Memory-Based Approaches to the Examination of Alibis Provided by Innocent Suspects

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Dedicated to Susy and Arie, my parents,
for their endless love and support.
And to Eyal, for being all that I could ask for.

ABSTRACT

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The aim of the current thesis was to extend research on suspect alibis by exploring how the process of providing alibis may be improved for innocent suspects, for whom the provision of inaccurate and incomplete alibis may be detrimental. Across three experimental studies and one exploratory survey, I examined (i) whether memory-based reporting instructions enhance innocent mock suspects' memory output when reporting past actions (Study I) and evidence that may corroborate their alibi (Study II); (ii) whether a presumption of guilt, communicated to innocent mock suspects by an interviewer prior to providing their alibi, affects their memory output (Study III); and (iii) the beliefs and knowledge of lay people about factors concerning the processes of alibi generation and provision (Study IV). In **Study I** ($N = 192$), innocent and guilty mock suspects provided an alibi, reporting about recently completed tasks. Prior to alibi provision, participants were asked to maximize their alibi accuracy, informativeness, or both; control participants were given no accuracy or informativeness instructions. Innocent mock suspects who were instructed to provide an accurate *and* informative alibi provided the largest number of correct details compared with control participants. In contrast, for guilty mock suspects, neither the number of correct details nor the accuracy of the alibis differed as a result of pre-alibi instructions. In **Study II** ($N = 78$), prior to providing an alibi, innocent mock suspects were asked to report accurately and informatively about past actions during task completion or about past actions *and* corroborating evidence. Control participants were asked only to report about their time while away from the lab. Results indicated that participants who were asked to report accurately and informatively about past actions, or about past actions and corroborating evidence, provided a

larger number of correct details than control participants. However, instructions focused on accurate and informative reporting about past actions and corroborating evidence did not result in a larger number of correct details compared with instructions to report accurately and informatively about past actions only. In **Study III** (N = 90), innocent mock suspects provided an alibi to an interviewer who communicated to them that she believed in their guilt or innocence, or had no belief about their involvement in a crime. Participants detected the innocent/guilty presumption of the interviewer, but the number of correct details provided in their alibis did not differ across interviewer-belief conditions. Finally, in **Study IV** (N = 343), lay people from the United Kingdom, Israel, and Sweden responded to a series of questions regarding their beliefs about the generation and provision of alibis. Participants tended to believe that innocent suspects do not provide inaccurate alibis, but that should this happen, memory errors may be the primary reason. Participants also tended to believe that interviewers begin to form their opinion of the guilt or innocence of suspects prior to or while hearing the suspects' alibi for the first time, and that a presumption of guilt can affect how interviewers conduct interviews. The findings reported in the present thesis suggest that innocent suspects' memory output may be increased using specific memory-based pre-alibi instructions. Guiding suspects to provide more correct information may result in innocent suspects providing more forensically valuable information which may in turn promote their exoneration. The finding that participants detected the innocent/guilty presumption of the interviewer suggests that the effect of a presumption of guilt on innocent suspects' alibis should be examined in longer interviewer-interviewee interactions. Lastly, the findings of the survey demonstrate that lay people hold some mistaken beliefs about the ability of innocent suspects to provide accurate alibis. The current thesis demonstrates the merits of examining innocent suspects as a unique group of rememberers and basing such examination on memory theory.

SWEDISH SUMMARY

Vid förhör med misstänkta är det vanligt att förhörsledaren ber den misstänkte redogöra för sina förehavanden då brottet begicks. En misstänkt som är oskyldig till brottet måste då försöka övertyga förhörsledaren om sin oskuld genom att ge ett alibi som bevisar att hen befunnit sig på en annan plats under den kritiska tidsperioden. För att göra detta måste den oskyldige ofta förlita sig på sitt eget minne, då andra hjälpmedel (t.ex. en notering i en kalender, tidsstämplade kvitton eller dylikt) sällan finns till hands. Det mänskliga minnet är dock inte felfritt och det förekommer därför brottsutredningar i vilka oskyldiga gett både felaktiga och ofullständiga alibin – något som i vissa fall fått förödande konsekvenser då personer felaktigt dömts för ett brott de inte begått. Trots vikten av ett korrekt alibi finns det idag endast en handfull studier på detta tema och ingen av dessa studier har genomförts i syfte att undersöka möjligheten att bistå oskyldiga att generera korrekta alibin. Syftet med denna avhandling, som består av tre experimentella studier och en survey, var därför att undersöka om minnesfrämjande instruktioner kan hjälpa oskyldigt misstänka att lämna korrekta och fullständiga alibin om sina förehavanden under den kritiska tidsperioden (Studie I & II). Vidare syftade avhandlingen till att undersöka om förhörsledarens förbestämda uppfattning om den misstänktes skuld påverkar den som är oskyldig att ge ett korrekt och fullständigt alibi (Studie III) samt studera allmänhetens uppfattning kring oskyldiga misstänkta och deras möjligheter att generera korrekta och fullständiga alibin (Studie IV). I **Studie I** blev skyldiga och oskyldiga misstänkta (N = 192) ombedda att ge ett alibi under ett förhör gällande den kritiska tidsperioden för ett iscensatt brott (stöld av ett USB-minne). Innan förhöret blev deltagarna antingen instruerade att ge ett i) så korrekt alibi som möjligt, ii) så fullständigt alibi som möjligt, eller iii) så korrekt och fullständigt alibi som möjligt. Kontrollgruppens deltagare fick inga minnesfrämjande instruktioner innan förhöret. Resultaten visade att

endast de oskyldigt misstänkta var behjälpta av instruktionerna. Av dessa rapporterade de som instruerats att ge ett så korrekt och fullständigt alibi som möjligt fler korrekta detaljer i jämförelse med kontrollgruppen. Bland de skyldiga som fick samma instruktioner skedde ingen ökning av antalet korrekta detaljer. I **Studie II** studerades oskyldigt misstänkta och deras förmåga att generera korrekta och fullständiga alibin vidare i ett liknande experimentellt upplägg. Oskyldigt misstänkta (N = 78) fick inför det iscensatta förhöret instruktioner om att rapportera korrekt och fullständigt om i) sitt tidigare agerande när de genomförde oskyldiga uppgifter, eller ii) om sitt tidigare agerande och bevis som kunde ge stöd åt deras redogörelse. Kontrollgruppen fick inga minnesfrämjande instruktioner. Resultaten visade att de två olika instruktionerna var lika effektiva. Oavsett vilken instruktion deltagarna fick (berätta om sitt tidigare agerande vs. berätta om sitt agerande och stödbevisning), gav de fler korrekta detaljer i jämförelse med kontrollgruppen. I **Studie III** (N = 90) lämnade oskyldigt misstänkta sina alibin till en förhörsledare som kommunicerade till dem att hon hade en uppfattning om att de var i) oskyldiga, ii) skyldiga, eller iii) att hon inte hade någon uppfattning alls om deras inblandning i brottet. Resultatet visade att antalet korrekta detaljer inte påverkades av förhörsledarens skulduppfattning, trots att deltagarna angav att de var medvetna om den. Slutligen, **Studie IV** syftade till att studera allmänhetens uppfattning och kunskap om hur alibin genereras. Respondenterna som var från allmänheten i Storbritannien, Israel och Sverige (N = 343) tenderade att tro att misstänkta som är oskyldiga till ett brott kan ge korrekta alibin, och att om de av någon anledning skulle ge ett inkorrekt alibi så är minnesfel den primära orsaken till detta. Därtill tenderade de tro att förhörsledarens uppfattning om den misstänktes skuld kan komma att påverka förhöret med den misstänkte något som kan ställa till problem. Deltagarna ansåg nämligen att förhörsledare i allmänhet tenderar att ha en förbestämd uppfattning om en misstänkt gärningspersons skuld redan innan den misstänkte förhörs, alternativt att

denna uppfattning formas under tiden den misstänkte förhörs. Sammantaget visar avhandlingens studier att oskyldigt misstänkta kan vara väl behjälpta av att få instruktioner inför det att de skall ge ett alibi (Studie I & II). Att ge enkla instruktioner till en misstänkt att hen skall ge så korrekt och så fullständig information som möjligt om sina förehavanden under den kritiska tidsperioden kan gynna oskyldigt misstänkta att ge alibi, något som i förlängningen kan minska risken för att de döms för ett brott de inte har begått. Samtidigt visar resultaten av denna avhandlingen att dessa instruktioner inte verkar gynna de som gjort sig skyldiga till ett brott. Framtida forskning bör således undersöka minnesfrämjande tekniker närmare vid förhör med misstänkta för att på sikt kunna bistå polisen med denna kunskap. Studie III visade att förhörsledarens förbestämda uppfattning inte påverkade de misstänktas förmåga att lämna korrekta och fullständiga alibin, ett resultat som skall tas med viss försiktighet då realismen i studiens upplägg var låg. De iscensatta förhör som genomfördes i denna studie var till exempel betydligt kortare, och pressen på den misstänkte betydligt lägre, i jämförelse med verkliga polisförhör. Det är min förhoppning att även detta adresseras i framtida forskning. Till sist, Studie IV visade att den allmänna uppfattningen är att oskyldiga misstänkta kan anses vara skyldiga redan innan de blivit förhörda och att denna skulduppfattning kan påverka förhöret. Med tanke på alla de som bevisligen dömts för brott de inte själva begått är denna allmänna uppfattning fullt befogad, och återigen pekar den på vikten av att ta fram evidensbaserade minnesfrämjande tekniker som kan hjälpa oskyldiga att ge alibi vid polisförhör.

PREFACE

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

I. Portnoy, S., Hope, L., Vrij, A., Ask, K., Granhag, P. A., & Landström, S. (2018). *Using pre-alibi instructions to increase innocent suspects' memory output*. Manuscript submitted for publication.

II. Portnoy, S., Hope, L., Vrij, A., Ask, K., & Landström, S. (2018). *Examining the effects of pre-alibi instructions on innocent suspects' memory output for past actions and corroborating evidence*. Manuscript submitted for publication.

III. Portnoy, S., Hope, L., Vrij, A., Granhag, P. A., Ask, K., Eddy, C. & Landström, S. (2018). *"I think you did it!": Examining the effect of presuming guilt on the verbal output of innocent suspects during brief interviews*. Manuscript submitted for publication.

IV. Portnoy, S., Hope, L., Vrij, A., Ask, K., & Landström, S. (2018). *Beliefs about innocent suspects' alibis: A survey of lay people in the United Kingdom, Israel, and Sweden*. Manuscript submitted for publication.

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And to you, my *Eyal*… Just like your name - I thank you with all my heart for the strength and courage you gave me throughout these years. Thank you for walking this journey with me hand in hand as if there wasn't an ocean between us. Thank you for always being so curious about and interested in what I was doing. I love you.

Shiri Portnoy
September, 2018

INTRODUCTION

In July 1984, 22-year-old Jennifer Thompson-Cannino was sexually assaulted by a man who broke into her apartment. Eleven days later, Ms. Thompson-Cannino identified Ronald Cotton in a physical line-up as the man who attacked her after having already selected his picture from a photo array. Mr. Cotton claimed that he could not have attacked Ms. Thompson-Cannino because on the night of the assault, he had been with several people including his brother and friends and had finished the night at a club. Unfortunately, Mr. Cotton had the dates confused, as his mother reminded him that at the time in question he had been at home, sleeping on the couch. Although there were people who could verify that Mr. Cotton had been at home at the time of the crime, he realised that the police would discover the error in his original statement. When he explained this mistake to his attorney, the attorney told him that "the inconsistent alibi would only give the District Attorney the opportunity to brand [him] as a liar" (Thompson-Cannino, Cotton, & Torneo, 2009, p. 92). Despite believing that the police officers who interviewed him had "already decided [he] was guilty" (ibid, p. 84), Mr. Cotton was confident in his innocence and refused to sign a plea bargain. In January 1985, he was sentenced to life in prison plus 50 years. However, a decade later, evidence from the case was submitted for DNA testing and showed no match to Mr. Cotton but rather a match to a convict who had already confessed to committing the crime to a fellow inmate. Eventually, in 1995, after serving over 10 years for a crime he did not commit, Mr. Cotton was released from prison and cleared of all charges. On the whole ordeal, which started from the day police first arrived at his home, Mr. Cotton noted: "From that day forward, I would always pay attention to the date and the time, memorizing details of what happened and when. My life might just depend on it" (Thompson-Cannino, Cotton, & Torneo, 2009, p. 75).

When innocent suspects provide a statement in an attempt to convince police interviewers of their innocence of a crime, namely an alibi, they must rely on their memory, particularly when they do not have the opportunity to consult others or use memory aids such as calendars or diaries. Consequently, the fallibility of human memory puts innocent suspects at risk of providing an inaccurate and/or incomplete alibi, which can be detrimental to their defence. To date, most research on the provision of statements by people who might have been involved in a crime has focused on eyewitnesses and victims (e.g., Fisher, 1995; Fisher & Geiselman, 2010; Gabbert, Hope, & Fisher, 2009). Research that has concerned suspect statements has focused mostly on innocent suspects' (in)ability to provide corroborating evidence (e.g., Nieuwkamp, Horselenberg, & van Koppen, 2017; Olson & Charman 2012; Strange, Dysart, & Loftus, 2014) and alibi believability as a function of factors such as corroborating evidence (e.g., Olson & Wells, 2004; Strange et al., 2014) or salaciousness (Nieuwkamp, Horselenberg, & van Koppen, 2016). However, such previous research has not focused on suspects' ability to report accurately and informatively about their whereabouts during a critical time. As such, research on alibi provision is scarce, particularly with respect to the factor of interview techniques that may enhance or diminish an innocent suspect's memory output while providing an alibi. A second factor of interest in alibi generation pertains to the presumption of guilt with which interviewers may approach interviews with suspects and which may consequently affect the quality of suspects' alibis. Mr. Cotton noted that the police officer who interviewed him had already decided that he was guilty, but it is unknown whether and how this presumption of guilt affects innocent suspects' memory output when they provide an alibi.

The aim of the present thesis is to address gaps in the literature about alibi generation. To this end, three experimental studies and one survey were conducted. Specifically, the present thesis examined whether memory-based reporting instructions provided to suspects prior to alibi provision increases their memory output for their

past actions (Study I), and, additionally, for evidence that could support their alibi (Study II). The effects of an interviewer displaying behaviour consistent with a presumption of guilt on innocent suspects' memory output during alibi provision were then examined (Study III). Finally, the beliefs of members of the general public about alibis generated by innocent suspects and the issue of interviewers' presumption of guilt were investigated (Study IV). With the data from these four studies, the present thesis is aimed to contribute to the growing body of research on alibi generation. From an applied perspective, by developing theoretically informed interview techniques, this thesis is hoped to maximize both innocent suspects' memory output and interviewers' time and resources through eliciting as much valid information as possible during suspect interviews.

Before turning to the individual studies, I discuss how innocent suspects usually behave during forensic interviews and offer an overview of research into alibi generation and suspect interviewing. I then describe the factors that may put innocent suspects' alibis at risk and discuss how such risk factors may be challenged to improve innocent suspects' chances to provide complete and accurate alibis.

What Is an Alibi?

An alibi is a statement that people suspected of a crime provide to police interviewers to convince them that they could not have committed the crime of which they are being held suspects. This process has been identified as the *generation domain* of alibis (Burke, Turtle, & Olson, 2007; Olson & Charman, 2012; Olson & Wells, 2004). According to Burke et al. (2007), the generation domain comprises two phases—the story phase and the validation phase. In the story phase, suspects provide the alibi, reporting from memory their actions and whereabouts during the time of the crime (Burke et al., 2007; Dysart & Strange, 2012; Olson, 2013). In the validation phase, suspects attempt to corroborate their alibi by offering one of two (or both) types of evidence—physical and person. *Physical evidence* refers to any object that can indicate that the suspect was at a certain

place at a certain time during the time of the crime (e.g., a security-camera recording or a shopping receipt). *Person evidence* refers to anyone who can support the suspect's alibi, confirming their presence at a certain place at a certain time. Such a person may be familiar to the suspect (e.g., parent, friend) or unfamiliar (e.g., a store clerk, a passer-by; Burke et al., 2007).

The story phase and validation phase are followed by the evaluation phase and the ultimate evaluation phase, which comprise the *believability domain* (Burke et al., 2007; Olson & Charman, 2012; Olson & Wells, 2004). During the evaluation phase, the credibility of the suspect's alibi is evaluated, usually first by the police. Finally, in the ultimate evaluation phase, the credibility of the alibi is determined in court by different evaluators who are exposed to all the facts of the case to determine whether or not the suspect has committed the crime (Burke et al., 2007). While there is a considerable body of literature examining the believability domain of alibis (e.g., Culhane & Hosch 2012; Olson & Wells, 2004), hardly any research has been conducted on the generation domain of alibis (Olson & Charman, 2012).

Why is it important to study alibi generation? Alibi evaluators (e.g., police officers) tend to overestimate the ability of innocent suspects to provide accurate alibis (Burke et al., 2007; Dysart & Strange, 2012; Olson & Wells, 2012). During a crime investigation, erroneous or incomplete alibis may be perceived as indicative of deception (Burke et al., 2007; Dysart & Strange, 2012; Olson & Charman, 2012). Non-believed alibis may then lead to a corrupted evaluation of forensic evidence such as DNA samples (see, e.g., Kassin, Bogart, & Kerner, 2012). Moreover, innocent suspects' inability to provide a convincing alibi may result in a false conviction (Crozier, Strange, & Loftus, 2017; Wells et al., 1998). Understanding the reporting behaviour of innocent suspects during alibi provision, as well as the factors that may affect this behaviour and improve it, may contribute to the prevention of miscarriages of justice.

Innocent Suspects' Behaviour During Police Interviews

To discuss the various ways to potentially affect an innocent suspect's alibi generation, it is important first to understand how innocent suspects usually behave during police interviews. Two main types of suspects' behaviour during interviews can be outlined: nonverbal and verbal. *Nonverbal behaviour* relates to overt behaviours such as vocal cues (e.g., pause durations, stuttering) and visible behaviours (e.g., head or/and hand movements, blinking; Sporer & Schwandt, 2007; Vrij, 2008a, 2008b). In contrast, *verbal behaviour* is covert, consisting of speech content in terms of its, for example, length, structure, and plausibility (DePaulo et al., 2003; Vrij, 2008a). Traditionally, suspects' behaviours in interviews have been studied and discussed in terms of the extent to which they serve as cues to deception, namely signs that may help interviewers discern a deceptive suspect from a truthful one (DePaulo et al., 2003; Vrij, 2008b; Vrij, Granhag, & Porter, 2010). While the differentiation between truth-tellers and liars (deception detection) is not within the scope of the current thesis, findings about innocent suspects' behaviour in the deception detection literature are relevant to its context.

In 2003, DePaulo and her colleagues (for a review, see Vrij, 2008a) published a comprehensive meta-analysis on results from 120 independent samples, examining 1,338 estimates of 158 cues to deception. Their aim was to determine, from examined samples, whether cues differentiating liars from truth-tellers do in fact exist. Regardless of the importance of this meta-analysis to deception detection research, and despite finding mostly weak support in terms of small effect sizes for predicted categories of cues to deception, DePaulo et al.'s (2003) work also provides a curated account of the behaviour of suspects during interviews. Of most relevance to the current thesis are the behaviours, specifically the verbal behaviours, of innocent suspects during interviews. The meta-analysis showed that truth-tellers provide a larger number of details in their statements than liars, thus making them appear more forthcoming during interviews. Truth-tellers' statements were also found to be relatively

more plausible and believable, and their accounts of sequences of events more coherent and logically structured. It was also found that when truth-tellers provide information, they do so in a relatively more engaging manner, in that they tend more to describe experiences of personal relevance. In this vein, the meta-analysis showed that truth-tellers are less likely to distance themselves from the content of the information they provide (e.g., more use of active than passive voice). More generally, DePaulo and colleagues' meta-analysis suggested that truth-tellers tend to be more cooperative with the interviewer and to appear more helpful. They are also more likely to spontaneously correct their statement while providing it and more willing to admit when they lack memory of some information. In the current thesis, when designing the interview techniques to be examined during interviews with innocent mock suspects, it was essential to consider how innocent suspects usually behave when interviewed in order to trigger desired behaviours (e.g., provision of detailed statements and cooperation). It should be noted that the data used in DePaulo et al.'s (2003) meta-analysis was obtained from studies using mock rather than real-life suspects. However, because the assumptions made in the present thesis also concern mock rather than real suspects, turning to the previous literature on deception detection is appropriate.

Innocent Suspects' Self-Regulatory Strategies

The behaviours of suspects during interviews reflect, and are even a result of, their self-regulatory strategies (Granhag & Hartwig, 2008). Essentially, self-regulatory processes are those by which people control and direct their actions (Markus & Wurf, 1987; see also Fiske & Taylor, 1991). Markus and Wurf (1987) noted that self-regulatory processes involve three components: goal setting, cognitive preparation for action, and a cybernetic cycle of behaviour. First, an individual engages in self-regulation to achieve a certain goal. A goal may be specific and explicit, such as the decision to finish a marathon on a specific date, or more implicit and general, such as a

desire to be perceived as a nice person (Fiske & Taylor, 1991). Next, during the step (which may or may not occur) of cognitive preparation for action, the individual plans and selects a strategy or several strategies for achieving the goal. The cognitive aspect plays a role here in that the planning is based on prior knowledge of which strategies are useful to achieve which certain goals. Finally, during the cybernetic cycle, people attempt to execute their plans and strategies while monitoring and assessing the quality of their behaviour.

The need for self-regulatory strategies is likely to arise when a threatening situation approaches, during which the person's goal would be to restore control (Fiske & Taylor, 1991). Fiske and Taylor (1991) presented methods that people may use to regain such a sense of control. For example, the method of decision control pertains to making decisions about the course of action during an upcoming stressful situation. An upcoming interview may be perceived by innocent suspects as a threating situation in light of the risk of being incorrectly judged as guilty, and it may lead them to engage in self-regulatory behaviours (Granhag & Hartwig, 2008). In this case, the method of decision control (Fiske & Taylor, 1991) may be used to reduce the threat of the upcoming interview by planning the types of behaviour and information to present (Granhag & Hartwig, 2008). Self-regulatory strategies may also be used to control the impression the interviewer forms of the suspect. In accord with this self-presentational perspective (DePaulo, 1992; DePaulo et al., 2003), innocent suspects – much like guilty ones – are concerned with creating the impression that they are honest and credible (Hartwig, Granhag, Strömwall, & Doering, 2010).

Research has shown that innocent suspects use several self-regulatory strategies during interviews (Hartwig, Granhag, & Strömwall, 2007; Hartwig et al., 2010; Strömwall, Hartwig, & Granhag, 2006). In a typical study, participants act as either innocent or guilty suspects who, after being accused of committing a crime, provide an alibi to convince an interviewer of their innocence. After providing their alibi, participants often complete a post-alibi questionnaire in

which they describe what (if any) strategies they used during the interview to succeed in the task of convincing the interviewer of their innocence. The categorization and analysis of these strategies has shown that innocent mock suspects are less likely to plan the verbal content of their alibi than guilty mock suspects (Hartwig, et al., 2007; Hartwig et al., 2010; Strömwall et al., 2006). It has also been found that when innocent mock suspects did plan the verbal content of their alibi, the strategies they used were more forthcoming than those of guilty mock suspects. Specifically, innocent mock suspects were occupied with "telling the truth like it happened", cooperating, and providing a detailed statement (Hartwig, et al., 2007; Hartwig et al., 2010; Strömwall et al., 2006).

Suspects' self-regulatory strategies reflect their mental state and reasoning (Granhag & Hartwig, 2008). The reasoning underlying the self-regulatory strategies of innocent suspects is their belief that their innocence bears the power to exonerate them (Kassin & Norwick, 2004; Vrij et al., 2010). This trust of innocent suspects in their own innocence may be due to a more general belief in a just world (Lerner, 1980) in which, eventually, people get what they deserve (Kassin & Norwick, 2004; see also Kassin & Gudjonsson, 2004). They may also be under the "illusion of transparency", meaning that they overestimate others' ability to read their internal states, such as their feelings and thoughts (Gilovich, Savitsky, & Medvec, 1998). Due to such reasoning, innocent suspects are typically forthcoming and informative during interviews and from the beginning waive their right to remain silent (Kassin & Norwick, 2004). In fact, these types of reasoning were also found to embody innocent mock suspects' explanations for not having a strategy before providing an alibi (Hartwig et al., 2007): innocent mock suspects noted the fact that they were innocent as a rationale for not needing to plan how to make their statement appear credible to the interviewer. For the memory-based instructions developed in the present thesis, it was important also to consider innocent suspects' self-regulatory strategies, given that such strategies influence their behaviours during interviews.

Challenges for Innocent Suspects During Alibi Provision

Despite their willingness to be informative, research has demonstrated that providing accurate and complete alibis can be challenging for innocent suspects. Two main factors may hamper innocent suspects' ability to provide accurate and complete alibis. One is impaired memory processes; the second is the interviewer's presumption of guilt, the effect of which on innocent suspects' alibis is less known than that of impaired memory processes.

Impaired memory processes. When providing truthful information, suspects rely on their autobiographical memory (often referred to as episodic memory), namely details of past events, specifically with respect to locations of events, people involved, thoughts and feelings experienced, and sequence of actions (Burke et al., 2007; Devitt, Monk-Fromont, Schacter & Addis, 2016; Olson & Wells, 2012). However, due to limitations in human memory, the information innocent suspects provide is prone to errors, inconsistencies, and suggestibility (Schacter, 1999; Tourangeau, 2000). These limitations may involve all stages of information processing: encoding, storage, and retrieval and reporting. In the encoding phase, it is likely that event details are encoded only superficially if the person is engaging in a routine task, as opposed to an out-of-the-ordinary activity or one of significance (Burke et al., 2007; Crozier et al., 2017; Tourangeau, 2000). Event details that have been encoded and stored in memory may nevertheless become less accessible with the passage of time (Pertzov, Manohar, & Husain, 2017; Tourangeau, 2000), and are likely to be forgotten if not retrieved often (Schacter, 1999). Innocent suspects may be unmotivated to retrieve any critical details until they are interviewed by the police. Consequently, and because they may not be asked for their alibi until days, months, or even years after the time of the alleged crime (Olson & Charman, 2012), they may forget relevant information by the time they are interviewed.

If not forgotten, retrieved memory details may be distorted if the rememberer is exposed to misinformation from others, which is then integrated with the original memory (Loftus, Miller, & Burns, 1978; see Frenda, Nichols & Loftus, 2011, for a review). In other cases, by trying to create an account of their actions and whereabouts during the critical time, innocent suspects may wrongly combine information from different memory traces into one erroneous report about an event that did not occur, in what is known as a "memory-conjunction error" (Reinitz, Lammers, & Cochran, 1992; see also Devitt et al., 2016). Alternatively, in their attempt to provide a coherent alibi by accounting for missing information, innocent suspects may rely on existing knowledge and beliefs in the form of scripts and schemas, especially those that pertain to what they usually do at a certain time (Crozier et al., 2017; Leins & Charman, 2016). However, relying on a schema that does not match the real event may result in a mistaken report (Leins & Charman, 2016).

Existing research on alibi generation has shown that innocent suspects do indeed struggle to provide accurate and complete alibis due to impaired memory processes. Olson and Charman (2012) asked participants to provide four initial alibis: two for specific dates six to 14 weeks prior to the study session (i.e., distant-past alibis) and two for a date three days prior to the session (i.e., near-past alibis). Participants were instructed to rely solely on their memory of what they had been doing during those times. Participants were then given 48 hours to locate the corroborating physical and person evidence they had initially mentioned to support their initial alibis. Olson and Charman (2012) found that participants generated fewer initial alibis about distant-past events than about near-past events. Moreover, 371 (36%) of the 1020 initial alibis provided turned out to be mistaken, with 117 of those mistaken alibis requiring a narrative change (with more distant-past than near-past alibis requiring this change).

Another demonstration of innocent suspects' difficulty in reporting accurately from memory comes from research by Strange et al. (2014). Participants provided an alibi for a time frame three weeks

prior to the study session and were then given a week to find evidence to corroborate their alibi. When providing their alibi for the same time frame again after a week, during which they had searched for evidence to support their actual whereabouts, it was found that the two alibis were consistent (i.e., participants were initially correct) on only 53% of the details. According to Strange et al. (2014), this finding suggested that the initial alibis contained a significant amount of inaccurate information. Culhane, Hosch, and Kehn (2008) found that even when participants were asked to report what they were doing during a specific time frame only two days prior to the study, 61 (10.9%) of 543 participants stated that they had no memory of their actions during that specific time (or had no witness that could corroborate their alibi). In sum, the deterioration and distortion of innocent suspects' memory for past events create a fertile ground for them to provide inaccurate, incomplete, and ultimately unconvincing alibis.

Interviewers' presumption of guilt. By its nature, an interview is a social interaction between the interviewer/s and the interviewee (i.e., the suspect). At times, although a suspect is innocent of the crime, the interviewer may approach the interview already believing the suspect to be guilty (Kassin, Goldstein, & Savitsky, 2003). Although a presumption of guilt may be erroneous, it may still be held confidently. For example, when Moston, Stephenson, and Williamson (1992) investigated 1,067 cases of suspects interviewed by United Kingdom (UK) police detectives, they found that in 73% (780) of cases the interviewers were sure of the suspect's guilt before the interview took place. Factors that may initiate a presumption of guilt include insufficient or even lack of evidence, pressure on the interviewer (from the public or their own police force) to find the culprit, or a need for appreciation (Mortimer & Shepherd, 1999). Yet, this presumption of guilt may also be based on nothing more than a hunch that the interviewer forms during early interactions with the suspect (Kassin, 2006).

While an interviewer's presumption of guilt may be formed only by internal factors (e.g., the need for appreciation or a hunch), some interview techniques encourage interviewers to form this belief and even to maintain it. One such technique is the Reid technique that may be used during American police interviews (Inbau, Reid, Buckley, & Jayne, 2001). In this technique, the interviewer first evaluates whether the suspect is lying or telling the truth. Then, if considered by the interviewer to be lying, the suspect is interviewed using some or all of the nine steps of the technique (Inbau et al., 2001). While guiding interviewers to initially approach interviews with an assumption of innocence or a neutral attitude, the Reid guide also suggests that interviewers adopt a guilt-presumptive approach to suspects. Moreover, the guide explicitly explains to interviewers that they should approach the nine-step interview with a suspect "whose guilt, in the opinion of the investigator, seems definite or reasonably certain" (Inbau et al., 2001, p. 68). It is not surprising then that the Reid technique has been described as a guilt-presumptive technique dedicated to eliciting confessions from suspects (Gudjonsson & Pearse, 2011; Kassin, 2005).

In contrast to the confrontational Reid technique that may be used in the American police system, the UK police system uses a more information-gathering approach, namely the PEACE interview model (Central Planning and Training Unit, 1992a, 1992b). The demand for this first national training programme for interviewing witnesses and suspects grew following several miscarriages of justice due partly to biased and unethical interview techniques. Five stages comprise the PEACE model: Planning and preparation; Engage and explain; Account; Closure; and, Evaluation. The principles underlying the PEACE model are open mindedness and fairness, and the model is more interviewee-led, allowing suspects the opportunity to present their version of events. Importantly, the PEACE model aims to eliminate false confessions, and interviewers are encouraged to avoid assumptions of guilt (e.g., Griffiths & Milne, 2006; Shawyer,

Milne, & Bull, 2009). The PEACE model has been adopted by several other police organizations, such as those in Norway (i.e., the KREATIV model; Fahsing & Rachlew, 2009) and New Zealand (Bull & Soukara, 2010). Despite the PEACE recommendation to keep an open mind and avoid presumptions of guilt, interviewers nevertheless continue to approach interviews with suspects with biased beliefs about their guilt (Shawyer & Milne, 2015).

Can merely believing that suspects are guilty prior to interviewing them affect the interview process? In their effort to answer this question, Kassin and colleagues (2003) led their interviewer-participants to expect that the suspect-participants they were about to interview were either guilty or innocent of a mock theft. As a preparation for the interview, the mock interviewers were asked to choose six questions they would ask from a list of guilt-presumptive and neutral questions. Mock interviewers primed with guilt expectations chose more guilt-presumptive questions than those primed with innocence expectations. Following the interview, 42% of the guilt-presumptive interviewers judged the suspects guilty versus only 19% of the innocence-presumptive interviewers, irrespective of the suspect's actual veracity. Neutral participants then listened to parts of the taped interviews while being "blind" to the interviewers' presumptions and the suspects' veracity. These listeners tended to judge more suspects interviewed by guilt-presumptive interviewers as guilty than those interviewed by innocence-presumptive interviewers. Moreover, the former suspects were perceived by these listeners to be more defensive than the latter suspects.

Hill, Memon, and McGeorge (2008) extended Kassin et al.'s (2003) study by showing that mock suspects (who chose whether or not to cheat on a test) interviewed with guilt-presumptive questions reported feeling more pressure during the interview to confess than did mock suspects interviewed with neutral questions. Hill et al. (2008) additionally found that neutral participants who listened to recordings of the interviewed suspects rated innocent suspects who

were asked guilt-presumptive questions as more guilty than guilty suspects who replied to such questions.

The studies of Kassin et al. (2003) and Hill et al. (2008) demonstrate how merely believing that suspects are guilty prior to interviewing them affects the entire interview process, eventually affecting how neutral observers judge the interviewed suspects. What are the psychological processes underpinning the effects of a presumption of guilt? In the context of suspect interviews, when an interviewer approaches an interview already believing that the suspect is guilty, a *confirmation bias* is especially likely to be evident (Findley & Scott, 2006). Confirmation biases pertain to the unintentionally selective gathering and use of information to increase the validity of the belief held by perceivers (Nickerson, 1998) such as interviewers. Accordingly, interviewer-participants in Kassin et al. (2003) and Hill et al. (2008) who were led to believe that their interviewees were guilty chose/formulated (respectively) questions that were coloured by this belief. A key feature of a confirmation bias is that it is likely to develop without the perceiver's awareness or intention (Nickerson, 1998).

After the perceiver forms a belief about the target and behaves towards the target in accordance with this belief, this may change the target's behaviour such that it confirms the perceiver's belief, seemingly providing evidence for the perceiver's belief (i.e., *self-fulfilling prophecy* interaction sequence; Merton, 1948; see also Darley & Fazio, 1980; Mortimer & Shepherd, 1999; Nickerson, 1998). In the studies by Kassin et al. (2003) and Hill et al. (2008), participant-suspects who were asked guilt-presumptive questions (vs. innocence-presumptive or neutral questions) were judged by neutral participants as more guilty, defensive, and nervous. With respect to the interviewer, s/he may fail to recognize that her/his guilt presumption has initiated this chain of events; s/he may therefore mistakenly conclude that the suspect's behaviour is a sign of their actual guilt (see Darley & Fazio, 1980). While the perceiver's belief is required to affect her/his behaviour towards the target, the target's perception of

the perceiver's behaviour is essential to determine the target's behaviour in response to the perceiver's behaviour. The target may, for example, attribute the (biased) behaviour of the perceiver to dispositional characteristics of the perceiver. Alternatively, the target may attribute the perceiver's behaviour to the target's own characteristics (Darley & Fazio, 1980).

To conclude, being motivated to convince police interviewers of their innocence may not be enough for innocent suspects to succeed in this goal, as factors out of their control may affect their ability to provide a convincing alibi. While memory-related factors have been found to hamper innocent suspects' ability to provide accurate alibis, the effects of interviewers' presumption of guilt on innocent suspects' memory output have been examined for the first time in the current thesis.

Improving the Process of Alibi Provision by Innocent Suspects

Existing findings on factors that affect innocent suspects' ability to provide a convincing alibi call for further research on other such factors, as well as on means to counter their effects. Such factors may enhance innocent suspects' verbal output and help them provide convincing alibis.

Dealing with impaired memory processes. Studies to date devoted to developing memory-based interview techniques that may help innocent suspects provide complete and accurate alibis are scarce (see Burke et al., 2007; Crozier et al., 2017; Leins & Charman, 2016). A notable exception is Leins and Charman's (2016) study, in which they demonstrated the effects of recall cue on alibi accuracy. In the first stage of the study participants completed a number of tasks. Between five and nine days later, participants provided an alibi for crimes allegedly committed in the previous stage of the study[1].

[1] All participants were innocent of the crimes, but some participants were instructed to respond deceptively to the interviewer's questions. When reporting

The alibi was provided across three conditions of recall cue, informing participants prior to alibi provision about the time at which the alleged crimes happened (time-only cue), the location of the alleged crimes (location-only cue), or both the timing and location of the crimes (time-and-location cue). It was found that participants cued by a location-only prompt provided more accurate alibis than participants cued by time-only and time-and-location prompts. The researchers suggested that in the paired cue condition, the less effective time cue became dominant, resulting in similar findings to those obtained with the time cue alone. Alternatively, they suggested that the paired cue promoted a narrower memory search than did the location-only cue, consequently decreasing the efficiency of the paired cue in finding accurate matches in memory. Despite difficulties interpreting the findings, Leins and Charman's (2016) findings demonstrate that memory-based interview prompts may affect and even enhance alibi accuracy.

A well-known interview technique that has been found to elicit more complete and accurate information from interviewees is the cognitive interview (CI; Fisher & Geiselman, 2010; Fisher, Geiselman, & Amador, 1989). The CI is a set of memory-based instructions that interviewers provide to witnesses and victims prior to and during an interview (Fisher & Geiselman, 2010; Fisher et al., 1989; Köehnken, Milne, Memon & Bull, 1999). Most relevant to the current thesis is the instruction in the CI to interviewees to report everything they can think about while refraining from guessing. Thus, the standard instructions of the CI encourage interviewees to maximize both completeness and accuracy. Because the CI was developed for use in witness and victim interviews, however, it remains unknown whether it can readily be used to enhance innocent suspects' memory output. Moreover, previous research has not addressed the question of whether different instructions, with different

on the accuracy findings, however, Leins and Charman (2016) did not address the different veracity conditions.

emphases on the informativeness and accuracy of information, produce different completeness and accuracy of memory output. In the current thesis, I drew on memory theory to develop pre-alibi instructions for use with suspects to examine their effects on the informativeness and accuracy of innocent mock suspects' memory output.

Enhancing innocent suspects' memory output during alibi provision. In the present thesis, I sought to enhance the completeness and accuracy of innocent mock suspects' memory output in their alibis in terms of two measures presented in Koriat and Goldsmith's (1996) model of strategic regulation of memory accuracy. Specifically, the model distinguished between *quantity measures* which pertain to the number of (only) correct details that can be remembered, and *accuracy measures* which are used to assess the probability of each reported detail's correctness (i.e., the number of correct details provided [quantity] out of the total number of details provided—correct and incorrect). According to Koriat and Goldsmith's (1996; see also Koriat & Goldsmith, 1994) model, people can enhance the accuracy of the information they report from memory if allowed to freely decide what and how much information to report or withhold. Presenting innocent suspects with pre-alibi instructions that differ in their emphasis on the informativeness and accuracy of information requested may reveal whether a certain type of such reporting instructions can increase innocent suspects' memory output in terms of the quantity and accuracy rates of their alibis. In the current thesis, I developed such pre-alibi instructions and examined their effects on innocent mock suspects' memory output during alibi provision.

Dealing with interviewers' presumption of guilt. In light of previous findings (Kassin et al., 2003; Hill et al., 2008) on the effects of interviewers' presumption of guilt on innocent suspects' non-verbal behaviour, it is possible that this presumption also affects the

quantity and accuracy of their alibis. If this is the case, further research should be devoted to reducing guilt presumptions at the outset of suspect interviews. However, to develop effective means to reduce such presumptions, it is first necessary to examine whether they affect innocent suspects' verbal behaviour while providing an alibi. In the current thesis, I examined the effect of an interviewer's displayed behaviour consistent with a presumption of guilt on innocent mock suspects' alibis in terms of the completeness and accuracy of the information provided.

SUMMARY OF EMPIRICAL FINDINGS

General and Specific Aims

The studies comprising the current thesis sought to address the gap in the literature concerning alibi provision by innocent suspects, mainly by developing and examining interview techniques that may increase innocent suspects' memory output during alibi provision. The effects of the presumption of guilt with which interviewers may approach suspect interviews on innocent suspects' alibis were also examined.

In **Study I**, considering innocent suspects' difficulty in providing complete and accurate information from memory (Olson & Charman, 2012; Strange, Dysart, & Loftus, 2014), I examined whether memory-based reporting instructions presented to innocent mock suspects prior to the occasion of providing an alibi increased their memory output when reporting their past actions. **Study II** expanded upon Study I by examining whether pre-alibi instruction increased innocent mock suspects' memory output not only for their alibi (i.e., past actions and whereabouts), but also for evidence that might corroborate their alibi.

In **Study III**, I examined whether an interviewer's presumption of guilt communicated to innocent mock suspects affected their memory output in terms of the completeness and accuracy of their alibis. The aim of Study III was to expand the existing literature (Kassin, Goldstein, & Savitsky, 2003; Hill, Memon, & McGeorge, 2008), which has demonstrated the effects of interviewers' presumption of suspects' guilt on suspects' non-verbal behaviour, such as increased defensiveness and nervousness. Specifically, the study examined the effect of this presumption of guilt on the verbal behaviour of innocent suspects during their provision of an alibi.

Across Study I, II, and III, participants' memory output was examined in terms of the number of correct details provided (quantity measure) and the number of correct details out of the total (correct

and incorrect) number of details provided (accuracy measure; Koriat & Goldsmith, 1996).

Finally, in **Study IV**, a survey comprising eight questions was disseminated among lay people in the UK, Israel, and Sweden to examine their beliefs about the verbal behaviour of innocent suspects during alibi provision and the issue of interviewer's presumption of guilt. In the UK, these participants were members of the public who might serve jury duty and thus be asked to judge the believability of alibis of innocent suspects in court.

Table 1 presents an overview of the studies included in the current thesis.

Study I

Study I explored whether the memory output of innocent mock suspects could be increased by presenting them with specific reporting instructions before they provided an alibi. Specifically, participants provided an alibi across three conditions of pre-alibi instructions emphasizing the informativeness of the alibi, its accuracy, or both its informativeness and accuracy. Control participants received no special instructions. I also included a sample of lying participants in the role of guilty mock suspects to better establish that any effects of the pre-alibi instructions on innocent mock suspects' alibis would be due to effects on memory (cf. reliance on pre-planned verbal strategies; Hartwig, Granhag, Strömwall, & Doering, 2010; Strömwall, Hartwig, & Granhag, 2006).

Based on previous research on the behaviour of innocent and guilty suspects during interviews (e.g., DePaulo et al., 2003; Hartwig, Granhag, & Strömwall, 2007; Olson & Charman, 2012), I predicted an interaction effect between participant-guilt conditions and the pre-alibi instructions on both quantity of correct details and accuracy rates of participants' alibis. Specifically, I predicted that the performance of the innocent mock suspects would be affected by the different pre-alibi instructions in terms of the quantity (of correct de-

tails) and accuracy rates of the details provided. In contrast, I predicted that the reporting behaviour of the guilty mock suspects would not express any effects of the pre-alibi instructions.

Considering that this was the first study to test the effects of reporting instructions on the memory reporting behaviour of innocent suspects, no predictions were made about the exact location and direction of differences between specific pre-alibi instructions for innocent mock suspects. These effects were instead tested in an exploratory manner.

Table 1

Overview of Studies Included in The Current Thesis

Study	**Method**	***N***	**K**	**Independent Variables**	**Outcome Variables**
I	Laboratory experiment	192	8	Pre-Alibi Instructions [accuracy, informativeness, accuracy and informativeness, control] × Participant Guilt [innocent, guilty]	Quantity and accuracy rates of alibis
II	Laboratory experiment	78	3	Pre-Alibi Instructions [task, enhanced, control]	Quantity and accuracy rates of alibis
III	Laboratory experiment	90	3	Interviewer's belief [guilt, innocence, neutral]	Quantity and accuracy rates of alibis
IV	Online Survey	343	-	-	Participants' beliefs regarding suspects' alibis and their explanations for their beliefs

Note. N = total number of participants, k = number of conditions.

Method

One-hundred and ninety-two native English-speaking participants (43 males, 149 females) were randomly allocated to one of eight experimental conditions in a 2 (participant guilt: innocent vs. guilty) × 4 (pre-alibi instructions: accuracy vs. informativeness vs. accuracy and informativeness vs. control) between-subjects design (n = 24 per condition). The dependent variables were the quantity measure and accuracy rates of the alibis.

The study had 80% power to detect a small effect of $f = 0.24$ ($\eta^2 = .05$) at the .05 significance level.

Task completion and accusation. Participants completed the study individually. In the task room, innocent mock suspects completed six non-criminal tasks, whereas guilty mock suspects completed three non-criminal tasks and then committed a mock crime (i.e., stealing a memory stick). All participants were surreptitiously filmed during task completion to provide ground truth for the calculation of quantity and accuracy measures. En route to another room following task completion, the participants were informed that a memory stick was missing from the task room and as the individuals who had been in the room most recently, they were suspected of stealing it. Participants were told that they would soon be asked to provide an alibi to convince an interviewer that they had not stolen the memory stick.

Alibi provision under the pre-alibi instructions. In the interview room, all participants were told that they should report in their alibi all the details that they could remember about each task. Innocent mock suspects were asked to be truthful in their alibi, whereas guilty mock suspects were told that they must lie about stealing the memory stick. Guilty mock suspects were told that, to create their cover story, during an upcoming 10-minute preparation time provided to all participants, they would be provided with the full instructions for the three additional tasks completed by the innocent mock suspects. The experimenter then delivered the pre-alibi instructions. After providing their alibi using a computer, participants

completed a post-alibi questionnaire, in which they were asked about their experience during alibi provision. Finally, participants were debriefed and compensated for their participation.

Calculation of quantity and accuracy rates. For each participant, a quantity measure and an accuracy rate were calculated for the entire alibi: the quantity measure was calculated by totalling the number of correct details provided across all tasks per each participant, and an accuracy rate was calculated by dividing the total number of correct details provided across all six tasks in an alibi by the total number of details provided overall (correct and incorrect) in that alibi.

Results and Discussion

The pre-alibi instructions × participant guilt interaction was not significant for either the quantity measure or the accuracy rates, failing to support my prediction. However, as one of the aims of the study was to explore the effects of the pre-alibi instructions on innocent mock suspects, I conducted further analyses whereby I examined differences in the quantity and accuracy of alibis between the pre-alibi instruction conditions separately among innocent and guilty mock suspects.

These analyses revealed an effect of the pre-alibi instructions on the number of correct details provided (i.e., quantity) by innocent suspects only, without compromising accuracy rates. Specifically, innocent mock suspects in the combined accuracy and informativeness pre-alibi instructions condition provided a larger number of correct details than did innocent mock suspects in the control condition, without compromising accuracy rates. No other differences in the quantity or accuracy of information were found between the pre-alibi instructions conditions. The finding that the pre-alibi instructions affected the memory output of innocent mock suspects but not that of guilty mock suspects was true also when analysing only those parts of the alibi in which guilty mock suspects could rely solely on their memory (i.e., reports about the first three tasks completed). Overall, the findings of Study I suggest that

innocent suspects' memory output during alibi provision may be increased using memory-based reporting instructions.

Study II

Study II expanded upon Study I by examining the effect of administering memory-based retrieval instructions that cued accurate and informative reporting about innocent mock suspects' whereabouts and activities during the critical time period of their alibi *as well as* tangible evidence that could support that alibi. Specifically, in the *task instructions condition*, participants were asked to report accurately and informatively about what they had done during the critical time period for their alibi (i.e., as in the accuracy and informativeness pre-alibi instructions condition in Study I). In the *enhanced instructions condition*, participants were asked to report accurately and informatively about what they had done during the critical time period for their alibi (as in the task instructions condition) *and* the evidence that could corroborate their alibi. Participants in the *control instructions condition* were only asked to report about their time away from the lab, without receiving further instructions regarding the type of information they should report nor how accurate and informative their alibi should be.

It was predicted that the number of correct details provided for the entire alibis would be greater in both the enhanced and task instructions conditions than in the control condition (Hypothesis 1). Additionally, it was predicted that, compared with the task instructions condition, the enhanced instructions would yield a larger number of correct details for the entire alibis (Hypothesis 2a) and for the evidence details (Hypothesis 2b).

With respect to accuracy rates, I predicted that these would be higher in both the enhanced and task instructions conditions than in the control condition for the entire alibis (Hypothesis 3a) and the evidence details (Hypothesis 3b).

Method

Seventy-eight native English-speaking participants (26 males, 52 females) were randomly allocated to one of three experimental conditions in a between-subjects design comprising three pre-alibi instructions conditions: enhanced instructions, task instructions, and control instructions (n = 26 per condition). The dependent variables were the quantity of correct details reported and accuracy rates.

The study had 80% power to detect a medium-to-large effect of f = 0.36 (η^2 = .11) at the .05 significance level.

The procedure was similar to that in Study I with the following main exceptions: (i) participants were only innocent mock suspects; (ii) following the completion of each main task, participants generated evidence that corroborated their whereabouts (i.e., evidence tasks); (iii) participants completed the tasks in different locations in the building in which the laboratory was located (cf. completion of all tasks in one room in Study I); (iv) participants wore a body-camera on their chest to obtain ground truth (cf. were surreptitiously filmed inside the task room in Study I); and, (v) participants were accused of a theft that occurred in one of the rooms of the building while they were away (cf. were accused of a theft that occurred in the room which they had earlier occupied during task completion in Study I).

Four measures were calculated for each participant: quantity of correct details for the entire alibi and quantity of correct evidence details, as well as an accuracy rate for the entire alibi and an accuracy rate for evidence details.

Results and Discussion

Participants in the task instructions condition and in the enhanced instructions condition provided more correct details overall than did control participants, supporting Hypothesis 1. However, I did not find that asking participants to report about past actions and corroborating evidence yielded a larger number of correct details overall than asking them to report about past actions only, failing to support

Hypothesis 2a. Also in contrast to my prediction, there were no differences in the number of correct evidence details provided between pre-alibi instructions conditions, failing to support Hypothesis 2b. Finally, neither the accuracy rates of the entire alibis nor the evidence details differed as a result of the pre-alibi instructions, failing to support Hypotheses 3a and 3b. Nevertheless, Study II replicated Study I by demonstrating the increased performance in the task instructions condition (i.e., the combined accuracy and informativeness pre-alibi instructions condition in Study I) in terms of number of correct details provided over simply requesting participants to report what had happened. Study II also supported the effects of the enhanced instructions on the increased number of correct details provided overall compared with the control condition.

Study III

In Study III, I examined whether the completeness and quality of innocent mock suspects' alibis were affected by an interviewer communicating a belief that they were guilty (*guilty-belief condition*) or innocent (*innocent-belief condition*) of a crime, or that she had no belief about their guilt or innocence (*neutral-belief condition*).

I identified and tested two possible predictions pertaining to the number of correct details provided and accuracy rates of participants' alibis. Granhag, Clemens, and Strömwall (2009) have demonstrated that statements of guilty mock suspects interviewed under high levels of suspicion were more detailed than statements of guilty mock suspects interviewed under low levels of suspicion, presumably because the former mock suspects felt that they had to "work hard" to convince the interviewer of their innocence. Accordingly, I predicted that the alibis of participants in the guilty-belief condition (the equivalent to high-level suspicion in Granhag et al., 2009) would include the largest number of correct details. The alibis of participants in the innocent-belief condition, in contrast, would include the smallest number of correct details (Hypothesis 1a). Based

on the same rationale, I also predicted that the guilty-belief participants would also work hard to provide accurate information, and thus the accuracy rates of their alibis would be the highest, whereas the accuracy rates of alibis in the innocent-belief condition would be the lowest (Hypothesis 1b).

Vrij, Mann, Kristen, and Fisher (2007), however, showed that when interviewed with accusatory (vs. information-gathering or behaviour analysis) interview styles, mock suspects provide the shortest statements, perhaps because accusatory interviews cause suspects to be less forthcoming. Thus, it was also considered possible that presumed-guilty participants would provide the smallest number of correct details (Hypothesis 2a) with poorer accuracy rates (Hypothesis 2b), while alibis of participants in the innocent-belief condition would include the largest number of correct details and be the most accurate.

Method

Ninety native English-speaking participants (15 males, 75 females) were randomly allocated to one of three experimental conditions in a between-subjects design with two conditions in which suspect-interviewees were led to believe that the interviewer believed they were guilty (guilty-belief condition, $n = 30$) or innocent (innocent-belief condition, $n = 30$) of a theft. Interviewees in a third condition were treated in a neutral manner by the interviewer (neutral-belief condition, $n = 30$). The dependent variables were the quantity of correct details provided and accuracy rates of participants' alibis.

The study had 80% power to detect a medium effect of $f = 0.33$ ($\eta^2 = .10$) at the .05 significance level.

The procedure was similar to that in Study I with the following main exceptions: (i) participants were only innocent mock suspects; and, (ii) all participants received the same instructions about the required accuracy and informativeness of their alibi.

Following task completion in the task room and after receiving the general alibi instructions, a new experimenter (i.e., the inter-

viewer) conveyed to participants her belief about their alleged responsibility for the supposed theft. Then, after giving participants 10 minutes to prepare their alibi, the interviewer reiterated her belief to participants regarding their responsibility for the alleged theft. Participants then provided their alibi, reporting about the tasks they had completed in the task room.

The calculations of quantity and accuracy measures in Study III were similar to those in Study I.

Results and Discussion

The interviewer-belief manipulation was successful to the extent that participants in the guilty-belief and innocent-belief conditions perceived that, before they provided their alibi, the interviewer believed they were guilty and innocent (respectively) of the theft. However, no significant differences were observed between the interviewer-belief conditions in terms of the quantity (of correct details) and accuracy rates of the alibis provided, failing to support all hypotheses. These findings suggest that when it comes to their verbal behaviour during brief interviews, innocent suspects interviewed by a guilt-presumptive interviewer may remain as informative as those interviewed by an innocence-presumptive or neutral interviewer.

Study IV

To examine the extent to which lay people are familiar with factors that may lead to an innocent suspect providing an inaccurate, incomplete, or otherwise unconvincing alibi, I asked lay people from the UK to complete a two-part questionnaire. To extend the generalizability of the findings, I also disseminated the questionnaire among lay people from Israel and Sweden[2]

[2] In Israel, verdicts are reached by the judge, who then also makes the sentencing decisions (Barak, 1992). In Sweden, a mixed panel of professional judges and lay judges decides on both verdicts and sentencing outcomes (Ortwein, 2003).

Method

The participants were 343 members of the general public from three countries, chosen in a convenience sampling (UK: $n = 96$; Israel: $n = 124$; and, Sweden: $n = 123$). An online (Qualtrics) questionnaire comprising eight questions was created in English and then translated into both Hebrew and Swedish.

In the first part of the questionnaire, participants described their beliefs regarding (i) the differences between alibis of truth-tellers and liars; (ii) the relation between the amount of details provided in an alibi and the truthfulness of the alibi; and, (iii) the extent to which truthful alibis might contain incorrect details. The second part of the survey concerned the factor of interviewers' guilt presumption. Participants were asked to indicate their beliefs regarding (i) the point in the course of the investigation in which interviewers begin to form an opinion about the guilt or innocence of suspects; (ii) the extent to which an interviewer's presumption of guilt affects what the interviewer says and how s/he behaves during an interview; and, (iii) the likelihood that suspects respond to the interviewer's guilt presumption by (a) providing more details in their alibi; (b) providing details even if uncertain of their accuracy; and, (c) confessing to committing the crime.

Results and Discussion

Participants tended to believe that while innocent suspects are more informative about specific details, guilty suspects in general try more often to be informative. In addition, most participants believed that the more details provided in the alibi, the less likely it is to be truthful. Most participants who reported this belief explained that liars may believe that a detailed alibi is perceived as truthful and convincing. Participants' responses also demonstrated that they were reluctant to acknowledge that innocent suspects' alibis may unintentionally include incorrect details. However, participants acknowledged that memory processes may fail innocent suspects when attempting to report accurately from memory.

With respect to the factor of interviewers' presumption of guilt, most participants believed that interviewers usually begin to form a belief about suspects' guilt or innocence before or while suspects provide their alibi for the first time. They also tended to believe that interviewers' presumption of guilt may lead them to conduct harsher interviews, use leading questions, and pressure the suspect to confess. Finally, participants tended to believe that when suspects feel that they are being interviewed by a guilt-presumptive interviewer, they are likely to be more forthcoming but not to confess to the crime. Combined, the findings of Study IV demonstrate that lay people hold some mistaken beliefs about innocent suspects' alibis.

GENERAL DISCUSSION

The aim of this thesis was to contribute to the neglected yet growing body of research on alibi provision by innocent suspects by exploring how providing an alibi can be improved for both suspects and police interviewers. The research presented here explored the effects of memory-based reporting instructions on the memory output of innocent suspects when providing an alibi to convince police interviewers of their innocence as well as when reporting alibi-corroborating evidence. I also examined the effects of one aspect of suspect interviewing that may hamper innocent suspects' memory output during alibi provision, namely an interviewer's presumption of guilt. Specifically, in three experimental studies and one exploratory survey, I examined the effects of pre-alibi instructions on the memory output of innocent mock suspects providing an alibi about their past actions (Study I) and evidence that might corroborate their alibi (Study II). Next, I examined how a presumption of guilt communicated to innocent mock suspects affected their memory output during alibi provision (Study III). Finally, I examined the beliefs and knowledge of members of the general public regarding alibi generation and provision by suspects, memory failures as a reason for inaccuracies in innocent suspects' alibis, and the issue of interviewers' presumption of guilt (Study IV). In this section, I discuss the key findings in terms of theoretical and practical implications and examine the contributions of the findings with respect to the wider literature. I also discuss the limitations of this thesis and suggest routes for further research.

Theoretical Implications

The first step in the prosecution of suspects is an investigative interview to discover their potential knowledge of and involvement in an alleged crime. It is therefore surprising how little research has been conducted on specific questions about how alibis are generated

and provided. Even less research has been dedicated to developing interview protocols and testing whether they may improve the process of alibi provision. Most research on the generation and provision of statements by people who might have been involved in a crime has concerned eyewitnesses and victims (e.g., Fisher, 1995; Fisher & Geiselman, 2010; Gabbert, Hope, & Fisher, 2009). However, while eyewitnesses or crime victims may not be harmed by providing inaccurate information, suspects whose statements are inaccurate may be perceived by interviewers as deceptive (Burke, Turtle, & Olson, 2007; Dysart & Strange, 2012; Olson & Charman, 2012), and therefore more likely to be guilty. Ultimately, the unintentional provision of inaccurate or incomplete information by suspects may contribute to the wrongful conviction of innocent people (Crozier, Strange, & Loftus, 2017; Wells et al., 1998).

A novel examination of suspect alibis. The research presented here is the first to develop and test memory-based reporting instructions (cf. retrieval cues; Leins & Charman, 2016) tailored specifically to be used during interviews with suspects. The findings of Study I and II are important as they suggest that innocent suspects' memory output may be enhanced by guiding them to provide an accurate and informative alibi. The findings of Study I that the alibis of guilty mock suspects were not affected by the pre-alibi instructions specifically suggest that memory-based reporting instructions may not assist guilty suspects in improving their accounts. The findings of Study II that the enhanced instructions did not significantly improve the number of correct details provided overall or the number of correct evidence details provided suggest that the nuances of pre-alibi instructions to innocent suspects are important. Indeed, adding the specific instruction to report accurately and informatively about alibi-corroborating evidence did not produce significantly more reports of this type of detail. These findings indicate the important need to continue and study interview techniques that may actively improve innocent suspects' memory output.

Study I, II, and III are also the first to examine suspect alibis in terms of the quantity and accuracy rates of the discrete details provided. Previous research on alibi provision has estimated alibi accuracy by testing whether participants reported in their alibi that, during the critical time, they participated in the critical event rather than were engaged in another activity (Leins & Charman, 2016). Alternatively, alibi accuracy has been estimated by examining whether participants changed details between two alibis provided on two separate occasions about the same time frame (Olson & Charman, 2012). While the examination of memory reports in terms of the quantity and accuracy of details have been conducted previously in the context of eyewitness statements (e.g., Hope, Mullis, & Gabbert, 2013; Pansky & Nemets, 2012), no such examination has been conducted in the context of suspect alibis. The most appropriate approach to examining memory reports, especially freely-recalled information, is to analyse the quantity and accuracy rates of the details provided (Koriat & Goldsmith, 1996; See also Goldsmith, 2017). In the specific context of suspect alibis, during the investigation of an alibi, its details are compared against the ground truth available to the interviewer. Studying alibis' completeness and quality by directly comparing the suspect's report of the event with actual event details provides a more naturalistic examination of alibis. While the ground truth may be difficult to establish in real-life investigations, pre-alibi instructions may assist in decreasing the danger of innocent suspects providing incorrect information that may be perceived by alibi evaluators as indicative of deception.

Despite the differences between previous research and the present thesis in ways memory completeness and accuracy were examined, all of these examinations of alibi provision are important for developing the understudied body of research into the alibi generation and provision of innocent suspects. Especially relevant to the present thesis is Leins and Charman's (2016) research, in which they demonstrated that memory-based interview prompts (i.e., cued retrieval) may enhance alibi accuracy. The interview prompts used in that

study were intended to affect the memory *search* of participants such that it would accord with the specific cue presented. In contrast, the pre-alibi instructions used in Study I and II in the current thesis were intended to affect innocent suspects' memory *reporting*, namely participants' decisions about what and how much information to report after this information has been retrieved. Future research may combine the two interview techniques to examine the effects of pre-alibi instructions with the use of different types of specific cued retrieval on suspects' memory output. Despite the difference between the interview prompts used in the present research and in Leins and Charman (2016), all the interview prompts were designed based on memory theory, which is an important approach to improving innocent suspects' memory output during interviews.

Enhancing suspects' verbal output versus detecting deception. Some deception detection methods may lead innocent suspects to provide more information in their statements. For example, before interviewees provide their statement, presenting them with a model statement—a truthful account about an event unrelated to that they are interviewed about—should inform them of the level of detail that interviewers expect them to provide (Leal, Vrij, Warmelink, Vernham, & Fisher, 2015). Research has shown that providing innocent and guilty mock suspects with a model statement before asking them to provide their statement can lead them to providing more information than if they do not have such prompt (e.g., Bogaard, Meijer, & Vrij, 2014; Leal et al., 2015; Porter et al., 2018). In addition, Nahari, Vrij, and Fisher (2014) demonstrated that to encourage innocent suspects to provide more verifiable details, they should be explicitly informed that their alibi will be examined for verifiability. However, because these deception detection methods were designed primarily to elicit cues to deception (cf. to enhance innocent suspects' memory output), the quality of the increased amount of information resulting from these methods was not examined. Such examination is necessary to establish whether these deception detection

methods can be used as memory-enhancing interview techniques. In fact, in Study II of the present thesis, informing participants in the enhanced instructions condition that their alibi would be verified could have caused them to provide more (complete and accurate) evidence details than those provided by participants in the other conditions. This should be examined in future research that includes an enhanced instructions condition in which participants are additionally informed that the alibi evaluator intends to check the verifiability of their alibis.

While some deception detection methods may be used as memory-enhancing interview techniques, it may not be feasible to rely on cues to deception when providing memory-based reporting instructions. This notion is demonstrated by Study I whereby the pre-alibi instructions did not affect the memory output of the guilty mock suspects, suggesting that when such instructions are used, guilty suspects may not provide more detailed alibis that include more cues to deception (see Vrij, Mann, Kristen, & Fisher, 2007). Yet, while not increasing the memory output of the guilty mock suspects, none of the pre-alibi instructions used in Study I compromised the quantity of correct details provided by them (nor the accuracy of the details they provided). A subtle yet important difference between interview techniques aimed to increase innocent suspects' memory output and those aimed to detect deception suggests that memory-based interview techniques may need to undergo some changes to be useful for detecting deception. Specifically, memory-enhancing interview techniques focus more on guiding innocent suspects to provide an accurate and informative statement that may promote their exoneration. In contrast, deception detection methods focus more on eliciting cues to deception that may assist interviewers with deciding whether a suspect is lying when denying involvement in a crime (Vrij, 2008b). Nevertheless, if changes are made in memory-based interview techniques to allow them to be used to elicit cues to deception, the purpose of eliciting accurate and complete information must not be compromised by the purpose of detecting deception.

Combined, the findings reported in the present thesis suggest that further efforts should be dedicated to studying the process of alibi provision by innocent (and guilty) suspects. In particular, Study I and II suggest that when the goal of using interviewing techniques is to enhance the memory output of innocent suspects (as opposed to detecting deception), the development of pre-alibi instructions should take memory theory into consideration.

Practical Implications

The introduction of the PEACE interview model (Central Planning and Training Unit, 1992a, 1992b) was undoubtedly a crucial first step in improving the interview process of suspects in the UK. The change from the confession-seeking interrogation to the ethical interview to gather information was a positive step in attempting to decrease miscarriages of justice. Combined with allowing suspects to present their version of events and asking them to tell the interviewer everything they did during the critical time frame of the alleged crime, this change likely improved the process of case investigation (Griffiths & Milne, 2006; Shawyer, Milne, & Bull, 2009). However, the findings of the present thesis (Study I and II) suggest that merely asking suspects to describe events in their own words is not enough, and that interviewers may need to present suspects with specific memory-based reporting instructions to guide and enhance their memory output. Yet, it is too early to determine, based on the studies in the present thesis, what might be the optimal way to ask suspects to report about their past actions and whereabouts when providing an alibi. Further research is needed to structure the best memory-based pre-alibi instructions. The present findings do suggest that asking innocent suspects to provide an accurate and informative alibi should benefit them more than not asking them to do so. Such pre-alibi instructions do not require specific training and, as indicated in Study I, should not facilitate guilty suspects' alibi provision.

Innocent suspects' alibis and interviewers' presumptions of guilt. The present research is the first to examine the effects of interviewers' presumptions of guilt on the completeness and accuracy of suspect alibis. Previous research has examined and demonstrated the effects of this presumption of guilt on the behaviour of the interviewer during interviews with suspects, and, consequently, on the judgements of neutral perceivers about the veracity of the interviewed mock suspects (Hill, Memon, & McGeorge, 2008; Kassin, Goldstein, & Savitsky, 2003). The present research expands these previous findings by showing that in short interactions with a guilt-presumptive interviewer, innocent suspects succeed in remaining accurate and informative when providing their alibi (Study III). These findings are not surprising considering that innocent suspects typically believe that their innocence can set them free (Hartwig, Granhag, & Strömwall, 2007; Kassin & Norwick, 2004; Vrij, Granhag, & Porter, 2010), and it is possible that this belief led participants in the guilty-belief condition to be as informative as participants in the innocent-belief condition. Thus, the findings of Study III embody yet another demonstration of the confidence innocent suspects have in the power of their innocence.

At first glance, Study III may seem to suggest that a guilt-presumptive interviewer may have no effect on innocent suspects' memory output in terms of the completeness and accuracy of their alibis. However, it would be a mistake to conclude from these findings that interviewers do not have to follow the recommendation to avoid guilt presumptions. Interviewers are unlikely to change their initial guilt belief even if an innocent suspect behaves in contrast to their guilt expectation (see Darley & Fazio, 1980), and the persistence of this guilt belief may affect further interactions with this suspect. For example, a guilt-presumptive interviewer who has obtained a suspect's alibi is likely to investigate the suspect's story and may discover that the information the (innocent) suspect provided during the interview was correct. However, instead of attributing the suspect's verbal behaviour to the suspect's actual innocence (see, e.g.,

Darley & Fazio, 1980), the interviewer may continue to believe that the suspect is guilty and conduct further interviews and interactions with this suspect with that guilt belief intact. Therefore, the findings of Study III may be relevant only to short, non-recurring interactions with a guilt-presumptive interviewer, and an attempt should be made to replicate them.

The findings of Study III provide some indirect support for the long-existing notion that interviewers should use more open-ended than close-ended interview prompts (Fisher, Milne, & Bull, 2011; Geiselman, Fisher, MacKinnon, & Holland, 1985, 1986). Close-ended interview prompts are usually suggestive, confine the rememberer to choosing between a limited number of response options presented by the interviewer and to reply to each question, and encourage guessing (Koriat & Goldsmith, 1996; see also Lamb et al., 2003). In contrast, when open-ended interview prompts are used, rememberers are free to produce their own answers and report only the information they are confident that they remember (Koriat & Goldsmith, 1996). Consequently, open-ended interview prompts encourage the provision of a narrative response, which is more complete and accurate compared with responses obtained with yes/no or forced-choice questions (Fisher et al., 2011; Geiselman et al., 1985; Koriat & Goldsmith, 1996; Lamb et al., 2003). In Study III, although some participants provided their alibi to a guilt-presumptive interviewer, they were given the opportunity to provide their account freely, ultimately providing an alibi as informative and accurate as that of the rest of the participants. Thus, while a presumption of guilt may be difficult to avoid even with training (see Shawyer & Milne, 2015), Study III suggests that using open-ended interview techniques may protect innocent people from the effects of interviewers communicating their guilt presumption (although this was not directly tested in the current thesis). Future research may examine how pre-alibi instructions and interviewers' presumptions of guilt affect innocent suspects' memory output when these factors are manipulated together.

The findings of Study III are more relevant to real-life interviews in which interviewers unintentionally communicate a guilt belief to suspects. However, in some cases, even if interviewers do not use accusatory interview techniques, they may be required by law to inform suspects of the degree of suspicion they are under. Such is the case in Sweden, where in accord with the Swedish Code of Judicial Procedure, police officers must inform suspects at the outset of the interview of the degree of suspicion they are under (see Granhag, Clemens, & Strömwall, 2009). This procedure is different from the implicit communication of a presumption of guilt examined in the current thesis. It is first necessary to determine whether the fact that interviewers inform suspects of the degree of suspicion they are under affects the behaviour of the interviewers. Additionally, it could be examined how informing suspects of the level of suspicion affects their memory output when the interviewer who provides this information is behaving in an innocence-presumptive, guilt-presumptive, or neutral manner.

Lay people's beliefs about suspect alibis. Previous surveys on suspect interviews conducted among lay people have examined participants' beliefs about cues that may differentiate truthful from deceptive suspects (e.g., Akehurst, Köhnken, Vrij, & Bull, 1996; Masip & Herrero, 2015). The survey conducted in the present research (Study IV) is the first to examine lay people's knowledge and beliefs about factors in the interview process itself with respect to how these factors might prevent innocent suspects from providing a convincing alibi.

The findings of the survey are important in light of the complex nature of jury service, whereby citizens unfamiliar with legal matters are expected to assess the credibility of suspect alibis while exposed to a variety of other information (Bornstein & Greene, 2011; Greene & Bornstein, 2000; Porter & ten Brinke, 2009). The finding that participants did not believe that innocent suspects may provide inaccu-

rate alibis is another demonstration of prospective jurors' lack of understanding of issues concerning psychology and law and is consistent with previous findings that demonstrated this poor knowledge in lay people (e.g., Benton, Ross, Bradshaw, Thomas, & Bradshaw, 2006; Simons & Chabris, 2011, 2012). For example, Benton et al. (2006) found that agreement between 111 jurors from the United States and 64 eyewitness experts on items about eyewitness issues (e.g., memory, weapon focus, and elderly witnesses) was obtained on only four (13%) of 30 items. This finding suggests that experts' testimony may be required in court to educate jurors about the reliability of, and how to evaluate, eyewitness testimony. The findings of the survey (Study IV) conducted for the present thesis add to this existing body of research by demonstrating that jurors may also benefit from being explicitly informed that innocent suspects may provide inaccurate details despite being motivated to be accurate. The finding that participants believed that interviewers form a belief about suspects' guilt or innocence before meeting them, but at the same time believed that interviewers may form this belief during the interview, suggests that jurors may also need to be explicitly informed that suspects sometimes provide their alibi to a guilt-presumptive interviewer. This should be done especially when suspects complain that their interviewer treated them as if they had already decided that they were guilty, as in the case of Ronald Cotton (see Introduction).

In sum, the findings reported in this thesis are encouraging in demonstrating that some types of pre-alibi instructions may assist innocent suspects to provide accurate and informative alibis and interviewers to obtain complete and accurate reports from suspects. However, the need for further research prevents me from providing direct recommendations of how to apply these findings in real-life suspect interviews. At present, it may be suggested that interviewers continue to allow suspects to provide a free account of events, in their own words, without interrupting or giving feedback on the details as they are provided. Such open-ended prompts may also act as

a safeguard when interviewers approach the interview already believing that the suspect is guilty. For the sake of innocent suspects who fail to provide a convincing alibi, judges must not prevent memory and interview experts from discussing relevant research findings in court on the grounds that "such research would tell jurors little that they did not already know" (Kassam, Gilbert, Swencionis, & Wilson, 2009, p. 552). Because jurors play a crucial role in determining the fate of innocent people, they should be educated as much as possible prior to fulfilling their duty.

Methodological Considerations and Future Directions

To evaluate the reliability and informativeness of the findings obtained, it is important to discuss the statistical power of the experiments reported in this thesis. In Study I, the effect size obtained for the main effect of the pre-alibi instructions on the quantity measure among innocent mock suspects ($f = 0.37$) was medium-to-large (Cohen, 1988). Moreover, the effect size of the finding that information quantity was higher in the combined pre-alibi instructions condition than in the control condition was large ($d = 0.99$; Cohen, 1969). With respect to the main effect of the pre-alibi instructions on the number of overall correct details provided in Study II, the effect size ($f = 0.33$) was medium (Cohen, 1988). Finally, the effect sizes of the findings in Study II that the quantity measure was higher in both the enhanced instructions condition ($d = 0.72$) and the task instructions condition ($d = 0.67$) than in the control condition were medium-to-large and medium, respectively (Cohen, 1969). Effect sizes of this magnitude suggest that pre-alibi instructions can have a substantial effect in terms of increasing suspects' memory output.

In terms of statistical power, the sensitivity analysis conducted for Study I, which demonstrated that I could expect to detect a medium effect size ($f = 0.24$) with reasonable power (80%), suggests that Study I was not substantially underpowered. However, Study I was likely underpowered for detecting an interaction between pre-

alibi instructions and participants' guilt, because the sample size required to detect interaction effects is typically larger than that required to detect main effects (see, e.g., Durand, 2013).

In contrast to Study I, Study II and III were relatively less powered since the sensitivity analyses indicated that I could expect to detect medium-to-large and medium effect sizes (f = 0.36 and f = 0.33), with 80% power, respectively. Turning to the Bayesian analyses conducted, the finding of Study II that the quantity of evidence details did not differ between pre-alibi instruction conditions provided only anecdotal evidence in favour of the null hypothesis. In Study III, where the quantity of (overall) information provided did not differ between interviewer-belief conditions, the Bayesian analyses provided moderate evidence in favour of the null hypothesis. Hence, although the Bayesian analyses suggest that these null findings are more likely the results of the absence rather than the presence of actual effects, the support for the null hypotheses is nonetheless weak.

In sum, while the magnitude of the effect sizes obtained for the specific effects in Study I and II is substantial, the reliability of the effect-size estimates in Study II and III is limited due to the modest sample sizes. Furthermore, the experimental studies in the current thesis were not adequately powered to detect medium or smaller effects, and it cannot be determined conclusively that the null findings obtained in the studies for this thesis reflect a genuine absence of the predicted effects. Thus, all three experimental studies should be replicated using larger sample sizes.

Because of the additional limitations outlined below, some findings should be treated with caution.

In Study I and II, calculating and analysing the quantity and accuracy rates of participants' alibis enabled me to draw conclusions about the effects of the pre-alibi instructions on participants' memory output. However, these findings do not inform us why the pre-alibi instructions produced the effects they did. For example,

since I did not calculate participants' report criterion, I cannot conclude whether monitoring and control processes produced the obtained results. Alternatively, it may be that the higher quantity measure obtained among innocent mock suspects in the accuracy and informativeness instructions condition (Study I) resulted from these participants engaging in a more thorough memory search than the control innocent mock suspects. Not knowing how the underlying mechanisms operated to produce participants' alibis does not limit my conclusions; however, a better understanding of the process of alibi generation and provision may be obtained by learning about the operation of mechanisms that produce suspects' memory output. To this end, future research on alibi generation should, for example, develop a paradigm that would allow the calculation of innocent (and guilty) suspects' report criterion to further examine the metacognitive monitoring and control processes underlying alibi provision. This would require asking participants to report (i) their confidence in the correctness of the details reported; (ii) the details they retrieved but withheld (i.e., chose not to report), and; (iii) their confidence in the correctness of these withheld details (Koriat & Goldsmith, 1996).

The present findings demonstrate the importance of including several experimental and control conditions to discover what aspects of manipulation enhance participants' memory output. Accordingly, it is yet to be determined whether the enhanced performance in both experimental conditions in Study II compared with the control condition was due to the fact that these experimental conditions instructed participants either (i) to report about certain types of details (i.e., past actions and corroborating evidence) or (ii) how to provide an accurate and informative alibi. It may also be that both types of instructions led to this result. We can also not rule out the possibility that participants found the task component and the evidence component of the enhanced instructions very similar, resulting in no significant difference in the number of correct details provided between the task instructions and enhanced instructions conditions.

In hindsight, to disentangle such influences, I should have included in Study II a condition in which participants would only be asked to report accurately and informatively about alibi-corroborating evidence, just as there was a condition in which participants were asked only to report accurately and informatively about their past actions. Including this individual evidence instructions condition would align with the procedure of Study I, in which there was a combined accuracy and informativeness pre-alibi instructions condition as well as individual accuracy and informativeness instructions conditions. It would also align with the procedure of Leins and Charman (2016), who included three conditions of recall cue to examine their effects on alibi accuracy: a time-only cue, a location-only cue, and a combined time-and-location cue. The inclusion of several experimental and control conditions is important when attempting to develop the most effective interviewing techniques to enhance innocent suspects' memory output and when seeking to discover the effects of other aspects of the interview (e.g., interviewers' guilt presumption) on suspects' verbal behaviour.

A key element of the procedures used in the experimental studies of this thesis (i.e., Study I, II, and III) was that participants completed tasks under specific task instructions. This served my aim of comparing participants' alibis with the critical event to calculate and analyse the quantity of correct details and the accuracy rates of the alibis. However, more realistic critical events might be used to study the quantity and accuracy of alibis and to replicate the findings of Study I. In addition, such research could examine the effects of the enhanced instructions used in Study II, with the inclusion of informing participants of the alibi evaluator's intention to verify their alibis.

In this context, it is worth commenting on the evidence items that participants were instructed to report about in Study II. Participants were asked to actively generate these evidence items so that the coding of evidence details would be cohesive across all participants. However, in real life, people do not go shopping specifically to obtain a receipt or to communicate with a person who can later provide

evidence; these are by-products of people's day-to-day actions. The effects of the pre-alibi instructions I used should be tested using a more authentic procedure in which evidence would be a by-product of participants' actions (e.g., a receipt from a shop as object evidence and a guard in a shop as person evidence). Participants in future research may also be asked to report about their past actions and the corroborating evidence one after the other or in separate interviews.

Another aspect of the critical event (i.e., task completion) I applied in Study I and III concerns the location of the "crime". Participants in both studies were asked to report on their task completion to explain why they could not have committed a crime that was committed in the same location where they had completed the tasks. It could then be claimed that the statement that participants provided was not an alibi according to its common definition, "a defense that places the defendant at the relevant time of crime in a different place than the scene involved and so removed therefrom as to render it impossible for him to be the guilty party" (Black, 1990, p. 71). Although a legitimate critique, it does not undermine the conclusions derived from these experiments. Importantly, in the three experiments in which participants were asked to report about their past actions or/and corroborating evidence (Study I, II, and III), participants provided their statement to exonerate themselves, and this made the statement their alibi (see Burke et al., 2007). Moreover, when it was crucial that participants report evidence that supported their presence in a location different from that of the "crime scene" (Study II), I designed the procedure such that the task completion and the "crime" were in different locations.

Participants in the studies presented in this thesis were asked only to provide specific information in the form of an alibi. Thus, the effects of the pre-alibi instructions and guilt presumption should be examined as part of a fuller interview, in which suspects are asked to provide an alibi and then reply to subsequent questions. For example, the pre-alibi instructions tested in the current thesis could be examined when presented to innocent mock suspects as part of the

CI (Fisher & Geiselman, 2010; Fisher, Geiselman, & Amador, 1989). Moreover, the performance of interviewees under the CI technique could be compared between those receiving pre-alibi instructions and those instructed to "report everything" in the CI. Such examination may reveal whether the combined accuracy and informativeness pre-alibi instructions, which were found to produce the relatively best performance in the current thesis, are more or less beneficial when preceded by other retrieval mnemonics.

More generally, in the procedures used in the present thesis, the time interval between the critical event and alibi provision was relatively short across all three experimental studies, and likely shorter than time intervals between real-life crimes and interviews. This short time interval may account for the high accuracy rates obtained in Study I, II, and III. Nevertheless, drawing reliable conclusions on any effects of the pre-alibi instructions and interviewers' guilt presumption on participants' memory output in these studies required that I eliminate any factors that could potentially interfere with the effects of these manipulations. The most likely factor to interfere would be memory contamination (see, e.g., Frenda, Nichols, & Loftus, 2011; Loftus, Miller, & Burns, 1978; Tourangeau, 2000). Memory contamination may result, for example, from information that rememberers have been exposed to after the critical event. If such post-event information is incorrect, the rememberer's own memory of the event is likely to be distorted, leading them to report incorrect event details when asked (Frenda et al., 2011). In the present thesis, such potential distortions would make it difficult to statistically detect the effects of the different manipulations. In fact, by administrating the time interval I did in Study III, I followed previous research that tested the effects of interviewers' presumption of guilt (e.g., Hill et al., 2008). Nevertheless, in future research, Study I, II, and III should be replicated using longer time intervals. It may be that larger effects of the pre-alibi instructions would be observed in those studies, as these instructions are intended to guide the memory retrieval of truthful rememberers.

Because of ethical constraints, in procedures that include mock suspects, participants are never accused of committing a real crime, and the crimes they are accused of are not particularly serious (typically thefts or minor infractions of rules; e.g., Hartwig et al., 2007; Vrij et al., 2009). For the same reason, the present research also included accusations of relatively minor crimes (e.g., theft of a wallet). For the same ethical reasons, and also in accordance with previous research (e.g. Hartwig et al., 2007; Vrij et al., 2009), participants were told that if they succeeded in convincing the interviewer of their innocence, they would have a chance to receive a monetary prize or if they failed, they would be asked to hand-write a second alibi. Clearly, the repercussions of the interviewer's judgement of the veracity of the participants' alibis are incomparable to the positive outcome of being exonerated or negative outcome of being imprisoned (or worse) in real-life cases. With such real-life outcomes, the manipulations used in the three experimental studies of this thesis may result in different behaviours of innocent suspects than those observed in the studies. For example, consider an innocent suspect facing a possible sentence of 15 years in prison for allegedly physically harming a person who is interviewed by a guilt-presumptive interviewer. Experiencing the guilt-presumptive behaviour of the interviewer and fearing the potential severe punishment may stun the suspect into becoming less talkative than participants in the experimental guilt-belief condition in Study III, ultimately supporting the interviewer's belief. Future research may examine whether the attractiveness of potential prizes and severity of potential punishments interact with interviewers' belief-led behaviour or pre-alibi instructions in affecting innocent suspects' memory output.

Because Study II and III included only innocent suspects, the results of these studies are not informative about how guilty suspects respond to the manipulated variables. This limitation does not undermine the informativeness of the current thesis's findings about innocent suspects' behaviour during interviews. Nevertheless, to determine whether or not different interview techniques that increase

innocent suspects' memory output also increase that of guilty suspects, research on such techniques must also include a sample of guilty mock suspects.

A limitation of the survey (Study IV) involves the use of the terms "truth-tellers" and "liars" as synonyms for "innocent suspects" and "guilty suspects", respectively. Admittedly, guilty suspects may speak the truth and innocent suspects may lie in police interviews. Although suspects' veracity and guilt are probably correlated in real life, one cannot be certain that respondents' reported beliefs about truth-tellers and liars correspond perfectly with their beliefs about innocent and guilty suspects, respectively. In future surveys on the topic, researchers should take great care to use the exact terms to which they intend to generalize their findings.

Finally, it cannot be determined from the findings of the survey whether participants would consider the factors of impaired memory processes and interviewers' presumptions of guilt if asked to evaluate the credibility of a suspect's alibi in court. Future research on lay people's beliefs about issues concerning alibi provision may include additional questions about this process while examining participants' decision-making process during an evaluation of a mock alibi.

To conclude, future research on alibi generation should apply more naturalistic procedures than those used in the present research. Nevertheless, this should not be done at the expense of being able to draw direct conclusions about the effects of the manipulations on the examined measures. Drawing more accurate conclusions on the effects of manipulations on suspect-participants' memory output may be achieved by ensuring experimental control through eliminating factors that may interfere with the effects of the examined manipulations.

Conclusions

In three experimental studies and one survey, the present thesis examined the process of alibi provision by innocent suspects to further understand this process and discover ways to improve it. The

findings of the present research demonstrate that specific memory-based reporting instructions presented to innocent suspects prior to alibi provision may increase their memory output. These findings suggest that such instructions should be carefully designed to encourage innocent suspects to provide information of the required type and level of completeness and quality. The present research also demonstrates that innocent suspects' memory output may not be sensitive to the guilt-driven behaviour of the interviewer during short interviews, but it warrants that guilt presumptions must still be avoided. Lastly, the findings of the survey demonstrate that lay people hold some mistaken beliefs about factors that may hamper innocent suspects' ability to provide accurate alibis. Future research should establish whether lay people consider these factors when serving on a jury. Despite the various limitations outlined above, the procedures used in the present thesis were designed to ensure that the conclusions drawn from the obtained results would be reliable and accurate. The current thesis paves the way to further theoretical and practical research on alibi provision by innocent suspects, and particularly on factors that can improve (and might challenge) this process. The future of alibi research is exciting yet challenging, as much additional research is required to reveal more factors that are involved in and underlie the suspects' provision of alibis.

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APPENDIX