	2	3	4	Very likely 5
If you were the victim of a crime, how likely would you be to report it to the police?					
If you witnessed a crime, how likely would you be to report it to the police?					
If you witnessed a crime, how likely would you be to willingly assist police if asked?					
If you witnessed a crime, how likely would you be to help police find someone suspected of committing a crime by providing them with information?					
If the situation arose, how likely would you be to report dangerous or suspicious activities to police?					

The following sections ask about your willingness to report specific types of crimes if you were a **witness**. Please read the statements carefully and answer with the response that best fits the way you would proceed.

❖ In case of theft of a car/vehicle

	Very unlikely 1	2	3	4	Very likely 5
If you witnessed the theft of vehicle, how likely would you be to report it to the police?					

	Please choose only ONE option	
If you were NOT willing to report the theft of a car/vehicle to the police, what would be the probable cause?		Fear of retaliation
		Fear of extortion
		A crime of low importance/ too trivial/ no loss
		A waste of time
		Complicated and long process
		Police could do nothing
		Police would not be interested
		Distrust in authorities
		No physical evidence
		Hostile attitude form the authorities
		Private/ dealt with it ourselves
	Other: _____	

❖ **In case of theft from a car/vehicle (for example: car accessories, spare parts, tools)**

	Very unlikely 1	2	3	4	Very likely 5
If you witnessed theft from a car/vehicle, how likely would you be to report it to the police?					

	Please choose only ONE option	
If you were NOT willing to report theft from a car/vehicle to the police, what would be the probable cause?		Fear of retaliation
		Fear of extortion
		A crime of low importance/ too trivial/ no loss
		A waste of time
		Complicated and long process
		Police could do nothing
		Police would not be interested
		Distrust in authorities
		No physical evidence
		Hostile attitude form the authorities
		Private/ dealt with it ourselves
	Other: _____	

❖ **In case of burglary (housebreaking, breaking and entering)**

	Very unlikely 1	2	3	4	Very likely 5
If you witnessed a burglary, how likely would you be to report it to the police?					

	Please choose only ONE option	
If you were NOT willing to report a burglary to the police, what would be the probable cause?		Fear of retaliation
		Fear of extortion
		A crime of low importance/ too trivial/ no loss
		A waste of time
		Complicated and long process
		Police could do nothing
		Police would not be interested
		Distrust in authorities
		No physical evidence
		Hostile attitude from the authorities
		Private/ dealt with it ourselves
		Other: _____

❖ **In case of mugging (theft from person)**

	Very unlikely 1	2	3	4	Very likely 5
If you witnessed a mugging, how likely would you be to report it to the police?					

	Please choose only ONE option	
If you were NOT willing to a mugging to the police, what would be the probable cause?		Fear of retaliation
		Fear of extortion
		A crime of low importance/ too trivial/ no loss
		A waste of time
		Complicated and long process
		Police could do nothing
		Police would not be interested
		Distrust in authorities
		No physical evidence
		Hostile attitude form the authorities
		Private/ dealt with it ourselves
		Other: _____

❖ **In case of verbal abuse**

	Very unlikely 1	2	3	4	Very likely 5
If you witnessed a case of verbal abuse, how likely would you be to report it to the police?					

	Please choose only ONE option	
If you were NOT willing to verbal abuse to the police, what would be the probable cause?		Fear of retaliation
		Fear of extortion
		A crime of low importance/ too trivial/ no loss
		A waste of time
		Complicated and long process
		Police could do nothing
		Police would not be interested
		Distrust in authorities
		No physical evidence
		Hostile attitude form the authorities
		Private/ dealt with it ourselves
		Other: _____

❖ **In case of assault (with and without minor injury)**

	Very unlikely 1	2	3	4	Very likely 5
If you witnessed an assault, how likely would you be to report it to the police?					

	Please choose only ONE option	
If you were NOT willing to report an assault to the police, what would be the probable cause?		Fear of retaliation
		Fear of extortion
		A crime of low importance/ too trivial/ no loss
		A waste of time
		Complicated and long process
		Police could do nothing
		Police would not be interested
		Distrust in authorities
		No physical evidence
		Hostile attitude from the authorities
		Private/ dealt with it ourselves
		Other: _____

❖ **In case of a sexual crime (for example: sexual harassment, fondling, exhibitionism, attempted rape and rape)**

	Very unlikely 1	2	3	4	Very likely 5
If you witnessed a sexual crime, how likely would you be to report it to the police?					

	Please choose only ONE option	
If you were NOT willing to report a sexual crime to the police, what would be the probable cause?		Fear of retaliation
		Fear of extortion
		A crime of low importance/ too trivial/ no loss
		A waste of time
		Complicated and long process
		Police could do nothing
		Police would not be interested
		Distrust in authorities
		No physical evidence
		Hostile attitude form the authorities
		Private/ dealt with it ourselves
		Other: _____

❖ **In case of rape**

	Very unlikely 1	2	3	4	Very likely 5
If you witnessed rape, how likely would you be to report it to the police?					

	Please choose only ONE option	
If you were NOT willing to report a rape to the police, what would be the probable cause?		Fear of retaliation
		Fear of extortion
		A crime of low importance/ too trivial/ no loss
		A waste of time
		Complicated and long process
		Police could do nothing
		Police would not be interested
		Distrust in authorities
		No physical evidence
		Hostile attitude form the authorities
		Private/ dealt with it ourselves
		Other: _____

Appendix B

Emotion questionnaire

Think about how the video you have just watched made you feel.

Rate each of the emotions below accordingly. Tick the appropriate box, 1 being “Not at all” to 7 being “Very much”.

	Not at all 1	2	3	4	5	6	Very much 7
Happy							
Excited							
Okay							
Calm							
Sad							
Angry							

Which emotion describes best how the video made you feel? _____

Why? _____

Note. The present scale was developed based on Levine and Burgess (1997) questionnaire for specific emotions and Izard, Libero, Putnam, & Haynes (1993), Differential Emotions Scale IV (DES IV).

Appendix C

Cognitive Interview protocol

1. Rapport building and instructions

1a. Establish rapport (5 mins.)

“Ok, so before we start with the interview, I would like to get to know a bit better. So tell me a little about yourself _____ (use participant’s name.) When you finish with your university work, what do you like to do? Do you like to watch TV? What type of programs do you like to watch? Do you like music? What is your favourite genre? What do you like to do in your spare time?”

1b. Transfer of control and aims of the interview

Transfer of control: “Do you remember the video you saw yesterday? I didn’t see it; I stepped outside and let you watch it by yourself. So I don’t know what happened; I want you to tell me what happened, OK?”

Aims of the interview: “Tell me everything that happened in the video, but don’t make anything up. If you aren’t sure about something it’s ok to say I don’t know. If you don’t remember something it’s also ok to say I don’t remember. If I say something that is wrong, you tell me ‘no, that didn’t happen in the video, this is what happened.’ If I say something you don’t understand, just tell me and I will rephrase it. We are going to have the audio-recorder here; and I am going to be taking some notes and looking down at my notes, but don’t mind that you keep on going. OK? Do you have any questions?”

2. Free recall phase

2a. Context reinstatement (CRI)

“I am going to ask you to please close your eyes and picture the room where you watched the video.” If the participant doesn’t seem comfortable closing their eyes use a phrase like: “closing your eyes will help you concentrate”. PAUSE.

“Think about the room.” PAUSE.

“What could you see in the room?” Pause (wait for participant to respond).

“What could you hear?” Pause (wait for participant to respond).

“What could you smell?” Pause (wait for participant to respond).

“Now try and picture yourself while you were watching the video. Think about what emotions you were feeling.” PAUSE (wait for participant to respond).

“What feelings did you have while watching the video?” Pause (wait for participant to respond).

2b. Report all (RA):

“Please tell me everything that you can about the video that you watched yesterday, even things that you think may not be important. Give me all the details you can without leaving anything out, but without guessing the information.”

PAUSE (wait for participant to respond).

2c. Change Order (CO):

Speak slowly and clearly: “Ok, now I want you to tell me about the last thing that you remember happened in the video.” PAUSE (wait for participant to respond).

“What happened just before that?” Keep asking what happened before that until the participant reaches the beginning of the film. Ask: “Is that the beginning?”

2d. Change perspective (CP):

Speak slowly and clearly: “Ok, now I want you to put yourself in the position of ____ (e.g., the man). What could you see from ____’s (e.g., the man) perspective?”

PAUSE (wait for participant to respond).

Remember more prompt?

“Is there anything else you remember of the video? Any other details?”

3. Questions phase with mental imagery

Use only information provided by the participant in the free recall, in the order provided, as a basis of mainly open- ended & closed questions.

INTERVIEWER - REMEMBER: Use context reinstatement (CRI) each time when asking questions: “I’m going to ask you a few questions about what you have told me about the video. You mentioned ____ (e.g., a man)” Brief pause: “I’d like you to close your eyes and think of this ____ (e.g., the man)” Get a mental image of this ____ (e.g., man) in your head.” Pause. “Can you tell me what ____ (e.g., the man) looked like?”

If the participants leave certain things out try to get more information by using-open ended instructions (e.g., describe what he was wearing, his hair, etc.).

Before activating the next image leave a clear break to indicate that you will be moving on to something different.

Remember more prompt?

Is there anything else you remember of the video? Any other details?

4. Closure phase

“Ok, thank you very much, you have given me plenty of information; if there is nothing else you remember we are going to end the interview phase.”

Answer any questions from participant: “do you have any questions?”

Thank participant: “thanks for helping me, you did a very good job ____ (participant’s name) with this we can finish our interview.”

Appendix D

Structured Interview protocol

1. Rapport building

1a. Establish rapport (5 mins.)

“Ok, so before we start with the interview, I would like to get to know a bit better. So tell me a little about yourself _____ (use participant’s name.) When you finish with your university work, what do you like to do? Do you like to watch TV? What type of programs do you like to watch? Do you like music? What is your favourite genre? What do you like to do in your spare time?”

1b. Aims of the interview

Aims of the interview: “Do you remember the video you say yesterday? I want you to tell me what happened, ok? Don’t make anything up just tell me what happened in the video. If you aren’t sure about something it’s ok to say I don’t know. If you don’t remember something it’s also ok to say I don’t remember. If I say something that is wrong, you tell me it’s wrong and if you don’t understand something I say tell me and I will rephrase it. We are going to have the audio-recorder here; and I am going to be taking some notes and looking down at my notes, but don’t mind that you keep on going. OK? Do you have any questions?”

2. Free recall phase

“Please tell me everything that you can about the video that you watched yesterday.”

Remember more prompt?

“Is there anything else you remember of the video? Any other details?”

3. Questioning phase

Use only information provided by the participant in the free recall, in the order provided, as a basis of mainly open-ended & closed questions.

“I’m going to ask you a few questions about what you have told me about the video. You mentioned _____ (e.g., a man). Brief pause: “tell me about _____ (e.g., the man).”

If the participant leaves certain things out try to get more information by using open-ended instructions (e.g., describe what he was wearing, his hair, etc.).

Remember more prompt?

Is there anything else you remember of the video? Any other details?

4. Closure

“Ok, thank you very much, you have given me plenty of information; if there is nothing else you remember we are going to end the interview phase.”

Answer any questions from participant: “do you have any questions?”

Thank participant: “thanks for helping me, you did a very good job _____ (participant’s name) with this we can finish our interview.”

Appendix E

Coding template

People

Main character, girl in black

- Female (1- P)
- Age , mid 20's (1- P) 24 years old (1- P)
- Height, 5ft 4 / 1.62 mts. (1- P)
- Weight, 10st / 63 kg. (1- P)
- Body build, thin (1- P)
- Hair (1- P) dark brown/black (1- P), straight (1- P), medium length/under her shoulders (1- P), parted on her right side, towards the left (1- P), half held (1- P) by a brown (1- O) hair claw clip/hair clip (1- O) loose strands of hair on her face (1- P)
- Eyes big (1-P) dark brown (1- P), dark eyeliner (1- P), dark (1- P) defined eyebrows (1- P)
- Small (1-P) pointy nose (1- P), medium mouth (1-P), lip gloss (1-P), small ears (1- P) small (1- O) round (1- O) white (1- O) crystal (1- O) earrings/studs (1- O)
- Dark/brown/tanned skin (1- P)
- Clothing, black (1- P) dress (1- P) knee length (1- P) with blue (1-P) red (1-P) pattern (1- P) and soft coloured (1- P) yellow (1- P) peach/pink coloured (1- P) flowers (1- P) beige (1- P) flower stems (1- P). Black (1- P) leggings (1- P). Black (1- P) plain (1- P) cardigan (1- P) with sleeves pushed up to her elbows (1- P).
- Black nail polish (1- P)
- Silver (1- O) charm (1- O) bracelet (1- O) on her right (1- P) wrist/hand (1- P)
- White (1- O) watch (1- O) with a ring of white (1- O) crystals (1- O) around the top/ clock face (1- O) black (1- O) numbers (1- O) and black (1- O) clock hands (1- O) on her left (1- P) wrist/hand (1- P).
- Hand bag/ bag/ purse (1- O) beige (1- O) with red (1- O) linings (1- O) and two (1- O) red (1- O) handles (1- O), a red (1- O) flower (1- O) hangs from a handle side (1- O), has a small outer (1- O) pocket (1- O).

Man / man in white

- Male (1- P)
- Age early 30's (1- P) 32 years old (1- P)
- Height, 5ft. 11 / 1.81mts (1- P)
- Weight, 13 st. 5 / 85 kg. (1- P)
- Body build, athletic (1- P)
- Hair (1- P) dark brown/black (1- P) lightly parted (1- P) on the left side/towards the right (1- P), medium length/ under his ears (1- P) with sideburns (1- P) wavy in the back (1- P) residing hair line (1- P).
- Small (1- P) dark brown eyes (1- P), dark eyebrows (1- P) well defined (1- P) joining slightly in the middle (1- P)

- Medium (1- P) pointy nose (1- P), small ears (1- P), medium (1- P) defined mouth (1- P) with thin lips (1- P).
- Close shaven (1- P)
- Light brown/tanned /olive skin (1- P)
- Clothing, white (1- P) long sleeve (1- P) button down (1- P) shirt (1- P) with vertical (1- P) grey (1- P) pinstripes (1- P) and with squared (1- P) dark blue/ dark coloured (1- P) with silver outline (1- P) cufflinks (1- P), with the first two buttons undone/ button undone (1- P) chest hair visible (1- P), Blue (1- P) jeans (1- P). Black (1- P) formal (1- P) slightly pointed (1- P) shoes (1- P).

Shopkeeper

- Female (1- P)
- Age, early 20's (1- P) 22 years old (1- P)
- Height 5ft 9 / 1.75 mts. (1- P)
- Weight 11st 11 / 75 kg. (1- P)
- Body build, chubby/thick/curvy (1- P)
- Hair (1- P) chestnut/reddish colour (1- P) straight (1- P) short / shoulder length (1- P) parted through the middle (1- P)
- Normal eyes (1- P) blue colour (1- P), thin (1- P) shaped (1- P) light eyebrows (1- P)
- Small nose (1- P), small mouth (1- P) with full lips (1- P), small ears (1- P).
- White/pale skin (1- P)
- Clothing, turquoise top (1- P) with deep V-neck (1- P) has a butterfly design (1- P) with open wings (1- P) in blue (1- P) and black colours (1- P) with silver tints (1- P) silver butterfly body (1- P) black (1- P) letters (1- P) over the butterfly's head (1- P). Grey (1- P) jumper/sweater (1- P) with hood (1- P), zipper (1- P) and pockets (1- P) sleeves pushed up to her elbows (1- P) zipper undone/open at the front (1- P) black (1- P) lining around the collar (1- P) and zipper (1- P).
- Medium length nails (1- P) with white tips/French manicure (1- P).

Female bystander

- Female (1- P)
- Age early 30's (1- P), 31 years old (1- P)
- Height 5ft 6 / 1.67 mts. (1- P)
- Weight 9 st. 5 / 60 kg. (1- P)
- Body build, medium (1- P) small belly (1- P)
- Hair (1- P) blonde/ light (1- P) wavy (1- P) medium length/ under her shoulders (1- P) slightly parted (1- P) on her right side/ towards her left (1- P)
- Big (1- P) blue eyes (1- P), dark eyelashes (1- P) dark eyeliner (1- P). Light (1- P) shaped eyebrows (1- P).
- Small mouth (1- P) with red (1- P) lipstick (1- P). Small nose (1- P) small ears (1- P). Small (1- O) silver (1- O) earrings/studs (1- O).
- White/pale skin (1- P)
- Clothing, dressed smart (1- P) with plain (1- P) black (1- P) top/blouse (1- P) with round neck line (1- P), black (1- P) formal (1- P) jacket (1- P) [black (1- P) suit (1- P)] black (1- P) belt (1- P) with silver (1- P) buckle (1- P). Silver (1- O) watch (1- O) with links (1- O) a squared (1- O) clock face (1- O) on her right hand/wrist (1- P)

Scenery / location and objects

First scene

- Bar (1- S), long (1- S) light colour (1- S) wooden (1- S) counter top (1- S). There is a round (1- O) plate (1- O) with slices of cake (1- O) and a round (1- O) clear/ transparent (1- O) plastic (1- O) cover (1- O) on top of the cover (1- S) there is a silver (1- O) spatula (1- O) with a red (1- O) and black (1- O) handle (1- O). Behind the plate of cake (1- S) there is an orange (1- O) bowl (1- O) with bags of crisps (1- O). In front of the plate with cake (1- S), there are two (1- O) squared (1- O) black (1- O) coasters (1- O) with white (1- O) and pink (1- O) letters on them (1- O). On the far end of the counter (1- S) there is a wooden board (1- O) with small (1- O) white (1- O) milk jugs/pitchers (1- O), there are 3 (1- O) glass (1- O) jars (1- O) behind the wooden board (1- S) and a tall (1- O) silver (1- O) pot (1- O) with a black (1- O) handle (1- O). The side of the bar has dark colour (1- S) wooden (1- S) panels (1- S) with bright green (1- S) rectangles (1- S). Barely visible there are 3 (1- O) stools (1- O).
- Over the bar (1- S) there are 3 (1- O) silver (1- O) cone shaped (1- O) lamps (1- O).
- Behind the bar (1- S) there is a white (1- S) round (1- S) pillar (1- S) and on the far (1- S) right end (1- S) there is a white (1- S) squared (1- S) pillar (1- S) with a painting (1- O) with red (1- O), yellow (1- O) and grey colours (1- O). Below the painting (1- S) there is a poster (1- O) with a green (1- O) and red (1- O) dragon (1- O).
- The back wall (1- S) is white (1- S) and it has some bright green (1- S) wooden (1- S) cupboards (1- S) some shelves (1- S) and two (1- O) refrigerators (1- O). There is a black (1- S) sign (1- S) with white (1- S) and pink (1- S) letters (1- S) the visible part reads “Fabrika” (1- S).
- Close up/on the left side of the back wall (1- S) there is a refrigerator (1- S) with two (1- S) glass doors (1- S), inside it (1- S) there are Redbull cans (1- O) water bottles (1- O) Coca cola cans (1- O) and other beverages (1- O). Next to the refrigerator on the back wall (1- S) there are 5 (1- S) shelves (1- S). The top shelf (1- S) has boxes/ tea boxes (1- O) in colours (1- O) one (1- O) red (1- O) 3 (1- O) yellow (1- O) one (1- O) pink (1- O) and one (1- O) green one (1- O). Under those boxes there are (1- S) 4 shelves (1- S) with glass jars (1- O) each with a white (1- O) name tag (1- O) containing tea leaves (1- O). Next to the shelves with tea jars on the back wall (1- S) there is a refrigerator (1- O) with white (1- O) paper (1- O) covering the doors (1- O), under that refrigerator (1- S) there is a shelf (1- S) with white (1- O) mugs/cups (1- O). Next to the door covered refrigerator on the back wall (1- S) there is a shelf (1- S) with some objects that are not clearly visible (1- O) but you can see a red object (1- O), black object (1- O) and white object (1- O). At the very back (1- S) you can see a black (1- O) bag/ backpack/ rucksack (1- O).
- A white (1- O) plain (1- O) coffee mug/cup (1- O) with a handle (1- O), is given to the girl in black.

Second scene

- The wall is painted white (1- S); there is a corner (1- S) where the back wall and a pillar join (1- S). There is a light (1- O) wooden top (1- O) table (1- O) with silver (1- O) curved legs (1- O). There are two (1- O) chairs (1- O) with dark brown (1- O) back rests (1- O) with a curved figure (1- O). On the table (1- S) there is a white

- (1- O) saucer/ small (1- O) plate (1- O) with a black (1- O) pot (1- O) with a small (1- O) pine tree/ plant (1- O).
- On the back (1- S) left side (1- S) in front of the pillar (1- S) there is a glass (1- S) display (1- S) unit (1- S), inside it (1- S) there are 3 (1- O) bags/handbags (1- O). The bag on top (1- O) is beige (1- O) with dark (1- O) designs (1- O) on the half bottom part (1- O). The second bag/ the next bag (1- O) is beige with dark (1- O) designs (1- O) on the top part (1- O). The third bag is not clearly visible (1- O).

Third scene

- At the far end (1- S) you can see the bar (1- S), you can see 3 (1- S) bright green (1- S) rectangular (1- S) panels on the side of the bar (1- S), on the green rectangle that is most visible/ the one in the middle (1- S) there is a black (1- O) poster (1- O) with dark green (1- O) letters (1- O) and lines (1- O). The right side (1- S) rectangle/panel (1- O) is bumpy/ corrugated (1- O). On the left side (1- S) of the bar (1- S) there is a round (1- S) white (1- S) pillar (1- S), the lower half of it (1- S) is painted grey (1- S). Over the bar (1- S) there is a red (1- O) coned shaped (1- O) lamp (1- O) hanging (1- O) by a cable/chain (1- O). The back wall (1- S) is white (1- S). On the far upper (1- S) right side (1- S) of the back wall (1- S) there is a painting (1- O) with a black (1- O) frame (1- O), it has different colours (1- O) red (1- O) blue (1- O) white (1- O) green (1- O), barely visible is a woman (1- O) in blue (1- O) clothing (1- O). On the back wall (1- S) under the painting (1- S) behind the bar (1- S) there is a green (1- S) framed (1- S) shelf (1- S), with two (1- O) bottles (1- O) with black (1- O) pumps (1- O).
- On top of the bar (1- S) at the centre (1- S) there is a coffee machine (1- O) with a black (1- O) base (1- O) and a silver (1- O) top (1- O), it has black (1- O) letters (1- O) on the bottom (1- O) right side (1- O), on top of the coffee machine (1- S) there are 10 (1- O) white (1- O) coffee mugs (1- O). Next to/ on the right (1- S) there is a tower/bundle/ stack (1- O) of white (1- O) with brown (1- O) designs (1- O) paper (1- O) cups (1- O). Next to/ on the right side of the cups (1- S) there is a grey (1- O) cash register machine/till (1- O). On the left side of the coffee machine (1- S) there are 2 (1- O) coffee granule grinder machines (1- O) with glass (1- O) containers on top (1- O) with black (1- O) tops (1- O), they have a silver (1- O) base (1- O) the cord plugs are visible (1- O).
- On the front (1- S) right hand (1- S) white (1- S) wall (1- S), there is a painting (1- O) depicting bare-chested (1- O) men (1- O) with white (1- O) loin clothes (1- O) and brown (1- O) belts (1- O) with silver (1- O) round (1- O) buttons (1- O), riding (1- O) white (1- O) horses (1- O) with brown (1- O) manes (1- O) and blue tinted (1- O) shadows (1- O), there are 2 men (1- O) up front/middle (1- O) the man on the right (1- O) is holding a horn (1- O) on his right (1- O) hand (1- O) the man on the left (1- O) is holding a bow (1- O) on his right (1- O) hand (1- O) and is carrying a quiver/ bag/ container with arrows (1- O) that is held by a black (1- O) lace/ribbon (1- O) on his back (1- O). Under the two men (1- O) there are 6 men/ others (1- O) silver (1- O) holding swords (1- O). The painting in general has some green (1- O) ground/ on the bottom (1- O) and some blue (1- O) clouds (1- O) on the top (1- O).
- Behind the wall on the right with the painting (1- S) there is a magazine stand (1- O) made of black (1- O) iron/tubes (1- O) with a spiral (1- O) on its side (1- O) and long legs (1- O), containing white (1- O) papers/ magazines (1- O), with a red (1- O) cover/ back (1- O).
- The floor (1- S) is smooth (1- S) with a dark red/ brick/ maroon colour (1- S).

Forth scene

- Section 1. There are 2 (1- S) windows (1- S) barely visible in the background (1- S) and bright (1- S) yellow (1- S) walls (1- S).
- Section 2. The back wall (1- S) is painted white (1- S), there are white (1- S) railings (1- S) on the back left side (1- S). On the back right side (1- S) there is a glass (1- O) door (1- O) with a silver (1- O) handle (1- O) and a green (1- O) sticker/sign (1- O) with white (1- O) letters (1- O) saying “push” (1- O). On the left side of the door/ next to the door (1- S) there is a window (1- S). There is green (1- O) leafy (1- O) plant (1- O) in front of the window (1- S). Above the window and the door (1- S) there is another window (1- S).
- The scene is the same as before, you can see there is a staircase (1- S) with grey (1- S) steps (1- S) and there is a white (1- O) with black (1- O) gate (1- O) in front of the staircase on the left side (1- S). There are 3 (1- O) paintings depicting landscapes (1- O) on a wooden (1- O) easel (1- O) 2 paintings (1- O) are squared (1- O) and one painting is rectangular (1- O) and bigger than the rest (1- O). Next to the paintings/ on the left (1- S) there is a white (1- O) wooden (1- O) counter (1- O).

Action sequence positive video

- *First scene.* Shopkeeper (1- P) puts (1- A) the cover of the cake plate (1- O) on top of (1- S) the plate (1- O) and looks up (1- A). Main character/ girl in black/ girl that gets flowers (1- P) comes up to/approaches (1- A) the bar (1- S), she is carrying (1- A) her handbag (1- O) on her right (1- P) hand (1- P) and she puts (1- A) the handbag (1- O) on the counter (1- S). She/girl in black (1- P) stretches (1- A) her left (1- P) hand (1- P) towards (1- S) the shopkeeper (1- P); at the same time the shopkeeper (1- P) looks (1- A) at her/girl in black (1- P) and smiles (1- A), and then she/shopkeeper (1- P) reaches (1- A) under the counter (1- S) with her right (1- P) hand (1- P) and pulls out (1- A) a white coffee mug/cup (1- O) and places it (1- A) on the counter (1- S). The girl in black/ that gets flowers (1- P) hands/gives (1- A) some money (1- O) with her left (1- P) hand (1- P) to the shopkeeper (1- P) who receives (1- A) it with her right (1- P) hand (1- P). The shopkeeper (1- P) turns (1- A) to her right (1- P) and puts (1- A) her left (1- P) hand up to her right (1- P) hand (1- P), and keeps moving (1- A) to her right/ left of the screen/towards the left (1- S). The girl in black/ that gets flowers (1- P) reaches for (1- A) the coffee mug (1- O) with her left (1- P) hand (1- P) and at the same time takes (1- A) her handbag (1- O) with her right (1- P) hand (1- P) and places (1- A) it on her forearm (1- P); she then turns (1- A) to her left/to the right of the screen/towards the right (1- S) and leaves (1- A).
- *Second scene.* The girl in black/ that gets flowers (1- P) is sitting (1- A) at a table (1- O), on the right hand chair (1- S) she is looking down (1- A) at her coffee mug/cup (1- O) which is on the table (1- S) and she then lifts (1- A) her head (1- P) and turns (1- A) to look at her left/right of the screen/towards the right (1- S), her right (1- P) hand (1- P) is touching (1- A) the coffee mug/cup (1- O) and she taps (1- A) her right hand (1- P) finger nails (1- P) on the coffee mug/cup (1- O), and her left (1- P) hand (1- P) is under the table (1- S) on her thighs (1- P). She lifts (1- A) her left (1- P) hand (1- P) and looks (1- A) down (1- S) at her watch (1- O); she then places (1- A) her left (1- P) hand (1- P) under the table (1- S) on her lap again

- (1- P) and turns (1- A) her head (1- P) to her left/right side of the screen/ towards the right (1- S).
- *Third scene.* The girl in black/ that gets flowers (1- P) is standing up (1- A) looking at (1- A) a painting (1- O) on the wall (1- S) in front of her (1- S), she is carrying (1- A) her handbag (1- O) on her right (1- P) forearm (1- P), her left hand (1- P) fingers (1- P) are touching (1- A) the fingers(1- P) of her right (1- P) hand (1- P). She moves (1- A) her left (1- P) hand (1- P) so that it cups her right (1- P) hand (1- P), at that moment a man in white (1- P) walks in (1- A) from the right/right side (1- S). He (1- P) looks (1- A) at her/girl in black (1- P), he has his hands (1- P) behind his back (1- P) and he is carrying (1- O) a bouquet of flowers (1- O). He looks (1- A) to his right/ towards the coffee machine (1- S) and he stops (1- A) at the bar (1- S) in front of (1- S) the coffee machine (1- O); he angles his body/turns (1- A) towards her/ to his left (1- S) hiding the (1- A) flowers (1- O) behind his back (1- P). Paused at the bar he looks (1- A) straight forward (1- S) at the girl (1- P) he has his head tilted to the right (1- P), and then he (1- P) walks towards (1- A) her (1- P). He (1- P) briefly looks (1- A) at the painting on the wall (1- O) while he is walking (1- A) then he looks (1- A) at her again (1- P). She/ girl in black (1- P) turns (1- A) to her left/ towards him/ to the left (1- S), he (1- P) pulls/moves (1- A) his right (1- P) hand (1- P) forward/from his back (1- S) in a swift movement (1- A), he is holding (1- A) the flowers (1- O) in his right (1- P) hand (1- P) and he leaves/has behind his back (1- A) his left (1- P) hand (1- P). He smiles (1- A) and hands/gives (1- A) the flowers (1- O) to the girl in black (1- P). She (1- P) takes/grabs (1- P) them/ the flowers (1- O) with both (1- P) hands (1- P), and looks (1- A) at him/man in white (1- P) and smiles (1- A), and then she looks (1- A) down (1- S) at the flowers (1- O), which she spins around (1- A); then she looks (1- A) back at him (1- P) and he/ man in white (1- P) is looking at (1- A) her/girl in black (1- P), he looks at (1- A) the flowers (1- O) and he brings/move (1- A) his left (1- P) hand (1- P) to his side(1- P), she/ girl in black (1- P) lets go of the bouquet (1- A) with her right (1- P) which she moves outwards (1- A), he then tilts (1- A) his head (1- P) to his right side(1- P), closes (1- A) his eyes (1- P) and raises (1- A) his eyebrows (1- P) and straightens (1- A) his head (1- P) again and smiles (1- A). She/girl in black (1- P) moves (1- A) her right (1- P) hand (1- P) back to the flowers (1- O) and lets go (1- A) of the flowers (1- O) with her left (1- P) hand (1- P) and bends (1- A) her body (1- P) on her left side (1- P) and then straightens up (1- A). Then he/man in white (1- P) takes a step/steps (1- A) to his right (1- P) towards her (1- S), he stands/ positions next to her (1- S). They (1- P) look up at (1- A) the painting (1- O) in front of them (1- S), and she (1- P) puts/moves (1- A) her left (1- P) hand (1- P) on the flower bouquet (1- O), he/man in white (1- P) then turns (1- A) his head (1- P) to the right/ towards her (1- S), and looks (1- A) at her (1- P) and then turns (1- A) his head (1- P) to the left/ forwards (1- S) and looks (1- A) at the painting again (1- O) .
 - *Forth scene.* The girl in black (1- P) is standing (1- A) on the right (1- S), with the flowers (1- O) in her hands (1- P); a woman/blonde woman (1- P) walks in (1- A) from the left side (1- S) she is looking (1- A) at the flowers (1- O) and has/holds (1- A) her hands (1- P) at her hips (1- P). She/ blonde woman stops (1- A) next to the girl in black/on the right side of the girl in black (1- S). The girl in black (1- P) looks (1- A) to her right/ the right (1- S) at the blonde woman (1- P), she/ blonde woman (1- P) nods (1- A) and smiles (1- A) opens (1- A) widely (1- A) her eyes (1- P) and raises (1- A) her eyebrows (1- P). She/ blonde woman steps(1- A) to her/the right (1- S) and leans over (1- A) on the flowers (1- O), the girl in black (1- P)

moves (1- A) the flowers (1- O) towards the blonde woman (1- S) and lets go/ loses grip (1- A) of her left (1- P) hand (1- P) on the flowers (1- O). The blonde woman (1- P) straightens up (1- A) and looks (1- A) at the girl in black (1- P), the girl in black (1- P) looks (1- A) at her/ blonde woman (1- P). The blonde woman (1- P) nods (1- A) her head up and down (1- A) twice (1- A), moves (1- A) to her/the left side (1- S) and leans towards (1- A) the flowers (1- O) once more and smells (1- A) the flowers (1- O), while the girl in black (1- P) moves (1- A) her hair (1- P) with her left (1- P) hand (1- P) behind her ear (1- P) and she leans in (1- A), smells (1- A) the flowers (1- O) and smiles (1- A). She /girl in black lets go (1- A) of her hair (1- P) and puts/moves (1- A) her left (1- P) hand (1- P) back on the flowers (1- O), while the woman in black (1- P) tilts (1- A) her head (1- P) to the left (1- S) and examines (1- A) the flowers (1- O).

Action sequence neutral video

- The *first and second scene* are the same as in the positive video.
- *Third scene.* The girl in black (1- P) is standing up (1- A) looking at (1- A) a painting (1- O) on the wall (1- S) in front of her (1- S), she is carrying (1- A) her handbag (1- O) on her right (1- P) forearm (1- P), her left hand (1- P) fingers (1- P) are touching (1- A) the fingers (1- P) of her right (1- P) hand (1- P). A man in white (1- P) walks in (1- A) from the right/right side (1- S). He is looking (1- A) straight forward (1- S), places/puts (1- A) his right (1- P) hand (1- p) on the counter (1- S), he stops (1- A) at the bar (1- S) in front of (1- S) the coffee machine (1- O), leans (1- A) towards the counter (1- S) and puts/places (1- A) his left (1- P) hand (1- P) on his left (1- P) hip (1- P). The girl in black (1- P) moves (1- A) her head (1- P) down (1- S) and keeps looking at the painting (1- A). He/man in white (1- P) straightens up (1- A), at that moment the shopkeeper (1- P) walks (1- A) to her left/ to the right (1- S) from behind (1- A) the bar/counter (1- S) behind (1- S) the coffee machine (1- O) and stops (1- A) at the till/ cash register machine (1- O), and then the man in white (1- P) puts (1- A) his right (1- P) hand (1- P) in the right side (1- P) pocket (1- P) of his jeans/trousers (1- P) and takes out (1- A) a black (1- O) with a silver (1- O) strip (1- O) cell phone/ mobile phone (1- O); he holds (1- A) the cell phone/ mobile phone (1- O) with his both hands (1- P) at chest level (1- S) and looks down at it (1- A). At that moment the girl in black (1- P) looks up again/ at the top part of the painting (1- A). He/man in white (1- P) pauses for a moment (1- A), then looks up (1- A) and puts (1- A) his cell phone/ mobile phone (1- O) back in his right side (1- P) jean/trouser (1- P) pocket (1- P) with his right (1- P) hand (1- P) and puts his left (1- P) hand (1- P) on his left (1- P) hip again (1- P). He looks around (1- A) with his eyes (1- P) and then walks (1- A) towards his left/ the left (1- S) and passes/walks (1- A) behind (1- S) the girl in black (1- P), she/the girl in black (1- p) turns (1- A) to her right/towards the left (1- S) and looks (1- A) at him (1- P). He/man in white (1- P) stops (1- A) in front of (1- S) the paintings (1- O) on the easel (1- O), puts (1- A) his left (1- P) hand (1- P) on his left (1- P) hip (1- p) and looks (1- A) at the paintings (1- O). The girl in black (1- P) turns (1- A) to her left/towards the right (1- S) and looks (1- A) at the painting once again (1- O), and the shopkeeper (1- P) again moves/walks (1- A) to her left/ to the right (1- S) from behind (1- S) the coffee machine (1- O) towards (1- S) the till/ cash register machine (1- O) and then turns (1- A) to her left/towards the right (1- S).
- *Forth scene.* The girl in black (1- P) is standing (1- A) on the right (1- S), with her left hand (1- P) at the inside (1- P) of her right (1- P) elbow (1- P), her right (1- P)

arm (1- P) is bent upwards (1- P) and her right hand (1- P) fingers(1- P) are curved (1- P) towards her right (1- P) shoulder (1- P). A woman/blonde woman (1- P) walks in (1- A) from the left side (1- S) she is looking (1- A) downwards (1- S) to her right/towards the left (1- S), she then looks up (1- A) at the girl in black (1- P) who turns (1- A) to her right/ towards the left (1- S) and looks (1- A) at the blonde woman (1- P). The blonde woman (1- P) opens/widens (1- A) her eyes (1- P), raises (1- A) her eyebrows (1- P) and nods up and down (1- A) twice (1- A) and smiles (1- A), the girl in black (1- P) smiles (1- A) at the blonde woman (1- P) and then turns (1- A) her head (1- P) towards her left/the left (1- S) and stops smiling (1- A), while the blonde woman (1- P) turns (1- A) her head (1- P) towards her right/the left (1- S) and looks (1- A) downwards (1- S), steps (1- A) backwards (1- S) and stands (1- A) behind (1- S) the right side (1- S) of the girl in black (1- P). The blonde woman (1- P) then looks (1- A) upwards (1- S) and looks (1- A) downwards again (1- S) steps (1- A) to her right/ towards the left (1- S) and leans down (1- A) then she lifts (1- A) her head (1- P) and looks (1- A) upwards (1- S) and straightens up (1- A).

Action sequence negative video

- The *first and second scenes* are the same as the positive video.
- *Third scene.* The girl in black/robbed (1- P) is standing up (1- A) looking at (1- A) a painting (1- O) on the wall (1- S) in front of her (1- S), she is carrying (1- A) her handbag (1- O) on her right (1- P) forearm (1- P), her right (1- P) hand (1- P) is angled upwards (1- P) and she is moving (1- A) her right hand (1- P) fingers (1- P), her left (1- P) hand (1- P) is touching (1- A) the inside (1- P) of her right (1- P) elbow (1- P) . She moves (1- A) her right (1- P) hand (1- P) downwards to a perpendicular position to her body (1- P), at that moment a man in white/thief (1- P) walks in (1- A) from the right/right side (1- S). He (1- P) is looking (1- A) at her/girl in black (1- P), and he stops (1- A) at the bar (1- S) in front of (1- S) the coffee machine (1- O); he places/puts (1- A) his left (1- P) hand (1- P) on his left (1- P) hip (1- P), and his right (1- P) hand (1- P) on the bar/counter (1- S). Paused at the bar he looks (1- A) straight forward/ to the left of the screen (1- S). He looks back (1- A) at the girl in black/ robbed (1- P) and he walks towards (1- A) her (1- P). He (1- P) is pressing (1- A) his lips together (1- P), and when he reaches/approaches (1- A) her/ the girl in black (1- P) and he puts (1- A) his right (1- P) hand (1- P) on the left side (1- P) of her body /of the girl in black (1- P) and his left (1- P) hand (1- P) on her (1- P) handbag (1- O), and he spins (1- A) her (1- P) to her right/ his left/ towards the left (1- S). They (1- P) struggle (1- A) for the handbag (1- O), the girl (1- P) places/is holding (1- A) both of her hands (1- P) on the handbag (1- O), and then he (1- P) puts (1- A) his left (1- P) hand (1- P) on her (1- P) right (1- P) shoulder (1- P), she (1- P) puts (1- A) her left (1- P) hand (1- P) on his (1- P) right (1- P) arm (1- P), he (1- P) then pushes her (1- P) with his left (1- P) hand(1- P). The girl in black/ robbed (1- P) falls (1- A) backwards (1- S). He (1- P) has/carries/holds (1- A) the handbag (1- O) in his right (1- P) hand (1- P), which he jerks/moves (1- A) backwards (1- S). He immediately leaves (1- A) in a run (1- A) to his left side/ towards the right (1- S).
- *Forth scene.* The girl in black/robbed (1- P) is sitting (1- A) on the floor (1- S) with her legs (1- P) stretched out (1- P); her hands (1- P) on her thighs (1- P) she is looking (1- A) towards her right/ the right (1- S) and her back (1- P) towards the screen/ you can only see her back (1- S). A woman/bystander/ blonde woman (1- P) comes in/walks in (1- A) from the left side (1- S) and turns (1- A) her head (1- P) to

her right/to the right (1- S) and sees (1- A) the girl (1- P) on the floor (1- S). She/woman (1- P) makes a brief pause (1- A), she opens/widens (1- A) her eyes (1- P) and she turns (1- A) her body (1- P) to face/towards (1- S) the girl on the floor (1- P). She/woman (1- P) moves quickly (1- A) towards (1- S) the girl in black/robbed (1- P) and she looks (1- A) at the woman/blonde woman (1- P) who/ the blonde woman kneels down (1- A) on her left (1- P) knee (1- P), and she extends (1- A) her arms (1- P) towards (1- S) the girl in black/ robbed (1- P) and then she (1- P) places (1- A) her right (1- p) hand (1- P) on the girl's (1- P) left (1- P) hand (1- P). The woman/blonde (1- P) is crouched over (1- A) the girl in black/robbed (1- P). The girl in black/robbed (1- P) points/indicates (1- A) with her right (1- P) hand (1- P) towards the right (1- S) and turns (1- A) her head (1- P) towards the right (1- S) and the woman/blonde (1- P) looks (1- A) in the direction pointed /to the right/ her left (1- S) and then she/ woman straightens up (1- A) looking towards the right/her left (1- S). The woman/blonde (1- P) then looks back (1- A) towards (1- S) the girl in black/ robbed (1- P), and the girl in black (1- P) looks at (1- A) the woman(1- P) who crouches down (1- A) and moves (1- A) her head (1- P) to her left and right (1- P), she/woman straightens up again (1- A) and turns to her left/towards the right (1- S), and crouches back down (1- A) and starts inspecting (1- A) the girl's (1- P) left (1- P) hand (1- P), while the girl in black/ robbed (1- P) gestures again (1- A) towards the right (1- S) with her right (1- P) hand (1- P) again and looks (1- A) to her right/same direction as her hand(1- S) and then looks back at (1- A) the woman/ blonde (1- P) who starts inspecting (1- A) the rest of the girl in black/ robbed (1- P).

Amount of details in templates of each video

Details	Video		
	Positive	Negative	Neutral
Person	319	344	295
Object	348	340	312
Action	109	85	92
Surroundings	168	185	179
Total	944	954	878

Appendix F

Cognitive Interview protocol

1. Rapport building

1a. Establish rapport (5 mins.)

“Ok, so before we start with the interview, I would like to get to know a bit better. So tell me a little about yourself _____ (use participant’s name.) When you finish with your university work, what do you like to do? Do you like to watch TV? What type of programs do you like to watch? Do you like music? What is your favourite genre? What do you like to do in your spare time?”

1b. Transfer of control and aims of the interview

Transfer of control: “Do you remember the video you saw yesterday? I didn’t see it; I stepped outside and let you watch it by yourself. So I don’t know what happened; I want you to tell me what happened, OK?”

Aims of the interview: “Tell me everything that happened in the video, but don’t make anything up. If you aren’t sure about something it’s ok to say I don’t know. If you don’t remember something it’s also ok to say I don’t remember. If I say something that is wrong, you tell me ‘no, that didn’t happen in the video, this is what happened.’ If I say something you don’t understand, just tell me and I will rephrase it. We are going to have the audio-recorder here; and I am going to be taking some notes and looking down at my notes, but don’t mind that you keep on going. OK? Do you have any questions?”

2. Free recall phase

2a. Context reinstatement (CRI)

“I am going to ask you to please close your eyes and picture the room where you watched the video.” If the participant doesn’t seem comfortable closing their eyes use a phrase like: “closing your eyes will help you concentrate”. PAUSE.

“Think about the room.” PAUSE.

“What could you see in the room?” Pause (wait for participant to respond).

“What could you hear?” Pause (wait for participant to respond).

“What could you smell?” Pause (wait for participant to respond).

“Now try and picture yourself while you were watching the video. Think about what emotions you were feeling.” PAUSE (wait for participant to respond).

“What feelings did you have while watching the video?” Pause (wait for participant to respond).

2b. Report all (RA):

“Please tell me everything that you can about the video that you watched yesterday, even things that you think may not be important. Give me all the details you can without leaving anything out, but without guessing the information.”

PAUSE (wait for participant to respond).

2c. Change Order (CO):

Speak slowly and clearly: “Ok, now I want you to tell me about the last thing that you remember happened in the video.” PAUSE (wait for participant to respond).

“What happened just before that?” Keep asking what happened before that until the participant reaches the beginning of the film. Ask: “Is that the beginning?”

2d. Change perspective

Speak slowly and clearly: “Ok, now I want you to put yourself in the position of ____ (e.g., the man). What could you see from ____’s (e.g., the man) perspective?”

PAUSE (wait for participant to respond).

Remember more prompt?

“Is there anything else you remember of the video? Any other details?”

3. Questioning phase with mental imagery

Use only information provided by the participant in the free recall, in the order provided, as a basis of mainly open- ended & closed questions.

INTERVIEWER - REMEMBER: Use context reinstatement (CRI) each time when asking questions: “I’m going to ask you a few questions about what you have told me about the video. You mentioned ____ (e.g., a man)” Brief pause: “I’d like you to close your eyes and think of this ____ (e.g., the man)” Get a mental image of this ____ (e.g., man) in your head.” Pause. “Can you tell me what ____ (e.g., the man) looked like?”

If the participants leave certain things out try to get more information by using-open ended instructions (e.g., describe what he was wearing, his hair, etc.).

Before activating the next image leave a clear break to indicate that you will be moving on to something different.

Remember more prompt?

Is there anything else you remember of the video? Any other details?

4. Closure

“Ok, thank you very much, you have given me plenty of information; if there is nothing else you remember we are going to end the interview phase.”

Answer any questions from participant: “do you have any questions?”

Thank participant: “thanks for helping me, you did a very good job ____ (participant’s name) with this we can finish our interview.”

CRI + RA, interview protocol

1. Rapport building

1a. Establish rapport (5 mins.)

“Ok, so before we start with the interview, I would like to get to know a bit better. So tell me a little about yourself ____ (use participant’s name.) When you finish with your university work, what do you like to do? Do you like to watch TV? What type of programs do you like to watch? Do you like music? What is your favourite genre? What do you like to do in your spare time?”

1b. Transfer of control and aims of the interview

Transfer of control: “Do you remember the video you saw yesterday? I didn’t see it; I stepped outside and let you watch it by yourself. So I don’t know what happened; I want you to tell me what happened, OK?”

Aims of the interview: “Tell me everything that happened in the video, but don’t make anything up. If you aren’t sure about something it’s ok to say I don’t know. If you don’t remember something it’s also ok to say I don’t remember. If I say something that is wrong, you tell me ‘no, that didn’t happen in the video, this is what happened.’ If I say something you don’t understand, just tell me and I will rephrase it. We are going to have the audio-recorder here; and I am going to be taking some notes and looking down at my notes, but don’t mind that you keep on going. OK? Do you have any questions?”

2. Free recall

2a. Context reinstatement (CRI)

“I am going to ask you to please close your eyes and picture the room where you watched the video.” If the participant doesn’t seem comfortable closing their eyes use a phrase like: “closing your eyes will help you concentrate”. PAUSE.

“Think about the room.” PAUSE.

“What could you see in the room?” Pause (wait for participant to respond).

“What could you hear?” Pause (wait for participant to respond).

“What could you smell?” Pause (wait for participant to respond).

“Now try and picture yourself while you were watching the video. Think about what emotions you were feeling.” PAUSE (wait for participant to respond).

“What feelings did you have while watching the video?” Pause (wait for participant to respond).

2b. Report all (RA):

“Please tell me everything that you can about the video that you watched yesterday, even things that you think may not be important. Give me all the details you can without leaving anything out, but without guessing the information.”

PAUSE (wait for participant to respond).

Remember more prompt?

“Is there anything else you remember of the video? Any other details?”

3. Questioning phase with mental imagery

Use only information provided by the participant in the free recall, in the order provided, as a basis of mainly open-ended & closed questions.

INTERVIEWER - REMEMBER: Use context reinstatement (CRI) each time when asking questions: “I’m going to ask you a few questions about what you have told me about the video. You mentioned _____ (e.g., a man)” Brief pause: “I’d like you to close your eyes and think of this _____ (e.g., the man)” Get a mental image of this _____ (e.g.; man) in your head.” Pause. “Can you tell me what _____ (e.g., the man) looked like?”

If the participants leave certain things out try to get more information by using-open ended instructions (e.g., describe what he was wearing, his hair, etc.).

Before activating the next image leave a clear break to indicate that you will be moving on to something different.

Remember more prompt?

Is there anything else you remember of the video? Any other details?

4. Closure

“Ok, thank you very much, you have given me plenty of information; if there is nothing else you remember we are going to end the interview phase.”

Answer any questions from participant: “do you have any questions?”

Thank participant: “thanks for helping me, you did a very good job ____ (participant’s name) with this we can finish our interview.”

RA + CO, interview protocol

1. Rapport building

1a. Establish rapport (5 mins.)

“Ok, so before we start with the interview, I would like to get to know a bit better. So tell me a little about yourself ____ (use participant’s name.) When you finish with your university work, what do you like to do? Do you like to watch TV? What type of programs do you like to watch? Do you like music? What is your favourite genre? What do you like to do in your spare time?”

1b. Transfer of control and aims of the interview

Transfer of control: “Do you remember the video you saw yesterday? I didn’t see it; I stepped outside and let you watch it by yourself. So I don’t know what happened; I want you to tell me what happened, OK?”

Aims of the interview: “Tell me everything that happened in the video, but don’t make anything up. If you aren’t sure about something it’s ok to say I don’t know. If you don’t remember something it’s also ok to say I don’t remember. If I say something that is wrong, you tell me ‘no, that didn’t happen in the video, this is what happened.’ If I say something you don’t understand, just tell me and I will rephrase it. We are going to have the audio-recorder here; and I am going to be taking some notes and looking down at my notes, but don’t mind that you keep on going. OK? Do you have any questions?”

2. Free recall phase

2a. Report all (RA):

“Please tell me everything that you can about the video that you watched yesterday, even things that you think may not be important. Give me all the details you can without leaving anything out, but without guessing the information.”

PAUSE (wait for participant to respond).

2b. Change Order (CO):

Speak slowly and clearly: “Ok, now I want you to tell me about the last thing that you remember happened in the video.” PAUSE (wait for participant to respond).

“What happened just before that?” Keep asking what happened before that until the participant reaches the beginning of the film. Ask: “Is that the beginning?”

Remember more prompt?

“Is there anything else you remember of the video? Any other details?”

3. Questioning phase with mental imagery

Use only information provided by the participant in the free recall, in the order provided, as a basis of mainly open-ended & closed questions.

INTERVIEWER - REMEMBER: Use context reinstatement (CRI) each time when asking questions: “I’m going to ask you a few questions about what you have told me about the video. You mentioned _____ (e.g., a man)” Brief pause: “I’d like you to close your eyes and think of this _____ (e.g., the man)” Get a mental image of this _____ (e.g., man) in your head.” Pause. “Can you tell me what _____ (e.g., the man) looked like?”

If the participants leave certain things out try to get more information by using open-ended instructions (e.g., describe what he was wearing, his hair, etc.).

Before activating the next image leave a clear break to indicate that you will be moving on to something different.

Remember more prompt?

Is there anything else you remember of the video? Any other details?

4. CLOSURE

“Ok, thank you very much, you have given me plenty of information; if there is nothing else you remember we are going to end the interview phase.”

Answer any questions from participant: “do you have any questions?”

Thank participant: “thanks for helping me, you did a very good job _____ (participant’s name) with this we can finish our interview.”

RA + CP, interview protocol

1. Rapport building

1a. Establish rapport (5 mins.)

“Ok, so before we start with the interview, I would like to get to know a bit better. So tell me a little about yourself _____ (use participant’s name.) When you finish with your university work, what do you like to do? Do you like to watch TV? What type of programs do you like to watch? Do you like music? What is your favourite genre? What do you like to do in your spare time?”

1b. Transfer of control and aims of the interview

Transfer of control: “Do you remember the video you saw yesterday? I didn’t see it; I stepped outside and let you watch it by yourself. So I don’t know what happened; I want you to tell me what happened, OK?”

Aims of the interview: “Tell me everything that happened in the video, but don’t make anything up. If you aren’t sure about something it’s ok to say I don’t know. If you don’t

remember something it's also ok to say I don't remember. If I say something that is wrong, you tell me 'no, that didn't happen in the video, this is what happened.' If I say something you don't understand, just tell me and I will rephrase it. We are going to have the audio-recorder here; and I am going to be taking some notes and looking down at my notes, but don't mind that you keep on going. OK? Do you have any questions?"

2. Free recall phase

2a. Report all (RA):

"Please tell me everything that you can about the video that you watched yesterday, even things that you think may not be important. Give me all the details you can without leaving anything out, but without guessing the information."

PAUSE (wait for participant to respond).

2b. Change perspective (CP):

Speak slowly and clearly: "Ok, now I want you to put yourself in the position of ____ (e.g., the man). What could you see from ____'s (e.g., the man) perspective?"

PAUSE (wait for participant to respond).

Remember more prompt?

"Is there anything else you remember of the video? Any other details?"

3. Questioning phase with mental imagery

Use only information provided by the participant in the free recall, in the order provided, as a basis of mainly open-ended & closed questions.

INTERVIEWER - REMEMBER: Use context reinstatement (CRI) each time when asking questions: "I'm going to ask you a few questions about what you have told me about the video. You mentioned ____ (e.g., a man)" Brief pause: "I'd like you to close your eyes and think of this ____ (e.g., the man)" Get a mental image of this ____ (e.g., man) in your head." Pause. "Can you tell me what ____ (e.g., the man) looked like?"

If the participants leave certain things out try to get more information by using open-ended instructions (e.g., describe what he was wearing, his hair, etc.).

Before activating the next image leave a clear break to indicate that you will be moving on to something different.

Remember more prompt?

Is there anything else you remember of the video? Any other details?

4. Closure

"Ok, thank you very much, you have given me plenty of information; if there is nothing else you remember we are going to end the interview phase."

Answer any questions from participant: "do you have any questions?"

Thank participant: "thanks for helping me, you did a very good job ____ (participant's name) with this we can finish our interview."

Appendix G

MCI, Interview protocol

1. Rapport building and instructions

1a. Establish rapport (5 mins.)

“Ok, so before we start with the interview, I would like to get to know a bit better. So tell me a little about yourself _____ (use participant’s name.) When you finish with your university work, what do you like to do? Do you like to watch TV? What type of programs do you like to watch? Do you like music? What is your favourite genre? What do you like to do in your spare time?”

1b. Transfer of control and aims of the interview

Transfer of control: “Do you remember the video you saw yesterday? I didn’t see it; I stepped outside and let you watch it by yourself. So I don’t know what happened; I want you to tell me what happened, OK?”

Aims of the interview: “Tell me everything that happened in the video, but don’t make anything up. If you aren’t sure about something it’s ok to say I don’t know. If you don’t remember something it’s also ok to say I don’t remember. If I say something that is wrong, you tell me ‘no, that didn’t happen in the video, this is what happened.’ If I say something you don’t understand, just tell me and I will rephrase it. We are going to have the audio-recorder here; and I am going to be taking some notes and looking down at my notes, but don’t mind that you keep on going. OK? Do you have any questions?”

2. Free recall phase

2a. Context reinstatement (CRI)

“I am going to ask you to please close your eyes and picture the room where you watched the video.” If the participant doesn’t seem comfortable closing their eyes use a phrase like: “closing your eyes will help you concentrate”. PAUSE.

“Think about the room.” PAUSE.

“What could you see in the room?” Pause (wait for participant to respond).

“What could you hear?” Pause (wait for participant to respond).

“What could you smell?” Pause (wait for participant to respond).

“Now try and picture yourself while you were watching the video. Think about what emotions you were feeling.” PAUSE (wait for participant to respond).

“What feelings did you have while watching the video?” Pause (wait for participant to respond).

2b. Report all (RA):

“Please tell me everything that you can about the video that you watched yesterday, even things that you think may not be important. Give me all the details you can without leaving anything out, but without guessing the information.”

PAUSE (wait for participant to respond).

2c. Change Order (CO):

Speak slowly and clearly: “Ok, now I want you to tell me about the last thing that you remember happened in the video.” PAUSE (wait for participant to respond).

“What happened just before that?” Keep asking what happened before that until the participant reaches the beginning of the film. Ask: “Is that the beginning?”

Remember more prompt?

“Is there anything else you remember of the video? Any other details?”

3. Questions phase with mental imagery

Use only information provided by the participant in the free recall, in the order provided, as a basis of mainly open- ended & closed questions.

INTERVIEWER - REMEMBER: Use context reinstatement (CRI) each time when asking questions: “I’m going to ask you a few questions about what you have told me about the video. You mentioned _____ (e.g., a man)” Brief pause: “I’d like you to close your eyes and think of this _____ (e.g., the man)” Get a mental image of this _____ (e.g., man) in your head.” Pause. “Can you tell me what _____ (e.g., the man) looked like?”

If the participants leave certain things out try to get more information by using-open ended instructions (e.g., describe what he was wearing, his hair, etc.).

Before activating the next image leave a clear break to indicate that you will be moving on to something different.

Remember more prompt?

Is there anything else you remember of the video? Any other details?

4. Closure phase

“Ok, thank you very much, you have given me plenty of information; if there is nothing else you remember we are going to end the interview phase.”

Answer any questions from participant: “do you have any questions?”

Thank participant: “thanks for helping me, you did a very good job _____ (participant’s name) with this we can finish our interview.”

Appendix H

Postevent narrative and Yes/No recognition memory test

Postevent narrative with misleading information version A (mislead information in *italics*)

It starts in a cafeteria. There is a woman serving behind a bar. A girl arrives and buys something. The girl has long *blond* hair. There is a small *silver* table. The girl is sitting at the table and is looking around. The scene changes to a big well lit area. The girl is *sitting* looking at a painting. A man arrives wearing jeans. The man looks at the girl. The man approaches the girl and snatches her *black* bag. The girl fell to the *wooden* floor. The man leaves. There are *four* glass doors. A lady dressed smartly arrives. The lady approaches the girl.

Yes/no recognition memory test questions for narrative version A

1. Was there a white woman serving behind a bar? (Control 1)
2. Did the girl buy a cup of coffee? (Control 2)
3. Did the girl have long blond hair? (Mislead 1)
4. Was the small table silver? (Mislead 2)
5. Was the area where the girl was looking at the painting well lit? (Control 3)
6. Was the girl sitting looking at a painting? (Mislead 3)
7. Was the man with jeans taller than the girl? (Control 4)
8. Did the man snatch a black bag from the girl? (Mislead 4)
9. Did the girl fall on a wooden floor? (Mislead 5)
10. Did the man leave with the girl's bag? (Control 5)
11. Were there four glass doors? (Mislead 6)
12. Did the lady wear a smart black outfit? (Control 6)

Postevent narrative with misleading information version B (mislead information in *italics*)

It starts in a cafeteria. There is a woman *eating* behind a bar. A girl arrives and buys some *cake*. The girl has long hair. There is a small table. The girl is sitting at the table and is looking around. The scene changes to a big *dark* area. The girl is standing looking at a painting. A man arrives wearing *black* jeans. The man looks at the girl. The man approaches the girl and snatches her bag. The girl falls to the floor. The man *walks away slowly*. There are some glass doors. A *black* lady dressed smartly arrives. The lady approaches the girl.

Yes/no recognition memory test questions for narrative version B

1. Was the woman behind the bar eating? (Mislead 1)
2. Did the girl who arrived buy a cupcake? (Mislead 2)
3. Did the girl have long dark hair? (Control 1)
4. Was there a small wooden table? (Control 2)
5. Was the area dark when the scene changed? (Mislead 3)
6. How big is the painting that is seeing the girl? (Control 3)
7. Was the man wearing black jeans? (Mislead 4)
8. Did the man approach the girl quickly? (Control 4)
9. Did the girl fall sitting up on the floor? (Control 5)
10. Did the man walk away slowly? (Mislead 5)
11. Were there glass doors next to the girl where she falls? (Control 6)
12. Did a black lady arrive dressed smartly? (Mislead 6)

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