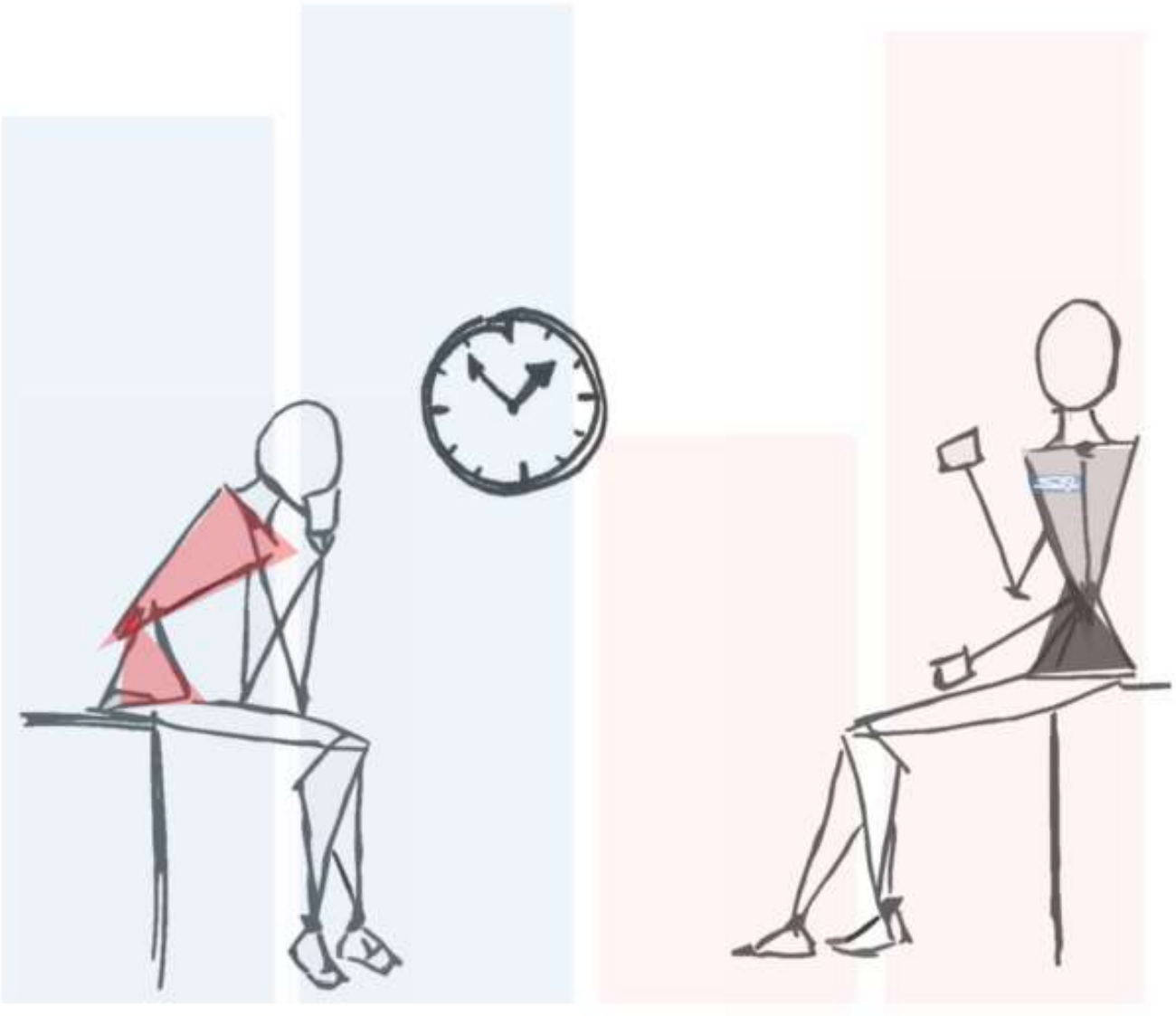
THE IMPACT OF INTERVIEW STYLE ON THE DEVELOPMENT, MAINTENANCE, AND TRANSFER OF RAPPORT

Lynn Weiher



THE IMPACT OF INTERVIEW STYLE ON THE DEVELOPMENT, MAINTENANCE, AND TRANSFER OF RAPPORT

by

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Declaration

I declare that the thesis is my own work and has not been submitted in substantially the same form for the award of a higher degree elsewhere.

Lynn Weiher

Date

Dedication

Danke Mama und Papa. Für die Fahrten auf Stützrädern, bis ich selbst die Balance halten konnte. Danke für all die Bücher und eine schöne Kindheit. Und immer wieder, sehe ich euch mit Ballons am Schwimmbadfenster stehen. Ich hab euch lieb. Diese Doktorarbeit ist auch für euch.

Thank you, Steven. For drawing animals from memory sitting on airport floors, and hiding in blanket forts. Thank you for everything. Let us explore the world some more.

Thank you, Ida. You are a dog. You cannot read this, still, thank you for being the best supawvisor, for keeping me running and on my toes.

Abstract

Investigative interviews are a central part of policing. Police interviewers use the information obtained from interviews to develop investigative leads or to make effective decisions. Therefore, it is important that the information is as detailed and accurate as possible. The recognized importance of interviewing has resulted in substantial research efforts being placed into the development of techniques that enhance information provision. One proposal for how these techniques lead to greater information provision is via increased rapport between the interviewer and interviewee. Although numerous interviewing models recommend rapport, the impact of interview style on rapport has rarely been tested directly in interviews with suspects. There has also not been a consideration of how rapport would be affected by repeated exposure to specific individuals and law enforcement in general. In this thesis, I aim to test whether rapport once established can be maintained between multiple interviews and across multiple interviewers. This is a critical gap in our knowledge, as in police interviews it is common practice for suspects to be interviewed more than once and by different interviewers at different times. It is therefore important to know whether previous interactions with the police could affect future interactions in terms of rapport. A second key aim of this thesis is to test if nonverbal mimicry measured via motion capture suits can serve as an objectively rated behavioural proxy of rapport as several studies showed that behavioural mimicry is higher in people with well-established rapport and further, mimicry results in increased rapport. My findings suggest that the interview style impacts on rapport and mimicry. However, I could not find evidence for a link between rapport and disclosed information, or rapport and mimicry.

Table of Contents

Table of Figures

Table of Tables

1 General Introduction

Crime stories fascinate us. With true crime and true crime-based documentaries and shows, books and podcasts about serial killers and unthinkable crimes, we cannot seem to appease our desire for details of true crimes. Crime is the biggest-selling genre when it comes to books[1]. Children tell each other creepy stories, heard from a friend of a friend. We get a thrill out of these stories and Germans unite meeting in bars or at home every Sunday night at 8.15 pm to watch "Tatort"[2] which has aired since 1970.

The media we consume, the movies, books, documentaries may give us the false sense that we are experts. However, law enforcement does not work on one case for 90 minutes or six episodes until a crime is solved but on multiple cases with limited resources. Rarely does the media we consume provide a glimpse of how challenging it can be for police interviewers to get a statement from a suspect. For our entertainment, law enforcement can be snappy, sometimes even rude, and even use force and torture methods in interviews and interrogations. Methods using force and torture are usually portrayed as effective and even used by the supposed hero. In reality, this is the opposite of what the research tells us is effective when interviewing suspects.

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[1] https://www.theguardian.com/books/booksblog/2018/apr/12/mystery-crime-fiction-bestselling-book-genre-sophie-hannah

[2] Translate to "crime scene", a Sunday night crime series that features different major cities in Germany. Germans do not necessarily agree if the Tatort was good and newspapers Monday will discuss it on Monday. But, we can all agree that the Münster Tatort is the best.

Investigative interviews are a central part of policing. The terms investigative interview and interrogation are sometimes mistakenly used interchangeably by non-experts. Both terms imply questioning by the police, are closely linked to police investigations, and are used, at least partly, to gather information. However, there is a distinction to be drawn. Historically, witnesses and victims are 'interviewed' by the police (Rabon, 1992, as cited in Gudjonsson, 2003, p. 2). On the other hand, 'interrogation' is often used in the literature as well as in police practice to refer to the questioning of a criminal suspect. However, there has been an effort, especially in Europe, to move away from the term interrogation and to refer to all police interviews, even those with suspects, as investigative interviews. The main difference is that the focus of an investigative interview is to gather detailed and accurate information about what happened, while an interrogation is focused on obtaining a confession. Recognising the ethical and practical advantages of investigative interviewing over interrogation, the term and practice 'investigative interviewing' is now used in police training and assessment in the UK (Clarke & Milne, 2001; Williamson, 1994 as cited in in Gudjonsson, 2003, p. 2). For consistency, and to keep to the standard term used in police training in England (Clare & Milne, 2001), I will use the term 'investigative interview' or 'interview' to describe all investigative interactions between police interviewers and suspects.

As mentioned above, the goal of the investigative interview is to obtain complete and accurate accounts from an interviewee. Information obtained from investigative interviews are used to further investigations (e.g., develop investigative leads; to make effective and efficient decisions) and ultimately solve crimes (e.g., lay charges). Therefore, it is crucial that the information elicited from interviewees is as detailed and accurate as possible. The recognized importance of interviewing has resulted in substantial research efforts being placed into the

development of techniques that enhance information provision that are humane and reliable; one target of these techniques is to build rapport.

Rapport is called the heart of the interview (St-Yves, 2005) and the recognised importance of rapport lead to substantial research in the area. While rapport-building is often claimed to be crucial in the investigative interview (e.g., Fisher & Geiselman, 1992; Milne & Bull, 1999; Shepherd & Milne, 1999) and has been shown to be associated with information provision (Walsh & Bull, 2011; Abbe & Brandon, 2013, 2014; Vallano, Evans, Schreiber Compo, & Kickhaefer, 2015). We do not know yet whether rapport can be maintained between multiple interviews and whether rapport can be transferred from one interviewer to another interviewer. This is a critical knowledge gap, given that it is extremely common for suspects to have multiple encounters with the police, and that they may be interviewed by more than one interviewer. Therefore, it is important to know how previous interactions with the police could impact on future interactions in terms of rapport.

1.1 Rapport

1.1.1 Definition(s) of rapport

To describe rapport in everyday life we describe interpersonal interactions using terms like “we had great chemistry”, “we were on the same wavelengths” or that “we clicked”. These phrases suggest a coherent relationship and indicates that there was a smooth flow of communication and a clear understanding between interaction partners (Bernieri, 2005). However, these every day terms are very vague and before we can further our knowledge about rapport, we need to define it clearly.

The Cambridge dictionary defines rapport as "a good understanding of someone and an ability to communicate well with them"[3]. This definition adds some more specificity in that it emphasises an ability to communicate clearly, and that this develops from clearly understanding someone. In the interviewing literature specifically, rapport has been defined in numerous ways, some of which are listed in Table 1-1. For example, some definitions emphasise rapport as a working relationship, and others emphasise cognitive and emotional perspective taking. I.e. some emphasise the product of rapport in terms of functional relationships, and others emphasise the mechanics of rapport in terms of how effective communication is established. Consequently, there is no clear conception in the literature of what rapport is.

Table 1-1. Various definitions of rapport across the literature

Reference	Definition of rapport
Vallano et al., 2011	Rapport is the relationship between the interviewer and the interviewee.
Williamson et al., 2013	Rapport is used to describe a productive relationship between the interviewer and the suspect, and involves how much mutual sympathy the interaction partners share based on a mutual understanding for one another's worries, goals and intended outcomes.

[3] https://dictionary.cambridge.org/dictionary/english/rapport

Reference	Definition of rapport
Newberry & Stubbs, 1990, p. 14, as cited in Collins et al., 2002, p. 71	Defined rapport as a "harmonious, empathetic, or sympathetic relation or connection to another self" and "accord or affinity, in an ecological alignment with another system"
Ardito & Rabellino, 2011, p. 2 as cited in Vallano et al., 2015	"therapeutic or working alliance, which implies a personal bond between therapist and client for the ultimate purpose of improving the client's mental health status"
Siegman & Reynolds, 1984, as cited in Vallano et al., 2015, p. 71	"friendly but relatively superficial conversation"
Harrigan et al., 1985, as cited in Vallano et al., 2015, p. 96	"an open, interested, and warm relationship,"
Bernieri et al., 1996	"a relationship marked by harmony, conformity, accord, and affinity"
Vanderhallen et al., 2011, p. 112	"a relationship that provides participants with a warm feeling"
Hartwig et al., 2005, p. 390	"a positive attitude toward the suspect and conveying genuine respect"

Moreover, as Table 1-1 points out, many studies do not provide a single definition of rapport but rather list different definitions. Further, some of the studies named above define rapport with constructs that are likely associated with rapport as either antecedents or

consequences, but which are separate constructs. For example, showing empathy or liking someone can make the development of rapport easier, or may be a consequence of having established rapport; however, neither are the same as rapport.

The lack of a clear definition leads to a fundamental problem in that without a clear definition and a transparent method to operationalise rapport, we can hardly tell if the rapport-literature is discussing the same construct (Goudy & Potter, 1975). Therefore, it is challenging to generalise findings from studies of rapport because it is not clear that the same constructs were manipulated or measured. Therefore, a critical first step in this thesis is to determine how rapport is to be defined throughout. A key consideration in developing this definition is that rapport is not an individual impression but is experienced between two or more people. Rapport is a state that describes the relation between multiple people and is not a construct that describes an individual; therefore, rapport must be studied between (at least) dyads and not just for the individual (Bernieri, 2005). Just as important, rapport is not static. We need to consider that rapport is dynamic, the flow and tone of an interaction changes with time and is not fixed or rigid, and rapport can be both built and lost between people over time. Given these foundational principles for rapport, I will now consider a theory of rapport.

1.1.2 Rapport Theories

In the following, I introduce the most influential theory of rapport, the ‘Tripartite model of rapport’ proposed by Tickle-Degnen and Rosenthal (1987), which will now be reviewed in order to help develop a clear definition of rapport. Subsequently to introducing the Tripartite model of rapport, I will introduce and discuss further potential theories of rapport and state why these do not influence the definition of rapport used in this thesis.

1.1.2.1 The Tripartite model of rapport.

Tickle-Degnen and Rosenthal (1987) offered a Tripartite model of rapport, which was developed in the context of the therapist-client relationship. Their model suggests rapport comprises mutual attentiveness, positivity and coordination. Mutual attentiveness is a shared attention, engagement and involvement that interaction partners should experience. Mutual attentiveness should be the easiest for an interviewer to establish, as it only requires paying attention to one's interaction partner but needs to remain high throughout the whole interaction. I.e., if mutual attentiveness is lost or not Mutual attentiveness is therefore the bedrock from which rapport is developed. Before or at the beginning of the interview, the interviewer and the interviewee need to share mutual attentiveness in order to lay the groundwork for positivity and coordination to develop (Abbe & Brandon, 2013).

Positivity, according to Tickle-Degnen and Rosenthal (1990) is a feeling of warmth and friendliness and may be linked with two dimensions of social judgement: warmth, as in liking; and competence, as in respect (Fiske, Cuddy, & Glick, 2007). For the investigative interviews especially, respect (competence) between the interviewer and the suspect seems more directly relevant than liking (warmth). This is because there is a power imbalance with the interviewer as an authority with the potential to significantly disrupt the suspects life (e.g., authority), and there is goal incongruence between the interviewer and the suspect with the interviewer seeking to elicit information and the suspect (often) seeking to conceal it. Given these misalignments it may not be possible, or desirable, to establish positivity as one would with a client in therapy. Rather, Abbe and Brandon (2013) argue that the interviewer has to establish respect from the interviewee but also needs to show respect for the suspect. I.e., respect needs to be mutual. Although, mutual

respect is not mentioned often in the clinical literature (Fischer, 1969, as cited in Abbe & Brandon, 2013, p. 296), Abbe and Brandon argue that respect may be the foundation of eliciting cooperation and may have been neglected in past research. In some interpersonal interactions, respect could be more important than warmth (liking), and the investigative interview could be a context were respect is highly valued (Wojciszke & Abele, 2008 as cited in Abbe & Brandon, 2013, p. 296) given the strong power and status (authority) imbalance discussed above. Further, Abbe and Brandon (2013) argue that based on and advised by the Army Field Manual (Department of the Army, 2006, p. 8-5) mutual respect could aid in developing positivity in the investigative interview. Additionally, a recent study found that respect mediates the effect of interview style on rapport (Raß, 2020).

Coordination by definition is shared between interaction partners rather than something that one can display toward an interaction partner (Tickle-Degnen & Rosenthal, 1987). Coordination is balance and harmony during the interaction, and the amount of behaviour synchronization between the interviewer and the suspect (Abbe & Brandon, 2013). Behaviour synchronization is characterised by shared understanding, and the predictability of the interaction. Tickle-Degnen et al. (1987) state further that coordination in the early stages of an interaction might be used to build rapport, while in later stages of the relationship, coordination is a sign of already established rapport. Tickle-Degnen and Rosenthal (1987) argue as well that postural mirroring could indicate coordination between interaction partners. This argument is based on previous empirical findings e.g., Charny, 1966; Kendon, 1970; LaFrance, 1979, 1985; Scheflen, 1964 (all as cited in Tickle-Degnen & Rosenthal, 1987, p. 126). Postural mirroring is described as two interaction partners mirroring one another's postures with one another's extremities. Tickle-Degnen et al. (1986, as cited in Tickle-Degnen & Rosenthal, 1987, p. 127)

showed in a preliminary meta-analysis of 10 experiments that posture mirroring is positively associated with ratings of the 'degree of togetherness' with no difference between participant and observer ratings. Further, there is evidence that mirroring can positively impact on experienced rapport (Storms, 1983; as cited in Tickle-Degnen & Rosenthal, 1987, p. 127).

Tickle-Degnen and Rosenthal (1990) also describe the developmental path of rapport to describe how the importance of the three components, mutual attentiveness, positivity and coordination, differ depending on the level of the connection between two people. This is illustrated in Figure 1-1.

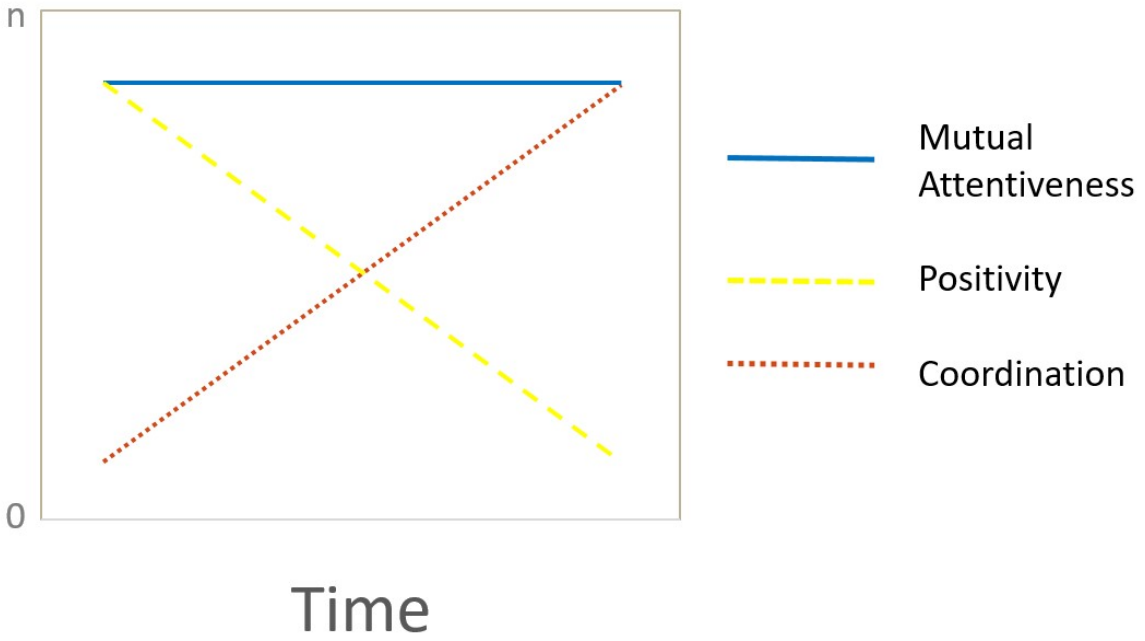

Figure 1-1. The three components of rapport over time (adapted from Rosenthal & Tickle-Degnen, 1987).

Figure 1-1 illustrates that during early encounters positivity is likely to be high because both interactions partners want to leave a good impression to establish and then maintain the relationship. Over the course of the relationship, positivity can decline. For example, close friends can argue without losing their relationship, and even in the absence of arguments do not

require consistent displays of positivity. In contrast, coordination begins low and then increases over time because both interaction partners need to get used to each other's communication style. Therefore, coordination is higher when both are already familiar with each other and their communication style. The familiarity between both interaction partners creates higher predictability of the interaction, which is then shown by smooth turn taking during a conversation. During the entire interaction, mutual attentiveness should be high to indicate both interaction partners are paying attention towards another. An absence of mutual attentiveness can be interpreted as disinterest and rapport can be lost. For example, when two friends are talking but one is distracted by their phone, the lack of attention paid towards the interaction partner interrupts the conversation and so rapport is, at least temporarily, lost.

However, it should be noted that the Tripartite model is not limited to nonverbal behavioural correlates. On the contrary, Tickle-Degnen and Rosenthal (1990) named nonbehavioral correlates of rapport as only one way to measure rapport, rather than as inherent to the definition of rapport. Positivity, to give the simplest example, is often expressed verbally.

1.1.1.1 Critique of the Tripartite model of rapport.

The Tripartite model of rapport (Tickle-Degnen & Rosenthal, 1990) established a theoretical framework explaining the development and maintenance of rapport within social interactions and is highly relevant to rapport in familial relationships, friendships, and relationships with colleagues. However, the Tripartite model of rapport was not developed to explain the development and maintenance of rapport specifically within the investigative interview.

Nonetheless, Rosenthal and Tickle-Degnen's (1987) tripartite model of rapport is the most commonly used theoretical model within the investigative interviewing literature (e.g. Abbe & Brandon, 2013; Duke et al., 2018; Holmberg & Madsen, 2014; Walsh & Bull, 2012). Despite this, it must be acknowledged that there are specific challenges in applying this model to the investigative interviewing context. There are several reasons why this model may only be partially applicable to rapport as it develops within an investigative interview (Driskell et al, 2011). One reason is that the goals of an interaction between friends and family differ from an interaction between an interviewer and a source of information. An interviewer wishes to obtain information that the suspect may wish to keep concealed and friends and family are (usually) looking for enjoyment and social support. Secondly, rapport in the interview is mostly initiated by the interviewer and is deliberately formed to obtain information. This may lead to pseudo-rapport: a form of rapport that is not genuine because it has the instrumental aim to persuade the suspect to talk (DePaulo & Bell, 1990). DePaulo and Bell (1990) argue that it remains unclear whether rapport is mutual and therefore shared between interaction partners, or what the consequences are of a mismatch in the perception of rapport.

The mutuality of rapport is not always directly stated but often implied within the literature with rapport being defined most often in terms of the quality of interaction between two people. For example, Bernieri (2005) stated that rapport is experienced within the dyad and not the individual. It is currently unknown what the impact of developing rapport for purely instrumental goals rather than a genuine desire to affiliate is. However, agreeing with DePaulo and Bell (1990), it seems more important that rapport needs to be mutual to be meaningful, otherwise it is pseudo rapport.

A third reason why the Tripartite model may not be readily applicable to investigative interviews may be the different emotional climate between the interaction partners. Interactions between friends or between a therapist and their client are normally positive and reinforcing, even if sometimes challenging. In contrast, investigative interviews are usually high stakes and are often characterised by fear, suspicion, resentment, or anger on the part of the source. Similarly, the interviewer may have a significant dislike of the suspect, or be upset, angry or disgusted by what they believe the suspect has done (Oxburgh,, Ost, Morris & Cherryman, 2015).Therefore, the Tripartite model assumes that the interaction partners communicate voluntarily and with mutual agreement. However, especially in law enforcement, this is not always the case. The interviewer has control over the interview. The interviewee or source has potentially crucial information that they might not want to share, either to not incriminate themselves or to protect someone else. Due to this power imbalance, the interviewee might lack the motivation to cooperate or may resist the interviewer's attempts to build rapport.

Consequently, there are some challenges in applying the Tripartite model to an investigative interview. However, as discussed in Abbe and Brandon (2013), the model can be applied in the investigative interview with only minimal adjustment of its key concepts i.e., instead of implying that positivity is warmth/ liking, in the investigative interviewing context positivity most likely equals respect. Moreover, as I will now discuss, there is no better theoretical conceptualization of rapport currently available.

1.1.1.2 Alternatives to the Tripartite model

As alternatives for the Tripartite model, one might argue to use the ORBIT (Observing Rapport-Based Interpersonal Techniques) model by Alison et al. (2013). Alison argues that in

order to build rapport the interviewer needs to adapt their behaviours to the source's behaviour to increase information yield. ORBIT is a coding framework consisting of three elements: 1) strategies based on motivational interviewing (Miller & Rollnick, 2009 as cited in Alison et al., 2013), 2) the "Interpersonal Behavior Circle" (based on the Interpersonal theories, Leary, 1957 as cited in Alison et al., 2013) that allows coding the interaction between the interviewer and the suspect along two dimensions (authoritative-passive and challenging-cooperative), and 3) disclosed information as an outcome variable. However, this model has not been developed as a theory of rapport. Rather, it is a training manual that provides behavioural guidelines for practitioners seeking to establish rapport. That is, ORBIT focuses on describing behaviours that enhance or hinder rapport rather than provide a framework for understanding what rapport actually is. Strategies of ORBIT are based on motivational interviewing (Miller & Rollnick, 2009 as cited in Alison et al., 2013) which has its roots within counseling. The aim of motivational interviewing is to build a respectful environment to gain information from the interaction partner while remaining flexible to changes throughout the interaction (i.e., keeping focused on the main goal of the conversation while reacting to the interaction partner's answers). Rapport is established within the motivational interview by creating the aforementioned respectful, judgment-free environment that aids collaboration. The motivational interview is a practical technique to get people talking, not a theoretical conceptualization of rapport, and theoretically emphasizes respecting one's interaction partner. Thus, its core principles fit readily within the reformulated positivity dimension of the Tripartite model I outline in the previous section.

A second alternative theoretical framework is the Model of Influence (Strong, 1968). Duke (2016) relied as well on the Tripartite Model (Tickle-Degnen & Rosenthal, 1990) as on the

Model of Influence (Strong, 168) to guide the development of her measure of rapport, the SR3i (see '2.3.1.3 A Rapport scale for interrogations and investigative interviews: RS3i' for more detail). Strong (1968) defines rapport as a positive working relationship. Strong developed the Model of Influence on client-therapist relationships. Strong stated that therapist-client rapport can increase therapy success. However, he identifies the client's potential unwillingness to change their behaviour (e.g., due to denial or refusal to acknowledge behavioural issues) as a main obstacle to therapy success. Strong argued that cues of expertise, reputation, honesty, trustworthiness, likeability or warmth from the therapist can help to overcome resistance to behaviour change. Duke draws parallels between the therapist facing resistance for behaviour change from the client to the investigative interview, because the interviewer also faces resistance for behaviour change (i.e., the source's refusal to disclose information). Just like the therapist, the interviewer works toward a behaviour change in the source, to shift a resistance to disclose information to commitment to communication. In Duke's (2013) adapted Model of Influence, instead of the therapist using cues to increase perceived credibility and influence the client towards behaviour change, the interviewer uses rapport-building behaviours to lead to information disclosure.

However, in the Model of Influence, rapport is defined as a therapeutic alliance or working alliance. A working alliance describes the commitment between two parties to a shared objective. Thus, once established it is at least somewhat robust to challenge and so more clearly describes what interviewers seek to establish – a suspect committed to cooperation. This means that arguing a working alliance should be established to achieve cooperation becomes a circular argument. Therefore, any definition of rapport that seeks to explain how cooperative relationships are established must occur earlier in the causal chain. The Tripartite model

interprets rapport as a dynamic state, as something that is changeable (one can have bad rapport at times and still have a therapeutic alliance). Rapport being a dynamic state also means that rapport is also not conflated with interview success. That is, because establishing a working alliance implies establishing success, the process by which cooperation is established (develop a working alliance) is conflated with the outcome (a cooperative suspect). Instead, with the Tripartite model there is a clear causal argument that communication quality (rapport) directly influences suspect cooperation (information provision). Moreover, the model identifies clear behaviours that are associated with rapport, and so helps us to understand what rapport should look like, as well as how it should feel. I.e. we should be able to develop behavioural measures of rapport based on the tripartite model, not only self-report measures. This allows for the possibility of measuring rapport directly. Further, the Tripartite model appropriately conceptualises rapport as a dynamic evaluation of the quality of communication between the interaction partners and does not conflate quality of communication with the outcome of successfully achieving cooperation with an interviewee.

Consequently, in this thesis, I define rapport based on Tickle-Degnen and Rosenthal's (1990) theoretical rapport framework to define rapport with the three components positivity, mutual attentiveness and coordination. Therefore, rapport implies mutual attention between the interviewer and the interviewee (mutual attentiveness) within a respectful interaction (positivity). Further, rapport implies a flow and effortlessness of the conversation (coordination).

In the following, I will discuss the importance of rapport within the investigative interview and revisit prior research.

1.2 Rapport in the investigative interview

The importance of 'rapport' to investigative interviews is widely assumed. As already stated, St-Yves (2006) called it the heart of the interview and others suggest rapport-building is crucial to the investigative interview (Fisher & Geiselman, 1992; Milne & Bull, 1999; Shepherd & Milne, 1999).

One benefit of the Tripartite model is that it provides a lens through which to crystallise some of the 'components' of rapport that are described in accounts of investigative interviewing. While rapport is essential across all forms of interviews, there are two contrasting interviewing styles: The Accusatory-interrogation method and the Information-gathering approach (e.g., Vrij, Mann, & Fisher, 2006; Meissner et al., 2014, Miller, Redlich, & Kelly, 2018).

One of the most prominent Accusatory-interrogation methods is the Reid Model of Interrogation (henceforth referred to as the Reid technique; Inbau et al., 2001; Inbau et al., 2013). The Reid technique follows a nine-step approach to interrogation to break down 'suspect' resistance and obtain a confession.

Strategies permissible in the Reid technique include the isolation of the suspect, presentation of false evidence, and confrontation of the certainty of the suspect's guilt while also offering a moral justification for the committed crime. Interviewers may insinuate that law enforcement will be more lenient if the suspect discloses details or a confession[4]. The questions are usually closed and leading. The interviewer is encouraged to interrupt the suspect to prevent

[4] In fact, interviewers cannot actually promise lenient treatment because it might invalidate the confession in US law.

denials or objections and to do most of the talking. Important techniques within Reid are minimization and maximization. To minimize the accused crime, the interviewer reduces the perception of the suspect's moral responsibility for the crime by offering justifications while encouraging the suspect to admit physical responsibility. Maximization adds pressure on the suspect while stressing the extent of the evidence against the suspect and the possible consequences of the crime. On the one hand, the suspect is accused of lying but on the other hand is not given a chance to deny any involvement in the crime (Inbau et al., 2013). Contrary to the Tripartite model, using the strategies described by Inbau et al. (2001, 2013) does not establish mutual attentiveness as the interviewer interrupts the suspect whenever the suspect tries to offer objections or denials to the interviewers pre-supposed narrative. Therefore, coordination cannot be reached i.e., no smooth turn-taking as the interviewer interrupts the conversation flow, and further by accusing the suspect of lying and not giving them the chance to supply an account, liking and respect (positivity) are harmed.

Some consider it acceptable to probe suspects using accusations in this way because they believe that suspects would never falsely confess to a crime (Leo & Ofshe, 2001). This belief is paired with the assumption that interview experts could tell a liar from a truth teller (Kassin, 2008). Combined, these arguments are used to imply that there is a very low risk of obtaining false confessions.

While applying Accusatory-interrogation methods is allowed by the courts in the USA, and the Reid technique is still seen as best practice in much of the USA, several decades of research have shown that Accusatory-interrogation methods are flawed. For example, the Reid technique advises unreliable behaviourally based deception detection methods, and techniques

known to elicit confessions from innocent people (Snook, Eastwood, & Barron, 2014). Evidence in favour of Accusatory-interrogation methods is anecdotal and not scientific (Leo, 1992).

Contrary to the Accusatory-interrogation method is the Information-gathering approach, also known as the 'rapport-based approach' (Alison et al., 2014). The Information-gathering approach was initially developed with the Conversation management approach as an attempt to develop a more ethical interviewing method (see Shepherd & Griffiths (2013) for the history of the Information-gathering approach).

Probably the most important framework for an interview style that emphasises ethical interviewing in the PEACE framework. The PEACE Framework was developed based on evidence that police interviewing in England and Wales was of very low quality, and that the evidence suggested that interviewers that used ethical approaches were no less effective and possibly even more effective than those that used accusatory methods (Moston and Stephenson, 1993). Therefore, the PEACE framework aimed to provide standardised training in ethical interviewing practice across England and Wales, and the success of PEACE led to similar models developing across Europe (Fahsing & Rachlew, 2009).

While the Accusatory-interrogation method is used as a tool to obtain a confession, the goal of the Information-gathering approach is to elicit detailed and accurate information. Therefore, the interviewer's goal is to be neutral and unbiased. The interviewer is interested in the full account of what happened and does not interrupt the suspect's statement. The suspect's statement is then used to gather evidence to further the investigation and to follow new leads. Being able to fully understand and present the crime to the court can be as powerful as a confession (Brimbal & Jones, 2018). Further, in most of Europe, more evidence than a

confession is needed to secure a conviction, and an Information-gathering approach helps to secure this extra evidence.

The Information-gathering approach is evidence-based and field-tested to support information disclosure, reduce false confessions, and can be trained to professionals that are required to conduct investigative interviews (Meissner, Redlich, Bhatt & Brandon, 2012).

In line with the Tripartite model, the Information-gathering approach encourages the establishment of mutual attentiveness as the interviewer does not interrupt the suspect, and further, the interviewer is interested in the suspect's account. The interview then should be defined by smooth turn-taking (i.e., question, answer, with no interruptions) and coordination is reached as the conversation is in flow. By being interested in the suspect and not interrupting them, the interviewer expresses respect for the suspect (positivity).

Research suggests that Information-gathering approach encourages cooperation and aids memory recall (Fisher & Geiselman, 1992; Meissner et al., 2012). However, the PEACE model has been criticised as being insufficient when interviewing non-cooperative suspects or high value detainees (e.g. suspects of terrorism) (Mortimer & Shepherd, 1999; Dixon, 2007), or rather the model does not specify how to interview a resistant or high-value target. A skilled officer can still use the challenge phase to present evidence in such a way that admissions are elicited – but the method relies on the police having reliable evidence against the suspect (Tekin et al., 2015). Still, international surveys show that practitioners value rapport building as critical in investigative and intelligence contexts (Goodman-Delahunty & Sivasbramaniam, 2013). Following the arguments in this section, it is expected that a key difference between the two styles of interview is the extent to which they impact on rapport. Previous research supports this assertion. Holmberg and Madsen (2014) manipulated rapport successfully via interview style

(here: a rapport-based humanitarian interview versus a dominant non-rapport-based interview). Further, Vanderhallen, Vervaeke and Holmberg's (2011) found that using a humanitarian interview style increases rapport, while a dominant interview style hinders the development of rapport.

1.3 The beneficial outcomes of rapport in the investigative interview

In the following, I report the beneficial outcomes of rapport in the investigative interview since rapport has no agreed definition. Further, while my studies focus on a conceptualisation of rapport via the interview style (Information-gathering approach vs Accusatory-interrogation method) within suspect interviews, I will still report empirical findings about the benefits of rapport within eyewitness interviews as well as the literature on suspect interviews is rather scarce and the literature on witness interviews is still relevant in terms of eliciting details once cooperation with a suspect has been achieved.

Collins, Lincoln, and Frank (2002) examined the effect of rapport in forensic interviews by manipulating rapport in three different conditions, which involved amongst others body language, name usage, placement of furniture and dialogue. The three conditions focussed on establishing different amounts of rapport: no rapport condition, abrupt condition and rapport condition. In the no rapport condition (neutral), the interviewer tried to express neutral behaviour. In the abrupt condition, the interviewer showed disinterest in the interviewee, spoke with a harsh tone, did not use the participant's name, and used a stiff body posture. In the rapport condition, the interviewer was friendly, used a gentle tone of voice and addressed the participant by name. To assess rapport after the experiment, participants gave one-sentence accounts about their relationship with the interviewer. Two coders rated the amount of rapport in five categories

from (1) ‘definitely had no rapport’ to (5) ‘definitely had rapport’. Although, interrater agreement was high (96% agreement). The study found significantly more rapport in the rapport condition, than the remaining conditions, and further, participants reported significantly more correct information in the rapport-condition without an increase of incorrect information. However, it is questionable how applicable the manipulation of rapport was, it appears as if a straw man was created by having one friendly conversational interview (rapport condition) and the abrupt or neutral conditions be quite unrealistic, as it is questionable whether a stiff body posture is natural behaviour even when rapport is not built. Further, there were so many behavioural cues that manipulated rapport that it seems hard to pin-point which of the variables impacted upon the results. Additionally, it is questionable how transparent the measure of rapport used is. There is no information about how the coders decided what coded rapport comprised, and how the question was phrased for participants. I.e., it is unclear whether the participants and the authors agree on a definition of rapport.

Vallano and Schreiber Compo (2011) examined rapport and susceptibility to misinformation in witness interviews. They use verbal rapport-building techniques such as self-disclosure (just the source, or both the interviewer and the source, or no self-disclosure) and in the rapport conditions methods recommended to build rapport according to the Cognitive Interview (Fisher & Geiselman, 1992) to facilitate rapport. The no-rapport condition focussed on demographic questions to not build rapport (e.g., 'What is your first, middle, and last name?'). To measure rapport, Vallano and Schreiber Compo (2011) used the Interaction questionnaire, which measures the experienced rapport towards the interviewer and the interaction with 27 rapport-related characteristics on a 7-point Likert scale (see Chapter 2 ‘2.3.1 Post-hoc questionnaires’). Results indicated that rapport lead to an increase of recalled information by the witness while

misinformation and inaccurate details were reported less in the rapport-building condition. Self-disclosure did not enhance witness recall. Vallano and Schreiber Combo do not list which rapport building techniques they used from the Cognitive Interview, and further, how they operationalised these techniques.

Kieckhaefer, Vallano and Schreiber Compo (2014) studied the effects of rapport building on adult eyewitness memory as well. Rapport was manipulated in two conditions: high rapport i.e., interview scripts that ask the witness for personal, non-crime-related information (e.g., active listening, using witness' name, displaying interest in interviewee's self-disclosure) and low rapport i.e., the interviewer asked for demographic information without using the verbal rapport builders used in the rapport condition. Participants then rated the interaction with the interviewer to test the rapport manipulation (Interaction questionnaire, see Vallano & Schreiber Compo, 2011 and Chapter 2 '2.3.1 Post-hoc questionnaires'). Kieckhaefer et al. found that high rapport seemed to increase the amount of accurate information witnesses reported.

Holmberg and Madsen (2014) manipulated rapport via the interview style, and hypothesised that rapport would be higher in a humanitarian interview than a dominant non-rapport interview. They tested eyewitness memory over a six-month interval, and found that the humanitarian interview lead to more information than the dominant non-rapport interview, while regardless of interview style, participants reported more information in the first than the second interview. The interviewer followed a basic script for a humanitarian rapport interview, a humanitarian interview and a dominant non-rapport interview. In the humanitarian rapport interview, interviewees were asked for a free recall; follow up questions were open and asked in a memory-compatible manner. In the humanitarian condition, interviewers were calm and allowed time for comments, they acted amongst other ways cooperative, helpful, empathetic and

friendly while showing personal interest and making an effort to create a personal conversation. The interviewer would make eye contact, smile and nod. In the dominant non-rapport condition, no introductory pleasantries were exchanged, and interviewees were asked for a free recall followed by interviewer prompts about the event in question. When the interviewee showed signs of uncertainty, the interviewer would interrupt and ask for clarification. Interviewers were amongst others, unemotional and indifferent. Rapport was tested using a 17-item inventory that asked the interviewees to evaluate the interviewer's behaviour (Holmberg & Christianson, 2002). Although, internal consistency was good (α = .89 and .84), the items focus on the interviewer's behaviour rather than a measure of perceived rapport between the interaction partners. Further, it seems that the rapport conditions were designed to fit the questionnaire i.e., the first 8 items listed are used in the humanitarian interviewing style and the last 9 items were used in the dominant interviewing style. This is certainly legitimate as a manipulation check whether rapport was indeed higher in one condition than the other but raises the questions about whether rapport was actually manipulated and measured rather than an interview style, as there is no additional measure to test for construct validity.

Vanderhallen, Vervaeke and Holmberg (2011) studied how perceived interview style impacts upon rapport (here referred to as working alliance which has been found to be firmly related to rapport, see Tickle-Degnen, 2002, as cited in Vanderhallen et al., 2011, p. 111). One hundred and twenty-six police interviews were analysed while both the investigator and the interviewee rated interview style and rapport. Results indicate that interview style (humanitarian vs dominant) can predict rapport i.e., a humanitarian interview style increases rapport, while a dominant interview style hinders the development of rapport.

Leahy-Harland and Bull (2017) examined interviews of real-suspects of serious crimes to investigate both police strategies and suspect responses. One focus of their study was rapport. They found that rapport increased the likelihood of suspects confessing to an offence. However, as they point out, none of the suspects changed from denial to admission, and further, suspects who confessed did so early in the interview. This observation might indicate that more rapport was expressed because the suspect was confessing. The sample size (N = 407) was very large which increases confidence in their findings.

Earlier, I briefly listed the ways in which the Information-gathering approach and the Accusatory-interrogation method establish rapport according to the Tripartite model (Tickle-Degnen & Rosenthal, 1987). In this section, I have demonstrated that there is evidence that suggest that rapport is likely to lead to positive interview outcomes. Moreover, a humanitarian, rapport-focussed approach such as Information-gathering approach (Alison et al., 2014) is positively associated with rapport.

However, this discussion has so far referred only to rapport building being beneficial in a very general way, additionally, the studies above show that there seems to be no clear way to measure rapport objectively. One way to try measure rapport objectively is by looking at the behavioural correlates of rapport and thus avoiding the potential problems associated with self-report measures (see Chapter 2 ‘2.3.1 Post-hoc questionnaires’).

1.4 Behaviours suggested to improve rapport

Researchers have identified both verbal and nonverbal behaviours that have been shown to build rapport or have been identified as required or recommended to build rapport within the investigative interview. Below I discuss verbal and nonverbal behaviours in turn.

1.4.1 Verbal behaviour correlates

Redlich, Kelly and Miller (2014) used an online survey to ask 152 interrogators in the USA about what works in the investigative interview. Rapport and relationship-building techniques were most often reported and rated as the most effective in comparison with confrontational techniques. Further, interrogators named self-disclosure, politeness and transparency about the expectations towards the interview, signalling interest towards the source, as well as an open and friendly body language as the most common behaviours to build rapport. Collins and Miller (1994) discuss in their meta-analytic review that self-disclosure can be crucial to development and maintenance of relationships. When people disclose more about themselves, it makes them more likable than people who disclose less about themselves. People then disclose more information towards the person who initially self-disclosed. However, self-disclosure needs to be appropriate and used carefully. In high-value interrogations, the self-disclosure of personal information by the interviewer could potentially put them in danger. Yet, self-disclosure does not need to be on a level of Clarice Sterling and Hannibal Lector but can be used more subtle. For example, when offering a tea or coffee to the source: “Please help yourself with sugar and cream. I always put way too much cream in.” Wachi, Watanabe, Yokota, Otsuka, and Lamb (2014) conclude that reciprocal self-disclosure might increase the trust of a suspect, which might lead to a development of good relationships which lead to information disclosure. However, they state that more research is needed in the area of reciprocal self-disclosure.

In order to build rapport, the interviewer should be respectful, friendly and considerate, and using reciprocity, behaviours that lead to an increase in information disclosure in high-value interrogations (Goodman-Delahunty, Martschuk, & Dhami, 2014). It is suggested that the

interviewer should pay attention to the suspect in order to build rapport (Milne & Bull, 1999), further, the interviewer should also pay attention to the suspect's needs and concerns; and should take time to establish trust and create a judgement free atmosphere in order to build rapport (St-Yves, 2006). Wachi et al. (2014) asked 219 prisoners in Japanese prisons about their perspectives about Japanese interrogation techniques. Their findings suggest that active listening, next to rapport building and the discussion of the crime are methods that aided suspect confessions. Interestingly, even when the interviewer was confrontational, the suspect would confess if the interviewer would pay close attention to the suspect's statements and build rapport.

Another method to establish rapport can be by establishing commonalities between the interviewer and the source. We tend to like people who are similar to us and like people less who are different (Capozza & Brown, 2000). With commonalities, people might also create and identify with members of an in-group, which might lead to rapport and suspects disclosing more information. Still, the context is an investigation and there might not be too much common ground between law enforcement and a criminal except that their workplace overlaps.

Collins et al. (2002) used different verbal methods to manipulate rapport e.g., in the rapport condition, interviewers used the interviewee's name. Collins et al. found that participants in the rapport condition recalled more correct information during the interview (see p. 25 for more information about the study). The Cognitive Interview (Fisher & Geiselman, 1992) also suggested that interviewers should use active listening, use self-disclosure and use the interviewee's name during the interview. However, these suggestions are made for witness interviews and it needs to be tested if the same methods to build rapport would lead to the same effects in suspect interviews.

The above-named verbal behaviours that correlate with rapport can help us to understand how rapport is build and may be manipulated, but they offer little basis for me to measure rapport as there is no direct link to suspect behaviour. The verbal behaviours are expressed by the interviewer and should in the best-case lead to rapport and to the suspect disclosing more information. Therefore, nonverbal behaviour may offer more compelling ways to measure, rather than manipulate, rapport.

1.4.1 Nonverbal behaviour correlates of rapport

Tickle-Degnen and Rosenthal (1990) showed in their extensive review how nonverbal behaviour is linked with rapport. Identifying a non-verbal measure of rapport would be advantageous in terms of identifying a way to measure the occurrence of rapport, rather than only the supposed psychological consequences or verbal precursors of its occurrence.

Tickle-Degnen and Rosenthal (1987) report evidence in their review that nonverbal behaviour precedes, correlates with and emerges from the three components of rapport: I.e., mutual attentiveness, positivity and coordination that create rapport. For example, leaning forward signals a shared interest in the conversation (Scheflen, 1964). Positivity can be observed via forward leaning, an open body posture, and smiling. Still, the link between nonverbal behaviour and positivity is dependent on context because a smile can be viewed as being both a sign of liking and nerves in an insecure situation (Ekman, Friesen, & Ancoli, 1980). Smiling being potentially friendly or threatening shows that the nonverbal correlates are potentially ambiguous. For example, forward leaning may signal friendliness (positivity) but can also be threatening in some circumstances (Tickle-Degnen & Rosenthal, 1987).

Figure 1-2 demonstrate that it is hard to pinpoint clear behavioural cues that indicate rapport following the Tripartite model by Tickle-Degnen and Rosenthal (1990). For example,

during a conversation the interaction partners need to actively listen to each other (mutual attentiveness) which can be signalled via forward leaning (which could also reflect positivity) and is vital for turn taking and to keep the conversation flowing (coordination). This makes it challenging to isolate the effects of each of the three variables. In part because they are all critical rather than any one being more or less critical than the others are. Consequently, the challenge may be in finding a nonverbal behaviour that captures all three elements of rapport. However, following Figure 1-2 this suggests only eye contact might be considered by Tickle-Degnen and Rosenthal (1987) to be indicative of all three elements of rapport. However, eye contact falls under the umbrella of rapport indicators that Tickle-Degnen and Tickle-Degnen (1987) highlight could be at least sometimes deliberately be controlled as part of an impression management strategy. Therefore, a plausible behavioural measure of rapport should ideally not be readily under conscious control such as mimicry (see ‘1.4.1.1 A definition of mimicry’).

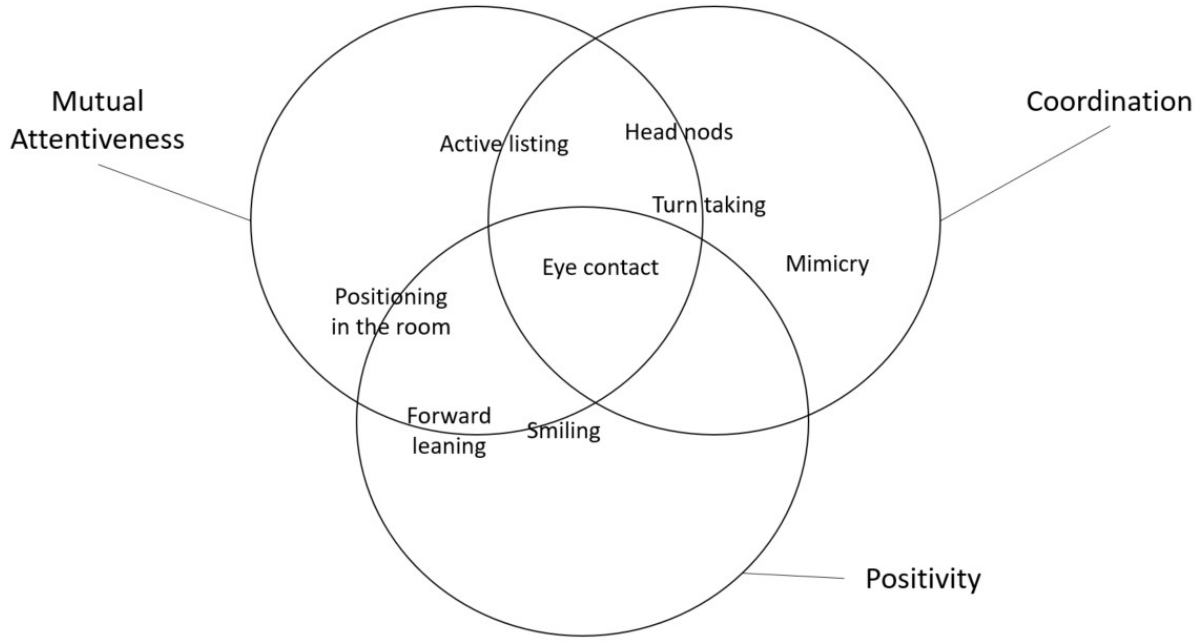

Figure 1-2. Examples of nonverbal correlates of rapport according to the Tripartite model of rapport (Tickle-Degnen & Rosenthal, 1987).

Bernieri et al. (1996) tested the Tripartite model by measuring rapport within a dyadic interaction by assessing participant gestures, interactional synchrony and proximity. The neutral observer judgements of rapport based on these non-behavioural elements were strongly correlated with the self-reported rapport by the dyad. That is as the occurrence of these behaviours increased, observed and self-rated rapport both increased. Their results support Hale and Burgoon (1984) who directly manipulated their participant's nonverbal behaviour instead of observing it. They created two body positioning conditions by instructing a confederate to either sit openly, closer, to lean forward and make eye contact, or to do the opposite e.g., sit closed, backwards leaning and avoiding eye contact. Participants felt more closely attached to the confederate who was positioned openly and in closer proximity.

However, as verbal channels were neglected in Bernieri et al. (1996), a follow up study by Grahe and Bernieri (1999) compared nonverbal and verbal channels to evaluate rapport. Participants observed and rated 30 seconds from the second to last minute out of a 4 to 5 minute interaction between two strangers (videos were obtained from a previous study, see Bernieri, Davis, Rosenthal, & Knee, 1994, as cited in Grahe & Bernieri, 1999, p. 257). Participants either rated rapport by reading a transcript of the interaction, listened to an audio recording, watched a muted video recording, watched a muted video recording and read the transcript, or watched the video recording with audio. Both synchrony (measured via mimicry), and proximity (measured as the average distance between the interaction partners) predicted self-rated rapport. Further, observers having access to nonverbal information (muted videos) were more accurate at judging rapport than when observers had just audio information. Audio information being less robust indicators of rapport might be due to the lack of nonverbal information such as synchrony and proximity, which seem important to make accurate judgements about rapport precisely because synchrony (mimicry) in particular is under less conscious control. I.e. what is said can be part of an impression management strategy, while mimicry is an honest signal (Tickle-Degnen & Rosenthal, 1987).

However, in Grahe and Bernieri (1999) observer ratings were validated against self-rated rapport, which pre-supposes that self-rated rapport is an accurate measure of rapport. That leaves the question: what is the benefit of challenging behavioural coding if it is no better than self-rated rapport?

The main advantage of using nonverbal behaviour as a measure of rapport is that unlike self-rated rapport it is independent from the participant's reflection of an interaction that might be confound with subjectively judged interview success. It has been demonstrated that once the

outcome of an event is known, this can affect the perception of the process that led to the outcome (Alison, Worth & King, 1990). In the context of the interview, an interviewer may assume that they had high rapport if they obtained sufficient relevant information and/or a confession. Similarly, the suspect may perceive high rapport when they believe they successfully persuaded the interviewer of their version of events. In both cases, a self-report measure of rapport is confounded by the perceived interview success i.e., for the interviewer obtaining information, for the suspect revealing as little incriminating information as possible. The consequence of this is that ratings of rapport would not accurately represent the true state of rapport because they are biased by affective appraisal of how successful the interview was. If outcome biases do influence self-rated rapport, this would also suggest that ratings of rapport may be biased in opposite directions because the markers of success would be in opposition on those occasions where a suspect seeks to be non-cooperative.

Nonverbal behaviour is mostly subconscious and not a subject under one's control (Chartrand & Lakin, 2013; Chartrand & van Baaren, 2009). Therefore, nonverbal behaviour could measure rapport more objectively as it is under limited-to-no conscious control. A self-report measure would agree with the police officer's subjective perception of rapport during the interview, while a measure that is not under conscious control can provide an objective measure of rapport. This is of even more importance as (Bull & Cherryman, 1996) showed that police officers who conduct interviews as part of their daily routine cannot reliably assess their own ability to build rapport.

This discussion suggests a non-verbal measure of rapport would be advantageous. However, as discussed above, Tickle-Degnen and Rosenthal (1987) fail to identify a suitable

non-verbal correlate of rapport that reflects all three elements of rapport and which is to under conscious control.

However, it may be that Tickle-Degnen and Rosenthal (1987) were not accurate when describing which behaviours should be attributed to the elements in their model. Grahe and Bernieri (1999) found that synchrony (mimicry) was the most reliable non-verbal correlate of rapport, and Tickle-Degnen and Rosenthal (1987) also report that mimicry and rapport tend to be positively associated. In the next section, I will first define and describe what we know of mimicry. I will then demonstrate that the understanding we now have about mimicry suggests that it is dependent on Mutual Attentiveness, is affected by positivity, directly represents coordination, and therefore is a strong candidate as a possible nonverbal measure of rapport.

1.4.1.1 A definition of Mimicry.

When I refer to mimicry, I refer to nonverbal mimicry here as the automatic imitation of gestures, postures, mannerisms, and other motor movements (Chartrand & Bargh, 1999) that is not goal-directed (Hamilton, 2013) and is therefore subconscious (Pentland, 2008).

Pentland (2008) defines mimicry as an honest signal as it is processed subconsciously and cannot be controlled. Mimicry includes the imitation of speech, overall movement, and the variability in movements and speech. Although mimicry can therefore occur in verbal behaviour, here I focus entirely on nonverbal mimicry. Mimicry is argued to have an evolutionary basis and is said to have developed between primates for the purpose of social signalling (Pentland, 2008).

1.4.1.2 Links between mimicry and rapport.

Chartrand and Bargh (1999) speak of the chameleon effect when describing mimicry of posture, mannerisms and facial behaviours of one's interaction partner when these behaviours are passively and unintentionally changed to match that of the interaction partner. The chameleon effect is the consequence of the perception-behaviour link. The perception-behaviour link argues that we are more likely to repeat behaviours that we observe. I.e. if we see our partner cross their arms, we become more likely to cross our arms, but only if we perceive the action. For example, Cheng and Chartrand (2003) observed a direct link between perceiving a behaviour (confederate shaking their foot or touching their face) and performing that same behaviour i.e., participants mimicked the behaviour. Further, Cheng and Chartrand manipulated how likely participants would feel affiliated with the confederate by manipulating the confederates background to be similar in education background (high school student vs Psych 100 student vs graduate). Participants showed more mimicry when they were affiliated with the confederate. Cheng and Chartrand also show that the observation and the execution of social behaviour are closely linked (shaking a foot or touching the face by the confederate is observed and mimicked by the participant) has also been found by Bargh, Chen and Burrows (1996). In this way, the perception-behaviour link shows the necessity of mutual attention in initiating mimicry.

Mimicry is also described as "Social Glue" that can aid bonding with members of social groups by creating smooth and harmonious social interactions. Describing social interactions as being smooth and harmonious with mimicry is in line with the definition of rapport being a "smooth, positive interpersonal interaction" (Abbe and Brandon, 2013) as well as "harmonious" (Oxford dictionary: "Rapport", 2018). More critically, smooth and harmonious interactions are

descriptors of the coordination element of the Tripartite model of rapport (Tickle-Degnen & Rosenthal, 1990).

There have also been empirical investigations that directly test some of the theoretical links between mimicry and rapport I proposed above. Much of this has its roots in clinical psychology and examining the relationship between clients and therapist (Charney, 1966; Dabbs, 1969; Scheflen, 1964). Charney (1966) found that during a therapist session, the postures of client and therapist synchronized, and were more congruent at the end of the session than at the beginning. Furthermore, an increase in rapport between these two interaction partners was found (Maurer & Tindall, 1983) and suggested that mimicry and rapport are linked. In the case of two interaction partners, being in-sync is in line with Tickle-Degnen and Rosenthal (1987) when they describe coordination.

Lakens and Stel (2011) tested whether mimicry would lead to rapport. Participants rated rapport between two interaction partners in a video who were either waving with high synchronicity or low synchronicity (waving rhythm and same hand or opposite hand). Confederates waving with higher synchronicity were rated as having more rapport. In a second study, participants watched another movie clip with three boys walking in a courtyard. Participants were told, either that the boys were instructed to find a shared walking rhythm, or they were simply told to walk in the courtyard. Participants rated the movie clip higher in rapport when they were not told that the boys were instructed to find a shared walking rhythm and lower in rapport when participants thought the boys had received according instructions. In summary, Lakens and Stel found evidence for the hypothesis that synchrony in movement leads to higher ratings of rapport, additionally the mimicking group was seen more as a unit than groups where no mimicry occurred.

Stel and Vonk (2010) studied mimicry in social interactions by studying mimicry between two people discussing a video scene (happy vs sad) that just one of the interaction partners had seen. The one listening to the description of the video is instructed to either mimic or not mimic the facial expressions and behavioural expressions of the other person. They found that the interactions in which mimicry occurred were described as running smoother in general.

Further, mimicry can be a strategic communication tool helping to connect people by creating liking, affiliation and rapport (Lakin and Chartrand, 2003). Lakin and Chartrand studied whether unconscious behavioural mimicry can create affiliation and rapport. In a first experiment, they could show that having a goal to affiliate lead to an increase in mimicry. A second experiment showed that people who did not manage to affiliate during an interaction showed more mimicry than people who successfully build affiliation. Results of this study suggest that mimicry is used unconsciously, when interaction partners wish to create rapport. Stel and Vonk (2010, see study details described above) found that participants who were instructed to mimic each other in face-to-face interactions reported more positive feelings, such as feelings of being more in tune, and feeling a bond between each other than participants who were instructed to not mimic each other. Findings from both, Lakin and Chartrand (2003) and Stel and Vonk (2010) suggests that positivity is a direct outcome of mimicry and so should also increase in line with mimicry.

In summary, several studies showed that behavioural mimicry is higher in people with well-established rapport (La France, 1979; La France & Broadbent, 1976; Scheflen, 1964), and it seems to also work vice-versa: mimicry results in increased rapport (Chartand & Bargh, 1999; see Chartrand & Van Baaren, 1999 for an extensive review). Therefore, in contrast to the ideas proposed by Rosenthal & Tickle-Degnen (1987), what we have learned about mimicry suggests

that it is a behaviour that is likely to reflect all elements of the Tripartite model. Therefore, mimicry could be a plausible behavioural proxy for rapport. Mimicry might have helped and enabled us to communicate nonverbally. Soon this imitation might have become an automatic behaviour that developed into unconscious behavioural mimicry, which now aids the development of affiliation and rapport (Dijksterhuis, 2005; Lakin et al., 2003). Combined, this evidence suggests that mimicry is a strong candidate for a behavioural measure of rapport.

1.5 Aims and objectives of the thesis

Rapport ranks amongst one of the most often recommended and yet under researched interviewing techniques (e.g., Fisher & Geiselman, 1992; Abbe & Brandon 2013). Although, rapport is recommended by numerous interviewing models, and despite the assumption that these impact on rapport, the impact of interview style on rapport has rarely been tested directly. It is also not yet clear how rapport mediates interview outcomes. There has also never been a consideration of how rapport would be affected by repeated exposure to specific individuals and law enforcement in general. In a series of three studies, I wish to determine

1) If rapport differs depending on interview style as measured by self-report (psychological correlates of rapport) and mimicry (behavioural correlate of rapport), and if rapport once established, carries over to a second time point with the same interviewer;

2) If rapport transfers between members of an in-group once rapport is established.

3) Based on the results of studies 1 and 2, if rapport is enhanced by Information-gathering approach, or rather damaged by Accusatory-interrogation methods.

A second key aim of this thesis is to determine if mimicry can serve as an objectively rated behavioural measure of rapport. I test this as a secondary aim throughout all experimental chapters.

Thesis overview:

Chapter 3

- Police interviewers have several contact points with a suspect over the course of an investigation e.g., to follow up on new leads. Further, a police interviewer based in one area knows "their" criminals and are in contact over several crimes. In my first study, I explore how rapport is maintained over time by interviewing participants on two separate occasions.

Chapter 4

- As police work is teamwork, a suspect is in contact with more than one member of an investigative team. The first contact might be the arrest, the second the interview, and it might not be necessarily the same police officer at both contact points. Here, I test if rapport can be transferred from one interviewer to another. This means that if the first contact with the police was unpleasant or pleasant, does this affect the second interview with a different interviewer?

Chapter 5

- In study 1 and 2 (s. Chapter 3 and 4), I use interview style (information gathering vs accusatory) to indirectly manipulate rapport. The accusatory method should

hinder or block the development of rapport while the Information-gathering approach, also known as the rapport-based approach, should increase the probability to build rapport between the interaction partners. In this final study, I add a control group (neutral) to directly test this assumption.

Chapter 6

- In this chapter, I lead to a main discussion of my study and research results supplemented by meta-analyses of the main findings of my three studies. I present implications of my research while also addressing the limitations and showing potential for future research. I also address whether my studies suggest mimicry is a good proxy measure of rapport.

2 Methodology

In this chapter, I review methodological options that address the study aims and justify the choices made. Figure 2-1 gives an overview of the design used for studies in this thesis. Every study in this thesis uses a Procedure that consists of a Pre-interview, an Interview and a Post-interview stage (see Figure 2-1). In the Pre-interview stage, participants, who are taking part as a suspect, complete a task (mock crime, case vignette) to provide them with guilty knowledge. In the Interview stage, an interviewer (a trained research assistant or participant) asks a series of questions of the suspect about the events that happened during the Pre-interview stage. During the Interview phase, both the interviewer and the suspect are equipped with the motion capture suits that allow the measurement of their nonverbal mimicry. In the Post-interview phase, participants and the interviewer fill in questionnaires to give a detailed account of their subjective perceptions of the interaction and their interaction partner.

While the specifics of what exactly happens in each study described in detail in the respective study chapter (see Chapters 3, 4, and 5), the common elements are described and justified in the following sections.

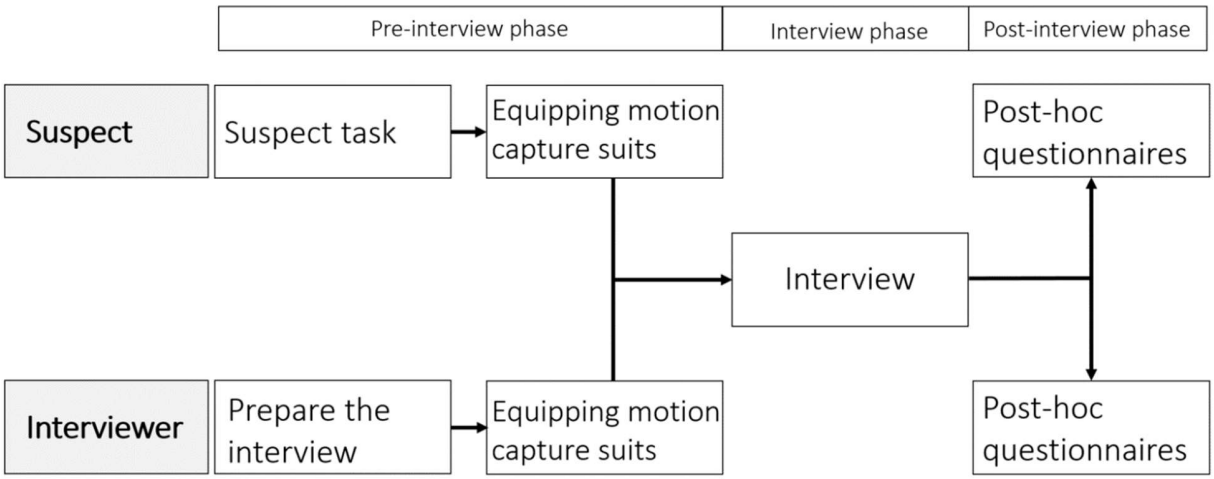

Figure 2-1. Study procedures.

2.1 Pre-interview phase

2.1.1 Suspect task

2.1.1.1 Guilty knowledge.

The studies in this thesis use either a deception induction task as a mock crime or case vignettes to provide participants with guilty knowledge. Participants were loaded with guilty knowledge to create a lab-based situation that is comparable to an investigative interview with guilty sources. This way, findings could support theoretical concerns in the applied context of the investigate interview. Comparable paradigms have been used over the years studying source behaviour in the investigative interviews in the lab with student samples (e.g., Brimbal et al., 2019; Collins, Lincoln, & Frank, 2002; Vallano & Schreiber Compo, 2011).

Table 2-1 gives an overview of paradigm used per study. Study 1 examined participants with guilty knowledge gained through the experience of doing something wrong (i.e., lying about a board game).

Table 2-1. Overview over experimental paradigms per study

Study	Paradigm	Specific Task
Study 1	Deception induction task	Board Game Task (Van der Zee, 2013)
Study 2	Mock Crime + Case vignette	Airport Task (Novel task)
Study 3	Case vignette	Military Base (Taylor, in preparation)

One issue with mock crime paradigms is that, much like genuine crimes, the researcher can never be entirely sure of the experience of the participant. This makes it impossible to be entirely certain about the accuracy or honesty of what is reported. As I wanted to not only study how much information a suspect disclosed during the interviews but also the amount of truthful information disclosed, I changed the procedure from a combination of both a case vignette and mock crime (Study 2) to a case vignette (Study 3). However, even here there is an issue with describing details as 'truthful'. False information may be provided deliberately but may also simply be an error on the part of the participant. Therefore, by truthful details, I will be referring to 'accurate details' which will be defined as details verifiably known to be true because they were specified in the provided vignette.

In summary, I initially used mock crime scenarios to maximise immersion for the participants and in the hope, this would maximise ecological validity because the participants have to actually engage in behaviour. I began using a case vignette in later studies because this gives maximum control of ground truth and accuracy because the experimenter knows exactly

what the truthful version of the story is, and which details are indeed truthful or fabricated/otherwise inaccurate.

Obtaining maximum confidence in the accuracy of elicited information is important for researching the relevance of rapport because eliciting greater information and greater accuracy of information is advocated as a key outcome of rapport building. Experimental research, unlike field studies, has the advantage that the experimenter can have greater control of what the genuine story is. Vignettes then provide even greater confidence in what the 'true' story was. In my studies, I value both disclosed information (i.e., the total amount of details the suspect provides), and in Study 2 and 3 truthful information (i.e., accurate details the suspect provides and are exactly as mentioned in the case vignette) as a robust test of the value of rapport building to interview outcomes.

In order to show that any identified effects are robust across paradigms and are not an artefact of a specific set up, I design my studies as conceptual replications (see Table 2-1). Contrary to an exact replication that attempts to replicate a study as closely as possible to the original (or here first) study, conceptual replications test the same theoretical concepts by changing the methods used in the original study to some degree. Crandall and Sherman (2016) describe in their paper the clear benefits of conceptual replications compared to direct replications. While a "successful" exact replication can increase confidence in the original study's method, claims about the theoretical reach are unaffected and our confidence in the theory can just be slightly improved. Contrary, when a conceptual replication is "successful", this finding does indeed enhance confidence in a theory's reach, additionally supports theoretical findings of the original study and we gain confidence in the methods of both the original and conceptually replicated study. There are also advantages in using conceptual replications even

when the replication “fails”: If the exact replication “fails”, one can doubt the methods of the original study, and the confidence for the theory decreases. If the conceptual replication “fails”, it leads to a decrease of confidence in the theory, and alternative interpretations for the original studies should be considered. By designing the studies as conceptual replications, I am still able to compare findings across studies, as I use similar methods. For example, in all studies the main task of the participant is to withhold information from an interviewer. However, by varying the exact task I show that my findings generalize across different experimental paradigms and as such are robust. This is important, because there is so far very limited evidence that effects that are robust to direct replication are less robust to conceptual replication. In other words, it is probably not the case that effects that fail to replicate across studies do so because differences between studies (often called “hidden moderators”) determine whether an effect is or is not present (Sherman & Pashler, 2019; Zwaan, Lucas & Donnellan, 2018). Finally, I also perform a meta-analysis in the General Discussion (see Chapter 6, p. 158 ff.), in order to capture the amount of heterogeneity in effect size estimates that can be attributed to difference across my studies.

2.1.1.2 Ecological validity.

One potential limitation of the paradigms chosen for this thesis is the extent of ecological validity. There are at least three limitations. First, not having real police interviewers to conduct interviews but (usually student or employees from Lancaster University) participants or research assistants who are provided with limited training before the study. Yet, the ideal approach here is to use police officers as my interviewers. However, it was not practical to recruit police officers as interviewers in my study. Second, mock crimes cannot fully represent actions of real or

serious crimes. I.e., while a mock crime might 'represent' a serious crime (e.g., stealing a wallet) the environment is artificial and the risks of engaging in a crime outside the laboratory cannot be replicated. I.e. one does not know how a member of the public might respond if they observe a theft and a violent response is plausible, but in the laboratory, participants are unlikely to consider that they might come to physical harm while engaging in a 'crime'. Third, the stakes of the interview encounter are also low. That is, there are no real consequences depending on the interview outcome for the participant. The consequences of engaging in criminality cannot be represented because it would be unethical (and impractical) to threaten participants with serious consequences of their actions.

2.1.2 Measurement of mimicry

One aim of this thesis is to test whether mimicry can serve as a viable proxy measure of rapport. There are different ways to measure mimicry. One way is to code mimicry between dyads, with trained judges examining moment-by-moment video data (e.g., Bernieri, 1996; Grahe & Bernieri, 1999; Stel & Vonk, 2010). The advantage of human coders is that they are able to interpret behaviours within the 'context' that they occur. For example, a head turn may not necessary be mimicry but both interaction partners reacting to a noise. However, what a coder can see of the mimicry that is occurring is dependent on the camera viewpoint as the camera is usually held in place during the recording. When a camera is looking 'side on', for example, it becomes more difficult to identify mimicry of limb movements obscured by the limb closest to the camera. Further, there is no agreed framework for how mimicry can or should be coded (e.g., Bernieri, 1996, Stel et al., 2010). I.e., replication of existing studies impossible

because it is not clear exactly if we are comparing the same thing when we compare papers that measure mimicry because the details of coding schemes are rarely revealed (e.g., Sharpe, 1997).

A second concern is the time required to manually code mimicry. It is a slow and imprecise process (see above for the limitations due to the camera angle). If mimicry is to be used as a measure of rapport, especially in applied settings, then measurement needs to be fast and reliable. Another way to measure mimicry is to use movement-tracking technologies. There is technology that is available to code human behaviour from existing video data (Poppe, 2007) which again, is camera viewpoint dependent. Alternatively, technology can be used to measure body motion directly from the person wearing it via sensors. These sensors allow the recording directly on the body independent from the location of the camera (e.g., Kleinsmith et al., 2011). Importantly, using these technologies would allow for rapid measurement, because coding of mimicry can be made to be automatic. Therefore, I measured mimicry using body worn sensors. However, one might argue whether the extra measurement accuracy one achieves by applying motion-tracking sensors directly to both the interviewer and the suspect is worth the practical barrier of applying sensors and how they might feel from the perspective of the suspect. Yet, at this stage accuracy is more critical than application in the field. For now, we need to know if mimicry can serve as a measure of rapport at all. So, I will begin with a maximally accurate tool so I can be sure if mimicry can possibly serve as a measure of rapport.

2.1.3 XSens Motion Capture Suits

Specifically, the specific body worn motion capture system I used was I use the XSens MVN motion tracking suits (MTw Awinda). XSens MVN measures body movement with high precision (120 times/sec) and are thus able to detect even small changes in behaviour. The choice

of MVN over other available systems was mostly practical. The system was already available and would not require the procurement of a novel system. Additionally, there is already code available for assessing mimicry using this system (Poppe, Van der Zee, Heylen, & Taylor, 2014), and so it would not be necessary to develop an entirely new method for measuring mimicry.

The XSens MVN system uses 17[5] motion trackers that are positioned on the body to ensure a precise measurement of movement during recording. Figure 2-3 (left) shows the location of the trackers on the head, sternum, pelvis (on the back), and on the left and right side: shoulders (on the back), upper arms, lower arms, hands, upper legs, lower legs and feet. The motion trackers are lightweight, matchbox sized, and they are secured with a tight-fitting T-shirt and Velcro straps.

The trackers interact wirelessly with the software MVN Studio (version 4.3), which I used to record motion capture for all studies. After equipping participants in the suits and before recording, the suits need to be calibrated so the corresponding software knows where the motion trackers are and can replicate the image on screen (see Figure 2-3, right). For calibration in MVN Studio 4.3, it was necessary to ask participants wearing the suit to either stand in a T-pose or N-pose for approximately 10 seconds.

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[5] There are 18 trackers available in total while tracker 18 is used for probes, e.g. swords. However, I abstained from using weapons during the interviews.

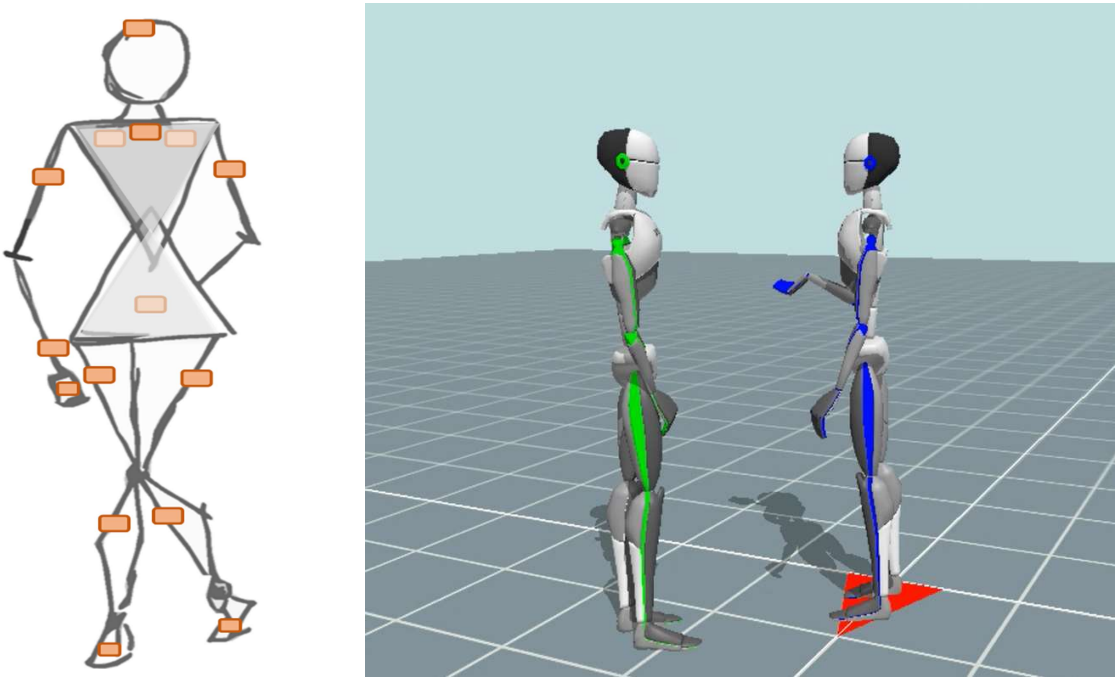

Figure 2-2. Left: MVN Awinda 17 motion tracker on body (lightly coloured the back), Right: Avatars on screen.

2.1.3.1 Processing the data

After data collection, the motion capture data needs to be processed and prepared for data analyses. To achieve this, the two recordings, interviewer data and the suspect data, were transformed from an mvn-file to an mvnx-file as only the mvnx-file can be opened in third party software for post recording processing (here, Microsoft Excel). This was necessary because the mvnx-files need to be aligned to the same lengths so that they have the same start and end time. This is important because the process by which the mimicry is calculated (AMAB, see below) assumes an interaction of an equal length for both participants. Participants do of course interact for the same period of time, but there are sometimes differences in lag in the initiation and ending of recordings for each suit which produces interactions of slightly different lengths for each participant. Therefore, this noise needs to be removed prior to analysis. To align the motion

capture data to the same lengths I used PERL code provided by Paul Taylor (see Appendix A '8.1 Perl Code' for the script).

To obtain mimicry scores from the recording, I use the AMAB method (Poppe, et al., 2014) using MatLab codes provided with (Poppe et al., 2014). The full details of the AMAB method are provided by Poppe et al. (2014). However, for clarity I will provide an overview of the phases used to obtain mimicry scores from the motion capture recordings:

1) Standardise start and end point so both partners are engaged in an interaction of equal length (see Appendix A '8.1 Perl Code').
2) Down sample the data from 60 frame per second to 5 frames per second to make processing less burdensome with minimal loss of accuracy (Van der Zee, 2013).

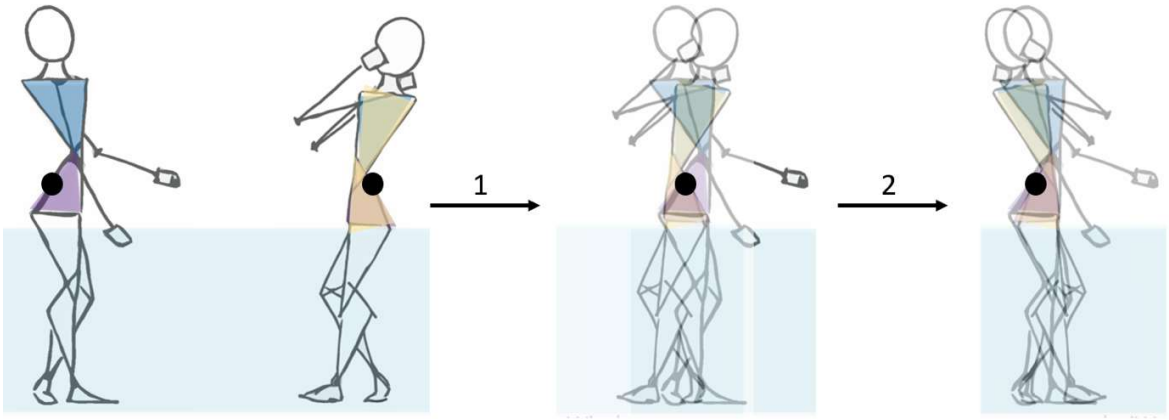

Figure 2-3. (1) Position normalization and (2) orientation normalization according to the AMAB method

3) Normalize the position of the body data i.e., as shown in Figure 2-4 (1) first the body data is matched at the pelvis, and secondly, one body data will be turned by 180 degrees so that all body movements by both parties are matched in the same direction (see Figure 2-4 (2)). Therefore, if the poses of the two bodies were identical, the summed score is zero. The higher the difference between the two body poses, the

higher the score. However, mimicry is not a snapshot but a dynamic process. As mimicry occurs over a short period of time of up to 10 seconds (Chartrand & Lakin, 2013; Stel et al., 2009), mimicry needs to be analysed across time. To obtain mimicry scores that represent the dynamic state of human interaction, a technique called Dynamic Time Warping (DTW, Rabiner & Juang, 1993[6]) is used (see next phase: phase 4).

4) DTW is used to obtain an alignment of body movement across time. DTW is necessary because the onset of behavioural mimicry differs between the interviewer and the suspect for each movement that is mimicked (i.e. one movement may be mimicked with a delay of only one second, while the next instance of mimicry may have a delay of three seconds). DTW accounts for these differences by calculating the best fit of body posture alignment across time. I.e., an algorithm both stretches and compresses the recorded motion data for each participant separately to create two paths through the movement data where body positions are optimally similar between the two participants (Van der Zee, 2013). This might mean, for example, that when Participant 1 moves and arm, and three second later, Participant 2 moves the same arm, the timeline of movements for Participant 1 is stretched and the movement of Participant 2 is compressed so that the movements occur at approximately the same time. This therefore applies a control for individual differences in mimicry response time as well as within-individual fluctuation in response time. This way, mimicry

[6] The DTW package can be found here: https://dynamictimewarping.github.io/

scores consist of two components: how similar body motions were at a certain time point but also across time. To align the two data streams from Person A and Person B, a step pattern is used that determines the appropriate alignment steps. The choice of step pattern is defined by the amount of compression and expression. Therefore, which step pattern to choose relies on which application is used, the type of data and the frame rate of the data. Based on Van der Zee (2013) who used the same algorithm to obtain mimicry scores from XSens motion capture suits, I also use the step pattern 6C (Rabiner & Juang, 1993) which is normalized and unbiased, to align the body motion data streams. For instance, if we obtain data with a 10 second duration from Person A, that can now be matched to person B with a minimum duration of 6.7 seconds and a maximum of 15 seconds. It is important to note, that both data streams have to end and start at the same time (adjustments here were made in phase 1). The result is one mimicry score per interview pair per limb. To obtain the overall mimicry score, the algorithm computes an overall average across all body limbs. Therefore, no movements contribute more or less to the score than others, and no limb or pair of limbs is given priority. This way this mimicry score captures slight body sway as well as e.g., Person A touches nose and Person B touches nose, as long as these movements are within the time frame described in phase 4 (see above).The more congruent one interaction partner's body movement is with the other, the lower the mimicry value obtained. This means that "perfect" mimicry would result in a value of zero. For analyses, the mimicry scores are reversed in order to create intuitive comprehensibility: high scores represent high mimicry. The range [0: 100] and norms

of the mimicry computational output are presented in Appendix A (see '8.17 Histogram: Mimicry').

To summarise via an analogy, mimicry was measured as the congruence of movement of the two interaction partners. With each interaction, we record two 'shadows'. To obtain the mimicry score, we put the two shadows on top of each other facing in the same and then calculated mimicry as follows: the congruent area of the shadow is mimicry, and the remaining area of the shadow is the movement that did not overlap and therefore does not count into the mimicry score. As mimicry is part of movement and these movements are likely to be variable both within-and between individuals, dynamic time warping (DTW, Rabiner & Juang, 1993) is used to obtain a best fit of mimicry over time. The more congruent the two shadows are, the more overlap there is, and raw mimicry values are close to zero.

To create a more intuitive measure of mimicry whereby more mimicry is represented by higher values, and positive relationships with other variables are represented by positive correlations, I subtracted all mimicry scores obtained from 100[7]. This would mean that, for example, if rapport and mimicry both increased under the same conditions, this would be represented by a positive correlation coefficient.

2.1.4 Overcoming the challenges of using Motion Capture Suits

The accuracy of using motion capture suits is usually high as they record the body movement with high precision (120 times/sec before down sampling). However, the

[7] The mimicry score obtained after processing the data.

disadvantage of operating the motion trackers with magnets and transmitting the signal to the computer via radio signal is that they are prone to distortion by other technical equipment using radio signals (e.g., mobile phones, or another suit) and the presence of metal. Metal was easy to avoid whilst testing, but consequently limited lab space and equipment. For example, participants filling in questionnaires on a laptop would require re-calibration of the suits before the next recording, as well as when participants sat down (especially at a table with a metal frame), stood up again, or leaned against a wall. By doing so sensors could shift and the correct representation within the software could not be maintained.

Further, another challenge is working with more than one suite. For example, the whole suit fails to record when one motion tracker loses connection with the computer. Record failures can happen when motion trackers enter sleep mode because they have not moved. Unfortunately, this can happen during recording if someone does not move a particular limb/body part for some time. Another challenge is to then reactivate that suit without interrupting the connection of the still connected suit and keep the flow of the experiment, especially the investigative interview element, going. To minimize the impact of this I made sure that one suit was already connected (interviewer) and the second suit (suspect) added only at the moment before the interview began.

2.1.5 Validity and Reliability of Motion Capture Suits

As discussed in Chapter 1, Tickle-Degnen and Rosenthal (1990) propose nonverbal correlates as a measure of rapport. Further, empirical studies found a link between mimicry and rapport. For example, behavioural mimicry is higher in people with well-established rapport (La France, 1979; La France & Broadbent, 1976; Scheflen, 1964), and vice-versa: mimicry results in increased rapport (Chartand & Bargh, 1999; see Chartrand & Van Baaren, 1999 for an extensive

review). Therefore, I proposed mimicry as a plausible measure of rapport. However, the psychometric properties of any new measure much be established.

To test mimicry as a measure for rapport, construct validity is tested by checking mimicry scores against traditional measures of rapport (self-report questionnaires). This way it is tested if mimicry is associated with established measures of rapport. However, as discussed in Chapter 1 there is a concern that self-reports may be biased by interaction outcome, which limits their own validity (see also section '2.3.1 Post-hoc questionnaires'). Therefore, I also test to determine if mimicry is affected in the same way as rapport by my experimental manipulations. I.e. if mimicry is a measure of rapport, and rapport is higher in the Information-gathering rather than Accusatory-interrogation condition, then mimicry should also be higher in the Information-gathering condition.

In addition to construct validity, there is also the issue of content validity. While I might find that mimicry correlates with self-reports of rapport, unlike self-reports I cannot achieve content validity because mimicry captures only one behaviour said to be associated with rapport. This is the reason why mimicry can only serve as a proxy measure of rapport at most. That is, because while my measure of mimicry is a measure of a behaviour expected to be strongly associated with rapport, I am making no claim that mimicry is directly measuring rapport. This is, because while I expect mimicry to change depending on rapport, mimicry has also been shown to be affected by other factors that could be relevant in the interview setting (e.g., identifying as an in-group or the goal to affiliate). Similarly, even in the absence of mimicry there may be different indicators of rapport present, because there are also individual differences in the extent to which people mimic (Hale & Hamilton, 2016). Nonetheless, I expect, on average, mimicry to be positively correlated with rapport.

2.2 Interview phase

The core element of all studies within this thesis is the interview. Here the participant, acting as the suspect, meets the interviewer who either is a paid (Study 1) or volunteer (Study 2) research assistant, or a participant (Study 3) (see Table 2-2 for an overview). Interviews were not restricted in time but followed a standardized script. This was to ensure that the information provided by the suspect could be compared across interviews.

Both the suspect and the interviewer are equipped with motion capture suits and they faced each other, standing. I chose a standing position 1) to not limit mimicry to seated positions (I.e. making the legs invisible); 2) the trackers are sensitive to metal, and most chairs and tables have a metal frame which would reduce the accuracy of recordings; and 3) in a sitting position it is more likely a tracker dislodges from the participant or a tracker shifts position (I found that in pilot testing it was possible to dislodge the trackers, for example when crossing legs).

Having the interview partners standing also allows for the detection of body sway. A pilot study by Swayden et al. (2012) explored the effects of sitting vs. standing. They found that sitting had a significant positive influence on patient's compliance and satisfaction, and further rapport between the provider and the patient. These study results could suggest that having participants stand may decrease the overall level of rapport, but since my research concerns relative levels across experimental conditions, this effect should be consistent and not impact on any of my conclusions.

The interview questions used in each study followed a funnel structure: starting open-ended and becoming more specific and closed. For example, starting with "Please tell me everything that has happened during xyz" and ending with "Are there any items in your bag that you need to declare?". This approach was taken to ensure the interviewer gave the opportunity

for suspects to provide details voluntarily before pressing for more specific details. This funnelling structure is standard interview procedure (Hartwig, Granhag, Strömwall, & Kronkvist, 2006; Hartwig, Granhag & Luke, 2014). The interviewer had at least ten minutes to prepare for the interview. Although, they were presented with a script and knew they would be able to read the questions during the interview, I asked them to try to keep the interview conversational. Therefore, the interviewer practiced the interview by reading it aloud a few times to familiarize themselves with the structure. The interviewers could highlight certain passages and change the wording to a minimum extent (i.e., to make it feel more natural to them but without affecting the specificity or target of the question). Further, the interviewer was instructed to speak in a calm manner and not to raise their voice or use other techniques of intimidation (leaning forwards, staring the interviewee in the eyes, using angry facial expressions, knocking the hand on the desk). To keep the interviewer's hands free to not hinder their movement and the development of mimicry between the suspect and the interviewer, the interview script was presented in a music stand so that only the interviewer could see the questions. The music stand was positioned to the side, so that the music stand would not create a barrier between the interviewer and the suspect to not hinder the development of rapport (e.g., Collins et al. (2002) used a book as a barrier between the interviewer and the interviewee to try to reduce rapport in their study).

I compared rapport between the Information-gathering approach and the Accusatory-interrogation method (s. Chapter 1 "Rapport in the Investigative Interview"). The interviewer either introduced the interview by accusing the suspect of committing a crime and offering justifications for the crime while minimizing and maximizing the offense (Accusatory-interrogation method), or by being respectful and engaged with the suspect and making the goal of the interview transparent (Information-gathering approach). Table 2-2 provides an overview

on the type of introductions used in each study, and I describe the manipulation in more detail in the next section.

Table 2-2. Interviewer per study and use of interview introduction

Study	Interviewer	Introduction
1	Casual research assistant (paid)	Information-gathering approach vs. Accusatory-interrogation method
2	Student helpers (volunteer)	Information-gathering approach vs. Accusatory-interrogation method
3	Participant	Information-gathering approach vs. Accusatory-interrogation method vs. Control (no introduction)

2.2.1 Interview manipulation

Time and ethical concerns limit the possibility to recreate a full Accusatory-interrogation method or an Information-gathering approach. For example, with the Accusatory-interrogation method, there are ethical concerns about using manipulative and coercive strategies on students taking part in the study. Clearly, it would not be possible (or desirable) to create the sense of futility the Reid technique tries to generate in order to extract a confession within the lab on volunteer participants. Further, both the Information-gathering approach and Accusatory-interrogation method posed a temporal challenge as both require significant time to prepare and execute.

As a solution for time and ethical concerns, I limit the interview manipulation to the start of the interview. The interview styles are contrasting (being accusatory or being information gathering), and the introduction sets the scene for the interview and presents the interview style and is the most important phase for establishing rapport in the Information-gathering approach (Walsh & Bull, 2010).

Using only an introduction as the interview manipulation enabled the interview questions to be kept the same for both interview styles. Keeping the questions consistent across interview style allowed the study to focus on the manipulation of rapport, thereby, reducing the possibility that any differences in information provision are due to the differing effectiveness of follow questions rather than rapport. Similarly, when using accusatory methods, the interviewer would normally shut down any denials or objections the suspect makes (e.g., Inbau et al., 2013). However, shutting down a participant's answer would artificially reduce the number of details provided, because suspects have no opportunity to provide them, so I did not enact this element of the Reid Technique. Focusing on an initial introduction made it reasonable to use the same question funnelling for both interview styles. This enabled direct comparison between the interviewing styles. I.e., I could show interview style rather than question type influences the level of rapport, and then that rapport indeed does positively correlates with disclosed information.

For similar reasons I avoided the use of leading and closed questions. Leading questions are questions that imply the answer the interviewer would like to hear ("And then you broke the window open with a stone?"). Leading questions would create a straw man to my research as they lead to distortion and impairment of memory (Loftus & Zanni, 1975 as cited in Loftus, 1975, p. 562; Loftus, 1975) and lower the accuracy of witness accounts (Weinberg, Wadsworth, & Baron, 1983). Leading questions also decrease the suspect's ability to disclose accurate details and a complete account (Vrij, Hope, & Fisher, 2014). I am interested only in the effect of interview style and rapport on information provision and so wish to avoid introducing this potential confound. Closed questions are questions that can be answered with very few words ("How tall was the man?", "What colour was the car?") and naturally, a suspect would provide

less information here than when asked open-ended questions. Therefore, the extent to which questions are open or closed need to be equivalent in order to attribute differences in information provision to interview style and rapport.

As mentioned above, rapport is not directly manipulated in this thesis but rather the two contrasting interview styles (Information-gathering approach vs. Accusatory-interrogation method) should influence rapport based on the findings by Holmberg and Madsen (2014) and Vanderhallen, Vervaeke and Holmberg (2011). As mentioned previously. Manipulating rapport via the interview style has several advantages: 1) my manipulation does not interfere with mimicry as a behavioural measure in the same way that manipulating rapport with behavioural cues such as an open vs closed body posture or smiling would; 2) the manipulation can be strictly controlled whereas in order to appear natural a behavioural manipulation would need to be adapted to each interview and interviewee. Therefore, some interviews may have multiple "rapport builders" while others have required only one; 3) a manipulation of rapport via interview style allows us to compare interview styles that are used in the field which maximises the relevance of this research to practice (I.e., Information-gathering approaches based on the PEACE-model and the Accusatory-interrogation method based on the Reid technique (Inbau at al., 2001; 2013) as discussed previously), and finally; 4) manipulating only the interpersonal style of interviews means that this research can directly test the effect of interpersonal style on rapport and information provision from suspects. Often these effects are confounded in rapport research with other differences between interview styles such as the use of open vs closed question types (Vallano and Schreiber Compo, 2015). To ensure that the interview styles impact upon rapport, the 'Rapport Scale for interrogations and investigative interviews' (RSi3, Duke, 2016) is used to measure the amount of rapport experienced by the suspect and the interviewer.

The RSi3 is a validated scale that has been shown to measure rapport. Duke et al. (2018) could show construct validity of the RS3i by demonstrating convergent and discriminant validity between rapport and other constructs, including trust. Therefore while manipulating interview style is likely to affect other variables too (e.g. stress and trust) the use of a validated scale allows me to be confident that I am measuring the construct I claim to measure (here: rapport) and not other variables that may be correlated with rapport that are also impacted by interview styles.

For the full interview scripts please refer to Appendix A '8.4 Interview script: Study 1', '8.9 Interview script: Study 2' and '8.13 Interview script: Study 3'.

2.2.1.1 Introduction to the Accusatory-interrogation method

For the Accusatory-interrogation method I focus on confronting the suspect with their guilt, minimizing and maximizing the crime, and offering justifications for the committed crime. Table 2-3 lists the methods according to the Reid manual (Inbau et al., 2001, 2013) that were used to create an Accusatory-interrogation method.

Table 2-3. The Accusatory-interrogation method

Methods to create an Accusatory-interrogation method	Example from the interview script for Study 3
Presentation of false evidence	"I [interviewer] talked to other drivers"
Confrontation with guilt	"I [interviewer] am certain that you know something about smuggling stolen equipment." / "you smuggled"
Offering a moral justification	"you were just trying to help a friend" / "most people would have done the same"
Minimize the accused crime	"missing equipment (…) would not cause any bother"

2.2.1.2 Introduction to the Information-gathering approach

For the Information-gathering approach I focused on phase 2 'Engage and Explain' of the PEACE model. The interviewer explained the reason and goal for the interview, laid the ground rules for the interaction, e.g., no interruptions on both sides, and generally stated that the purpose of the interview is to gather as much information as possible without accusing or pressuring the suspect. Table 2-4 lists the methods according to the PEACE manual that were used to create an Information-gathering approach.

Table 2-4. The Information-gathering approach

Methods to create an Information-gathering approach	Example from the interview script for Study 3
Interviewer is interested in the full account of what happened	"The main purpose here is to get as much information as possible. So, it is important that you tell me everything in as much detail as possible without leaving things out."
Transparency	"go over some ground rules for today"
The interviewer does not interrupt the suspect's statement	"I'm not going to interrupt you"

2.3 Post-interview phase

2.3.1 Post-hoc questionnaires

2.3.1.1 Self-report questionnaires

Self-report questionnaires are a popular choice as they enable the researcher to quickly and cost efficiently collect data. A disadvantage of using self-report questionnaires is that participants might not give truthful answers but answers that are considered socially acceptable (social desirability bias, e.g. see Fleming, 2012). For example, the suspect is rating the

interviewer who they can see in the next room through the open door. Suspects might be hesitant to give a member of their peer group an honest rating even if they did not get on with them in order to appear virtuous themselves.

The validity and reliability of self-report questionnaires can further be jeopardized by response bias. I.e., the participant follows particular response patters regardless of the specific questions. For example, the acquiescent response bias makes it more likely that participants answer “yes”, and the non-acquiescent bias makes the answer “no” more likely. Further, responses in self-report questionnaires are dependent on the interpretation of the question by the participant (Demetriou, Ozer & Essau, 2015). Considering that there is no clear definition of rapport and its concepts, there is a risk that a well thought through formulation of a question with the researchers’ conception of rapport is not understood in the same way by the participant. I am not aware of any rapport scales that have been developed while checking for these differences in interpretation within scale items, for example by employing think aloud procedures (Willis, 2004). Further, with so little consensus on a clear definition of rapport, it is hard to expect that there is likely to be significant convergence among measures (Goudy & Potter, 1975).

2.3.1.2 Self-reporting questionnaires for perceived rapport.

Recently, researchers have tried to develop rapport measures appropriate for use in genuine investigative interviews. However, many are not validated or do not measure rapport itself but its correlates such as empathy and liking. Further, some measures lack a detailed description and therefore transparency. For example, Brimbal at el. (2019) used an 8-item rapport scale to measure the participant's perception of the interviewer. However, their entire description of this scale was "Our perceived rapport measure was an average of eight items related to the

participants' perceptions of the interviewer (i.e., empathetic, helpful, patient, sought common ground, positive, fair, respectful, liked; $\alpha = .87$), with higher scores indicating greater perceived rapport." (Brimbal at el., 2019, p. 111). This means that the reader does not know exactly how these constructs were related to rapport, what the anchor points were for these items, and without looking at the table could not even know how many points are on their measurement scale. Collins, Lincoln, and Frank (2002) asked participants for a one-sentence statement describing their relationship with the interviewer, and then used two independent raters who rated rapport on 5-interval categories from (1) "definitely had no rapport" to (5) "definitely had rapport". The rapport ratings were otherwise not further defined making it impossible to know what was meant by rapport or how participants were interpreting the question.

However, there are reliable and valid measures that may be appropriate or deliberately designed to research rapport in the context of law enforcement and the investigative interview. The most popular scales are the Interaction Questionnaire (Vallano & Schreiber Compo, 2011), the Rapport Questionnaire (Bernieri & Gillis, 2001; Bernieri, 2005), the Working Alliance Inventory (Hovarth & Greenburg, 1989), and the RS3i - Rapport Scales for Investigative Interviews and Interrogations (Duke, Wood, Bollin, Scullin, & LaBianca, 2018).

The Interaction Questionnaire (IQ) (Vallano & Schreiber Compo, 2011) consists of two subscales, which measure rapport characteristics within an interaction. There is limited psychometric information available for any of the three versions of the IQ, and factor structures and reliability have not been presented. Further, there is no information about the construct validity available. The IQ has also undergone various changes by adding or removing scale items and it is uncertain whether the psychometric properties of one version can be transferred to

others (e.g., Vallano et al., 2011 removed 11 items from the IQ Interaction scale but just justified the removal for only one of these items but not for the remaining 10).

The Rapport questionnaire is a 27-item scale to measure rapport (Bernieri, 1991). Items included in the Rapport questionnaire are amongst others 'Enjoyment', 'Excitement', 'Liked partner', 'Dominant' and 'Happy'. Internal reliability of the Rapport questionnaire was found to be $\alpha = .88$ (i.e., very good, (Bronstein et al., 2012). However, this scale is not specific to interviewing and it is not clear that all items would be appropriate for this setting. For example, 'happy' and 'enjoyment' are unlikely descriptions for interaction partners within an interview even if there is good rapport.

The Working Alliance Inventory (WAI) consists of 36 self-report items and was designed to measure the level of working alliance between a counsellor and a client (Hovarth & Greenburg, 1989). The WAI has been used to measure rapport as some researchers have suggested that working alliance is closely related to rapport and can be applied to the investigative interview (Vanderhallen, Vervaeke, and Holmberg, 2011; Tickle-Degnen, 2002). Vanderhallen et al. (2011) developed a 20-item version of the WAI that was adapted to fit into the context of investigate interviews. The internal reliability of this version was very good (α =.90). Construct validity was overall good, Vanderhallen et al. (2011) stated positive correlations of their version of the WAI and empathy measures *(r* = .68), clarity of the interview (*r* =.59), the humanitarian interview style (*r* =.69) and feelings of respect (*r* =.62). However, while the Dutch version was adapted to the investigative interview an English version has not yet been tested for validity or reliability.

2.3.1.3 A Rapport scale for interrogations and Investigative Interviews: RS3i.

Of the discussed rapport scales, only Vanderhallen's (2011) was developed for use in investigative interviews, and this was not yet validated in English. Therefore, I decided to use another scale developed specifically for use in investigative interviews: The Rapport scales for Interrogations and Investigative Interviews 'RS3i' (Duke et al., 2018).

The RS3i is based on the Tripartite model of rapport, and therefore its items fit the three-component structure that is the foundation for the conception of rapport used in this thesis. The RS3i is a 21-item multi-scale instrument designed to measure rapport in investigative interviews. The RS3i subscales measure the extent to which an interviewee has positive perceptions of the interviewer, how at ease the communication between the interaction partners is, and if the interviewee is motivated to cooperate with the interviewer (Duke et al., 2018). There is a source version (interviewee version), interviewer version and an observer version available. The difference between the source and the observer version is the change from first person pronouns in the source-version and third person pronouns in the observer version.

2.3.1.3.1 The source version.

In this thesis, I used the prototype versions of the RS3i-Source for data collection. The prototype RS3i-Source version was developed as part of a PhD thesis (Duke, 2013), and consists of 63 items categorized into 11 scales: 1. Warmth/Agreeableness, 2. General Trustworthiness, 3. Respectful Communication, 4. Professional Expertise, 5. Professional Dedication, 6. Deep Respect, 7. Trustworthiness Toward Suspect, 8. Cultural Similarity, 9. Similarity as Individuals, 10. Connected Flow, and 11. Commitment to Communication

However, by the time my studies were completed, a final version of the RS3i was developed and published. Therefore, for the analyses I used the updated version of the RSi3 (Duke et al., 2018) which was after validation and reliability checks was reduced to five sub-scales: 1. Trust/ Respect (4 items), 2. Expertise (4 items), 3. Attentiveness (4 items), 4. Cultural similarity (3 items), 5. Connected Flow (3 items), and 6. Commitment to Communication (3 items). Items are rated on a 5-point Likert Scale ranging from “Strongly Disagree” to “Strongly Agree”.

The Trust/ Respect scale measures the suspect’s positive perceptions if the interviewer, moreover if the interviewer treated the suspect with respect, and is in general a trustworthy person outside and inside the interview situation. The Expertise scale gives an indication of how competent the suspect judges the interviewer to conduct an interview. The Attentiveness scale measures the extent to which the suspect perceives the interviewer as being an active listener and interested in their statement. Cultural Similarity measures how similar the suspect and the interviewer are in terms of culture. The Connected Flow scale measures the flow and ease of the conversation while working towards the goals of the interview. The Commitment to Communication scale measures how motivated the suspect was to cooperate during the interview. Therefore, the Commitment to Communication scale is not intended to measure rapport rather the result of good rapport: the suspect’s willingness to cooperate.

Duke et al. (2018) reported adequate to good internal reliability for all scales: 1. Trust/ Respect ($\alpha = .78$), 2. Expertise ($\alpha = .75$), 3. Attentiveness ($\alpha = .82$), 4. Cultural similarity ($\alpha = .77$), 5. Connected Flow ($\alpha = .74$), and 6. Commitment to Communication ($\alpha = .74$). Overall, most scales showed good construct validity, as shown by testing convergent and discriminant validity. The RS3i scales show acceptable (Streiner, 2003) and good (Hunsley & Mash, 2008)

reliability: 1. Trust/ Respect (α = .78), 2. Expertise (α = .75), 3. Attentiveness (α = .82), 4. Cultural similarity (α = .77), 5. Connected Flow (α = .74), and 6. Commitment to Communication (α = .74).

As I manipulate rapport in this thesis via the 'interview style' (Information-gathering approach vs Accusatory-interrogation method, see e.g. '1.2 Rapport in the investigative interview' and '2.2.1 Interview manipulation'), a threat to this research is that interview style affects variables other than rapport, and that these variables could potentially affect information disclosure rather than rapport. Therefore, it is critical to use a valid measure of rapport that is able to discriminate between rapport and other related variables. To test whether rapport was successfully manipulated by the different interview styles I use the RS3i (Duke et al., 2018). The RS3i includes a scale to measure "Trust and Respect". This subscale was specifically shown to have high discriminant validity over other measures and so shows that these items are capturing rapport and the extent it overlaps with trust (Duke et al., 2018). Using a scale validated specifically for use in investigative interviews offers good validity for my measure of rapport and provides confidence that untested hidden variables are explaining my results. Moreover, the scale directly accounts for interrelations with variables that could confound the relationship between rapport and information provision, e.g. trust.

2.3.1.3.2 The interviewer version.

I used the interviewer version of the SR3i (Duke, 2013) to measure how interviewers perceived their level of rapport with the suspect. The Interviewer version consists of 11 sub-scales: 1. Warmth/ Agreeableness (1 item), 2. General Trustworthiness (1 item), 3. Respectful Communication (1 item), 4. Professional Expertise (1 item), 5. Professional Dedication (1 item),

6. Deep Respect (1 item), 7. Trustworthiness Toward Suspect (1 item), 8. Cultural Similarity (1 item), 9. Similarity as Individuals (1 item), 10. Interpersonal Connection (7 items) and 11. Commitment to Communication (4 items).

Validity and reliability are not provided for the interviewer version of the scale, nonetheless because no other scale that is validated for use in investigative interviews could be identified, and for consistency with the source-version of the scale, I proceeded to use the interviewer version of the SR3i. I provided Cronbach's α for my studies (see Chapter 3 – 5).

2.3.2 Information disclosed during the investigative interview

The investigative interview is a critical element of many investigations. Information obtained from the interview is important to develop and further investigative leads and to prevent, intervene or solve a crime. A police investigation needs to follow best practice in order to maximize the probability of getting correct, accurate and complete information. Rapport based methods are advocated along two main strands of argument. The first that they are more ethical and lead to fewer false confessions and the second that they are more effective, with effectiveness normally defined in reference to the amount of information provided (See Chapter 1). Therefore, a critical dependent variable in my studies is the amount of information provided by suspects depending upon the interview style used and the amount of rapport that was developed.

2.3.2.1 Coding disclosed information

To test which interview style leads to more disclosed information, I counted disclosed information by suspects during the interview. To code information provided by the suspect, I

based my coding scheme on the Interview Yield Assessment (IYA; Alison et al., 2013) which is a recording tool to measure the amount of information that was provided by the suspect. There are three IYA scales that measure disclosed information regarding the Capability, Opportunity, and Motive of the crime. Finally, a fourth IYA scale, called PLAT (People, Location, Action, Temporal) codes the amount of disclosed information about the people, location, actions and timing of the activities in question.

For my coding, I used an adjusted version of PLAT as an objective measure of details provided, and so less likely to fluctuate according to which researcher codes the interviews. For example, the inter-rater reliability of PLAT was recorded as .62 for PLAT, but only .53 for Capability, .44 for Opportunity, and .34 for motive (Alison et al., 2013). Similar PLAT coding has also been used in previous research (e.g., Eastwood, Snook, & Luther, 2019; Luther, Snook, Barron, & Lamb, 2014). I adapted the coding scheme to make it fit to my suspect tasks and added Object (o) and Conversation/ Verbal detail (c) as two additional coding categories. Object and Conversational/ Verbal detail were added as participants in their tasks handle many objects that they report during the interview. This crucial information would not have been coded with the standard PLAT. Further, I added Conversational/ Verbal detail as my participants interacted with a confederate or were given verbal instructions or requests by another person. To be able to capture these Conversational/ Verbal details, I added the category to the framework as well.

PLAT codes details in the following four categories: People/ personal description (p), Location (l), Action (a), Temporal (t), Object (o) and Conversation (c). Only new information will be coded, i.e., “another (p) girl (p)” is coded only at the first mention, not if the participant repeats this information, or describes something else the other girl did. Table 2-5 gives precise descriptions for each of these codes.

Table 2-5. Detailed description of the coding scheme PLAT(OC)

	Detail	Description
P	Person/ personal detail	A detail is coded as People/ personal description (p) when it answers 'the who?' question i.e., every person that is mentioned plus their descriptions. For example, "a man (p)", "the tall (p) girl (p)".
L	Location detail	A location detail (l) is counted when the detail describes a precise location where the event took place, or where something was placed e.g., "in a cupboard (l)" or "in the hospital (l)".
A	Action detail	An action detail (a) is every action that is named. Action details are mostly verbs or adverbs. Examples are "I had to (a) wait (a) in the room (l)" and "We heard (a) five (p) people (p) run (a), they ran fast (a)".
T	Temporal detail	A time detail (t) is every detail that names a time point or refers to time and is coded when a special or precise time is mentioned: "It took (a) 10 (t) minutes (t)".
O	Object detail	An object (o) is every object or its description e.g., "There was a pen (o), a black (o) book (o), two (o) note pads (o), and a green (o) envelope (o)".
C	Conversational detail	A conversational detail (c) is every verbal detail that is directly said by the participant, the participant repeats what

Detail	Description
	s/he heard someone else say e.g., “The other (p) girl (p) told (a) me to ‘sign the document’ (c)”.

To code an interview transcript with PLAT(OC), I provide an example below:

“Suspect: The case was about a preacher (p) who was (a) murdered (a) while (t) he was watching (a) a show (o) of Hamlet (o) I think (a) it was. And his, the person (p) he was (a) with (a) had gone (a) the bathroom (l) and during (t) the intermission (t) and she (p) came (a) back (a) and his (p) body (p) was there (l) and his (o) Bible (o) was gone (a) but someone (p) had left (a) behind (l) some (o) German (o) cigarettes (o) and some (o) aspirin (o).“

Table 2-6. Example for coding with PLAT(OC)

Participant	P	L	A	T	O	C	Total
Example	6	3	11	3	9	0	32

For analyses, as I was only interested in the total amount of details provided, I used the total score for the analyses. Still, using established coding schemes helps ensure the coding of details follow a valid framework and helps ensure objectivity.

Further, to control for the varying lengths of the interview, I also produced a measure of information provision that was divided the total word count. Doing so produces a measure information density, which captures the efficiency of the different interview methods, as well as correcting for individual differences in verbosity within participants exposed to each interview method. However, I also analyse the raw number of details, because police may well be

primarily interested in the yield of an interview, even if this is at the cost of some efficiency. I.e. even if an interview takes longer, this may be worth it if it also provides sufficiently more details.

2.3.3 Truthful information

PLAT can be used to count details within specified categories to give an estimate of how much information the suspect disclosed during the investigative interview and cannot necessarily distinguish between relevant and irrelevant information. Therefore, in Study 2 and Study 3, I used a case vignette, which allowed me to not only count the total amount of details, but also to check for accurate information. To code accurate information, I prepared lists with details and their respective synonyms (e.g., handbag: clutch, purse, and bag) based on the case vignettes (see Appendix A '8.8 Truthful information: Study 2', and '8.14 Truthful information – Study 3'). When coding with PLAT, I then also counted the number of unique details that corresponded to these lists of accurate information. Therefore, I was able to determine the number of details provided by sources that was known to be truthful.

2.4 Data analysis

For data analysis, I use statistics programmes R and Jamovi.

Studies 1 and 2 use a mixed design with both within and between subjects' effects. I use R to analyse this data using ('lsmeans' R package; Russel V. Lenth, 2016; Searle, Speed & Milliken, 1980). I follow up significant effects using t-tests, and report both the raw significance levels and p-values with Tukey correction. Whenever a t-test is reported in the analyses I use Welch's t-test rather than Student's t-test. I use Welch's t-test because when sample sizes and variances between groups are not equal (which we can expect from the study design because

students are required to attend at multiple time points and so at least some attrition in the sample is likely), Welch's t-test performs better than Student's t-test, and when sample sizes and variance are equal Welch's t-test and Student's t-test are equivalent (Declare, Lakens & Leys, 2017). Welch's t-test can be easily recognized as the degrees of freedom are usually not whole numbers.

In study 3 (and study 2 when checking for interviewer effects) I use a between-subjects design which is tested via one-way ANOVA. Consistently with my approach to reporting t-tests, I apply Welch's correction to all one-way ANOVAs, because this approach is more accurate when variances are unequal across experimental conditions, and equivalent to the standard Fisher approach when variances are equal. One-way ANOVAs were analysed using Jamovi and I used the 'emmeans' R package embedded within Jamovi to calculate any post-hoc tests from ANOVAs.

The package 'emmeans' computes interaction estimates by calculating the pooled variance across groups. This means all estimates have the same standard error, and degrees of freedom are not necessarily whole numbers. There are benefits to using the pooled variance such as 1) it comes with a higher power to detect real effects, and 2) using the pooled variance is more robust when the sample size is lower in some groups because while t-test results are normally based on only a selection of the data (i.e., the specific groups that are compared), 'emmeans' results have their estimates based on a model that is fitted to the complete data. Therefore, the denominator for the t-statistics is calculated on pooled information in the model (i.e., more information and a correspondingly higher number of degrees of freedom). Post-hoc tests are corrected via Tukey's HSD. Tukey HSD tests for differences between groups by pairwise post-hoc testing using a studentized range distribution (Lee & Lee, 2018). I decided against Bonferroni corrections for these comparisons because the adjusted α is often smaller than

necessary which inflates the Type II error rate. Therefore, when alternative metrics such as Tukey's can be readily computed, they are preferable to Bonferroni (Lee & Lee, 2018). However, all reported correlations are corrected via Bonferroni corrections as Tukey HSD is not available for correlations.

2.5 Ethical Considerations

The studies reported in this thesis received ethical approval from FSTREC, the Faculty of Science and Technology Research Ethics Committee and SREC, Security Research Ethics Committee (Application FST17009 and amendments).

All participants taking part as the suspect committed a mock crime and therefore were guilty, and further were made to believe that the research purpose was to test new lie detection trainings. Interviewers, either being employed or recruited as participants, were made to believe that the suspect they would interview was either guilty or innocent although in all cases suspects were guilty. This way both suspects and interviewers were deceived, and the true purpose of the study concealed. To combat these ethical issues, all participants were debriefed immediately after the study, and given the opportunity to ask questions. Additionally, the debrief form contained contact information from the Head of Department and mental health services provided by Lancaster University in case participants did not feel comfortable to voice out concerns in front of the experimenter and researchers involved with the research projects. Experimenters were debriefed at the end of data collection for each study and were likewise given details in case they wished to complain, but all reported being perfectly happy to have contributed despite the deception.

Further, participants were reassured that they could leave the experiment at any time, and still receive participant compensation. Participants were also reminded that they could withdraw their data within 10 days of participation without naming any reasons, and were fully debriefed after the study.

3 Study 1: Maintaining Rapport over Multiple Interviews

During investigative interviews, police officers seek to elicit information from a suspect in order to develop investigative leads or make effective investigative decisions. Therefore, it is important that the information obtained is as detailed and accurate as possible. During investigations, it is likely that a suspect needs to be interviewed on multiple occasions. This is mostly due to the complexity of, especially serious, crimes. Even when the suspect confesses in the first interview, the police still needs to gather information to support prosecution (Leahy-Harland & Bull, 2017). Additionally, another interview often needs to be conducted due to new witness accounts, new evidence that was found or ambiguities detected in the suspect's first statement. Most interviews are conducted over several days (Leahy-Harland & Bull, 2017). The delay between the first and second interview could be hours, days, weeks or even longer. Research findings show that continuously maintaining rapport throughout an interview is imperative to preserve the established positive working relationship and enhance information provision (Walsh & Bull, 2012). However, it has not yet been tested whether rapport can or needs to be maintained over multiple interviews.

Informal discussions with practitioners suggest that this is a question they consider important. I attended an interview-training course at the Cheshire School of Policing (19-21/09/2018). Practitioners reported that they mostly know "their criminals" in the area. Asked how they define rapport, they answered they mostly know their "usual suspects" and keep a civil tone with them, show them respect and are honest about the consequences of their illegal behaviour. One police officer told us that if they are interviewing a suspect, then the suspect usually talks because they know the police officer and know what to expect from them. One police officer told me: "I had a girl who shoplifted. She got caught and they played her the wrong

CCTV from another occasion before, she right away admitted that it was her. Then, another video was played, and she looked at me puzzled: “You know that that’s not me?” And, I had another look as I hadn’t watched the CCTV too closely then and said: “Yes, that is true, that is not you. I will talk with the probation officer. That is not on you. I’ll make sure of it.” The example above illustrates that police officers and offenders meet repeatedly and build a relationship over time characterised by disclosure and trust on both sides.

However, there is no literature that explores how and whether rapport does maintain over time across separate encounters. Walsh & Bull’s (2012) research suggests that rapport may be required to be continuously maintained over time. However, this would contradict the reports of the practitioners I spoke to who implied that once a relationship had been built there is no need to continuously work on building rapport. The practitioners’ reports also fit within the theoretical framework of the Tripartite model of rapport (Tickle-Degnen & Rosenthal, 1990) because according to the Tripartite model of rapport, rapport should increase over time as a relationship builds (see Chapter 1, Figure 1-1). Positivity is initially important but becomes less important over time. Therefore, the behaviours often discussed as being essential in rapport building (e.g. empathetic displays, active listening) may become less important over time. Even the provision of legal advice and a clear understanding of the legal situation is likely to become less critical for establishing rapport as familiarity with the interview situation and interviewer grows. In contrast, coordination should still increase as long as there is mutual attention due to the increased predictability of the interviewer and interviewee communication. In summary, it is expected that rapport should be initiated when there is positivity during the first encounter, however, once rapport has been established, even if there is no additional positivity, so long as rapport is not harmed it should be maintained from one interview to the next.

In the following study, I will test if rapport is maintained over multiple interviews with the same interviewer. The interviewer will interview participants on two occasions with a 2 – 5-day delay between interview sessions. If people take part in multiple interviews, I expect more rapport in subsequent interviews over the initial interview, especially when the interview is based on an Information-gathering approach rather than an Accusatory-interrogation method. This is because regardless of interview style, coordination should increase with time and rapport should be higher at the second interview. However, where positivity is also present, as in the information gathering approach, there should be a higher initial rapport at the first time point, and this established positivity should facilitate later increases in rapport. In contrast, the lack of positivity inherent in the Accusatory-interrogation method should mean that rapport is lower at the first interview, and this may result in a reduced increase in rapport at the second time point due to the absence of one of the three elements of rapport (positivity).

To further test how rapport affects the interview outcomes such as mimicry and disclosed information, I use two contrasting interview styles to either support rapport building by having a greater amount of positivity (Information-gathering approach) or hinder rapport building by having an absence of positivity (Accusatory-interrogation method). As well as a consequence of increasing rapport, different interview styles should facilitate different amounts of disclosed information. As described in Chapter 1, the information gathering approach is claimed to be more effective in eliciting admissions and investigation relevant information from suspects (Meissner, Redlich, Bhatt, S., & Brandon, 2012). It is also proposed that part of the reason for this disclosure is the rapport established between interviewer and suspects (Meissner et al., 2012). Here I will test both arguments by comparing the number of details provided by suspects

depending on interview style, and by testing a model where rapport acts as a mediator between interview style and information provision.

I will also test the assumption of the Tripartite model of rapport that rapport is a shared perception between both parties in an interaction. That is, if one partner feels rapport is high, the second partner should also feel that rapport is high.

Finally, I will develop an initial test of whether mimicry is a suitable proxy measure of rapport. If this is the case, then I would expect mimicry to respond similarly to rapport under the same experimental conditions. I.e., mimicry should be higher where there is higher positivity (Information gathering approach versus the Accusatory-interrogation method) and where there is more coordination (later interviews over earlier interviews). Secondly, there should also be a strong positive correlation between rapport and mimicry as a demonstration of convergent validity.

Therefore, this experiment makes the following predictions:

H1: The Information-gathering approach is associated with higher self-rated rapport than the Accusatory-interrogation method. Further, self-rated rapport may increase or stay similar from Time 1 to Time 2, but it should not decrease as coordination develops over time.

H2: Suspect-rapport and Interviewer-rapport should be significantly positively correlated, i.e. rapport is a shared perception between the suspect and the interviewer.

H3: Higher mimicry should be associated with the Information-gathering approach than the Accusatory-interrogation method due to increased positivity in the Information-gathering approach. Further, mimicry should increase from Time 1 to Time 2 as a reflection of increased coordination.

H4: Mimicry and rapport should be significantly positively correlated if mimicry is a plausible proxy measure of rapport.

H5: I expect higher information provision is associated with the Information-gathering approach than the Accusatory-interrogation method, again as a consequence of greater positivity in the Information gathering approach.

H6: I expect that rapport mediates any observed differences between interview style and disclosed information if rapport is the mechanism that explains why interview style leads to more information provision.

3.1 Method

3.1.1 Participants

Fifty-seven Lancaster University students (44 females M_{age} = 20.14, SD = 2.39; 13 males M_{age} = 22.54, SD = 4.39) were recruited for the study. Fifty-two participants returned for the second interview session (41 female, M_{age} = 20.20, SD = 2.44; 11 male, M_{age} = 23.09, SD = 4.57). Of the five that failed to return, three participants dropped out of the Information-gathering condition and two participants dropped out the Accusatory-interrogation condition. Participants received either payment (£5.00) for participation or received course credit (first year Psychology students).

3.1.2 Materials

3.1.2.1 Rapport

Rapport was measured with the Rapport scales for Interrogations and Investigative Interviews (RS3i, Duke et al., 2018) by using the suspect version for the suspects and the interviewer version for the interviewers.

I obtained good to excellent reliability scores for both the suspect version of the scale (α = .84), and for the interviewer version of the scale (α = .93).

3.1.2.2 Mimicry

Mimicry was measured using motion capture suits by XSens. Both the interviewer and the suspect were equipped with the motion capture suits during the interview as described in Chapter 2 '2.1.3 XSens Motion Capture Suits'. Participants are asked to wear skintight T-shirts upon arrival so that the tight T-shirts of the motion capture suits can fit above. As shown in Figure 3-1, motion trackers are equipped with Velcro straps on the head, sternum, pelvis (on the back), and on the left and right side: shoulders (on the back), upper arms, lower arms, hands, upper legs, lower legs and feet.

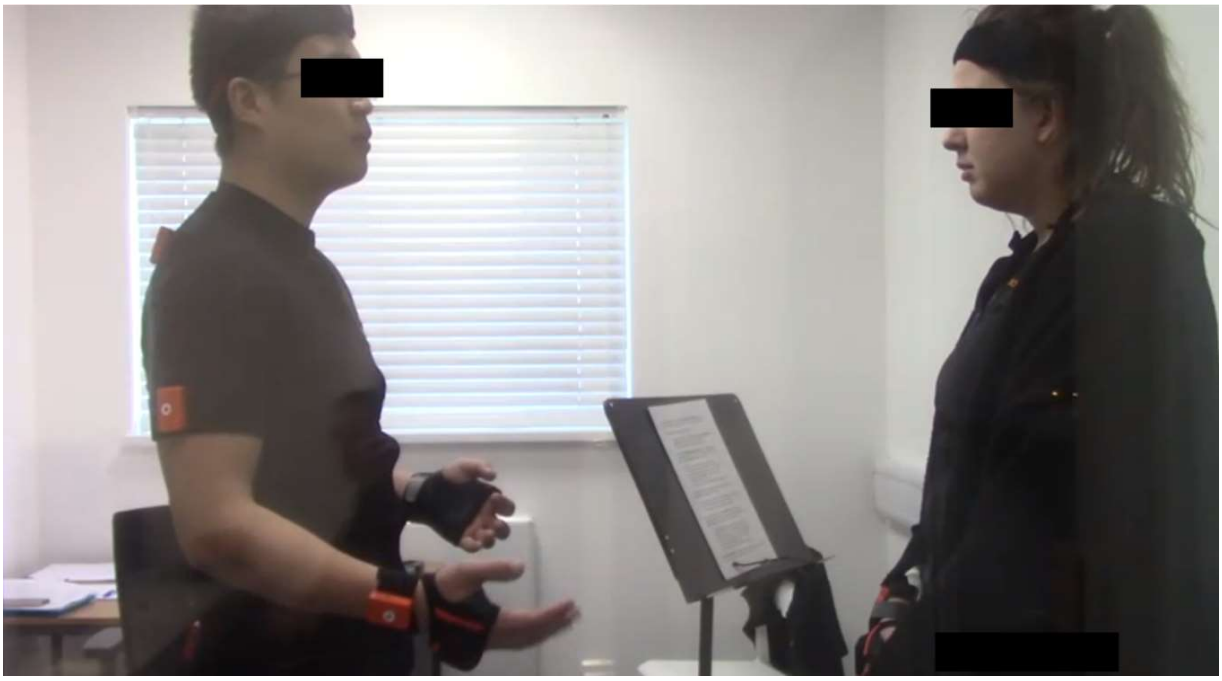

Figure 3-1. Interview setup for study 1.

3.1.2.3 Disclosed information

To code disclosed information from the interviews, I used an adjusted version of PLAT (e.g., Eastwood, Snook, & Luther, 2019; Luther, Snook, Barron, & Lamb, 2014) and added Object (o) and Conversation/ Verbal detail (c) as two additional coding categories as described in Chapter 2. As I am only interested in the total amount of details provided, I use the total score for the analyses. Using established coding schemes helps ensure the coding of details follow a valid framework and ensures objectivity. To control for the varying lengths of the interview, I also use a measure of information density by dividing the total amount of details by word count. This captures the efficiency of the different interview methods, as well as correcting for individual differences in verbosity within participants exposed to each interview method.

In this study, two coders coded 60% (65 out of 109) transcripts. I compared the total number of details coded per question. The coding between Rater 1 (M = 112.71, SD = 41.87) and

Rater 2 (M = 102.69, SD = 52.18) was reliable, ICC = .801, (95% CI [.547, .914], F (23, 24) = 5.03, $p < .001$.

3.1.3 Design and procedure

A 2 (Interview style: Information-gathering approach x Accusatory-interrogation method) x 2 (Time 1 x Time 2)-mixed-subject design was used.

On arrival, participants were informed that they would be testing a new lie-detection approach during police interviews, and that they would be interviewed at one point during the experiment. They were told that one group of interviewers was trained in a new method to detect lies while the other group did not receive such training. This instruction was used as a reason as to why participants would be interviewed later, and why they were asked to lie at certain points, without giving away the true purpose of the experiment.

3.1.3.1 The Suspect task

Participants took part in two mock crimes and were accompanied by a confederate. First participants had a casual two-minute conversation with a confederate to "get to know each other," and then engaged in the two mock crimes. The first task involved solving a wooden puzzle with the confederate (Van der Zee, 2013). The confederate first acted as though the puzzle was too hard to solve. They then used the puzzle solution that the confederate found in the puzzle box that the experimenter had forgotten to take out. After the experimenter detected that the participants had used the instructions to solve the wooden puzzle, the participant is asked by the experimenter to conceal that they used the solution to solve the puzzle in a later interview because it would ruin the experiment. In the second task, the participant and the confederate are

separated. Both have to convince the interviewer that they played a board game ("221 B Baker Street", a Sherlock Holmes-style board game that is similar to "Clue"/"Cluedo", but is not as well-known and so participants would not be able to explain it to the interviewer without some knowledge of the game). Participants were told that only the confederate is playing the game with a student helper, while the participant has to pretend to have played the game based only on looking at the game board and reading the game manual. Hence, the participant must fabricate knowledge about this event without having any direct experience of playing the game. The participant is made to believe that the confederate actually played the game so that s/he has to compete with actual knowledge to motivate the participant to engage her/himself in the interview. The participants were given 10 minutes to prepare a story about playing the game, while having access to all of the gaming material.

3.1.3.2 The interview

In the interview stage, a Research Assistant was trained to interview participants about their pre-interview experiences. Participants were interviewed about both tasks in a randomized order at both interview time points. The interviewer introduced the interview by using either Information-gathering approach or the Accusatory-interrogation method to verbally increase or decrease rapport. As is explained in Chapter 2 ('2.2 Interview phase') I manipulated interview style only by changing how the interview is introduced to participants so that the impact of initial rapport on later rapport can be determined. I.e. there is no manipulation of interview style at the second interview and participants in both the Information-gathering approach and the Accusatory-interrogation method condition are asked the same questions in the same way (see Appendix A for the interview scripts). This means that any differences between the two

conditions can be attributed to the rapport that was (or was not) established during the first interview. Regarding interviewer behaviour, the experimenter trained the Research Assistant to act out the interview transcript in a natural manner and with common behaviour rules. For example, they were told to not raise their voice, that they should end the interview if the participants show signs of distress, and that they should speak in a calm manner.

For the analyses, I will only analyse the second task (board game task) as the first task (wooden puzzle task) was not successfully manipulated. Despite training and opportunity to practice[8], confederates could not recreate the wooden puzzle, which led to none of the groups finishing the puzzle. Therefore, the interview task, i.e., complete the wooden puzzle with the instructions and hide the information of having the instructions, was not followed. I will not

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[8] Confederates were trained 1-2 weeks prior to the experiment to solve the wooden puzzle. The experimenter demonstrated the solution and let the confederates replicate the solution. After confederates successfully solved the wooden puzzle and stated that they had no further questions, the experimenter stated once more the importance to solve the puzzle during the experiment. To ensure that confederates were familiar with the puzzle, they took the puzzle with instructions home over the weekend to practice. Additionally, the experimenter sent them a YouTube link with a step-by-step guide as another medium to ensure the puzzle would be solved. During data collection, the experimenter was first not suspicious about solving the puzzle as they assumed participants were lying that they had not solved the puzzle and gave this as a reason that they "could not possibly have had the instructions". As the "same" statement was used throughout more and more interviews, the experimenter asked the confederates who answered with hesitation that they did not solve the puzzle. As data collection was ongoing, the experimenter made the decision to focus on the board game task for data analysis.

consider the puzzle task in the study result interpretation. While it is possible that there would be a difference between groups that cheated and those that did not cheat regardless of whether the cheating was successful, the questions participants faced about this task assumed that the task had been successfully completed, and therefore the responses to these questions were not appropriate given the failure to complete the task.

3.2 Results

Interviews were not restricted in time but followed a standardised script. This was to ensure that the information provided by the suspect could be compared across interviews. In this study, interviews took on average 8 minutes 52 seconds (SD = 4 Min 25 Sec, Min = 2 Min 56 Sec, Max = 27 Min 57 Sec). Follow up tests for all ANOVAs have Tukey's correction for multiple testing applied. All reported correlations are corrected via Bonferroni corrections.

3.2.1 H1: Rapport

A 2 (Approach: Information-gathering approach x Accusatory-interrogation method) x 2 (Time: Interview 1 x Interview 2)-mixed ANOVA found no main effect of Interview style, or of Time on suspect-rapport i.e., participants' experience of rapport during the interview. There was a statistically significant interaction effect between Interview style and Time (see Table 3-1). The interaction is illustrated in Figure 3-2.

Table 3-1. ANOVA summary of the effect of interview style and time on suspect-rapport.

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 50	2.50	.120	0.04
Time	1, 50	3.02	.089	0.01
Interview style x Time	1, 50	4.87	.032	0.02

Scores for suspect-rapport were overall higher in the Information-gathering approach at Time 1 and Time 2 than in the Accusatory-interrogation method at Time 1 and Time 2. At Time 1, suspect-rapport is lower in the Accusatory-interrogation method than in the Information-gathering approach, $t(54.26) = 2.48$, $p = .016$, $d = 0.65$. In the Accusatory-interrogation method, suspect-rapport seems to have recovered from lower rapport at Time 1 because it has significantly increased at Time 2, $t(46.47) = 3.10$, $p = .007$, $d = 0.82$. Suspect-rapport in the Accusatory-interrogation method is also lower at Time 1 than in the Information-gathering approach at Time 2, $t(79.45) = -2.23$, $p = .028$, $d = 0.61$.

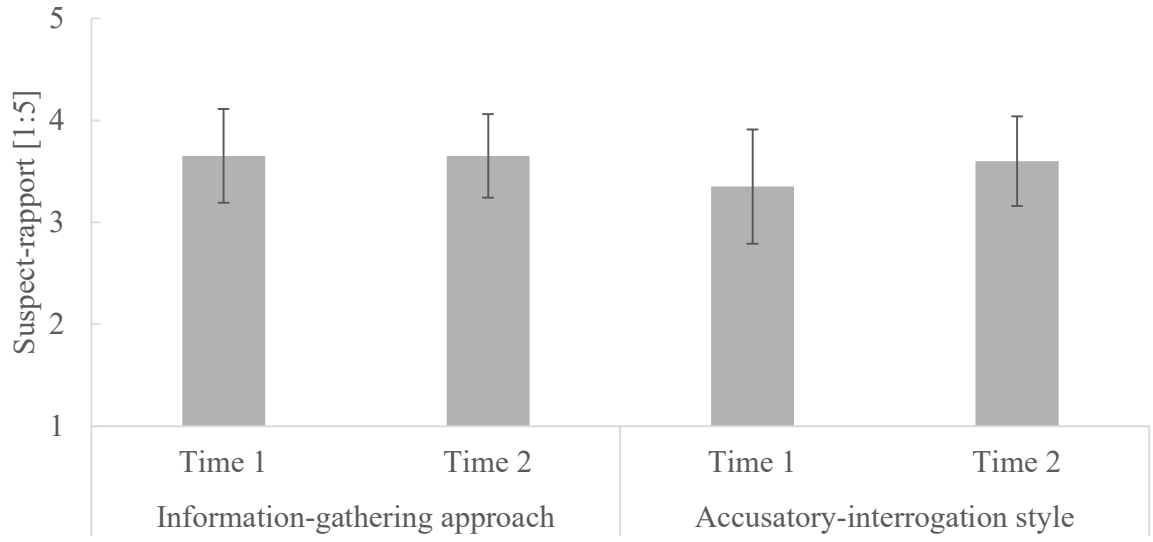

Figure 3-2. Mean (*SD*) suspect rated rapport by each interview style and time.

A 2x2-mixed ANOVA found a main effect of Interview style. I.e., interviewer-rapport was higher in the Information-gathering approach than in the Accusatory-interrogation method. Interviewer-rapport is lower at Time 1 than Time 2. There was a statistically significant interaction effect for the Interview style and Time. This is illustrated in Figure 3-3.

Table 3-2. ANOVA summary of the effect of interview style and time on interviewer-rapport

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 50	62.54	<.001	0.32
Time	1, 50	52.12	<.001	0.12
Interview style x Time	1, 50	80.90	<.001	0.19

Follow up tests showed that at Time 1, the Information-gathering approach is associated with higher interviewer-rapport than the Accusatory-interrogation method, $t(87.20) = 11.57$, $p < .001$, $d = 3.27$. In the Accusatory-interrogation method, interviewer-rapport is lower at Time 1 than at Time 2, $t(50.00) = -11.47$, $p < .001$, $d = 2.84$. There was no significant difference for interviewer-rapport in the Information-gathering approach from Time 1 to Time 2, $t(50) = 1.25$, $p = 0.217$, $d = 0.30$.

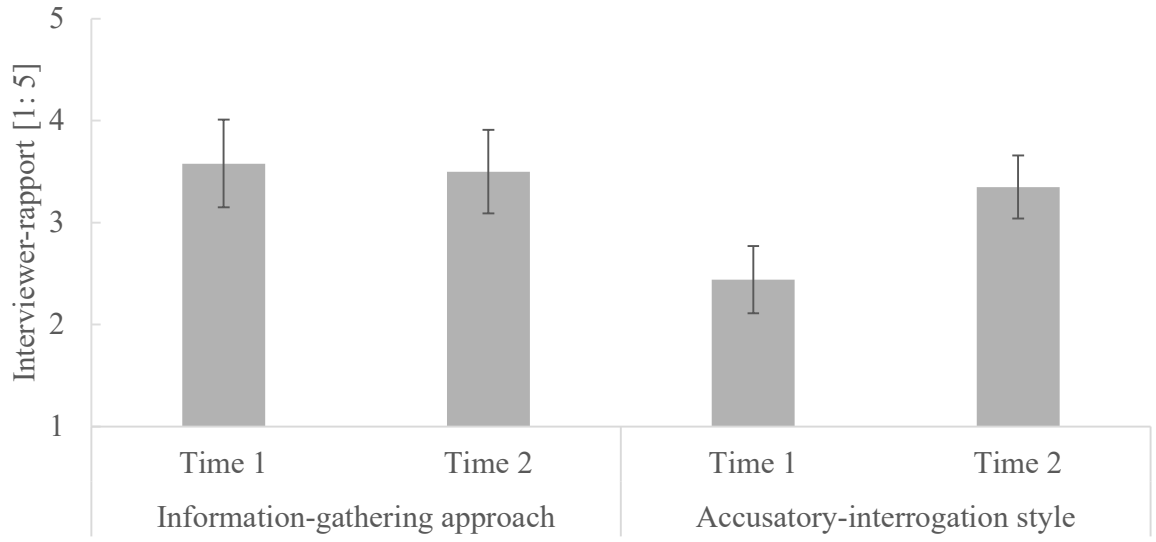

Figure 3-3. Mean (*SD*) interviewer rated rapport by each interview style and time.

3.2.2 H2: Suspect-rapport and interviewer-rapport

A Pearson product-moment correlation coefficient was computed to assess the relationship between the interviewer-rapport and suspect-rapport across both interview styles and interview times. Interviewer-rapport and suspect-rapport are not correlated for the Information-gathering approach at Time 1 but were at Time 2. For the Accusatory-interrogation method there was no significant correlation for Time 1or Time 2.

Table 3-3. Correlation results of suspect-rapport and interviewer-rapport.

	Time 1	Time 2
Information-gathering approach	r = -.04, n = 28, p = 1.000	r = .40, n = 26, p = .152
Accusatory-interrogation method	r = .26, n = 29, p = .692	r = .10, n = 26, p = 1.000

Note. Reported correlations are corrected via Bonferroni corrections.

3.2.3 H3: Mimicry

A 2x2-mixed ANOVA found that the main effect of Interview style was statistically significant. Mimicry also increased from Time 1 (see Table 3-4) to Time 2. However, these effects were subsumed into a statistically significant interaction effect between Interview style and Time which is represented in Figure 3-4.

Table 3-4. ANOVA summary of the effect of interview style and time on mimicry.

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 40	10.44	.002	0.11
Time	1, 40	19.24	<.001	0.13
Interview style x Time	1, 40	9.82	<.001	0.07

Follow up tests showed that in the Information-gathering approach, mimicry is lower at Time 1 than Time 2, $t(40) = -5.20$, $p < .001$, $d = 1.31$. Mimicry is lower in the Accusatory-interrogation condition at Time 1 than in the Information-gathering approach only at Time 2, $t(76) = -5.26$, $p < .001$, $d = 1.43$. For Time 2, mimicry is higher in the Information-gathering approach than in the Accusatory-interrogation method, $t(76) = 4.48$, $p < .001$, $d = 1.15$.

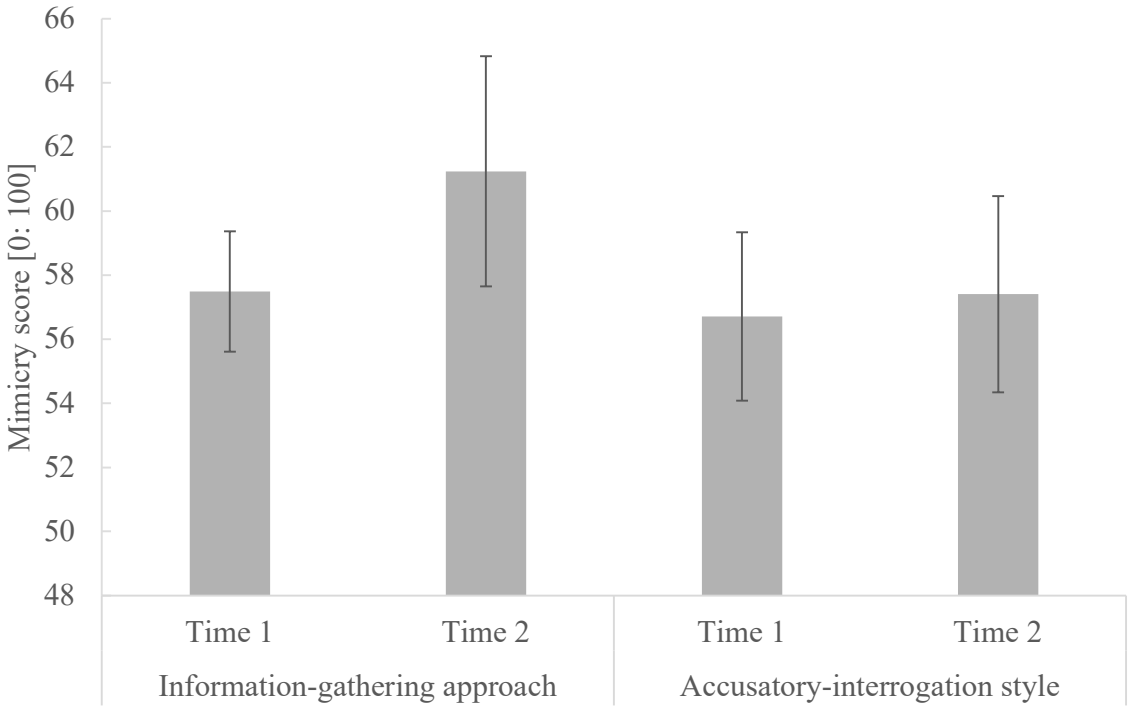

Figure 3-4. Mean (*SD*) mimicry by each interview style and time.

3.2.4 H4: Rapport and mimicry

A Pearson product-moment correlation coefficient was computed to assess the relationship between both suspect-rapport and interviewer-rapport on mimicry across both interview styles and interview times.

Suspect-rapport and mimicry are not significantly correlated (see Table 3-5). Interviewer-rapport and mimicry are not significantly correlated (see Table 3-6).

Table 3-5. Correlation results: suspect-rapport and mimicry

	Time 1	Time 2
Information-gathering approach	r = -.25, n = 22, p = .964	r = -.19, n = 24, p = 1.000
Accusatory-interrogation method	r = -.13, n = 26, p = 1.000	r = .15, n = 25, p = 1.000

Note. Reported correlations are corrected via Bonferroni corrections.

Table 3-6. Correlation results: interviewer-rapport and mimicry

	Time 1	Time 2
Information-gathering approach	r = .07, n = 24, p = 1.000	r = -.23, n = 25, p = 1.000
Accusatory-interrogation method	r = .07, n = 24, p = 1.000	r = -.01, n = 26, p = 1.000

Note. Reported correlations are corrected via Bonferroni corrections.

3.2.5 H5: Disclosed information

A 2x2-mixed ANOVA found a main effect of Interview style. Disclosed information was higher in the Information-gathering approach than in the Accusatory-interrogation method. There was also a main effect of Time on disclosed information. Disclosed information was higher at Time 1 than Time 2. There was also a statistically significant interaction effect for the Interview style and Time (see Table 3-7).

Table 3-7. ANOVA summary of the effect of interview style and time on closed information.

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 48	10.69	.002	0.12
Time	1, 48	58.36	<.001	0.18
Interview style x Time	1, 48	7.95	.007	0.02

At Time 1, disclosed information was higher in the Information-gathering approach than in the Accusatory-interrogation method**,** $t(72.22) = 4.20$, $p < .001$, $d = 0.95$. Further, in the Information-gathering approach, disclosed information was higher at Time 1 than at Time 2, $t(48.00) = 7.40$, $p < .001$, $d = 1.15$. In the Accusatory-interrogation method, suspects disclosed more information at Time 1 than at Time 2, $t(48.00) = 3.41$, $p = .007$, $d = 0.73$. This interaction is illustrated in Figure 3-5.

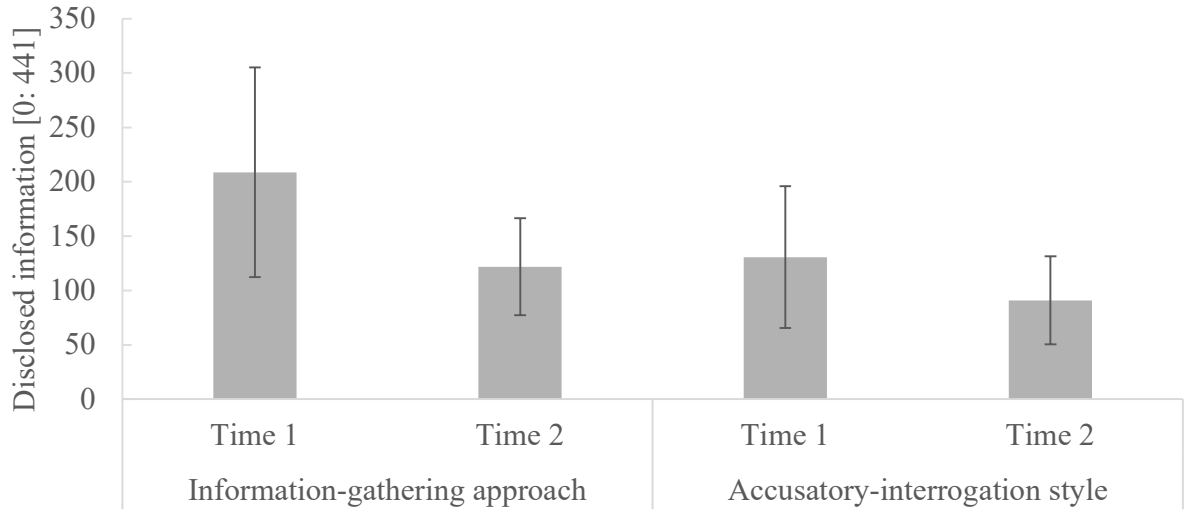

Figure 3-5. Mean (*SD*) disclosed information by each interview style and time.

I also calculated the efficiency of the suspect statements, i.e., information density. To determine the rate of information provision by word count.

A 2x2-mixed ANOVA found a main effect of Interview style. Information density was higher in the Information-gathering approach than in the Accusatory-interrogation method. I also found a main effect of Time on information density. Information density was higher at Time 2 than Time 1. There was, however, no statistically significant interaction effect for the Interview style and Time (see Table 3-8).

Table 3-8. ANOVA summary of the effect of interview style and time on information density.

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 48	66.35	<.001	0.47
Time	1, 48	17.38	<.001	0.05
Interview style x Time	1, 48	1.82	.183	0.01

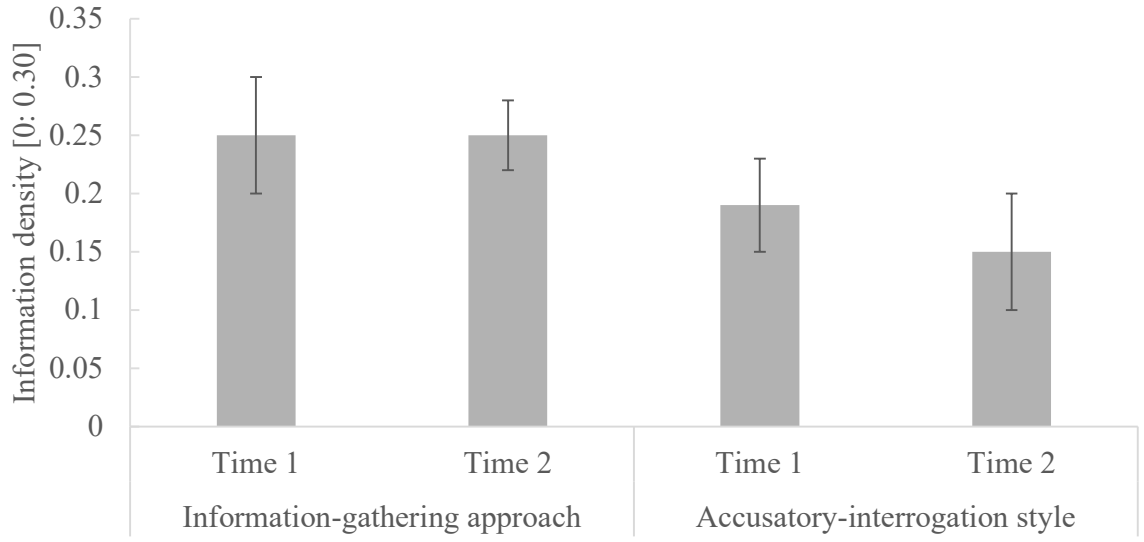

Figure 3-6. Mean (*SD*) information density by each interview style and time

3.3 Discussion

The purpose of this study was to test if rapport can be maintained between multiple interviews as during police investigations, police officers often need to interview suspects more than once. Further, I studied how rapport is established and maintained between the interviewer and the suspect by using contrasting interview styles, i.e., the Information-gathering approach and the Accusatory-interrogation method. I also tested whether mimicry can serve as a proxy measure of rapport.

To summarise, my findings suggest that both suspect-rapport and interviewer-rapport are impacted by the interview style at Time 1. However, suspect-rapport and interviewer-rapport were similar at Time 2, which suggests that although rapport is not set by earlier encounters, an accusatory interview style may still affect rapport, at least initially. As mimicry was also impacted in a similar way, it could be suggested that mimicry may well be capturing rapport, however, there was no correlation between rapport and mimicry which undermines this

conclusion. There are also similar effects on disclosed information with less information disclosure following an accusatory interview, which shows that there may be concrete consequences to poor interview style.

Both suspect-rapport and interviewer-rapport behaved similarly. At the first interview, there was a statistically significant difference in rapport depending on interview style. This does support the notion that interview style is an important determinant of rapport (Vallano, Evans, Schreiber Compo, & Kieckhaefer, 2015). At Time 2 these differences had diminished and were no longer significant. This partially supports the experience of the practitioner I recounted at the start of this chapter. When the interviewer had established rapport in the first interview, the interviewer continued to have high rapport at Time 2 even when no additional effort was made to establish or maintain rapport.

However, that rapport increased at Time 2 in the Accusatory-interrogation condition to the extent that it did was not expected. There are some possible reasons for this. One reason could be that even in the absence of rapport the increase in coordination from Time 1 to Time 2 may be sufficient for rapport to become equal. This would fit within the theoretical assumptions of the Tripartite model (Tickle-Degnen & Rosenthal, 1987) that positivity becomes less important over time while coordination becomes more important. In other words, the effect may be exactly as expected, simply larger than anticipated.

Supporting the argument that coordination becomes more central over time is that mimicry was similar at Time 1 regardless of interview style, and while it had increased at Time 2 in both conditions, it increased much more strongly for participants that had experienced the Information-gathering approach at Time 1. This would follow if mimicry more closely reflects coordination, as Tickle-Degnen and Rosenthal (1987) originally suggested, rather than reflects a

composite measure of rapport as I propose. At Time 1 for the first interview, coordination is low regardless of positivity, but increases much more quickly when positivity has been present. This might also explain why the expected correlation between rapport and mimicry was not present. Although rapport and mimicry responded similarly to the experimental conditions, no correlations between the variables could be identified. This could be because mimicry may only be associated with one aspect of rapport, coordination, and not rapport as a whole as argued in Chapter 1.

However, other explanations for the results are possible. Speculatively, the rapid increase of suspect-rapport from Time 1 to Time 2 in the Accusatory-interrogation method could be impacted by the suspect's expectation to be accused again, which is an uncomfortable situation. When these negative expectations were not met, participants rated rapport with the interviewer higher partly due to the second interview seeming far less negative in comparison to the first. This suggests that a first negative impression may recover when the Accusatory-interrogation method is not repeated.

My findings showed that mimicry increased in the Information-gathering approach from the first interview to the second interview, however mimicry remained unchanged in the Accusatory-interrogation method. Mimicry did not reflect findings for suspect-rapport i.e., a first poor interaction could recover at the second interview. Low mimicry ratings in the Accusatory-interrogation condition might be explained by the suspects feeling accused before the interview even began, and therefore not mimicking the interviewer because suspects may not be motivated to affiliate with the interviewer on these terms (Lakin & Chartrand, 2003; Maddux, Mullen, & Galinsky, 2008).

As mentioned above, my study findings do not support the findings from other studies that people who were mimicked reported feelings of rapport towards the mimicker (Chartrand & Bargh, 1999) or a direct link between mimicry and liking (Bailenson & Yee, 2005; Kot & Kulesza, 2016; Kouzakouva, van Baaren, & van Knippenberg, 2010). Stevanovic et al. (2017) found that mimicry might help during an interaction when close coordination is harder to achieve, and therefore is more valued than when the interaction goes smoothly anyway and does not require additional fine-tuning. In line with this theory, less mimicry was observed within dyads engaging in discussion rather than conversations (Paxton and Dale, 2013). An investigative interview can be described as closer to a discussion than a conversation. That is an investigative interview has a power dynamic based on authority (interviewer), and further, just like in a discussion, the interviewer and the source might have opposing opinions and views about a topic and try to come to an agreement. If this is the case then mimicry may not be a good measure of rapport within an interview setting.

Interestingly, there was no correlation between suspect-rapport and interviewer-rapport with one exception. Suspect-rapport and interviewer-rapport were positively correlated in the Information-gathering approach at Time 2, albeit with a p-value not far from the threshold of .05 (p = .038). This finding might suggest that it takes more than one positive encounter to develop a shared perception of rapport. This might also explain why there were no correlations for the remaining groups. An Accusatory-interrogation method might hinder the development of genuine shared rapport as one party highlights the power imbalance of the interview (the interviewer being in full control). Additionally, at the first encounter for the Information-gathering approach, the time may be too short to develop the mutual attentiveness, positivity and coordination (Rosenthal & Tickle-Degnen, 1990) that are necessary to build a shared perception for rapport.

However, based on the available literature it is hard to find evidence to support this claim, as most studies do not report their interview times (e.g., Vanderhallen, Vervaeke & Holmberg, 2011) or the time spent building rapport. Hershkowitz (2009) states that five minutes should be enough to establish rapport in child sexual abuse investigations, however the time does not seem based on research findings but anecdotal "evidence". Holmberg and Madsen (2014) state for their interview times: that for their first interview round humanitarian interviews lasted on average 21.39 minutes (SD = 4.28), and dominant interviews lasted on average 12.19 minutes (SD = 2.55). Their second interview lasted for the humanitarian interviews on average 20.34 minutes (SD = 3.52), and for dominant interviews 9.49 minutes (SD = 4.13). My interview was considerably shorter than these, but that does not mean that longer durations are necessary to establish rapport. It may also be that rapport depends more on quality of interview rather than duration. As there is no evidence to indicate minimum periods for how long rapport needs to be established, a comparison between studies or a clear statement of what is too short or not sufficient seems speculative. However, one way to establish whether there was enough time to establish rapport is to look at the rapport questionnaire. If rapport requires more time to eb established than was possible during the experiment, there should be floor effects whereby participants tended to have very low rapport scores. I did not observe these floor effects with even the lowest source rapport scores observed being slightly above the midpoint of the scale (Accusatory Time 1: $M = 3.35$, $SD = 0.56$ on the SR3i ranging from 1 = "low rapport" to 5 = "maximum rapport" (Duke, 2013).

3.4 Limitations

One limitation that needs to be discussed is that one mock crime could not be completed successfully. Participants and confederates could not build the wooden puzzle and could not lie about having used the instructions successfully. Therefore, the wooden puzzle task was not taken into account for the main analyses. However, the board game task seemed to have worked well and given the suspect an experience to lie about during the interview. Still, to lie about a board game might be too low stakes to replicate an investigative interview. For the coming studies, I will focus in mock crimes that are more realistic topics to be questioned about by an interviewer. These are smuggling forbidden goods through airport security or off a military base. I hope using these scenarios increases the stakes for suspects and motivates suspects to perform well during the interview.

3.5 Conclusion and next steps

As I could show that rapport increases with repeated encounters with the same police officer, I wish to test if rapport can also be transferred between different interviewers within the same organisation, here, members of the police. This will help to distinguish whether the increases in rapport I observe in this study are due to repeated encounters with the same individual, or perhaps can be explained by practice effects. I.e. participants are less intimidated at the second interview and so it is easier for rapport to be established. Moving on to consider transfer of rapport also addresses a very important applied question. Police work is teamwork as more than one officer works on a crime, therefore there is often more than one police officer conducting the interviews with a suspect over time. In addition, with some crimes (e.g., burglary and robbery; Bull and Cherryman, 1996) there is usually just one police officer working on the

case. Nonetheless, the transfer of rapport remains crucial. For example, one police officer might arrest or bring a suspect to the station, and another police officer might conduct the interview.

In study 2, I will test if rapport can be transferred from the first interviewer to a second interviewer after an interruption in the interview. This has implications as a first impression with one person might be important for determining cooperation with interviewers at subsequent time points.

4 Study 2: Transferring Rapport between Two Interviewers

In my first study, I tested if rapport can be maintained during multiple interviews. My findings suggest that there was a clear effect whereby both suspect-rapport and interviewer-rapport differed in the first interview (Time 1) depending on the interview style with higher rapport in the Information-gathering approach than in the Accusatory-interrogation method. Yet, the clear effect whereby rapport was different at Time 1 depending on the interview style was not present in the second interview (Time 2) 2 – 5 days later.

Interestingly, although mimicry increased from the first to the second interview as expected in the Information-gathering approach; mimicry remained low in the Accusatory-interrogation method across both interviews. Although, suspects reported that rapport had recovered from the first interview to the second within the Accusatory-interrogation method, their nonverbal cues spoke a different language. This might suggest that positivity might have a big impact on self-reported rapport, but not on the development of objectively measured mimicry. It was suggested that this might mean that mimicry may refer more directly to coordination, as originally proposed by Tickle-Degnen & Rosenthal (1990).

Overall, my findings suggest that an interview style characterized by positivity can give an initial boost to rapport, but sufficient familiarity with an interviewer may make positivity less important over time as the suspect and interviewer learn one another's communication style, and coordination comes to dominate over positivity. Regardless, study 1 did show that rapport either stayed the same or increased overtime, depending on interview style. This study will develop this finding to test if rapport can be transferred between different interviewers within the same organisation.

Abbe and Brandon's (2014) claim that we do not know much about rapport beyond the dyadic interaction i.e., rapport between *one* interviewer and a source. Therefore, we do not know whether rapport can be transferred from one interviewer to another interviewer. Abbe and Brandon suggest that when more than one interviewer interacts with a source, certain aspects of rapport might transfer while others do not. Mutual attentiveness and coordination may need to be established again with the second interview but there is a possibility that positivity might transfer. This possibility is based on findings from studies on (imagined) intergroup contact (Crisp & Turner, 2009). Research has shown that having or imagining a positive interaction with an outgroup member can potentially lead to a more favorable perception of the outgroup members. Allport (1954, as cited in Crisp & Turner, 2012) proposed that positive contact between social groups could create more harmonious relationships between different groups. A meta-analysis of 515 studies supported Allport's idea: there is a significant, negative relationship between contact and prejudice against an outgroup (Pettigrew & Tropp, 2006, as cited in Crisp & Turner, 2012). Further, studies could show that individuals who perceived positive experiences between an ingroup and an outgroup member then showed more positive outgroup attitudes (Wright et al., 1997, Studies 3 and 4, as cited in Crisp & Turner, 2012).

These studies are likely relevant to the investigative interview situation. Suspects and police officers are stark examples of an outgroup, in that they belong to different groups and the interviewer has the opportunity to significantly disrupt the suspects life, evem if the suspect tis innocent. Consequently, the relationship between suspect and interviewer is often characterized by distrust and suspicion. One aim of humanistic interviews is to break down this distrust and suspicion by emphasizing fair treatment of the suspect within the interview and a lack of pre-judgement on the part of the interviewer. That is, there is an explicit goal to build a positive

perception of the interviewer and the interview process. This positivity is lacking in an accusatory interview, which if anything confirms the prejudices the suspect holds over the interviewer. Briefly then, a humanistic interview should establish positivity and challenge assumptions made by the suspect about interviewers and the interview process in general, and (imagined) contact studies show us that these positive experiences are likely to be generalized to other interviewers. Therefore, if the an initial interviewer establishes rapport with a suspect, the positive perception might transfer to another member of the same out-group, namely a second interviewer. This positive perception should directly facilitate the establishment of rapport.

The hypothesis whether rapport is transferrable can be tested addresses an important practical consideration – whether rapport can be transferred from one interviewer to another. In Study 1, I discussed that it is very common for police officers to 'know' their criminals and to come into repeated contact with them over time, both within and between investigations. It is also the case that these known criminals are likely to be known to multiple police officers and may be interviewed by multiple people even during a single investigation. Therefore, it is important to know if rapport can be transferred between interviewers within the same organization e.g., law enforcement. As police work is teamwork, and police officers work in shifts, it is crucial to understand how rapport within one interaction (e.g., arrest) can affect rapport within second and further interactions (e.g., interviews). As with my first study, the inspiration for this study comes from my interactions with practitioners. The question of whether rapport can be transferred was raised by Cheshire police officers during the interview training course I described in Chapter 3(19 – 21/09/2018) but was also raised by practitioners in law enforcement and the security services during a round table (CREST, 02/02/2018).

There is research supporting the idea that rapport should transfer between individuals. For example, this is the logic behind police engagement in community relations. Mazerolle et al. (2006) report that community-wide policing initiatives aid to improve police-citizen relationships and increases communication with citizens to build trust and rapport. The success of this initiative can be shown by an increase in calls for service and subsequent arrests when police build relationships with communities by creating initiatives such as 'Neighborhood Watch', reassurance policing, and contact patrols, which provide opportunities for police and citizens to interact in a positive manner (Mazerolle, Bennett, Davis, Sargeant & Manning, 2013). Further, Figueroa (2012) demonstrated that higher levels of trust are established between law enforcement and communities, communities become more compliant with law enforcement and safer. Law enforcement recognizes that policing is also community based and therefore it is important to make an effort to build trust and rapport with the community based on expected repeated positive encounters with members of the community. Previous research has shown that rapport can increase a communities' trust in law enforcement (Figueroa, 2012) and that effective communication skills allow law enforcement to develop a rapport with their community (McDermott & Hulse, 2012 as cited in Sereni-Massinger & Wood, 2016, p. 261).

We also see effects in the opposite direction, where bad experiences harm rapport between the community and police. For example, in the USA, Latinas are less likely to report violent crimes as they fear law enforcement, in part because some Latinas have bad experiences with law enforcement and do not trust in fair treatment and procedural fairness of the justice system (Messing et al., 2015). Therefore, crimes remain unreported, or crucial evidence is not brought to the police attention. This example shows that poor policing practices can also lead to damaged trust. There is reason to believe that poor interviewing practice can have similar effects.

Skerker (2010) argues that the use of Accusatory-interrogation methods such as the Reid technique are potentially harmful to police-community relations. (However, he does not consider these concerns enough to refrain from using Accusatory-interrogation methods.)

Rapport research has so far mainly focused on dyadic interactions; therefore, rapport in multiparty interactions is relatively unexplored. When one suspect is interacting with multiple interviewers, some aspects of rapport might transfer between the interaction partners where other aspects of rapport might be dyad specific and cannot be transferred. If a suspect and one interviewer have productive rapport, the second interviewer may benefit from the transfer of positivity but, presumably, has to establish coordination and mutual attention themselves (Abbe & Brandon, 2013). As well as the sociological arguments outlines above, there are good theoretical reasons founded in social psychology to expect rapport to transfer. For example, Pettigrew & Tropp (2006) meta-analysed 515 studies on intergroup contact and found that positive encounters with an out-group leads to the formation of more positive attitudes about the whole group. Thus it is likely, given the importance of positivity in rapport, that positive encounters with an out-group should lead to greater initial rapport with other members of that outgroup. However, this increase would still require continued positivity, mutual attentiveness and, especially, the development of coordination between specific interaction partners for rapport to continue to develop.

Very few studies have directly tested whether rapport transfers between members of an out-group in an interviewing setting. Some studies have investigated rapport transfer within the investigative interview when interpreters were present. For example, suspect-rapport seemed unaffected by interpreter attendance during an interview, in terms of positivity and proximity

(Driskell & Driskell, 2011) which suggests that interpreter presence has neither a positive nor a negative effect on the interview.

In a more recent study, Houston et al. (2017) demonstrated that interpreter behavior impacts on how interviewers are perceived by suspects. Suspects rated an interviewer more positively when the interpreter engaged in a short rapport-building session with the suspect prior to the interview compared to when the interpreter did not build rapport. Rapport-building was based on Tickle-Degnen and Rosenthal (1990) Tripartite model of rapport and so in the pre-interview phase the interpreter was approachable and friendly (positivity), the interpreter paid attention to the suspect (mutual attentiveness) and finally the interpreter imitated the suspect's body language by engaging in deliberate mimicry (which they conceptualized as coordination). This study does seem to imply that the rapport building efforts of one party directly influenced perceptions of another.

However, in the examples mentioned above, the interpreter is part of the same conversation. It is yet unknown if rapport transfers between interviews with different interviewers. Further, the interpreter and the suspect are sharing a common language, which might likely confound rapport ratings by reinforcing shared group membership and enhancing coordination over what could be achieved without the interpreter. In other words, their rating of rapport with the interviewer is likely biased by their perception of the interpreter.

Here we are interested in whether rapport can transfer between people in different conversations. As discussed earlier, the same police officers interview the same potential suspects within an area, and often more than one police officer works on a single case. Therefore, it is unlikely that the first contact between a suspect and a police officer is the only time the suspect encounters law enforcement and at present we do not know to what extent previous

encounters impact on later encounters. Therefore, just as important as understanding if one can maintain rapport with suspects is understanding if one can transfer rapport between different investigators

The results of this experiment would have potential implications on police work, as it will show whether the treatment of a suspect by one member of an organization can affect the suspect's perception of not only the individual but also the organisation itself. If so, failing to build genuine rapport at any step in the chain might hinder information disclosure not only for one interview but also for future encounters involving different people.

However, the design of this study aimed to do more than address this practical question. The design also aims to test some of the conclusions proposed by the results of Study 1. To briefly recap, Study 1 showed that self-reported rapport was high on the first encounter after an Information-gathering approach, and this stayed high at the second interview. For the Accusatory-interrogation method self-rated rapport started low then increased. It was proposed an increase in coordination at the second time point could explain this. However, for mimicry, we saw an increase at the second interview only for the Information-gathering approach, with mimicry low at the first interview for both interview styles and remaining low for the Accusatory-interrogation method. I argued that these results could be explained by mimicry being primarily a measure of coordination, rather than rapport as a whole, with coordination not increasing to the same extent at the second time point in the Accusatory-interrogation method due to the lack of positivity at Time 1.

If this explanation is accurate, we should expect that self-rated rapport should be high for the suspect interviewed via the Information-gathering approach compared to the suspect interviewed via the Accusatory-interrogation method. If rapport transfers, then self-rated rapport

should remain at the same level set by the first interviewer in the Information-gathering approach even when the interview style is neutral for the second interview. If rapport does not transfer then self-rated rapport should be high only for interview 1 in the Information-gathering approach. This is because coordination should not increase at the second interview compared to the first because unlike in Study 1 the second interview is with a different interviewer. I.e. self-rated rapport should be low for all interviews other than the first interview using the Information-gathering approach if rapport does not transfer. Similarly, if mimicry is primarily a measure of coordination, then it should remain relatively stable across all conditions, because coordination has not had sufficient time to develop, at least based on the comparatively low scores in Study 1 at the first interview for both interview styles. In contrast, if mimicry reflects rapport more widely it should be higher in the Information-gathering approach at least at interview 1, but also at interview 2 if rapport does transfer.

To clarify, my specific predictions are:

H1: I expect higher rapport is associated with the Information-gathering approach than the Accusatory-interrogation method. Further, I expect self-rated rapport to remain similar from Interviewer 1 to Interviewer 2 as rapport should be transferred between interviewers, but there is no opportunity for an increase in coordination. Consequently, I do not expect an interaction effect of interview style and interviewer (1 or 2) on rapport.

H2: Suspect-rapport and interviewer-rapport should be significantly positively correlated if rapport is a shared perception.

H3: Higher mimicry should be associated with the Information-gathering approach than the Accusatory-interrogation method if mimicry is a valid proxy measure of rapport. I do not expect an increase of mimicry from Interviewer 1 to Interviewer 2 as there is no

opportunity for coordination to increase over time. Thus, I do not expect an interaction effect of interview style and interviewer on mimicry.

H4: Mimicry and rapport should be significantly positively correlated if mimicry is a valid proxy measure of rapport.

H5: I expect higher information provision is associated with the Information-gathering approach than the Accusatory-interrogation method. Further, I do not expect an increase of information provision from Interviewer 1 to Interviewer 2. Accordingly, I do not expect an interaction effect of interview style and interviewer on disclosed information.

H6: I expect rapport mediates any effect between interview style and disclosed information.

Some predictions for study 2 are repeated from study 1 even though these were not supported by the results in study 1, for example correlations between mimicry and suspect rapport (see Chapter 3), this is to prevent possible type II errors whereby I falsely reject a correct hypothesis, for example, due to low power.

4.1 Method

4.1.1 Participants

Sixty-three participants Lancaster University students (46 female M_{Age} = 21.02, SD = 4.43 and 17 males M_{Age} = 21.88, SD = 4.66) were recruited for this study to take part as the suspect. Forty-nine percent (31) participants were native English speakers. Participants received either payment (£5.00) for participation or received course credit (first year Psychology students).

4.1.2 Materials

4.1.2.1 Rapport

Rapport was measured with the Rapport scales for Interrogations and Investigative Interviews (RS3i, Duke et al., 2018) by using the suspect version for the suspects and the interviewer version for the interviewers. I obtained good to excellent reliability scores for both the suspect version of the scale ($\alpha = .87$), and for the interviewer version of the scale ($\alpha = .87$).

4.1.2.2 Mimicry

I measured mimicry using motion capture suits by XSens. Both the interviewer and the suspect were equipped with the motion capture suits during the interview. Contrary to study 1, I measured only the upper body of both the suspect and the interviewer to obtain mimicry scores. Therefore, the amount of trackers was reduced from 17 to 11 motion trackers in total. These were the head, shoulders (left, right), sternum, upper arms (left, right), lower arms (left, right), hands (left, right) and pelvis. This decision was made to reduce the error rate when recording with the suits. As discussed in ’2.1.4 Overcoming the challenges of using Motion Capture Suits’, motion trackers go into sleep mode when they do not move. As participants are standing still during the interview, the motion trackers can all into sleep mode to save power and this interrupts the recording. This could affect perceptions of rapport where sessions are interrupted, or reduce the number of participants where mimicry scores are available. For example, in Study 1, the suits temporarily or entirely stopped working in 19% (11 out of 57) of the sessions.

To justify the change from full body to upper body, I correlated the full body measure with the upper body measure from the mimicry outputs from Study 1. The full body measure correlated strongly and significantly with the upper body measure, $r = .93$, $p < .001$.

For the first 10 sessions, interviewer 1 left the room and interviewer 2 entered the lab already equipped with the motion capture suits. This procedure increased the probability of the suits breaking as two suits were initially linked to the system, a third needed to be connected and then the first one disconnected. To ensure flawless recording, the experimenter decided for the remaining sessions to take the suit from interviewer 1 directly off and immediately equip interviewer 2 with the same suit. This reduced the number instances where the motion capture system would crash and recording for mimicry would fail.

A second change from Study 1 is that because both the interviewer and the suspect are dressed in the same motion capture suit, the interviewer is wearing an additional police badge to avoid possible minimal group effects due to the interviewer and suspect wearing the same clothing.

4.1.2.3 Disclosed information

To code disclosed information from the interviews, I used the same adjusted version of PLAT as in Study 2 (e.g., Eastwood, Snook, & Luther, 2019; Luther, Snook, Barron, & Lamb, 2014) including the categories I added in that study: Object (o) and Conversation/ Verbal detail (c) as two additional coding categories. For analyses, as I am only interested in the total amount of details provided, I use the total score for the analyses. To control for the varying lengths of the interview, the total amount of detail is divided by word count, which captures the efficiency of

the different interview methods, as well as correcting for individual differences in verbosity within participants exposed to each interview method.

Two coders coded 25.81 % (32 out of 124) of the transcripts. I compared the total number of details coded per interview. The coding between Rater 1 (M = 49.56, SD = 20.26) and Rater 2 (M = 57.47, SD = 30.29) was reliable, ICC = .75, (95% CI [.49, .88], F (31, 32) = 3.96, p < .001.

4.1.2.4 Truthful information

To code accurate information, I prepared lists with details and their respective synonyms (e.g., handbag: clutch, purse, and bag) based on the case vignette (see Appendix A '8.7 Suspect-task').

Two coders coded 25% (31 out of 124) of the transcripts. I compared the total amount of truthful information per transcript. The coding between Rater 1 (M = 12.35, SD = 4.86) and Rater 2 (M = 11.77, SD = 4.77) was reliable. ICC = .83, (95% CI [.68: .91], F (30, 30) = 10.72, p < .001.

4.1.3 Design and procedure

To meet the aims and objectives of this project, an experimental study with a 2 (Interview style: Information-gathering approach vs. Accusatory-interrogation method) x 2 (Interviewer 1 vs. Interviewer 2) mixed subject design with the interview style as between-subjects factor and the interviewer as the within-subjects factor was performed. The interviewer is within-subjects as all participants were exposed to two different interviewers.

For this study, I recruited five student helpers via the Psychology Employability Programme (PEP) that offers researchers at the Department of Psychology at Lancaster

University the option to host a research assistant placement for undergraduate Psychology students. The recruited student helpers were the interviewers in this study. Employing five student helpers ensured that a minimum of two interviewers were available each session but also to ensure differences in my dependent variables (rapport, mimicry and disclosed information) are due to the independent variables and not due to the differing ability or charisma of individual interviewers.

Student helpers received interview training and were instructed to keep a calm and steady pace during the interview, that they have the script in a music stand (as in Study 1) in front of them the whole time but could match the wording to how they would say it. The interviewer is instructed to act as natural as possible to simulate an "every-day" human interaction and is asked to speak in a calm manner and not to raise their voice or use other techniques of intimidation.

The two different interview conditions were counterbalanced and the order randomised using R. The interviewers were assigned randomly and by availability to either of the interview conditions and time points; i.e., conducting the first or second part.

4.1.3.1 The suspect-task

The experiment consists of two main stages: the pre-interview stage and the interview itself. During the pre-interview stage, the suspect reads a case vignette, preparing them for a mock crime that they commit while returning from holiday. The case vignette was complemented with pictures and maps making the holiday experience more realistic. The pictures show various sightseeing destinations; pictures of a market, food, and party scene (see Appendix A '8.7 Suspect-task').

Participants imagine that they were on holiday with their close friend, Anne Hastings, in Madrid, Spain. Anne left a day early to visit her grandparents who are on an eight-week winter break in Tenerife, Canary Islands. The participant spends the last day alone in Madrid. During the day, participants receive a text message from Anne who asks them to buy a handbag for her that she saw at the local market. Participants buy the handbag.

Then participants pack the items on the table next to them, including the handbag, in their bag (see Figure 4-1 for the items) for their flight back to Manchester Airport.

During the case vignette, participants could take notes which most did. Participants were informed before they engaged with the case vignette that they were not allowed to take the notes into the interview.

After approximately 10 minutes, the experimenter returns to the lab and tells the participant: “You have now landed at Manchester Airport. You are on your way to passport control and security at the airport. At the airport, you notice some signs explaining forbidden goods that you cannot bring into the UK. You realise that the handbag you bought for Anne is real snakeskin and because this is an animal product from an endangered species, this might have severe consequences for you if you are detected. I ask you to convince the interviewer of your innocence. Your goal is it to convince him or her that there is nothing in your bag that does not belong there. You do not want him or her to search your bag.”

In fact, the interviews end before the interviewer makes the decision if they wanted to search the bag. Participants have to try to avoid giving any information that might incriminate them and try to convince the interviewer of their innocence so that they do not search their bag.

Figure 4-1. Items the suspect had to pack before the interview. Top right: snakeskin bag.

4.1.3.2 The interview

In preparation of the interview, participants are invited to a two-room interview laboratory. In the first room, participants are equipped with the motion capture suits, and informed that in the second room, the interviewer is waiting for them. To make the scenario more realistic, there are direction signs that were designed in the style of airport signs (see Figure 4-2, left), and additionally signs that inform and remind the participant once more that they have a forbidden good in their bag (see Figure 4-2, right). The poster informs the participant once more: "You must tell customs about ('declare') any other goods when you arrive at the UK border, as well as anything that is banned or restricted in the UK. If you owe any duty or tax, you will usually have to pay it immediately. Your goods and any vehicle you use to transport them may be seized if you break the rules. You may also be fined or prosecuted." The same poster hangs behind the interviewer in clear view for the suspect in the interview room as well.

To explore if rapport can be transferred from one interviewer to another, the experimenter stops the interview after Interviewer 1 asked a certain number of questions either starting the interview with the Information-gathering method or the Accusatory-interrogation method. The experimenter interrupted the interview by saying: “I am sorry, we need to interrupt here. Can [name of the interviewer] please step out for a moment?” The experimenter pauses the audio and video recorder, assures the suspect they will continue in a moment and closes the door between the two rooms. The interview switches to the second interviewer who continues the questioning after a two-minute break by saying: “Apologies for the interruption, but my colleague needs to deal with an urgent phone call. I will take over the interview. [He/she] already asked you where you traveled from into the UK, and why you were traveling. [He/ she] talked about your bag, and if someone asked you to put something for them into your bag, and if you left your bag unattended at any point. Let’s continue with the interview.”

During the interview sessions both the interviewer and interviewee are standing, facing each other.

Figure 4-2. Left: Airport sign, Right: Customs information

4.2 Results

Interviews were not restricted in time but followed a standardized script. This was to ensure that the information provided by the suspect could be compared across interviews. Interviews took on average 2 minutes 42 seconds (SD = 1 Min 21 Sec, Min = 1 Min 5 Sec, Max = 8 Min 16 Sec) in this study. Follow up tests for all ANOVAs have Tukey's correction for multiple testing applied. All reported correlations are corrected via Bonferroni corrections.

4.2.1 Interviewer effects.

In this study, five interviewers conducted the interviews. To ensure that interviewers did not affect the interview outcomes, a one-way ANOVA was conducted (see Table 4-1). ANOVAs

are run without assuming equal variances (with Welch's correction) because this approach is equivalent to Fisher's model when variances are equal, and gives more a more robust test of significance when estimates are unequal. The results of these tests are presented below, but there were no significant effects. Therefore, I do not consider interviewer as a source of variance in later analyses of ratings of rapport, mimicry, disclosed or truthful information.

Table 4-1. ANOVA to test for interviewer effects on interview outcomes

	Interview 1			Interview 2		
	df	*F*	*p*	*df*	*F*	*p*
Suspect-rapport	4, 25.44	1.45	.247	4, 24.99	0.54	.705
Mimicry	4, 15.93	2.76	.064	4, 16.13	0.82	.533
Disclosed information	4, 22.95	1.17	.348	4, 26.20	0.44	.775
Truthful information	4, 24.54	0.13	.969	4, 24.30	0.42	.791

4.2.2 H1: Experienced rapport

A 2 (Interview style: Information-gathering approach x Accusatory-interrogation method) x 2 (Interviewer: Interviewer 1 x Interviewer 2)-mixed ANOVA found no main effect of Interview style. There was also no main effect for the Interviewer on suspect-rapport (participants' experience of rapport) during the interview. There was also no statistically significant interaction effect for the Interview style and Interviewer (see Table 4-2).

Table 4-2. ANOVA summary of the effect of interview style and time on suspect-rapport.

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 60	1.13	.292	0.01
Time	1, 60	1.11	.297	0.004
Interview style x Time	1, 60	0.74	.393	0.003

As in Study 1, suspect-rapport was higher in the Information-gathering approach than the Accusatory approach with Interviewer 1. Also as in Study 2, rapport increased between the first to the second interview for the Information-gathering approach. However, there was no corresponding increase for the Accusatory-interrogation method from Interviewer 1 to Interviewer 2. However, none of these comparisons are statistically significant.

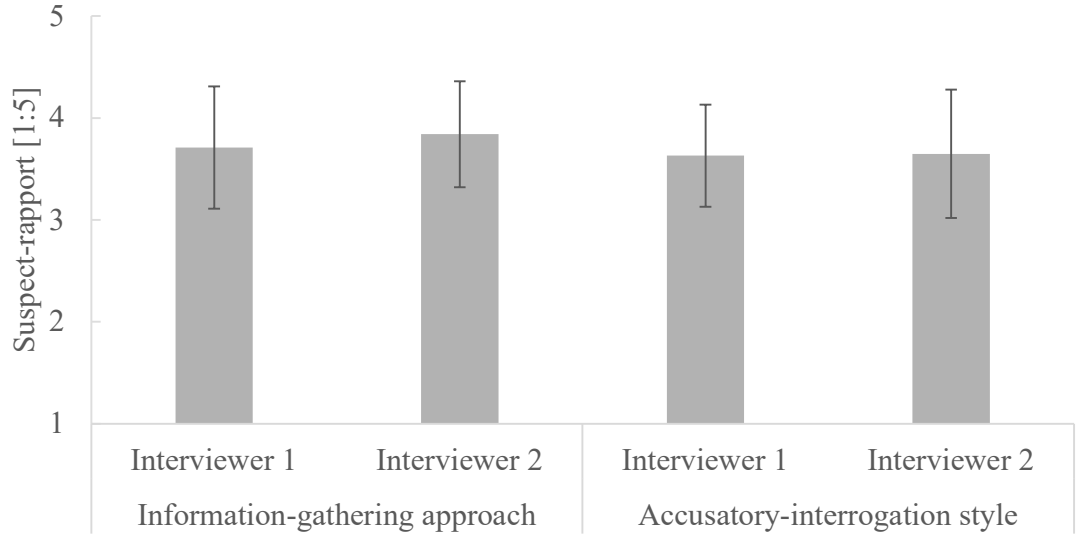

Figure 4-3. Mean (*SD*) suspect rated rapport by each interview style and interviewer.

Further, interviewers rated how they perceived rapport with the suspect. A 2x2-mixed ANOVA found no main effect of Interview style. There was also no main effect of Interviewer. There was an interaction effect for the interview style (see Table 4-3).

Table 4-3. ANOVA summary of the effect of interview style and time on interviewer-rapport.

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 60	0.84	.363	0.008
Time	1, 60	0.39	.536	0.002
Interview style x Time	1, 60	5.88	.018	0.04

Follow-up tests showed that Interviewer 1 rated rapport higher than Interviewer 2 in the Information-gathering approach, $t(60) = 2.16$, $p = .035$, $d = 0.52$. In the Accusatory-interrogation approach, there was no significant difference between Interviewer 1 and Interviewer 2, $t(60) = -1.28$, $p = .207$, $d = 0.28$.

Importantly for rapport transfer, suspect-rapport for Interviewer 1 is correlated with suspect-rapport with Interviewer 2 ($r = .78$, $n = 31$, $p = .004$). However, interviewer-rapport for Interviewer 1 is not significantly correlated with interviewer-rapport for Interviewer 2 ($r = .30$, $n = 31$, $p = .392$).

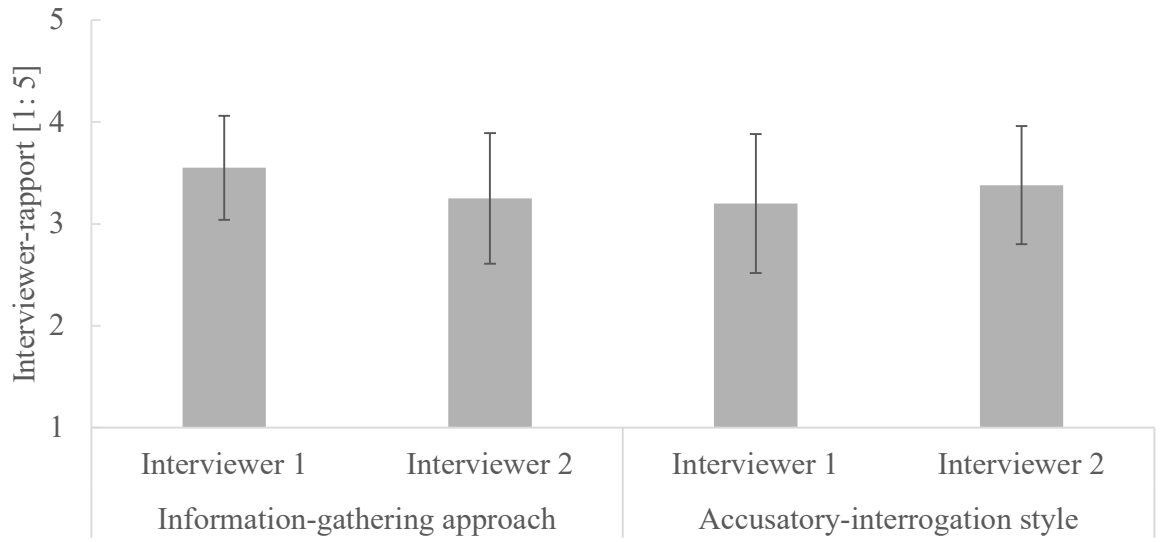

Figure 4-4. Mean (*SD*) interviewer rated rapport by each interview style and interviewer

4.2.3 H2: Suspect-rapport and interviewer-rapport

A Pearson product-moment correlation coefficient was computed to assess the relationship between the interviewer-rapport and suspect-rapport across both interview styles and interview times. Interviewer-rapport and suspect-rapport are not correlated for the Information-

gathering approach with either Interviewer 1 or Interviewer 2; or for the Accusatory-interrogation method for Interviewer 1 or Interviewer 2.

Table 4-4. Correlation results: interviewer-rapport and suspect-rapport

	Interviewer 1	Interviewer 2
Information-gathering approach	r = .12, N = 31, p = 1.000	r = .29, N = 31, p = .460
Accusatory-interrogation method	r = -.14, N = 31, p = 1.000	r = -.14, N = 31, p = 1.000

Note. Reported correlations are corrected via Bonferroni corrections.

4.2.4 H3: Mimicry

Here, I test the notion that mimicry is higher in the Information-gathering approach than in the Accusatory-interrogation method for both interviewers. Due to recording errors during the MVN recordings, there are twenty missing values, which were not detected until data analyses. The .mvnx-files contained errors (minus values when values should be positive). Re-running the data processing (transforming the raw .mvn data to .mvnx did not fix the error. While re-playing and skimming the motion capture recording for errors, the recordings were normal and recorded as expected so there was no way of detecting this software error prior to data analysis.

2 (Interview style: Information-gathering approach x Accusatory-interrogation method) x 2 (Interviewer: Interview 1 x Interview 2)-mixed ANOVA found no main effect of Interview style. There was no difference between mimicry for the first interview and the second interview. There was also no main effect of Interviewer on mimicry between the suspect and the interviewer. There was also no statistically significant interaction effect for the Interview style and Interviewer (see Table 4-5). Although, mimicry was consistently higher in the Information-gathering approach from Interviewer 1 to Interviewer 2 than in the Accusatory-interrogation method from Interviewer 1 to Interviewer 2.

Table 4-5. ANOVA summary of the effect of interview style and time on mimicry.

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 39	3.46	.070	0.05
Time	1, 39	0.88	.355	0.01
Interview style x Time	1, 39	0.00	.952	0.00

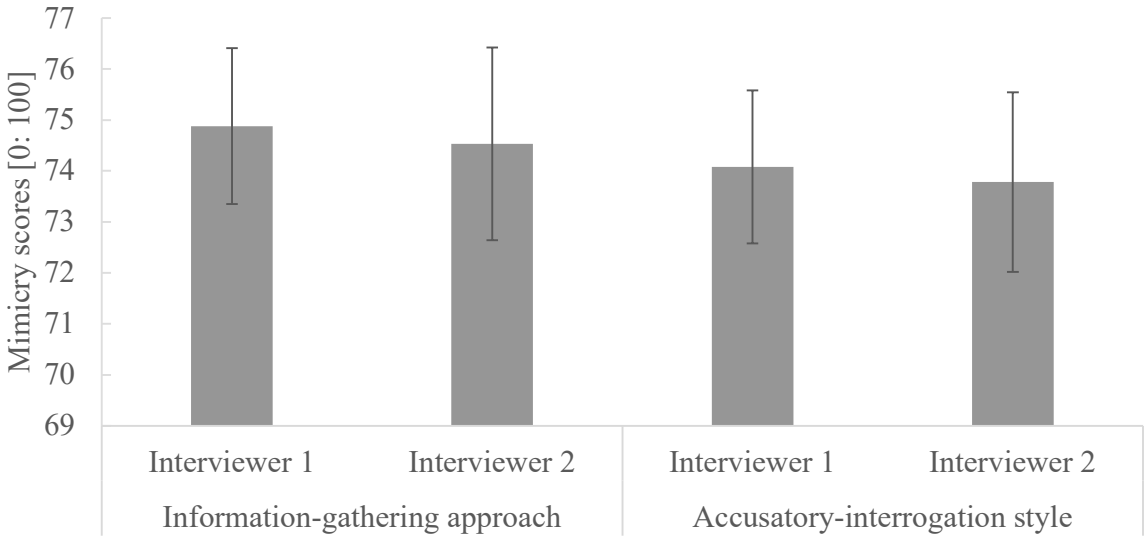

Figure 4-5. Mean (*SD*) mimicry by each interview style and interviewer.

4.2.5 H4: Experienced rapport and mimicry

A Pearson product-moment correlation coefficient was computed to assess the relationship between experienced rapport and mimicry across both interview styles and for both interviewers.

Suspect-rapport and mimicry are not significantly correlated (see Table 4-6). Further, interviewer-rapport and mimicry are not significantly correlated (see Table 4-7).

Table 4-6. Correlation results: suspect-rapport and mimicry

	Interviewer 1	Interviewer 2
Information-gathering approach	r = -.01, n = 25, p = 1.000	r = -.33, n = 25, p = .412
Accusatory-interrogation method	r = .04, n = 16, p = 1.000	r = -.08, n = 16, p = 1.000

Note. Reported correlations are corrected via Bonferroni corrections.

Table 4-7. Correlation results: interviewer-rapport and mimicry

	Interviewer 1	Interviewer 2
Information-gathering approach	r = -.15, n = 25, p = 1.000	r = -.27, n = 25, p = .776
Accusatory-interrogation method	r = .18, n = 16, p = 1.000	r = -.17, n = 16, p = 1.000

Note. Reported correlations are corrected via Bonferroni corrections.

4.2.6 H5: Disclosed information

A 2x2-mixed ANOVA found no main effect of Interview style. There was no difference between the Information-gathering approach and the Accusatory-interrogation method. There was a main effect of Interviewer on disclosed information. Disclosed information was higher for Interviewer 1 than Interviewer 2. There was also a statistically significant interaction effect between the Interview style and Interviewer (see Table 4-8).

Table 4-8. ANOVA summary of the effect of interview style and time on disclosed information.

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 60	0.00	.993	0.00
Time	1, 60	53.49	<.001	0.23
Interview style x Time	1, 60	6.60	.013	0.03

In the Information-gathering approach, suspects disclosed more information with Interviewer 1 than for Interviewer 2, $t(60) = 3.35$, $p = .007$, $d = 1.53$. In the Accusatory-interrogation method, suspects disclosed more information with Interviewer 1 than with Interviewer 2, $t(60.00) = 6.99$, $p < .001$, $d = 0.71$. However, there was a much smaller difference

between the two time points than for the information gathering approach. This difference is illustrated in Figure 4-6. Direct comparisons between interview styles for Interviewer 1 and Interviewer 2 were not statistically significantly different.

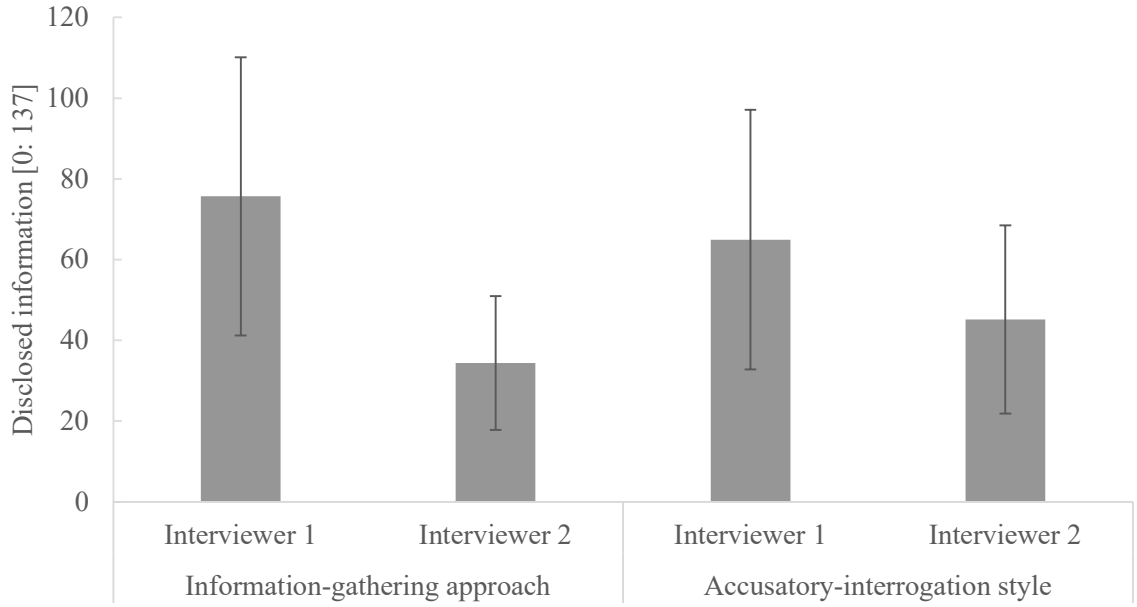

Figure 4-6. Mean (*SD*) disclosed interviewer by each interview style and interviewer

I calculated the efficiency of the suspect statements by controlling for the total number of words said by suspects (information density). A 2 (Approach: Information-gathering approach x Accusatory-interrogation method) x 2 (Time: Interview 1 x Interview 2)-mixed ANOVA found no main effect of Interview style. There was no main effect of Interviewer. There was also no statistically significant interaction effect for the Interview style and Interviewer (see Table 4-9).

Table 4-9. ANOVA summary of the effect of interview style and time on information density.

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 60	1.10	.297	0.01
Time	1, 60	3.60	.063	0.03
Interview style x Time	1, 60	2.17	.146	0.02

The Information-gathering approach generates a consistent number of details from Interviewer 1 to Interviewer 2. The Accusatory-interrogation method gets more information elicited per word in the second interview than in the first interview, but this difference was also not statistically significant. These differences are illustrated in Figure 4-7.

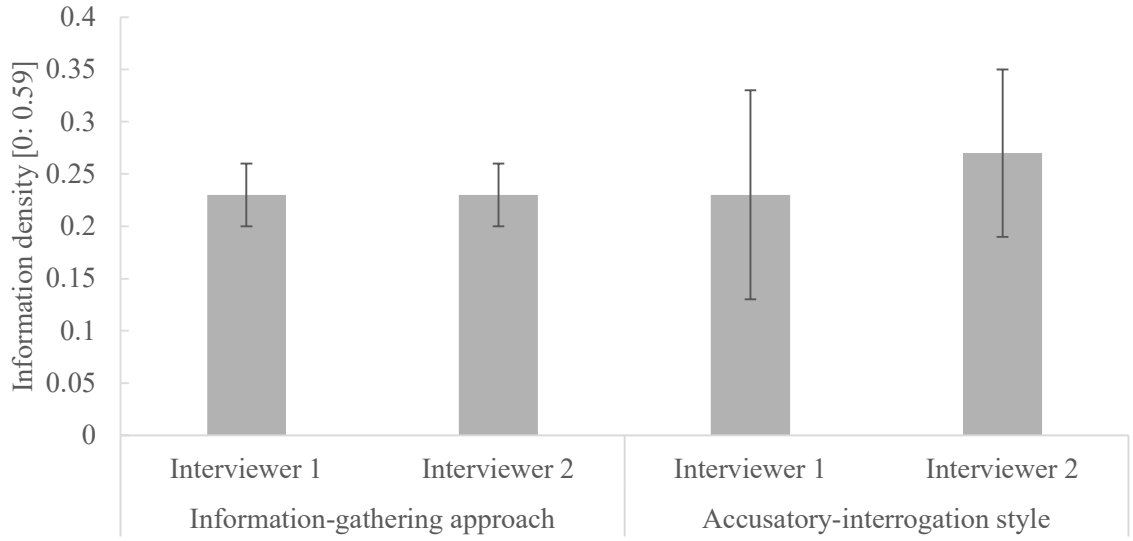

Figure 4-7. Mean (*SD*) information density by each interview style and interviewer

4.2.7 H6: Truthful information

2 (Approach: Information-gathering approach x Accusatory-interrogation method) x 2 (Time: Interview 1 x Interview 2)-mixed ANOVA found no main effect of Interview style. There was a main effect of Interviewer. Truthful information was higher in the first interview than in

the second interview. There was no statistically significant interaction effect for the Interview style and Interviewer (see Table 4-10).

Table 4-10. ANOVA summary of the effect of interview style and time on truthful information.

Predictor	*df*	*F*	*p*	η^2
Interview style	1, 60	1.10	.297	0.01
Time	1, 60	3.60	.063	0.03
Interview style x Time	1, 60	2.17	.146	0.02

Follow-up tests illustrate the main effect of interviewer as suspects provided more information interacting with Interviewer 1 than with Interviewer 2 in the Accusatory-interrogation method, $t(60) = 6.98$, $p < .001$ and the same pattern could be found for the Information-gathering approach. Here suspects also provided more information with Interviewer 1 than Interviewer 2, $t(60) = 8.23$, $p < .001$. These differences are illustrated in Figure 4-8.

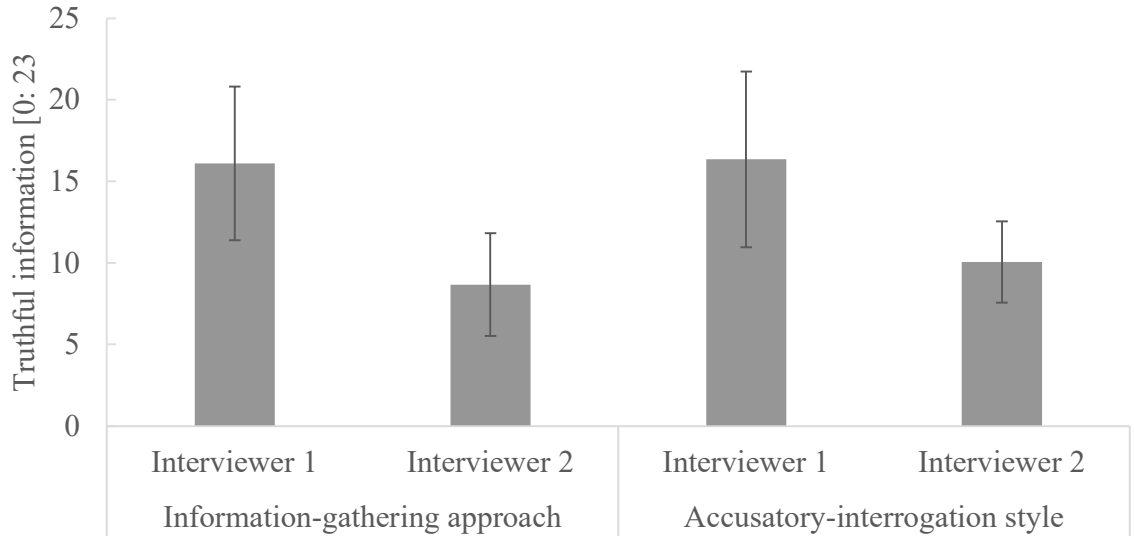

Figure 4-8. Mean (*SD*) truthful information by each interview style and interviewer.

4.3 Discussion

The purpose of this study was to test if rapport can be transferred between multiple interviewers because during police investigations it is possible that a suspect is in contact with more than one police officer. For example, at boarder control, the first customs officer is doing a screening of a suspect or their luggage and decides if the suspect needs to be investigated further. Then a second customs officer takes over and conducts a more thorough check. Further, I studied how rapport is transferred between two interviewers and one suspect when using contrasting interview styles; the Information-gathering approach and the Accusatory-interrogation method.

4.3.1 Rapport

In this study, I observe the same effects for suspect-rapport as in Study 1, but here they are not statistically significant and much smaller. Suspect-rapport was higher in the Information-gathering approach than in the Accusatory-interrogation method and there was a small increase from Interviewer 1 to Interviewer 2 in the Information-gathering approach, but there was no such effect in the Accusatory-interrogation method. These results highlight the pattern that I expected if suspect-rapport transferred between two interviewers. However, either these effects are genuine, but the study is underpowered and therefore did not show significant effects, or this pattern may be a fluke and these results do not reflect genuine effects. Given the very small effect sizes (shown via η^2 very close to 0) the later conclusion may be more likely. Speaking in favour of a transfer of rapport may be the decrease (or at least lack of increase) in suspect-rapport for Interviewer 2 in the Accusatory-interrogation method. In Study 1 a second interview with the same individual allowed rapport to recover, that is in Study 1 rapport was higher in the second interview in the Accusatory-interrogation method. In the current study, no rapport

recovery took place in the second interview of the Accusatory-interrogation method. This was as hypothesized assuming the increase in the second interview observed in Study 1 was due to increased coordination. However, with no statistically significant effects in comparison to the Information-gathering approach there is no strong support for this argument.

There are alternative reasons why there was no difference in rapport ratings for the second interview in this study compared to Study 1. These are: 1) The second interview took place directly after the first so there may not be enough time for a new impression to be formed, and; 2) the second interviewer was a different person so the 'no rapport' second interview might not be seen as comparatively pleasant compared to the initial accusatory interview. Rather it might have been considered part of the same accusatory interview. In other words, the second interview was perceived as being part of the same interview as the first, and so there was no new baseline level of rapport for the second interview based on positive experiences in the first.

A final explanation for non-significant findings might be that the suspect's ratings of rapport may be confounded by perceived interview success. I.e., the suspect's interview goal was to convince the interviewer that they had nothing 'illegal' in their bag, which they all did. When the interviewer now did not check their bag, the suspect could feel that they successfully accomplished their goal, which may have affected their rating of rapport. Study 1 had no such clear marker of success. However, this issue should have affected both Interview styles equally, and the means found for the groups may not imply ceiling effects that may be a likely explanation for the null findings.

One indicator that suspect-rapport may be transferred between interviewers is the positive significant correlation between suspect-rapport for Interviewer 1 with suspect-rapport for Interviewer 2, whereas interviewer-rapport from Interviewer 1 is not significantly correlated with

interviewer-rapport from Interviewer 2. In other words, suspects rapport ratings are similar for both of their interviewers, while interviewers have different rapport ratings of the same suspect. If there was no transfer of rapport one would expect this effect to be the other way around. The suspect is the consistent element in the experiment, and both interviewers interact with the same individual. However, their judgements of the suspect may not be correlated even though this is of the same participant. The suspect's judgments of two different people were, however, correlated, which suggests the interview conditions may be more important in establishing rapport than the individual interviewers, and those interview conditions were always set by Interviewer 1.

One notable deviation from Study 1 was that Interviewer-rapport was higher in the Information-gathering approach for Interviewer 1 and decreased for Interviewer 2. This may mean that the lack of a proper introduction might inhibit interviewer-rapport. Similarly, the second interviewer rated rapport more highly than Interviewer 1 in the accusatory interrogation method. Although, findings were only significant regarding the decrease in interviewer rapport between Interviewer 1 and Interviewer 2, these results tentatively indicate that the Accusatory-interrogation method may lead to reduced interviewer-rapport and the Information-gathering approach increased interviewer-rapport, while the second interviewers who had no defined style rated interviewer-rapport similarly. These findings suggest that the interview style may impact on the development of rapport such that the Information-gathering approach may increase rapport (Vallano, Evans, Schreiber Compo, & Kieckhaefer, 2015) and it could be that interviewers and not just suspects may benefit from having properly introduced interviews.

Yet it is still not clear if the Information-gathering approach may increase rapport or the Accusatory-interrogation method may decrease rapport. In this study it seemed that an information gathering approach may increase rapport, at least for the interviewer, given the

difference between Interviewer 1 and Interviewer 2 in this condition. However, in Study 1 the second time point for both interviewers produced similar rapport to when the introduction to the information gathering approach actually took place. Therefore, it could not be that the Information-gathering approach may create higher rapport so much as that rapport may not be damaged in the way it is with an accusatory approach. Given the lack of effects for suspect rapport in this study, this still needs to be established.

4.3.2 Rapport as a shared perception

The findings of the current study replicated the findings from Study 1 and indicate that suspect-rapport and interviewer-rapport are not correlated. This may imply that 1) rapport may not be, as theoretically assumed, a shared perception between both partners in the interaction, or; 2) the rapport that was established was not genuine. This is it could reflect pseudo-rapport where the attempts to build rapport by the interviewer are not perceived as reflecting the genuine beliefs of the interviewer (DePaulo & Bell, 1990), or; 3) the measure may be inadequate and the lack of correlation may reflect a lack of validity in the measure.

4.3.3 Mimicry

The direction of values for mimicry were in line with expectations if mimicry is a global measure of rapport, does not primarily reflect coordination, and where rapport does transfer between individuals in that it was consistently higher for individuals in the Information-gathering approach for both interviewers and lower in the accusatory-interrogation condition. However, little confidence can be placed in these findings because none of these comparisons are statistically significant, though the main effect of interview style is nearly significant ($p = .07$).

This could be due to faulty measurements where a number of recordings could not be analysed. This reduced the power of the study to detect any effect of mimicry. Similarly, as expected mimicry remained the same within the transition from Interviewer 1 to Interviewer 2. I.e., mimicry may carry over between two interviewers within the same organization whether that be higher or lower depending on the behaviour of Interviewer 1. But once again caution has to be exercised to not over interpret a non-significant result as confirmation of the null hypothesis. Rather I can say only that I do not find evidence that perceptions of rapport differ between Interviewer 1 and Interviewer 2.

One final thing to note is that mimicry scores were considerably higher in this study in comparison to the values in Study 1. It may seem as though only measuring upper body mimicry may detect more mimicry than using the full body. This may make sense here as both the interviewer and the suspect were standing and talking. This may mean that there was not much movement in the legs. Therefore, full body mimicry measures could underestimate the true extent of mimicry by including limbs not actively engaged in mimicry. Therefore, for future studies it might make more sense to focus on the upper body so as to not artificially restrict estimates of mimicry.

4.3.4 Mimicry and rapport

As with Study 1, there was no significant correlation between mimicry and suspect-rapport or interviewer-rapport. Although the study has been discussed as being underpowered regarding mimicry scores, as results were consistently non-significant both here and in Study 1 it may be likely that a true null effect is been observed because correlation coefficients were either close to zero or even negative. Given that we observed that mimicry did differ as expected

according to experimental condition if mimicry was a measure of global rapport rather than coordination (admittedly non-significantly) this could suggest that there may be a different reason to the one suggested for the lack of correlation between mimicry and rapport suggested in Study 1. I.e. it may not be that mimicry is a measure that captures coordination and not other elements of rapport. Rather, it could be that mimicry and rapport may be variables that are affected by similar conditions, but which are not directly associated. This will be further tested in my final study.

4.3.5 Disclosed and truthful information

For disclosed information, the results show no difference between the Information-gathering approach and the Accusatory-interrogation method. However, suspects disclosed more information in the second interview than in the first interview in the Accusatory-interrogation method. These findings are in line with Study 1, where suspects also disclosed more information in the second interview. In Study 1 I suggested that these results may be explained by 1) the suspect being more familiar with the structure of the interview in the second interview, 2) the first interview may be experienced as a practice run and therefore disclosed information may become more efficient in the second interview. Further, in the current study, in the first interview, the interviewer asks the suspect to provide as many details as possible about their travel and holiday while the second interviewer asks mainly about anything involving packing and the items in the bag. It could be that the second interview feels more realistic as questions concerning the content of the bag may be more expected, or as the questions are funneled towards “Is there anything in your bag that you need to declare?” it may give the suspect more guidance on what the interviewer may want to hear rather than open-ended questions about the

overall travel. In other words, it may be most likely that the reason for the difference in information provision between interviewers may lie in the script interviewers followed rather than anything to do with the order of interview or change in personnel.

My findings also suggest that there is no difference in how much truthful information a suspect shares between the Information-gathering approach and the Accusatory-interrogation method. However, suspects disclose more truthful information in the first interview than in the second. As with total details, an explanation for these findings may be in line with the interview structure. The interview structure is built like a funnel. I.e., in the first interview, the interviewer asks the suspect to give a full and complete statement about the suspect's holidays and travel. The suspect could plausibly provide up to 40 out of 52 true details in this section alone, with fewer opportunities to provide details in the second interview.

When comparing the amount of disclosed information and truthful information, there were potential interviewer effects in study 1 as only one interviewer conducted all interviews across conditions and time points (as discussed previously). Therefore, it might be possible that the interviewer guessed the study aim and (sub-)consciously influenced the suspect to provide more or less information. While the use of multiple interviewers in study 2 helps to ensure the effects observed are not idiosyncratic and to a single individual (in study 2, all dependent variables have been tested for interviewer effects prior to the analyses - see "4.2.1 Interviewer effect.", p. 116-117) it remains a possibility that interviewers were not blind to study aims in Study 2, because interviewers conducted interviews of both types. Therefore, in my next study I will recruit participants to be interviewers to ensure full blinding.

Previous research found Information-gathering approach to be advisable when interviewing suspects because it elicits more details (e.g., Meissner et al., 2012; Vrij et al., 2014).

Further, Vrij et al. (2014) advises the Information-gathering approach with reluctant suspects for the same reason. However, I did not find this effect. It could be that in the current study, stakes for the suspects may be low as there are no real consequences committing a mock-crime in an experimental setting, therefore the Accusatory-interrogation method may not be harmful to information provision because the risk for providing information is so low. Alternatively, it could be that the accusatory approach may be what suspects expected an interview to be like due to media consumption and so with low stakes may not have considered the approach to be as unfair or coercive as a genuine suspect would (see Chapter 1 'Introduction').

4.4 Limitations

One limitation of this study are the missing values for the mimicry measure across all conditions. Although the direction of effects for mimicry is as expected, we cannot be sure if these results would have been significant or not if it were not for the missing values.

Due to logistical reasons and to not give the aim of the study away (i.e., a second interviewer will take over the interview) participants rated both interviewers at the same time after the interview. I randomized the order in which the interviewers were rated and attached pictures to the questionnaires as a reminder which interviewer was first and which one was second. Nonetheless, results might be confounded by a desire to rate the interviewers consistently or due to framing effects. I.e. participants could anchor their rating of the second interviewer based on their rating for the first interviewer, artificially reducing the magnitude of any perceived differences between the interviewers (Levin, Schnittjer, & Thee, 1988). However, I can be fairly certain that suspects were surprised that the change in interviewers was the main part of the experiment as most participants asked when I told them to rate both interviewers:

"Oh, so that was part of the experiment? I thought they really had to leave, or that there was something wrong with the suits!" However, this remains anecdotal evidence.

Another reason for the effect of rapport being so small might be due to the shortness of the interview. The second interviewer had an even shorter encounter with the suspect as the second interview was not focussed on the holiday but on the content of the suitcase. Both interviewers focussing on different parts of the interview was planned according to a real-life airport security scenario (i.e., the first interviewer is doing the screening e.g., information about the general travel, and the second interviewer focusses on the contents of the bag) but may have created an imbalance between the two scenarios. However, as discussed in "3.3 Discussion" (see p. 97-98) based on the available literature it is hard to make accurate statements about the sufficient length of an interview to establish rapport. However, as in study 1 we do not observe and floor effects that would indicate rapport failed to be established.

4.5 Conclusion and next steps

So far, I have found that suspect-rapport may increase based on a non-accusatory interview style, at least in Study 1 and indicatively in Study 2. However, both studies only manipulated the interview style in the first interview to test whether rapport can be maintained and transferred. Still, it is not yet clear whether any benefit of interview style on my outcome variables (rapport, mimicry, disclosed information and truthful information) is due to the Information-gathering approach or if an Accusatory-interrogation method reduces rapport. This may be because differences for rapport may not have carried over to the second interview in Study 1, and there was a lack of any clear effect in Study 2. The next logical step is to test whether a control condition leads to a disambiguation between whether there is a benefit of the Information-

gathering approach over a control interview or whether the Accusatory-interrogation method is harmful for rapport, mimicry and information provision.

5 Study 3 – The influence of different interview styles on rapport

In my second study, I found no differences in how suspects experience rapport using two contrasting interview styles during the investigative interview. The Information-gathering approach did not, as expected, increase rapport compared to the Accusatory-interrogation method. The effects were in the expected direction, but these differences were not statistically significant. Study 1 did find that the interview style affected the development of rapport such that the Information-gathering approach lead to an increase in rapport (Vallano, Evans, Schreiber Compo, & Kieckhaefer, 2015). Using an Accusatory-interrogation method with its persuasive and coercive tactics, which supposedly aim to build rapport, should hinder the development of genuine rapport. I.e., as rapport is used in the Accusatory-interrogation method as a tactic to elicit confessions without any real desire to understand the suspect's perspective; this reflects pseudo-rapport, which may harm the development of true rapport (DePaulo & Bell, 1990). Therefore, it is not clear whether investigative approaches facilitate rapport building, accusatory approaches inhibit rapport, if both effects occur, or if neither approach differs particularly strongly in terms of rapport. It may be that pseudo-rapport is not perceived differently by suspects after all.

My own studies so far have not been able to answer this question definitively. In my first study, I could show that rapport was low in the Accusatory-interrogation method in the first interview, but higher in the second interview. The second interview showed rapport at the same level as the level of rapport found for the information gathering approach in both the first and second interview. This might suggest that rapport can recover from a first bad impression, plausibly as coordination increased. However, it might also suggest that the Information-gathering approach did not increase rapport, because rapport was at the same level at Time 2

regardless of interview style and there was no manipulation of interview styles at the second time point. Rather, it suggests that the Accusatory-interrogation approach may have reduced rapport. However, in my second study, interview style had no clear effect. Therefore, we still need to establish whether there is any clear effect of interview style, and if so whether the Information-gathering approach increases rapport, the Accusatory-interrogation method decreases rapport, or whether interview style does not lead to differences in interview outcomes.

There are not many studies that have directly researched how different interview styles impact on the development of rapport. This is especially surprising given that 1) law enforcement works with these interview styles in investigations across the world every day, and 2) researchers often emphasise the importance of rapport and highlight rapport's crucial role in interview outcomes (e.g., Alison et al., 2014).

One study that directly investigated effect of different interview styles on rapport by Alison et al. (2013) found that motivational interviewing (MI), which should increase rapport, could lead to a greater amount of information disclosure within interviews with suspects accused of terrorism offences. They found that even minor expressions of non-adaptive interviewer behavior towards suspects were reciprocated and reduced information disclosure, with these negative behaviours having a larger impact on information disclosure than positive interview behaviours. This suggests that negative behaviours may have a greater impact on information provision than good rapport building. My findings showed similar patterns in that rapport was only lower in Study 1 when the accusatory-interrogation style was directly present.

In this study, I try to clarify the effect of interview style by directly testing how the Information-gathering approach and the Accusatory-interrogation method influence the establishment of rapport and the disclosure of truthful information by the suspect during the

interview. Especially, I want to explore if the Information-gathering approach indeed increases rapport or if the Accusatory-interrogation method reduces the establishment of rapport by introducing a clear control group.

In the control condition, the interview begins immediately with the questions. Adding a control group that includes an introduction that is neither the Information-gathering approach nor the Accusatory-interrogation method would have the advantage that the time spent with the interviewer would be equal. However, a no introduction control was used because it is difficult if not impossible to create a genuinely neutral introduction. Further, beginning the interview with no introduction also reflects the second interview of Study 1 and Study 2, and can therefore indicate if rapport can genuinely be maintained or transferred, as was inferred from those studies, or if the findings at the second interview only reflect what happens when there is an interview with no introduction. As the mimicry measure so far has consistently found higher mimicry in the Information-gathering approach, I will also be able to test if mimicry is also higher for the Information-gathering approach compared to a clear control condition.

Interviewers are recruited as participants in this study, and not hired casual research assistants (Study 1), or student helpers (Study 2). This is to test whether the effect in Study 1 may have been specific to the interviewer and her guessing the study aims by conducting interviews with contrasting styles, which may have led to her unwittingly exaggerating the effect. Recruiting participants with no prior knowledge of different interview styles allows me to be fully confident that the study is double blinded.

For this study, I hypothesized that different interview styles affect rapport, mimicry, the amount of disclosed information and truthful information. Specifically:

H1: I expect higher self-rated rapport is associated with the Information-gathering approach followed by the control condition followed by the Accusatory-interrogation method if it is accurate that the information gathering approach increases rapport and the accusatory approach diminishes it.

H2: Suspect-rapport and interviewer-rapport should be significantly positively correlated in all interview conditions.

H3: I expect higher mimicry is associated with the Information-gathering approach followed by the control condition followed by the Accusatory-interrogation method if mimicry is a proxy measure for rapport, and H1 is found to be supported.

H4: Mimicry and rapport should be significantly positively correlated in all interview conditions if mimicry is a valid proxy measure for rapport.

H5: I expect higher information provision is associated with the Information-gathering approach followed by the control condition followed by the Accusatory-interrogation method as measured by total details provided, details provided per word, and the number of truthful details.

5.1 Methods

5.1.1 Participants.

For the current study, I recruited 128 Lancaster University students who were randomly assigned to take part as either the suspect or the interviewer: Sixty-nine Lancaster University students (32 females M_{age} = 20.72, SD = 3.77; 36 males M_{age} = 21.94, SD = 5.77; 1 did not declare their sex) were recruited to take part as the suspect. Fifty-one percent of suspects were native English speakers. An additional 69 Lancaster University students (45 females M_{age} =

22.36, SD = 5.72; 24 males M_{age} = 21.71, SD = 4.35) were recruited to take part as the interviewer. Another, fifty-one percent of interviewers were native English speakers. Participants received either payment (£5.00) for participation or received course credit (first year Psychology students).

5.1.2 Material

5.1.2.1 Rapport.

Rapport was measured with the Rapport scales for interrogations and Investigative Interviews (RS3i, Duke et al., 2018) by using the suspect version for the suspects and the interviewer version for the interviewers. I obtained excellent reliability scores for both the suspect version of the scale (α = .90), and for the interviewer version of the scale (α = .94).

5.1.2.2 Mimicry.

I measured mimicry using motion capture suits by XSens. Both the interviewer and the suspect were equipped with the motion capture suits during the interview. As in Study 2, I measured only the upper body of both the suspect and the interviewer to obtain mimicry scores.

5.1.2.3 Disclosed information.

To code disclosed information from the interviews, I used the same adjusted version of PLAT as in Study 2 and 3 (e.g., Eastwood, Snook, & Luther, 2019; Luther, Snook, Barron, & Lamb, 2014) including the novel added Object (o) and Conversation/ Verbal detail (c) codes as two additional coding categories (see Study 1 and Study 2).

In the current study, two coders coded both 22 % (15 out of 69) of transcripts. I compared the total number of details coded per interview. The coding between Rater 1 (M = 70.80, SD = 22.45) and Rater 2 (M = 49.27, SD = 20.46) was reliable, ICC = .863, (95% CI [.641, .952], F (14, 14) = 13.60, p < .001.

5.1.2.4 Truthful information.

To code accurate information, I prepared lists with details and their respective synonyms based on the case vignette (see Appendix A '8.14 Truthful information: Study 3'). Truthful details are coded dichotomously, either 0 (missing) or 1 (mentioned). Two coders coded 26% (18 out of 69) of the transcripts. I compared the amount of truthful information per transcript. The coding between Rater 1 (M = 12.94, SD = 2.18) and Rater 2 (M = 13.00, SD = 2.47) was reliable. ICC = .789, (95% CI [.521: .916], F (17, 17) = 8.50, p < .001.

5.1.3 Procedure

To meet the objectives of this study a between subjects design was performed with three groups (Information-gathering approach vs. Accusatory-interrogation method vs. Control). I use a One-way ANOVA for all group comparisons. Twenty-three participants were randomly assigned to the Information-gathering approach, 24 to the Accusatory-interrogation method, and 22 in the control condition. Randomisation was determined by using a randomisation procedure in R.

After arrival at the lab, participants were randomly assigned to the role of either the suspect or the interviewer. Randomisation was determined by dice roll. The experimenter explained the two different roles, and then separated the participants into different labs.

5.1.3.1 The suspect-task.

In the pre-interview stage of the experiment, the suspect is asked to engage with a case vignette for approximately 10 minutes, as they will be questioned about the incident in a later interview. Suspects are asked to imagine that they work on a military base as a local contractor delivering food and equipment from the local airport. The base has recently been experiencing a lot of theft of equipment, such as engine parts for vehicles. A couple of days ago, a close friend of the suspect told them that he is part of the smuggling ring, and that they are short on drivers at the moment. He asked the suspect to smuggle equipment out of the base, which the suspect agreed to. The case vignette then describes various ways of how to smuggle equipment out of the base including how the suspect engaged in smuggling. Now the suspect is being interviewed about the equipment theft at the base.

As the suspect is also part of the crime committed, they are instructed to be hesitant of how much information to provide. The suspect is required to provide enough information to become an informant and gain police protection, but not so much that they incriminate themselves. For the detailed case vignette please see Appendix a (‘8.12 Case vignette’).

The experimenter told participants that they would test a new lie-detection approach during police interviews. Participants were told that one group of interviewers was given information about how to detect lies during an interview and the other group did not receive the training. In actuality, none of the interviewers received deception detection training; this deceit was used to provide a reason why participants would be interviewed later, and why they were asked to lie at certain points without giving away the true purpose of the experiment.

5.1.3.2 The interviewer task.

The interviewer is told that they are questioning the suspect about military equipment theft at the military base – they must find out how much the suspect knows and if the suspect is guilty or innocent.

The interviewer has time to read the interview script, which will also be presented during the interview in a music stand. Further, interviewers are instructed to not raise their voice, to not invent their own questions, and try to make the interview as conversational as possible to avoid just reading off the script. Interviewers can change the wording if it does not change the meaning of the question. The interviewer is instructed to act as natural as possible to simulate an "every-day" human interaction. The interviewer is asked to speak in a calm manner and not use techniques of intimidation. Interviewers are not given any instructions on how to deliver the different interview styles (Information-gathering approach, Accusatory-interrogation method and control). The interviewer is asked to practice the interview with the experimenter at least once.

5.1.3.3 The interview.

The interviewers and suspects are then dressed in the motion capture suits (just upper body). While the interviewer waits equipped in the interviewer suit for the suspect who is dressed by the experimenter in an adjascent room, the interviewer has additional time to prepare their interview. As both the interviewer and the suspect are dressed in the same motion capture suit, the interviewer is wearing an additional police badge to avoid possible in-group as in Study 2.

The experimenter starts the interview session by starting the motion capture recording. During the interview sessions both the interviewer and interviewee are standing, facing each other.

5.2 Results

Interviews were not restricted in time but followed a standardised script. This was to ensure that the information provided by the suspect could be compared across interviews. Interviews took on average 2 minutes 44 seconds (SD = 1 Min 22 Sec, Min = 1 Min 5 Sec, Max = 8 Min 16 Sec) in this study. Follow up tests for all ANOVAs have Tukey's correction for multiple testing applied. All reported correlations are corrected via Bonferroni corrections.

5.2.1 H1: Experienced rapport

A one-way between-subject ANOVA was conducted to compare the effect of interview style on suspect-rapport. There was a significant effect of interview style on suspect-rapport, $F(2, 40.1) = 3.93$, $p = .028$. A Games-Howell Post-Hoc Test was used rather than Tukey because this analysis failed a homogeneity of variances test (no other analyses failed this test and so use Tukey corrections as throughout the rest of the thesis). This test showed that there is a significant difference between the Information-gathering approach and the Control condition, $t(33.09) = -2.55$, $p = .040$, $d = 0.77$. Overall, as illustrated in Figure 5-1, suspect-rapport was rated highest in the Information-gathering approach, followed by the Accusatory-interrogation method, and was rated lowest in the control condition.

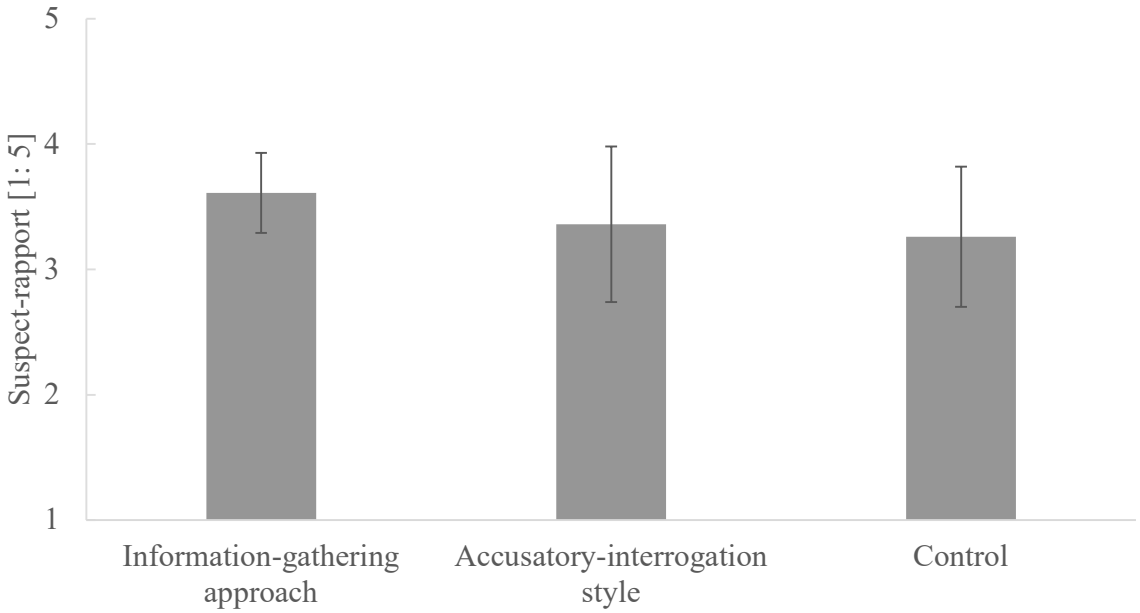

Figure 5-1. Mean (*SD*) suspect rated rapport by each interview style.

There was no significant effect of interview style on interviewer-rapport, $F(2, 42.1) = 1.63$, $p = .207$. As illustrated in Figure 5-2, interviewer-rapport was rated highest in the Information-gathering approach, followed by the Accusatory-interrogation method and the control condition.

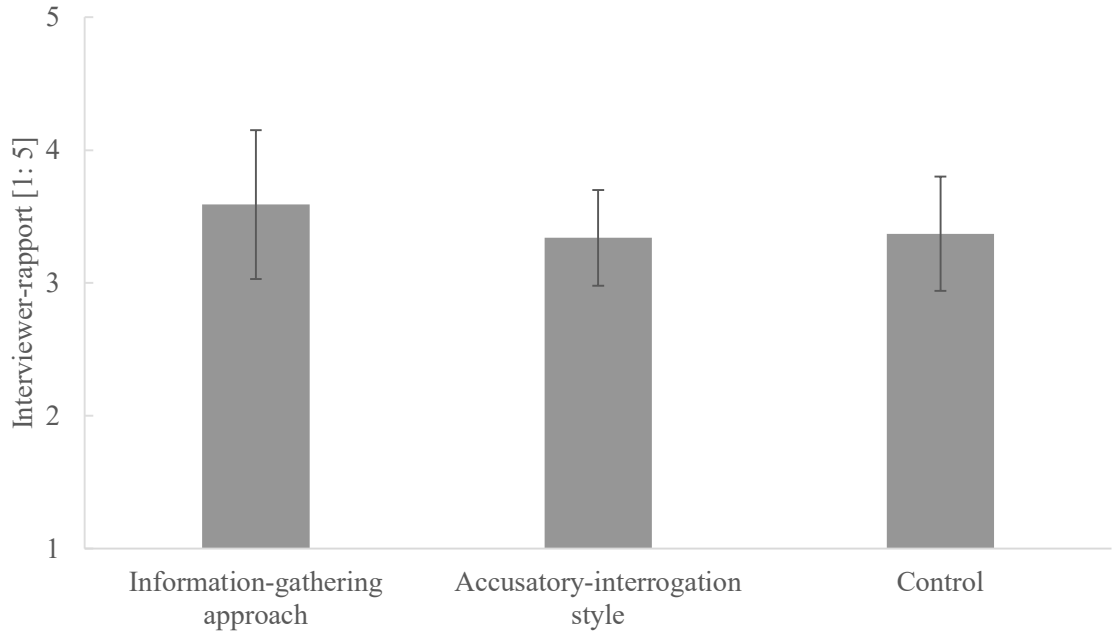

Figure 5-2. Mean (*SD*) interviewer rated rapport by each interview style

5.2.2 H2: Suspect-rapport and interviewer-rapport

Additionally, a Pearson product-moment correlation coefficient was computed to assess the relationship between the interviewer-rapport and suspect-rapport across all conditions. Reported correlations are corrected via Bonferroni corrections.

Interviewer-rapport and suspect-rapport are not correlated for the Information-gathering approach ($r = .20$, $n = 23$, $p = 1.000$), or in the Accusatory-interrogation method ($r = .32$, $n = 24$, $p = .378$), or in the control condition ($r = .32$, $n = 22$, $p = .429$).

5.2.3 H3: Mimicry

A one-way between-subjects ANOVA was conducted to compare the effect of Interview style on mimicry in the Information-gathering method, the Accusatory-interrogation method and the control group. There was not a significant effect of interview style on mimicry for the three

conditions, $F(1, 36.3) = 1.52$, $p = .233$. As shown in Figure 5-3, Mimicry was highest in the Information-gathering approach, followed by the control condition, and was rated lowest in the Accusatory-interrogation method.

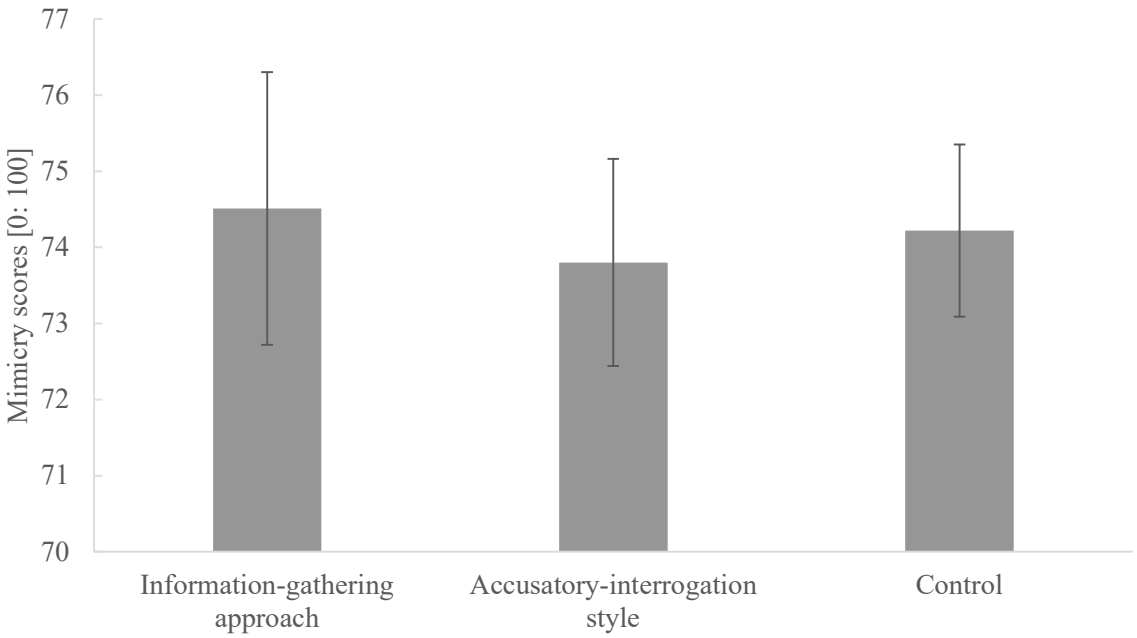

Figure 5-3. Mean (*SD*) mimicry by each interview style.

5.2.4 H4: Mimicry and rapport

A Pearson product-moment correlation coefficient was computed to assess the relationship between experienced rapport and mimicry across interview conditions. Reported correlations are corrected via Bonferroni corrections.

Mimicry and suspect-rapport were not correlated for the Information-gathering approach ($r = -.37$, $n = 17$, $p = .402$), in the Accusatory-interrogation method ($r = -.10$, $n = 21$, $p = 1.000$), or in the control condition ($r = -.07$, $n = 22$, $p = 1.000$).

Mimicry and interviewer-rapport are also not correlated for the Information-gathering approach (r = -.01, n = 17, p = 1.000), the Accusatory-interrogation method (r = .13, n = 21, p = 1.000), or the control condition (r = -.13, n = 22, p = 1.000).

5.2.5 Disclosed information

A one-way between subjects ANOVA was conducted to compare the effect of interview style on disclosed information in the Information-gathering method, the Accusatory-interrogation method and the control group. There was not a significant effect of interview style on disclosed information for the three conditions, $F(2, 35.0) = 0.36$, p =.701. As illustrated in Figure 5-4, disclosed information was highest in the Information-gathering approach, followed by the control condition, and was lowest in the Accusatory-interrogation method.

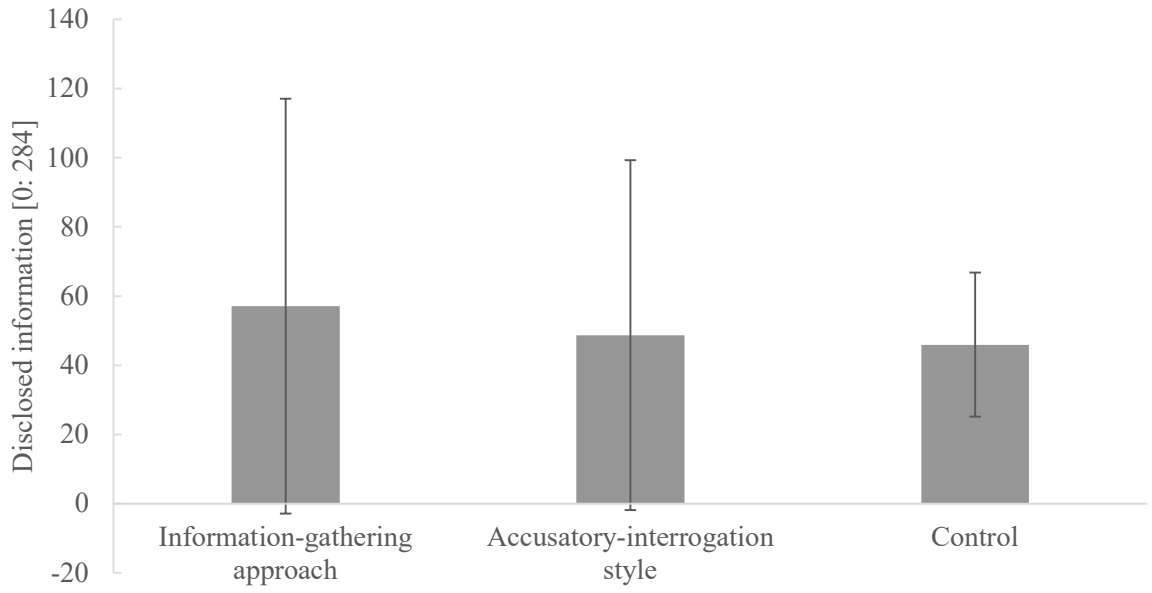

Figure 5-4. Mean (*SD*) disclosed information by each interview style.

Further, I calculated the efficiency of the suspect statements by controlling for the total number of words said by suspects (information density). A one-way between subjects ANOVA was conducted to compare the effect of interview style on information density in the Information-gathering method, the Accusatory-interrogation method and the control group. There was not a significant effect of interview style on disclosed information for the three conditions, $F(2, 40.2) = 0.31$, $p = .310$. As illustrated in Figure 5-5, information density was highest in the Information-gathering approach, followed by the control condition, and the Accusatory-interrogation method.

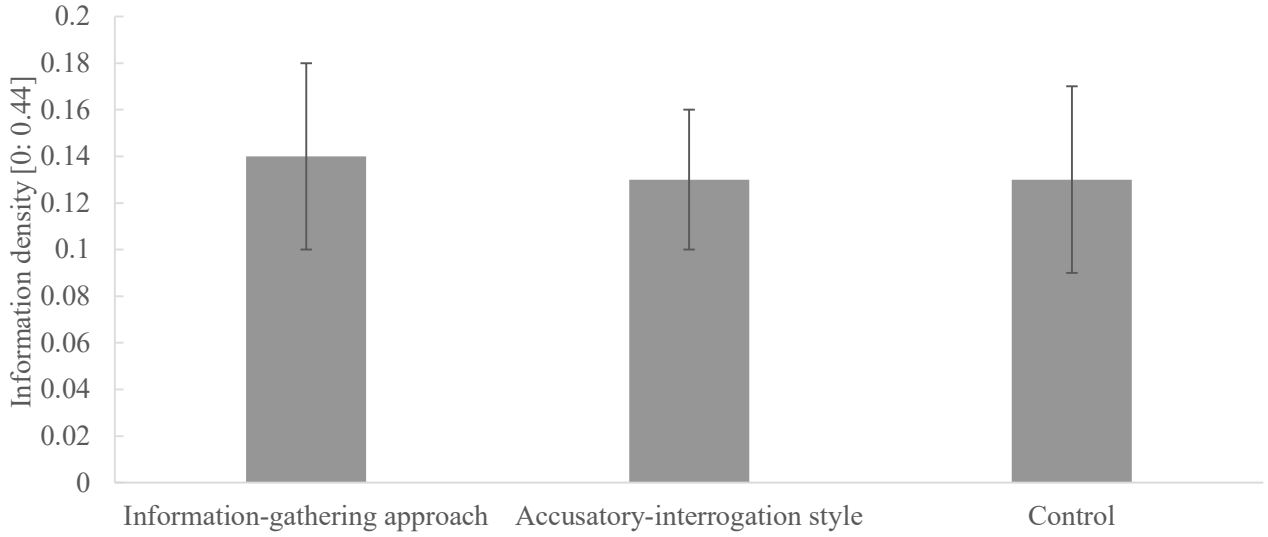

Figure 5-5. Mean (*SD*) information density by each interview style

5.2.6 Truthful information

A one-way between subjects ANOVA was conducted to compare the effect of interview style on truthful information in the Information-gathering method, the Accusatory-interrogation method and the control group. There was a significant effect of interview style on disclosed

information for the three conditions, $F(2, 43.8) = 4.57$, $p = .016$. Suspects provided the most truthful information in the Information-gathering approach, followed by the Accusatory-interrogation method, and was lowest in the control condition. A Tukey Post-Hoc test revealed that there was a significant difference for truthful information between the Information-gathering approach and the control condition, $t(42.3) = -2.86$, $p = .018$, $d = 0.85$. The findings are illustrated in Figure 5-6.

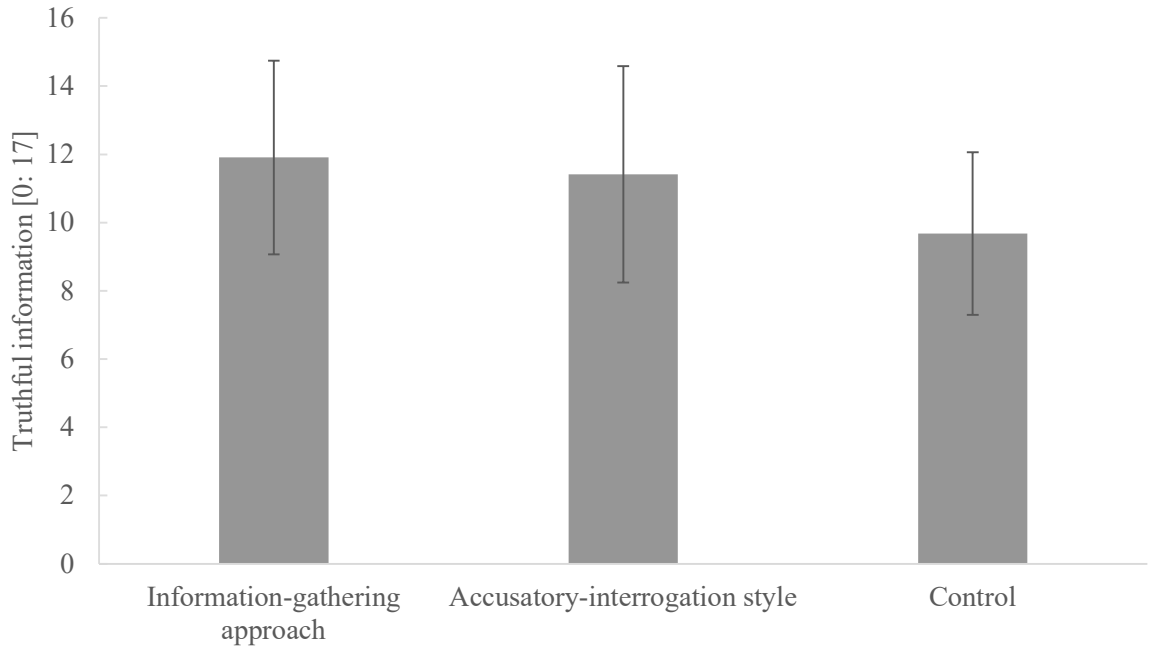

Figure 5-6. Mean (*SD*) truthful information by each interview style

5.2.7 H6: Disclosed information and experienced rapport

A Pearson product-moment correlation coefficient was computed to assess the relationship between experienced rapport and disclosed information, information density and truthful information across interview styles. Results are listed in Table 5-1, none of the correlations are significant.

Table 5-1. Correlations between rapport and disclosed information, information density and truthful information across conditions

	Information-gathering approach (N = 23)	Accusatory-interrogation method (N = 24)	Control condition (N = 22)
Suspect-rapport			
Disclosed information	r = -.10, p = 1.000	r = .14, p = 1.000	r = .26, p = .741
Information density	r = -0.02, p = 1.000	r = -.22, p = 1.000	r = -.13, p = 1.000
Truthful information	r = .05, p = 1.000	r = -.16, p = 1.000	r = .25, p = .846
Interviewer-rapport			
Disclosed information	r = .17, p = 1.000	r = .39, p = .549	r = -.01, p = 1.000
Information density	r = -.26, p = .852	r = -.07, p = 1.000	r = -.12, p = 1.000
Truthful information	r = .18, p = 1.000	r = .30, p = .552	r = .43, p = .186

Note. Reported correlations are corrected via Bonferroni corrections.

5.3 Discussion

The purpose of this study was to test how contrasting interview styles impact upon the interview such as the development of rapport, mimicry, disclosed information and the amount of truthful information. My findings from previous studies suggest that interviewer-rapport may be impacted by interview style as interviewer-rapport was higher in the Information-gathering approach than in the Accusatory-interrogation method, but not always statistically significantly (see Study 1 and Study 2). Suspect-rapport seemed unaffected by the interview style in Study 2, however the effects were in the expected direction in that suspect-rapport was higher in the Information-gathering approach than in the Accusatory-interrogation method, and the difference was statistically significant in Study 1. The purpose of this study was to detect whether the Information-gathering approach indeed increases rapport or the Accusatory-interrogation method

hinders the establishment of rapport by introducing a control group, as well as seeking to replicate any effect of interview style to increase confidence that any effect is genuine given the null result in Study 2.

The current study results show that suspect-rapport and interviewer-rapport are again higher in the Information-gathering approach than in the Accusatory-interrogation method. However, these effects are again not statistically significant which could raise doubts over how much confidence we should have on the impact of interview style on rapport. This question would likely require either a meta-analysis or a larger study than was possible here to draw a firm conclusion.

Results of the current study found that the control condition produced the lowest rapport. This finding might suggest that rapport may have actually been maintained between multiple interviews, and further may have actually been transferred between multiple interviewers. I.e., Rapport was not lower at Time 2 (Study 1) or for Interviewer 2 (Study 2) when the results of this study suggest that if Interview 1 (Study 1) or Interviewer 1 (Study 2) had no effect on the perceived rapport then rapport should have been lower at the second time point in both studies. This is because the interviews at the second time point in both studies had no introduction, which this study suggests should have produced low rapport. That rapport was consistent (Study 2) or even increased (Study 1) at the second time point which had an introduction does suggest that rapport may have been affected by prior experience. This could be directly tested by a study which incorporated the no information condition and tested rapport at multiple timepoints.

The current control condition also helps us to determine whether the difference between interview conditions and rapport seen in Study 1 was due to the Information-gathering approach increasing rapport or the Accusatory-interrogation method decreasing it. This study shows that

both approaches can help to establish rapport over providing no information at all to a suspect, but the Information-gathering approach leads to a greater overall increase in rapport, at least in Study 1. Rapport being higher in the Information-gathering approach cannot just be explained by the Accusatory-interrogation method suppressing rapport because the introduction to the interview was not repeated in the second interview. According to my findings, it actually seems as it may be as bad if not worse than using the Accusatory-interrogation method to start the interview with no introduction at all, and certainly worse than the Information-gathering approach.

Finding the lowest rapport in interviews that are lacking an introduction might suggest that clarity about the interview situation may be critical for the suspect to experience higher rapport, even if that clarity may be confirmation that the interviewer thinks that the suspect is likely to be guilty. Needing clarity about interview situations is according to self-regulation theory (Leventhal et al., 1980). Leventhal's self-regulation theory describes the individuals' needs to actively engage in a dynamic process of assessing threats and then coming up with problem-solving strategies to address those threats. A lack of information would make it harder to assess a threat and to accordingly plan for it. Self-regulation theory was already applied to interviews in the development of the Strategic use of Evidence (SUE) technique (Granhag, & Hartwig, 2015). The SUE technique is partly based on assumptions about how suspects plan counter interview strategies. It is argued that suspects are engaging in information control (e.g., working out what the interviewer knows) and decision control (deciding on course of action depending on what the suspect thinks the interviewer knows); and the Accusatory-interrogation method may confirm for the suspect that the interviewer may have information that has led them to conclude the suspect is guilty. Or it might be that the interviewer in the Accusatory-

interrogation method is perceived as being (apparently) upfront and honest about their position. This certainty might help the suspect's decision control by giving clear and unambiguous information regarding the interviewer's position. This clarity of context might make the interview situation less stressful than if the suspect were asked questions without any context cues such as in the control condition.

In summary, an interview introduction could increase the information about an uncertain situation (i.e., an investigative-style interview removes ambiguity by explaining the interview process (Information-gathering approach) or revealing the interviewer's beliefs about the suspects guilt (Accusatory-interrogation method). Therefore, removal of ambiguity might increase perceived rapport.

My findings in this current study suggest that there may not be any significant differences between the interview styles for disclosed information. Again, the effects were in the expected direction with disclosed information highest in the Information-gathering approach, but comparisons were not significant. In contrast, my findings did show that suspects disclosed more truthful information in the Information-gathering approach than in the Accusatory-interrogation method, and suspects disclosed least amount of truthful information in the control condition, although only the comparison between the Information-gathering approach and the control condition was statistically significant. These findings partly support the claim that the Information-gathering approach should be used to elicit information (Walsh et al., 2016). This is because this approach was found to be superior to the control group, while the Accusatory-interrogation method was not. Therefore, even though the direct comparison between the two interviewing methods was not conclusive, on balance the evidence is stronger in support of the Information-gathering approach than the Accusatory-interrogation method.

My findings suggest that mimicry did not significantly differ between interview styles. However, the effect was in the expected direction in that mimicry was also highest in the Information-gathering approach as in Study 1 and Study 2. However, as with my results for self-rated rapport, I now have two null results from three studies which implies the effect may likely be small, or not genuine and this too would need a meta-analysis or a larger study to provide a more definitive conclusion.

In Study 1 and Study 2, mimicry and neither suspect-rapport nor interviewer-rapport were correlated. These results were replicated in this study.

Finally, we once again saw that suspect-rapport and interviewer-rapport were not correlated.

5.4 Limitations

In this study, a specific limitation was the low stakes for the participants. They tried to become an informant for the police to gain protection from the police and try to not get discovered of smuggling military equipment themselves. The scenario was much more abstract than the scenarios used in Study 1, where participants actively engage in deception, or Study 2, which presented a scenario that most could easily imagine for themselves. This made plausible that participants were less likely to perceive a real threat from being discovered and prosecuted in this study compared to Study 1 and Study 2.

6 General discussion

Identifying methods to obtain as many details, and especially accurate and truthful details, during an investigative interview is crucial aim of investigative psychological research. One concept that has been said to aid information provision is rapport (Walsh & Bull, 2011; Abbe & Brandon, 2013, 2014; Vallano, Evans, Schreiber Compo, & Kickhaefer, 2015) therefore, rapport is discussed as a central aspect to the investigative interview (St-Yves, 2006). However, as described in Chapter 1, rapport might be one of the most recommended and yet under researched interviewing techniques (e.g., Fisher & Geiselman, 1992; Abbe & Brandon 2013). Although, rapport is a key element of numerous interviewing models, for example the PEACE framework (Fahsing & Rachlew, 2009) and the Reid technique (Inbau et al., 2001), and despite the assumption that these influence information provision, the impact of interview style on rapport has rarely been tested directly. Further, it is not yet been directly tested if rapport mediates the effect of interview style on information provision. There has also never been a consideration of how rapport would be affected by repeated exposure to specific individuals and law enforcement in general.

As shown in Figure 6-1, I wished to test how different interview styles impact on rapport and disclosed information. For example, both the Information-gathering approach and the Accusatory-interrogation method highlight the importance of rapport building, but it is not known how 1) these contrasting interview styles impact upon rapport, and 2) how being accused of committing a crime (Accusatory-interrogation method) would alter the suspect's perception of rapport during the investigative interview (see Chapters 3, 4 and 5). Adams-Quackenbush (2019) found that that guilt presumption by the interviewer leads to fewer details provided by the interviewee. This effect is mostly due to the type of question asked, which I control for (the same

questions are asked across interview conditions). Therefore, my effects have to be due to the interpersonal style and effect of the introduction. As rapport has been argued to facilitate information provision (Alison et al., 2013), rapport should mediate the relationship between interview style and the amount of disclosed information by the suspect. I.e., higher rapport between the interviewer and the suspect should be associated with higher amount of disclosed information, while suspects who experience little rapport with their interviewer should provide less information. A question brought forward by my conversations with practitioners and recent literature (e.g., Abbe & Brandon, 2013), was to test whether rapport once established can be maintained across multiple interviews (Chapter 3), additionally, can rapport also be transferred between two interviewers within the same organization (see Chapter 4).

A second focus of the thesis concerned the measures of rapport. As discussed in Chapter 1, there is limited consensus on how rapport should be measured (see Chapter 1). As previous literature suggested nonverbal behavioural correlates are more accurate indicators of rapport (e.g., Tickle-Degnen & Rosenthal, 1990), recent research found a direct link between rapport and mimicry (La France, 1979; La France & Broadbent, 1976; Scheflen, 1964), and due to theoretical arguments that mimicry is related to all three aspects of Tickle-Degnen and Rosenthal's Tripartite Model of Rapport (Chapter 1), I tested mimicry measured via motion capture suits as a possible proxy for rapport. This Chapter will discuss the findings of the previous Chapters in the light of the rapport and mimicry literature. Subsequently, the implications of this research for investigators are discussed, and recommendations for future research are offered.

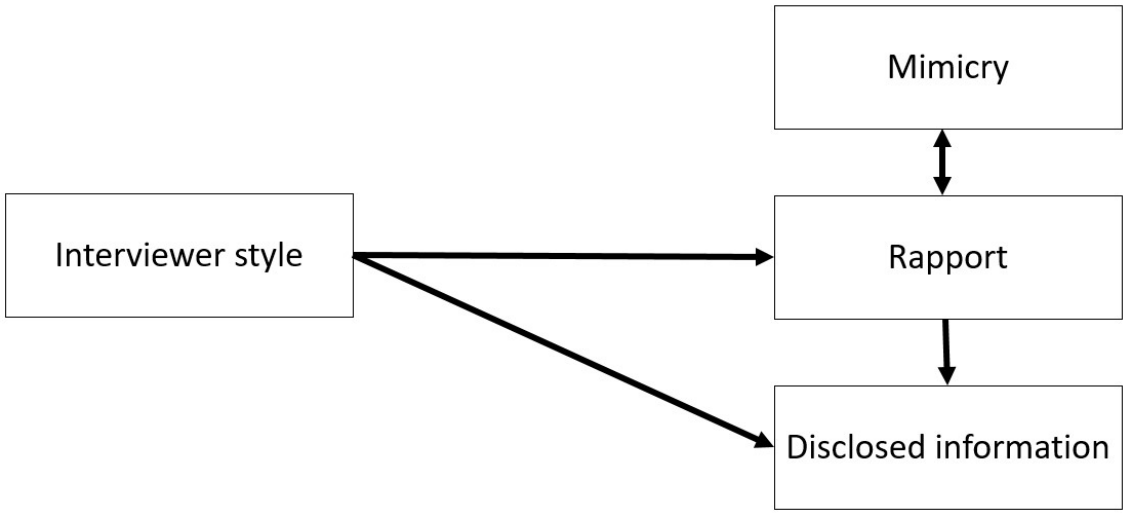

Figure 6-1. Thesis aim.

6.1 Theoretical Implications and Emerging questions

6.1.1 The effect of interview-style on rapport

Across, my studies the Information-gathering approach was consistently associated with higher self-reported rapport for both interviewers and suspects when compared to the Accusatory-interrogation method. However, these differences were only statistically significant in Study 1. One concern was that the effect may be genuine, but too small to be detected in individual studies. I.e., Study 2 and 3 could contain false negatives due to low power. To test this, I did have performed retrospective a priori power calculations to determine how big a sample I would have needed to detect a genuine effect of the size I observed in my studies (See Table 6-1). I also conducted post-hoc power analysis to identify the amount of power I had for my studies. This is also presented in Table 6-1. Post-hoc and a-priori analyses were both conducted using G*Power (Faul, Erdfelder, Land & Buchner, 2007). These analyses show that I would need larger samples than I had in order to detect effects of the magnitude I observed in each of my studies. However, it also reveals that across my three studies my combined sample size should be

sufficient to detect any effects. Therefore, I use meta-analysis to conduct a properly powered test of my main hypotheses that pools my samples from each of my three studies while taking account of between study heterogeneity. Testing the effects of interview style on my DVs via meta-analyses could compensate for the underpowered individual studies and further increase confidence in any difference I observe between interview styles on suspect rapport and mimicry. To increase robustness and prevent my concluding arguments from being speculative I will directly test the effect of interview style on *suspect-rapport* across my studies via meta-analysis.

Table 6-1. Post-hoc and a-priori power analyses across all studies (analyses conducted with G*Power).

	Suspect-rapport				Mimicry			
Study	*N*	Effect size [*f*]	Post hoc: Power	A Priori: Ideal *N*	*N*	Effect size [*f*]	Post hoc: Power	A Priori: Ideal *N*
1	57	0.31	.76	98	41	0.17	.29	220
2	63	0.07	.10	1204	41	0.26	.65	90
3	64	0.38	.75	72	59	0.22	.31	204
Meta-analysis	184	0.24	.90	140	141	0.21	.81	180

Meta-analysis was conducted using Jamovi. I used random effects meta-analysis, with restricted maximum-likelihood estimation method because this approach takes account of heterogeneity in the data. I.e., because my studies used different experimental paradigms and are not direct replications but conceptual replications, I need to use a method of meta-analysis that takes into account this extra variance beyond random error between studies. Effect sizes are presented as Hedge's *g* (Hedges & Olkin, 1985), which is very similar to Cohen's *d* but is less biased when sample sizes are small.

Table 6-1 shows how the interview style affected suspect-rapport. I only considered rapport scores from the first interview in Study 1 and Study 2 because these were the interviews where interview style was directly manipulated. Overall, I find a modest advantage for the Information-gathering approach over the Accusatory-interrogation method in establishing suspect-rapport (*g*[95% CI] = 0.48 [0.11, 0.85], *SE* = 0.19, *p* = .011).

Table 6-2. Summary of meta-analysis of the difference between interview styles on suspect-rapport

	Information-gathering approach			Accusatory-interrogation method			Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	M	SD	n	M	SD	g	LCI	UCI	g	LCI	UCI	SE	p
1	28	3.67	0.45	29	3.35	0.56	0.62	0.09	1.15	0.48	0.11	0.85	0.19	.011
2	31	3.71	0.59	31	3.63	0.50	0.14	-0.35	0.64					
3	23	3.61	0.32	24	3.26	0.56	0.75	0.16	1.34					

Based on the effect sizes for suspect-rapport, the paradigm in study 1 (g = 0.62) and study 3 (g = 0.75) may have worked best in eliciting differences between interview styles. However, because the effect size for study 1 may have been affected by the interviewer knowing the aims of the study, study 3 was likely the "best" paradigm to use. As a reminder, both the suspect and the interviewer were participants. Participants taking part as the suspect had to immerse themselves into a case vignette about equipment theft at a military base, and later convince the interviewer that they had not smuggled equipment out of the base although they had (see "5.1.3.1 The suspect-task", p. 144). This is in line with anecdotical feedback from participants after the study. Both interviewer (here participants) and suspect-participants experienced the scenario as most realistic in that they could imagine the scenario easily.

I also tested the effect of interview style on *interviewer-rapport*, and performed a meta-analysis here as well using the same parameters as described for the test of suspect-rapport. Table 6-3 presents how interviewer-rapport may be impacted by the interview style across my studies. The meta analyses for interviewer-rapport, showed that despite the point-estimate of the effect size actually being larger between the Information-gathering approach and the Accusatory-interrogation method when compared to the effect on suspects, the effect is not significant (g [95% CI] = 1.41 [-0.30, 3.12], SE = 0.87, p = .106). This may be explained by the effect of interviewer-rapport being much larger in Study 1 than Study 2 or Study 3. This introduces considerable heterogeneity into the estimate, which increases the standard error and therefore the associated confidence intervals. As I employed a single casual research assistant to conduct the interview in Study 1, it is likely that this very large effect size is due to the study aims not being blind in Study 1. It is likely the interviewer guessed the study aim and so provided responses to the questionnaires, which helped to confirm the study hypotheses. Plausibly, if unfortunately less likely, it is also possible that the difference was due to a training effect across all interviews and more experienced interviewers produce larger effects. The reason this is unlikely is that one would also expect training effects to impact on suspect rapport, and the effect sizes for suspect rapport were more consistent.

Table 6-3. Summary of meta-analysis of the difference between interview styles on interview-rapport

	Information-gathering approach			Accusatory-interrogation method			Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	M	SD	n	M	SD	g	LCI	UCI	g	LCI	UCI	SE	p
1	28	3.62	0.39	29	2.45	0.33	3.20	2.42	3.98	1.41	-0.30	3.12	0.87	.106
2	31	3.55	0.51	31	3.20	0.68	0.58	0.07	1.08					
3	23	3.59	0.56	24	3.34	0.36	0.52	-0.06	1.11					

Overall, I do find Information-gathering approach may increase rapport when compared to the Accusatory-interrogation method. I.e., Interview style may seem to impact upon suspect-rapport and interviewer-rapport.

According to the Tripartite model of rapport (Tickle-Degnen & Rosenthal, 1990) rapport consists of the three components: mutual attentiveness, positivity and coordination (see Chapter 1). It may be that mutual attentiveness and coordination are at least partly enforced by the interview structure: without paying attention to the suspect, the interviewer would not know when to ask the next questions, which sets the rhythm for turn taking, i.e., coordination. Moreover, an interview is a highly structured formal interaction, which may also help the development of coordination. Therefore, the effect of interview style upon suspect-rapport and interviewer-rapport may be most likely primarily due to positivity.

Positivity is described as a feeling of warmth and friendliness between two interaction partners (Tickle-Degnen & Rosenthal, 1990) and is argued to be associated with two dimensions of social judgement: warmth, as in liking, and competence, as in respect (Fiske, Cuddy, & Glick, 2007). When adapting the Tripartite model from its original background, which describing the relationship between the therapist and the client in psychotherapy, to the investigative interview it may make sense to emphasise the respect element of positivity. Defining positivity as respect

seems more fitting than liking (warmth) considering the power (e.g., authority) and goal (e.g., elicit vs. conceal information) imbalance between the interviewer and the suspect (Brambilla, Sacchi, Castellini, & Riva, 2010).

Within the Information-gathering approach, positivity might have been established by being respectful by explaining the interview procedure (e.g., content and purpose of the interview) and setting ground rules (e.g., not interrupting each other, suspect can ask questions at any time). These ground rules may also emphasise elements of coordination, by reinforcing the structure and expectations for communication by both parties. In the Accusatory-interrogation method, positivity may be reduced as the interviewer directly accused the suspect of committing a crime (e.g., "I am certain you smuggled equipment"). Interestingly, the control condition in Study 3 (interviewer just starts the interview without an introduction), may have led to the lowest amount of perceived rapport. I expected that the Accusatory-interrogation method would lead to the lowest amount of rapport, as positivity should be lowest. Thus, it might be that both the Information-gathering approach and the Accusatory-interrogation method may have an overall positive benefit on rapport by giving introductory information prior to the interview questions may reduce ambiguity and uncertainty for the suspect. It is rather that the Information-gathering approach has the larger benefit on rapport than the Accusatory-interrogation method. The control condition may not reduce any ambiguity by just starting the interview, leaving the suspect in an uncertain and therefore threatening situation. According to the Self-regulation theory (Leventhal et al., 1980), individuals actively engage in a dynamic process of assessing threats and then coming up with problem-solving strategies. A lack of information may make it harder to assess a threat and to plan for it accordingly. Threatening situations trigger self-regulatory strategies,

especially situations where one has little knowledge about an anticipated unpleasant event (Carver and Sheier, 2012, as cited by Hartwig, Granhag & Luke, 2014, p. 9-10).

The SUE technique, Strategic use of Evidence (Granhag, & Hartwig, 2015) implements elements of the psychology of self-regulation theory. The SUE technique assumes that an interview can be seen as an upcoming threat as there is a possibility for the suspect that the interviewer will not believe their arguments that they are innocent. This threat is compounded because the suspect is unaware how much the interviewer already knows. A strategy for the suspect to regain control over the interview situation are behavioural strategies (e.g., avoiding the situation by remaining silent) and cognitive strategies (e.g., focusing on less threatening aspects of the interview by taking the interview as a chance to convince the interviewer of their innocence; Hartwig, Granhag & Luke (2014)). For suspects, the following cognitive strategies may be the most important: 1) information control, i.e. attempts to obtain information about the interview, e.g. by trying to take the perspective of the interviewer and thinking what evidence thy may have that implicates the suspect and 2) decision control, i.e. deciding on a counter interview strategies based on the established information control to regain a sense of control (Averill, 1973, as cited by Hartwig, Granhag & Luke, 2014, p. 10). My studies tentatively suggest that increasing the level of ambiguity suspects face could inhibit the establishment of rapport. Conversely, removal of ambiguity might increase rapport.

An alternative explanation for these effects is that even the Accusatory-interrogation method may be considered to have greater positivity than the ‘no introduction’ interview simply because it may be considered societally impolite to not formally introduce yourself to each other (Rosenzwelg, 1993).

I would also like to add the caveat that even though the impact on interview style on suspect-rapport is significant, the effect is not large. The likely impact in practice might be modest given the effect sizes (see Table 6-1 and Table 6-2). For example, Satchell (2019) showed even for medium to large effect sizes, there is often a lot of overlap in behavioural expression between the two groups. Although Satchell illustrated this using deception detection, the logic might also apply here where the argument is that even if there is a true medium effect of interview style on rapport, there may be a number of specific individuals with high rapport in the accusatory-interrogation approach and equally there will be those with poor rapport where the Information-gathering approach is used. There will inevitably be individual differences in response even in controlled experimental scenarios, and these are only likely to increase when research findings are applied to practice where there is much less control over the context under which questioning takes place. Similarly, although I did not find any effect of using different interviewers in Study 2, it has been demonstrated that interview outcomes with witnesses do at least partly depend on the interpersonal dynamic of the specific interviewer and witness regardless of other considerations (Hudson, Satchell & Adams-Quackenbush, 2018). Rapport seems likely to be part of the explanation for this effect. Therefore, even though I have shown that interview style does impact on the rapport established between interviewers and suspects, interview style cannot explain all of the variance in how rapport is established.

6.1.2 Maintaining and transferring rapport

My findings suggested that rapport may be maintained over multiple interviews, and even may recover from one interview to the next in the Accusatory-interrogation method where rapport was low after the initial interview. Initially these effects were uncertain due to a lack of

significance in Study 2. However, Study 3 suggested that the effects observed in Study 1 and Study 2, where interviews at the second time point were similar to those at the first time point or showed higher rapport, were unlikely because no introduction interviews may genuinely be neutral.

Tickle-Degnen and Rosenthal (1990) included within their Tripartite model a trajectory of the three elements of rapport, i.e. the importance of the three components depending on the status of the relationship. Mutual attentiveness should be high at any point of the relationship for rapport to be present during a specific interaction, but positivity can decline once the relationship is established. Coordination is low at the beginning and increases over time when both interaction partners are more familiar with each other and communication become more predictable.

My first study showed that rapport remains high in the Information-gathering approach between the first interview and the second interview. After conducting Study 3, it may likely be that this may show a genuine maintenance of rapport from the first to second interview. However, Study 1 also suggests that rapport was lowest in the Accusatory-interrogation method for the first interview but may recover to the second interview. In Chapter 3, I argued that this may reflect increased coordination. There may be another possibility however, which is that the second interview, in contrast to the first, seemed to be considerably more pleasant. It has been shown that repeated exposure to an outgroup does increase positive attitudes toward that group (Pettigrew & Tropp, 2006). Again, my third study would argue against this alternative explanation because the second interview would not likely have been experienced as pleasant without the prior experience of the first interview given that there was no introduction.

One final note of caution against concluding that the reason for the increased rapport at Time 2 for the Accusatory-interrogation approach in Study 1 is provided by the study by Oostinga, Giebels and Taylor (2018). Oostinga et al. (2018) found that in suspect interviews, a judgement error (I.e. an error that threatens the self-worth of the receiver) by the interviewer may decrease rapport. However, these judgment errors need not negatively impact on rapport if the interviewer accepts that an error was made. In my studies, there is no explicit acknowledgement of the error, however conducting a second interview where no further accusation is made could be inferred as accepting that the initial approach to the interview was not appropriate. This is somewhat speculative at present but could be tested in future studies.

My findings also suggest that it is possible that rapport may also transfer between multiple interviewers. I did not observe any increase in rapport between interviewer 1 and 2, but the level of rapport established with the first interviewer were maintained with the second interviewer. In Chapter 5, I could not be confident that this was evidence for the transfer of rapport due to the lack of significant difference between the two interview styles during the first interview. The results of the meta-analysis in this chapter increase my confidence that this may demonstrate a genuine transfer of rapport, because in the absence of any transfer of rapport between interviewers, the level of rapport with the second interviewer should have been lower than that with the first because no introductions or explanations of the interview process were made. This confidence is increased because, as discussed in Chapter 5, suspect-rapport with the first interviewer may be positively associated with suspect-rapport with the second interviewer, while rapport ratings with the suspect from the interviewers was not correlated. This correlation with two different individuals by the suspect, and lack of correlation in judgements about the same individual by the interviewers suggested that rapport could be transferred.

This conclusion will require further testing. It is very possible that the immediate swap and cover story provided for the change in interviewer prevented any negative impact of a lack of an introduction during the interview because the suspect assumed the information provided by the first interviewer still applied. Though if this is the case it does suggest that the information given, rather than the interpersonal relationship between interviewer and suspect, is most critical in establishing rapport.

There is no other literature that directly tests how a suspect's experience within an interview could impact on their perceptions of police officers or affect their later communication in a second interview. Given that my findings are only tentative, this needs further examination, but it may suggest that theory from other areas of psychological inquiry applies in the interview context. In Chapter 5, I draw on literature examining Intergroup Contact Theory to build a case that positive encounters with the police may be likely to change attitudes toward police and may make it easier to establish rapport. Similarly, sociological perspectives of police cooperation have argued that procedural justice and legitimacy is essential for securing cooperation. For example, Kochel, Parks and Mastrofski (2013) interviewed victims of crime in Trinidad and Tobago and they examined the victims chose to contact the police. They found that normative perceptions of the police were more important in explaining why victims approached the police than utilitarian considerations. In other words, victims approach the police for help when they perceive the police as legitimate rather than only when it is in their own self-interest. While this study addresses the experiences of victims it is not a large leap of logic to think it is plausible that suspects would think along the same lines, and would be more inclined to cooperate with the police when they expect to be dealt with by a legitimate and procedurally fair system. The guilt presumptive nature of the Accusatory-interrogation method actively undermines this perception

of procedural fairness, and so experiences of procedurally unfair interviews could also lead to a generalised refusal to cooperate with police. This would be likely to directly impact on whether an interviewer was trusted, but would also impact on affective perceptions of the police and interviewers, and could inhibit positivity which is especially important in the early stages of establishing rapport.

To summarise, comparing the Information-gathering approach and the Accusatory-interrogation method to the control condition suggests that rapport may be likely to have been maintained between multiple interviews and further, rapport might transfer between multiple interviewers. I.e., at Time 2 (Study 1) and for Interviewer 2 (Study 2), there was higher rapport for Information-gathering approach than the Accusatory-interrogation method, with study 3 showing that this may not likely be caused by the second interview not being affected by the first interview.

6.1.3 Disclosed and truthful information

So far, I have discussed the effect of interview style on rapport, but rapport is not the end goal of an interview. The aim of the investigative interview is to elicit as much information as possible from the suspect to further the investigation. Rapport is expected investigative interview to aid information provision (Walsh & Bull, 2011; Abbe & Brandon, 2013, 2014; Vallano, Evans, Schreiber Compo, & Kickhaefer, 2015), and raising rapport without considering the ultimate aim of considering information provision only accounts for half a story. However, according to my findings, disclosed information and truthful information might not differ according to the interview style, and moreover rapport might not be a plausible mediator of the information that was provided.

Again, I performed a meta-analysis to test I the effect of interview style on *disclosed information* to ensure that null effects were not caused by low power, as for the observed effect of interview style on rapport. Table 6-4 presents how interviewer-rapport was impacted by the interview style across my studies. Again, I only took the value from the first interview time so that all comparisons are between interviews where interview style was directly manipulated. The meta-analysis for disclosed information, suggest that there is no effect on disclosed information between the Information-gathering approach and the accusatory-interrogation (*g* [95%CI] = 0.21, [-0.12, 0.77], *SE* = 0.23, *p* = .149).

Table 6-4. Summary of meta-analysis of the difference between interview styles on disclosed information

	Information-gathering approach			Accusatory-interrogation method			Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	M	SD	n	M	SD	g	LCI	UCI	g	LCI	UCI	SE	p
1	28	168.25	88.40	29	111.52	57.88	0.75	-0.36	1.29	0.21	0.12	0.77	0.23	.149
2	31	55.06	29.09	31	55.02	33.92	0.00	-0.50	0.50					
3	23	57.09	57.09	24	45.96	20.80	0.25	-0.33	0.82					

I also tested the effect of interview style on *information density* (see Table 6-4). Again, I do not identify reliable evidence of an effect on information density between the Information-gathering approach and the Accusatory-interrogation method (*g*[95%CI] = 0.74, [-0.46, 1.94], *SE* = 0.61, *p* = .227).

Table 6-5. Summary of meta-analysis of the difference between interview styles on information density

	Information-gathering approach			Accusatory-interrogation method			Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	M	SD	n	M	SD	g	LCI	UCI	g	LCI	UCI	SE	p
1	28	0.24	0.04	29	0.16	0.04	1.97	1.34	2.61	0.74	-0.46	1.94	0.61	.227
2	31	0.23	0.03	31	0.23	0.10	0.00	-0.50	0.50					
3	23	0.14	0.04	24	0.13	0.03	0.28	-0.30	0.85					

Apart from the first study, where suspects provided more information in the Information-gathering approach than in the Accusatory-interrogation method, my findings seem contrary to Meissner et al. (2012) who stated that previous research suggested that interviews conducted with an Information-gathering approach motivate suspects to disclose information that is more accurate by building rapport. In addition, Holmberg and Madsen (2014) found that a humanitarian rapport interview similar to my Information-gathering approach, led to more reported information all together than a dominant non-rapport interview, which would be comparable to an Accusatory-interrogation method. Although, my findings are in line with Holmberg and Madsen's (2014) second finding: I also found that suspects reported more information in the first than the second interview.

In Study 1, there was a large effect on information density being higher in the Information-gathering approach than in the Accusatory-interrogation method. However, I could not replicate the effect for the following studies. Optimistically, this might be due to employing a single-well trained interviewer in Study 1, while Study 2 and 3 were run with either numerous student helpers, and Study 3 with participants. Plausibly there might be beneficial effects of more thorough training and practice, or even just of engagement with the task. Less optimistically, another explanation might be that the interviewer in Study 1 guessed the desired study outcome,

so the study was not as planned genuinely double blinded. Recall that I found very similar results for interviewer-rapport and there the study not being blinded seemed the most plausible explanation because only interviewer-rapport and not suspect-rapport was affected. Here the answer is not so clear cut, because the interviewer still had to follow a script and had limited power to change the interview to manipulate the number of details provided. For example, the interviewer could not ask more follow up questions or probes in order to artificially raise the number of details elicited. This might suggest I may observe a genuine effect of interview delivery, but demand characteristics cannot be entirely ruled out.

It is entirely plausible that there may be no difference in the number of details provided by suspects depending on interview condition. In the Information-gathering approach, suspects might feel under less pressure and give as much information as they remember that does not implicate themselves. While in the Accusatory-interrogation approach, suspects being directly accused of committing a crime wanting to explain themselves and giving therefore as many information as they can. For example, Hartwig, Granhag, Strömwall and Doering (2010) found that guilty suspects will provide a lot of information when there are opportunities to provide alibis or volunteer information that helps them to appear innocent.

The lack of difference between the Information-gathering approach and the Accusatory-interrogation method might also be due to different personalities reacting different to the interview styles. Gudjonsson and Petursson (1991) found that the reason why offenders might confess might be a combination of the offence committed, to offender's attitude and personality factors and I have not considered the role of suspect or interviewer personality or attitudes here. Nonetheless, as with establishing rapport it is unlikely that interview style is the only important

factor and there are likely to be considerable differences in how much detail different participants provide. This is highlighted by the very large standard deviations in Table 6-4.

Another explanation might be that the stakes during the interview were not high enough and so regardless of condition participants were insufficiently motivated to conceal critical details. Committing a mock crime or reading a case vignette might have not created a realistic scenario of guilt for suspects in my study to change behaviour accordingly. Creating situations with higher stakes would lead to individuals being more motivated to lie or tell the truth, as participants believe the consequences of being detected might be higher (Matsumoto & Hwang, 2015).

6.1.4 Rapport – an individual or shared perception

Across all my studies, correlations between suspect-rapport and interviewer-rapport that rapport may not be a mutual experience either in the Information-gathering approach (see Table 6-6) or in the Accusatory-interrogation method (see Table 6-7).

According to Tickle-Degnen and Rosenthal (1987) rapport is not an individual state but describes the quality of a relationship. DePaulo and Bell (1990) argued against this and said that it is not quite clear if rapport is mutual and therefore shared. The mutuality of rapport is not always directly stated but is often implied within the literature where it is defined most often in terms of the quality of interaction between two people (See Chapter 1). For example, Bernieri (2005) claimed that rapport is experienced within the dyad and not the individual.

My findings suggest that rapport may not seem to be a shared perception. However, interview style may have impacted upon suspect-rapport and interviewer-rapport in the same direction, with rapport being consistently higher in the Information-gathering approach and

lower in the Accusatory-interrogation method. An explanation for the lack of correlation between suspect-rapport and interviewer-rapport might simply lie in the measure (SRi3, Duke 2013) which does not seem to be designed to measure mutuality of rapport between the interviewer and the source. As described in Chapter 2 (‘2.3.1.3 A Rapport scale for interrogations and Investigative Interviews: RS3i.’), the source-version of the RS3i consists of five sub-scales describing rapport which are 1. Trust/ Respect (4 items), 2. Expertise (4 items), 3. Attentiveness (4 items), 4. Cultural similarity (3 items), 5. Connected Flow (3 items). The interviewer-version consists of different subscales, which are 1. Warmth/ Agreeableness (1 item), 2. General Trustworthiness (1 item), 3. Respectful Communication (1 item), 4. Professional Expertise (1 item), 5. Professional Dedication (1 item), 6. Deep Respect (1 item), 7. Trustworthiness Toward Suspect (1 item), 8. Cultural Similarity (1 item), 9. Similarity as Individuals (1 item), 10. Interpersonal Connection (7 items). There is little overlap between the scales but moreover, the source-version asks the participants how they perceived the interviewer. While the interviewer-version asks interviewers predominately to rate how the source rated the interviewer. The RS3i is therefore not asking about the rapport between the source and the interviewer but the sources’ rating of rapport. A high correlation of both scales would indicate that the source and interviewer agree on the source’s perception of rapport. I therefore think it might be debatable how much the interviewer-version may genuinely be a measure of interviewer-rapport so much as a measure of how much the interviewer believes they were successful in generating rapport.

This could also explain why I nor Duke (2016) could find a correlation between source-rapport and interviewer-rapport. While Duke does not address this in her thesis, it could be that because a number of the items ask the interviewer to make inferences about the perception of the source, it could just be that the interviewers are not able to accurately make these inferences. We

know from literature from deception detection that people are not very good at judging the internal state of another person (e.g., Bond & DePaulo, 2006).

Another explanation might be that the rapport between the interviewer and the suspect is not genuine but pseudo-rapport. Pseudo-rapport can develop when behaviours that are associated with rapport like empathy displays or active listening, are used instrumentally (DePaulo & Bell, 1990). For example, if an interviewer acts as if they are trying to build a relationship with the suspect but without any genuine desire to, then this may result in pseudo rapport. Yet, there is a risk that non-genuine attempts to build a relationship will be discovered and Abbe and Brandon (2013) argue that it is not clear how pseudo-rapport, or rather the detection of pseudo-rapport, by the receiver could affect the relationship and the interview. I.e. people should aim to build genuine rapport not just use techniques to trick the suspect into compliance. In my studies, I asked interviewers to simply follow a script. The extent to which they made a genuine attempt to build rapport is unknown but likely not large. DePaulo and Bell argue whether there would be a real disadvantage of pseudo-rapport as it may be unlikely to be discovered and Abbe and Brandon (2013) state that we do not know how faked rapport would impact upon the interview. However, it is plausible that there may be individual differences in how both suspects and interviewers respond to non-genuine attempts to build rapport that could lead to an overall average increase in rapport when using the Information-gathering approach compared to the Accusatory-interrogation method even though there is no identified correlation between interviewer-rapport and suspect-rapport.

Another explanation for the lack of correlation between suspect-rapport and interviewer-rapport might be due to the nature of self-report questionnaires as a measure. As discussed in Chapter 2 (‘2.3.1.1 Self-report questionnaires’), disadvantages of using self-report questionnaires

include several biases. For example, social desirability bias (e.g. see Fleming, 2012), and the acquiescent (and non-acquiescent) response bias. Additionally, responses in self-report questionnaires depend on the interpretation by the participant (Demetriou, Ozer & Essau, 2015). It may be that responses to the questionnaires reflect something other than rapport, for example a general positive affective appraisal of the interview or interviewer or trust.

The most important information to take away from these findings, might be that there is no consensus in regard of the mutuality of rapport. Researchers often do not seem to take it into account when developing measures that capture both interviewer and source ratings of rapport (e.g., Duke, 2013), or just measure rapport for one interaction partner (see the list of measures in '2.3.1.2 Self-reporting questionnaires for perceived rapport'). And secondly, the impact of pseudo-rapport is also not yet clear. While self-reported measure of rapport for the suspect and the interviewer are not associated with each other, mimicry might hold a promising proxy of rapport.

Table 6-6. Information-gathering approach: Correlation between suspect-rapport and interviewer-rapport

	Information-gathering approach			Accusatory-interrogation method			Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	M	SD	n	M	SD	g	LCI	UCI	g	LCI	UCI	SE	p
1	28	0.24	0.04	29	0.16	0.04	1.97	1.34	2.61	0.74	-0.46	1.94	0.61	.227
2	31	0.23	0.03	31	0.23	0.10	0.00	-0.50	0.50					
3	23	0.14	0.04	24	0.13	0.03	0.28	-0.30	0.85					

Table 6-7. Accusatory-interrogation method: suspect and interviewer: Correlation between suspect-rapport and interviewer-rapport

		Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	r	LCI	UCI	r	LCI	UCI	SE	p
1	29	0.27	-0.12	0.65	0.14	-0.16	0.44	0.15	.353
2	31	-0.14	-0.51	0.23					
3	24	0.33	-0.10	0.76					

6.1.5 Mimicry

I also tested the effect of interview style on *mimicry*, and performed a meta-analysis here as well. If mimicry is a proxy of rapport, then mimicry should also be influenced by the same factors as rapport. I.e., the interview style. Table 6-8 shows how mimicry was impacted by the interview style across my studies. The meta-analysis for mimicry suggests that there may be a significant medium effect of mimicry between the Information-gathering approach and the Accusatory-interrogation method (g[95%CI] = 0.42 [0.07, 0.77], SE = 0.18, p = .019).

Table 6-8. Summary of meta-analysis of the difference between interview styles on mimicry

	Information-gathering approach			Accusatory-interrogation method			Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	M	SD	n	M	SD	g	LCI	UCI	g	LCI	UCI	SE	p
1	24	57.49	1.88	26	56.71	2.63	0.33	-0.23	0.89	0.42	0.07	0.77	0.18	.019
2	25	74.88	1.53	16	74.08	1.50	0.52	-0.12	1.15					
3	17	74.51	1.79	21	73.80	1.36	0.44	-0.20	1.09					

My findings suggest that interview style may influence mimicry between the interviewer and the suspect once power may be increased by combining the effects of all three studies. Mimicry is higher in the Information-gathering approach than in the Accusatory-interrogation method. This may imply that mimicry may be affected by the interview style in much the same

way that rapport might have been. I argued in section 6.1.1. that this effect on rapport may most likely be due to increased positivity. We know from previous literature that mimicry is higher when interaction partners like each other. Liking between interaction partners could be due to the mutual respect communicated by the Information-gathering approach. Low mimicry ratings in the Accusatory-interrogation method condition could be explained by the suspects feeling accused before the interview even began, and therefore not mimicking the interviewer because suspects were not motivated to affiliate with the interviewer on these terms (Lakin & Chartrand, 2003; Maddux, Mullen, & Galinsky, 2008). Therefore, that the behaviour matching occurred in the Information-gathering approach but not in the Accusatory-interrogation method might be due to the fact that behavioural matching is more likely to develop in positive social situations (Beńuš, 2014).

6.1.6 Mimicry as a proxy measure for rapport

However, while showing that mimicry may change under similar conditions to rapport offers some criterion validity, I also need to show convergent validity. I tried to do this by correlating mimicry with self-reported rapport. My findings do not support a link between either suspect-rapport or interviewer-rapport, and mimicry. I conducted four meta analyses to assess all these comparisons across my studies: 1) mimicry and suspect-rapport in the Information-gathering approach (see Table 6-9), 2) mimicry and interviewer-rapport in the Information-gathering approach (see Table 6-10), 3) mimicry and suspect-rapport in the Accusatory-interrogation method (see Table 6-11), and 4) mimicry and interviewer-rapport in the Accusatory-interrogation method (see Table 6-12). Correlation coefficients ranged from -.21

to .11 and all correlations were non-significant. It therefore seems that there probably is no correlation between my measure of self-rated rapport and mimicry.

Table 6-9. Information-gathering approach: Mimicry and suspect-rapport

		Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	r	LCI	UCI	r	LCI	UCI	SE	p
1	22	-0.26	-0.71	0.19	-0.24	-0.53	0.05	0.15	.111
2	25	-0.01	-0.43	0.41					
3	17	-0.55	-1.07	-0.03					

Table 6-10. Information-gathering approach: Mimicry and interviewer-rapport

		Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	r	LCI	UCI	r	LCI	UCI	SE	p
1	24	0.07	-0.36	0.50	-0.01	-0.26	0.25	0.13	.968
2	25	-0.15	-0.57	0.27					
3	17	0.11	-0.41	0.63					

Table 6-11. Accusatory-interrogation method: Mimicry and suspect-rapport

		Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	r	LCI	UCI	r	LCI	UCI	SE	p
1	26	-0.13	-0.54	0.28	-0.12	-0.38	0.15	0.14	.389
2	16	0.04	-0.50	0.58					
3	21	-0.21	-0.68	0.25					

Table 6-12. Accusatory-interrogation method: Mimicry and interviewer-rapport

		Effect Size (95%CI)			Meta-Analyses (95%CI)				
Study	n	r	LCI	UCI	r	LCI	UCI	SE	p
1	24	0.07	-0.36	0.50	0.11	-0.16	0.38	0.14	.434
2	16	0.18	-0.36	0.73					
3	21	0.10	-0.36	0.56					

Although interview style may have affected both rapport as a self-report measure and mimicry as a behavioural measure, rapport and mimicry do not seem to be associated. One explanation for the lack of correlation between rapport and mimicry might be that there may be no need for it. Mimicry may be of less importance to an interaction that is already positive, because a positive interaction may not need additional fine-tuning, as the interaction is smooth anyway (Stevanovic et al., 2017). However, this is in opposition to the Tripartite model which suggest that mimicry should become an increasingly important indicator of rapport over time via increased coordination. Moreover, the increased positivity of the information-gathering approach may seem to be associated with greater mimicry. Therefore, the null findings across my studies might instead indicate that: 1) mimicry and the self-report scale may not measure the same aspects of rapport, 2) either mimicry or self-reported rapport or both may not capture genuine rapport at all, 3) the interactions in my studies may be too short for mimicry to become an important component of rapport, or 4) mimicry is a variable that sometimes is affected by similar conditions to rapport, but may be affected by too many other factors to be a reliable measure of rapport. While any or all these explanations could be true to some extent option 4 seems to be the most compelling explanation. Explanation 3 (interactions were too short to establish mimicry) can be considered unlikely because there are studies that studied mimicry over a duration similar to my interview times (ranging on average from study 1 with 8 Min 52 Sec, study 2 with 2 Min 42 Sec and study 3 with 2 Min 44 Sec): in previous studies mimicry interactions lasted between on average 43 seconds (Stel et al., 2011 as cited in Hale, 2016, p. 25) to 3 minutes (Stel et al., 2011 as cited in Hale, 2016, p. 25), 5 minutes (Kouzakova, Karremans et al., 2010 as cited in Hale, 2016, p. 24), 10 minutes (Drury & van Swol, 2005; Kot & Kulesza, 2016; Kouzakova, van

Baaren et al., 2010; van Swol, 2003 all as cited in Hale, 2016, p. 24-25) and 45 minutes (Maddux et al., 2008 as cited in Hale, 2016, p. 25).

In support of explanation 4, Hale (2017) presented experimental results that showed that mimicry might not have a direct role in establishing rapport, but rather these are two different constructs that are sometimes both present under similar conditions. My findings suggest that she was right about this and I have independently replicated her results using in person experiments, while she performed her tests in a virtual reality environment. It might be that case that mimicry is a 'default' social behaviour (van Baaren, Decety, et al., 2009) used as a method to quickly understand other people's motives by facilitating interpersonal alignment (Hale, 2017). Rapport may often be a consequence of this increased interpersonal alignment, but frequent co-incidence of rapport and mimicry may be insufficient for mimicry to be a proxy measure of rapport.

Hale (2017) further suggests that mimicry might just show very small positive effects, which with additional social cues might increase rapport. Very small effects for mimicry would also imply that the social glue effect might be too weak to observe. Dang, King and Inzlicht (2020) demonstrate why self-report and behavioural measures are often weakly correlated. Weak correlations between self-report and behavioural measures of the same construct might stem from the poor reliability of many behavioural measures (because behavioural responses tend to have high variability it can be difficult to identify effects because this high variability leads to large error variance) and the dissimilar response processes between behavioural and self-report measures (because self-reports tend to measure perceptions of performance and behavioural measures tend to measure actual performance, but only in a very narrow and specific way). Dang et al. argue that behavioural measures may help to predict the short-term effects of a variable for the same individual (e.g. comparing mimicry in two interviews of a different type in close

proximity as per the original design of Study 1). Therefore, it might be that mimicry will prove to be too variable a measure to be a reliable measure to be applied in practice. This has parallels with the deception detection literature, where attempts to identify reliable behavioural cues to deception that are applicable across individuals have been unsuccessful (Luke, 2019). Inspired by this literature I decided to explore how reliable the measure of mimicry I used was (see Appendix a: '8.15 Validation: Measuring mimicry via motion capture suits'). In summary, I could not create 'perfect' mimicry by manipulating the input when measuring body movement via motion capture suits. I.e., two actors were directed to move in the exact same way while touching hands. Although this does not constitute a formal test of reliability very high mimicry scores would be expected, however, even under these conditions, mimicry scores indicated far from perfect mimicry which makes me doubt the reliability of the measure.

In summary, in Chapter 1, I identified strong theoretical grounds to expect a link between rapport and mimicry. However, it seems that mimicry is affected by too many factors so that it seems too difficult to argue that mimicry can be used as a straightforward proxy for any single construct. For example, mimicry may be influenced by various social cues i.e., motivation to affiliate (Chartrand et al., 2005), being an in-group vs an out-group member (Bourgeois & Hess, 2008; Yabar et al., 2006), eye contact (Wang et al., 2011, as cited in Hale et al., 2017, p. 107) and physical attractiveness (van Leeuwen et al., 2009, as cited in Hale et al., 2017, p. 107). At least I show that mimicry and rapport may not be robustly associated. For a variable to be a suitable proxy for another variable there needs to be a large and consistent correlation between the two variables. If the association between rapport and mimicry is variable in direction depending on the need to affiliate, or may only be weak or even plausibly non-existent under many of my experimental conditions, then it cannot be said that mimicry is a suitable proxy for rapport.

Nonetheless, I do find that both rapport and mimicry do tend to be greater in Information-gathering approaches rather than accusatory interviews, which suggests that mimicry and rapport may be affected to at least a small degree by the same conditions even if there is unlikely to be a strong causal relationship between the two.

6.2 Limitations

I have tried to address limitations of my studies throughout this discussion but would like to flag some final issues. As discussed in the introduction (see '1.1.2 Rapport Theories'), one limitation that rapport research needs to face is the limited number of theories of rapport. It is the Tripartite model of rapport (Tickle-Degnen & Rosenthal, 1987; 1990) that is mostly used in investigative interview literature despite being developed within clinical settings. The Tripartite model was not developed to be directly applicable to the interviewing context, as it focusses on rapport building within relationships between a therapist and a client rather than the relationship between an interviewer and a suspect, and therefore ignores the challenges this unique pairing faces (e.g., authority, power imbalance, high stakes). However, as also discussed, the Tripartite model can be adapted towards the investigative interview when positivity as one element is defined as respect (see '1.1.2 Rapport Theories' for a more detailed discussion). Still, it needs to be considered within the investigative interviewing literature more widely, and not just this thesis alone, that there is no specific theoretical framework for rapport within the suspect interview context.

As that as is common in interviewing research, my interviews lacked ecological validity. Interviews followed a strict structure with a standard interview protocol and interview script that did not allow the interviewers to spontaneously adapt to the interview situation. This might have

led to the suspect experiencing the interview as rigid and certainly does not reflect the probing questioning of an expert interviewer. The actual experience of an accusatory-interrogation interview is considerably more coercive and stressful than could possibly be performed on student volunteers and so would likely produce far larger differences in perceived rapport than my manipulation of interview introductions. Similarly, in comparison with real interviews my interviews were short, and might have not been long enough to develop rapport or mimicry. I.e. the reason I observed null effects prior to meta-analysis may be partly due to limited sample sizes but could equally be due to short interviews reducing the anticipated effect size. Finally, the stakes in lab-based interviews are lower than in real-life settings as for example when a suspect has to prove their innocence. One consequence which may arise of limited ecological validity are floor or ceiling effects of the rapport measure, because low stakes help high rapport to be established, or because brief interviews fail to provide sufficient time for rapport to be established. To test for floor and ceiling effects, histograms were inspected (see Appendix A '8.16 Histograms for the Rapport scale '3RS3i''). These histograms showed that there were not floor or ceiling effects, and are supported by mean and standard deviations in my individuals studies that show a diversity of rapport scores. Duke (2016) does not report the histograms in her thesis however, based on her reported means and standard deviations, we can assume that there were also no floor or ceiling effects because means scores are not near the upper or lower limits of the scale, and the standard deviations are not unusually large or small[9]. Another limitation

[9] Mean and Standard Deviation for the subscales of the RS3i (source version): General Trustworthiness M = 3.87, SD = 0.54; Attentiveness M = 4.26, SD = 0.53; Professional Expertise M = 4.03, SD = 0.60; Professional Dedication M = 4.19, SD = 0.58; Respect M = 4.11, SD = 0.53; Trustworthiness Toward Source M = 3.64, SD = 0.60; Cultural Similarity M = 3.21, SD = 0.74; Connected Flow M = 4.02, SD = 0.59; Trust/ Respect M = 3.84, SD = 3.84; Expertise M = 4.11, SD = 0.50 (Duke, 2016, p. 209).

based on the limited ecological validity of my studies are concerns about to what extent the chosen interview structures allow for variability in disclosed information and/ or truthful information. Although, I am confident that my interview questions allowed for variability in disclosure because they were all open questions, future research might consider adding more questions to increase difference between interview groups. I focussed on the main parts of the participant task (lying about the objective), yet variability might show more in areas "apart from the main crime" because suspects are likely to try to avoid mentioning central details but may report more peripheral details (Hartwig, Granhag & Luke, 2014).

As already discussed in the general discussion (see p. 159), there might be potential demand characteristics as the studies might not been fully blinded in that interviewers conducted both interview styles even if they were not explicitly informed about the study hypotheses. These interviewer effects on interviewer-rapport might limit the interpretability of these results. In study 1, the interviewer (one paid casual research assistant) might have guessed the purpose of the study as one can see in the inflated effect size compared to my other studies ($g = 3.20$). In study 2, interviewers were student volunteers who volunteer in research to gain work experience, here the effect size ($g = 0.58$) is roughly the same as in study 3 with interviewers being participants ($g = 0.52$). Therefore, it is likely that the effects for study 2 and study 3 are more representative of any true population effect.

Another threat to the generalization of my results beyond my samples is participants in my studies had to wear skin-tight suits, which are clearly motion capture suits and not 'every-day wear'. Especially, wearing a headband, gloves, and having Velcro straps on the extremities is unusual. Anecdotal evidence from my participants suggests this was not an issue because people often stated at the end of the experiment that you start forgetting the suits as soon as the

interview begins. However, the effect of wearing vs. not wearing the suits on perceived rapport is not directly tested here and so remains unknown.

However, a more critical limitations due to the use of the XSens suits needs to be addresses. To make sure that the mimicry measure is correct, I tested the MatLab and Perl Codes provided. I manipulated the input in four ways to create "perfect" mimicry. I equipped a colleague and myself[10] with the motion capture suits. We then touched hands to be able to create nearly perfect mimicry scores. The values I obtained for the mimicry scores are nowhere near zero, and also differ for the exact same movement. This decreased my confidence in the measure and the obtained mimicry scores. For a more detailed description please see Appendix A "8.15 Validation: Measuring mimicry via motion capture suits" (p. 229 ff.).

Also linked to the mimicry scores is a limitation that concerns my definition of mimicry. In this thesis, I defined interpersonal coordination as mimicry "as the automatic imitation of gestures, postures, mannerisms, and other motor movements (Chartrand & Bargh, 1999) that is not goal-directed (Hamilton, 2013) and is therefore subconscious (Pentland, 2008)." (p. 31). However, there are other types of interpersonal coordination with their own definitions. For example, 'perfect synchrony' is defined as behaviour that matches in both time and form (e.g.as is displayed in parade marching (Miles, Griffiths, Richardson, & Macrae, 2010 as cited in Hale, 2016, p. 12). Or further, imitation is the direct and deliberate copying of another person's body movement (Whiten et al., 2009 as cited in Hale, 2016, p. 12). In this thesis, I do not consider different forms of interpersonal coordination apart from the mimicry definition provided here, therefore other forms of interpersonal coordination that do not fall into my definition of mimicry

[10] The colleague also uses the suits for her research, and therefore had the expertise to equip me.

have not been considered. Arguably, my automatic measure of mimicry would not be able to disambiguate between synchrony, imitation and mimicry. However, this is also true of traditional measures of mimicry because researchers do not have access to the motives behind participants behaviours when coding mimicry when these have not been deliberately manipulated (e.g. by instructing a confederate to imitate an interaction partner). I.e. Raters cannot know if mimicry was a deliberate action (imitation) or a spontaneous response (mimicry). Therefore, I am making an assumption that bodily synchrony does reflect mimicry rather than imitation, but this seems reasonable since participants were not instructed to imitate their interaction partners.

Throughout this thesis, I used the RS3i based on Duke's thesis (2013) to measure experienced rapport by both the suspect and the interviewer. However, the scale was updated and then published in 2018 (Duke et al., 2018). The 2013 version of the RS3i has 55 items while the new version has just 21 items. My results might have been potentially influenced by participants being asked 55 questions while for analyses I used only 21 items to obtain a rapport score. However, I correlated the old and new questionnaire version and observed very high agreement (across all studies $r > .90$). therefore, the influence of using the shorter questionnaire should be limited. Still, there are a couple disadvantages of long scales that I would like to address as they potentially influenced results: 1) long scales can decrease participant motivation (Nevo, 1985, as cited in Gogol et al., 2018), 2) long scales are more time consuming and potentially monotonous and therefore negatively influence participant responses (Gardner, Cummings, Dunham, & Pierce, 1998, as cited in Gogol et al., 2018), and 3) long scales can lead to e.g., boredom, irritation, or fatigue (Robins et al., 2001; Wanous, Reichers, & Hudy, 1997, as cited in Gogol et al., 2018). These factors might lead to careless or random answering of the questionnaire which

might impact in the reliability and the validity of study results (Credé et al., 2012; McCrae, Kurtz, Yamagata, & Terracciano 2011, as cited in Gogol et al., 2018).

As is often the case in most psychological research, my participants were over 50 % WEIRD (Western, educated, industrialized, rich, and democratic) which leads to a lack of diversity in my sample, and leads to findings being less generalizable. Plus, due to limited research budget, I relied on using the credit system to reward undergraduate Psychology students for their participation, which lead to mostly females taking part in my research as Psychology students are mostly female. According to the American Psychology Association, females studying psychology on graduate level outnumber their male colleagues by approximately three to one[11]. My sample consists of mainly female participants although perpetrators in real-life cases are mostly male (e.g. Leo, 1996, p. 273). Consequently my sample is somewhat distant from the population group they are used to represent.

A related limitation I wish to address is the gender consistency across studies and interviewer similarity especially in study 1 (one interviewer was employed to conduct all interviews across times and conditions therefore all interviews were conducted by a single gender). Unfortunately, due to low power across studies, my sample size does not allow sub-sampling to compare same-sex (female, male) and opposite-sex comparisons. Therefore, I could not test for gender consistencies. For future research, it could be beneficial to compare females and males while displaying rapport as previous research has found that females perform better at social perception than male participants (Ambady & Rosenthal, 1992 as cited in Grahe &

[11] https://www.apa.org/monitor/2018/12/datapoint

Bernieri, 1999, p. 259). Females performing better at social perception than male participants may lead to females also being more receptive and/ or responsive to displays of rapport.

6.3 Conclusion

An interview style focusing on the Information-gathering approach may potentially increase rapport compared to an Accusatory-interrogation method, but only to a modest degree. These effects need to be further tested. Further, it may be that rapport can maintain between multiple interviews and also might transfer between interviewers. This could mean that what happens in the first interview, or even during the first encounter with the police, may impact on later interactions. This may have important implications for practice, because it suggests that good interviewing practice can lead to long term benefits in terms of cooperation with the police. However, I could not show that interview style or rapport had a clear effect on information disclosure. It may be that the reasons why people choose to disclose or not disclose depends more on other factors than the interpersonal relationship between the suspect and interviewer.

Mimicry does not seem to be a reliable proxy measure of rapport. While both do seem to be consequences of Information-gathering style interviews compared to Accusatory-interrogation style interviews, I could not find any evidence for any direct relationship between the two outcomes.

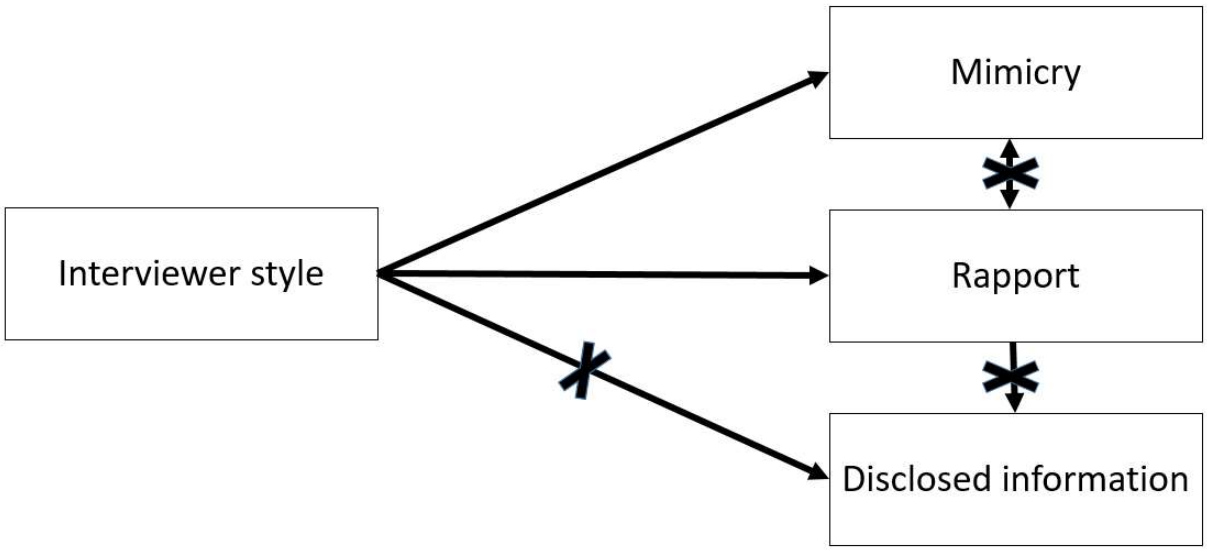

Figure 6-2. Summary of thesis results.

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8 Appendix A

8.1 Perl Code

The following Perl code (written by Paul Taylor, 2017) was used to cut the mvnx-files (raw mimicry recordings) to the same lengths, start and end time:

```
my %end;
my $file_up;
#First, lets load all the cutting times into an hash, so that we can call on them later when we've loaded the MVN file. We do so by openning the file into the pipe called 'IN', and then taking each line at a time though the while loop that puts your time markigns into a start, middle (Marker 1) and end hash array where the hash is the file name--so that we can look it up.
open IN, "times.txt" or die print "Cannot open times file";
while (<IN>){
   chomp;
   s/.mvnx//;
   s/.mvn//;
   @line = split(/\t/, $_);
   $start{$line[0]} = $line[1];
   $middle{$line[0]} = $line[2];
   $end{$line[0]} = $line[3];
}
close IN
#Now we have the times stored, we're going to open up the folder and look for every .mvnx file. We're then similarly take that file into an IN and examine each line. When we see a time marker, we evaluate the time against the three hashes from above, and determine whether we should keep the data from that point to the next time marker. There are three options, and these options are handlined by $time_switch. 0 = dump it, not needed, 1 = print to first period, 2 = print to second period.
my $dir = getcwd();
chdir("$dir/data") or die;
opendir (DIR,".");
while ($file=readdir(DIR)){
   $handle = substr ($file,-5,5,"");
   if ($handle =~ ".mvnx")
      open IN, "$file\.mvnx" or die print "Cannot access $file file";
      { local $/=undef;  $file_up = <IN>; }
      open FIRST, ">$file\_A.txt" or die print "Cannot create output file";
      open SECOND, ">$file\_B.txt" or die print "Cannot create output file";
      print "$file\t$start{$file}\t$middle{$file}\t$end{$file}\n";
      my $time_switch = 0; ##Change this to include starting code from the file.

      my @lines = split /[\r\n]+/, $file_up; #Necessary because Mac does't always recognise the carraige return
```

```
        foreach (@lines) {
            if ($_ =~ "time"){
                my ($frame_number) = $_ =~ /[^\n\r].*time\=\"([^\n\r]*?\")/s; #This is called
regex. Here it is finding the number after time="
                chop $frame_number; #Just getting rid of the tailing "
                if ($frame_number < $start{$file}){ $time_switch = 0; }
                if ($frame_number > $start{$file}){ $time_switch = 1; }
                if ($frame_number > $middle{$file}){ $time_switch = 2; }
                if ($frame_number > $end{$file}){ $time_switch = 0; }
            }
            next if $time_switch == 0;
            if ($time_switch == 1){ print FIRST "$_\n" }
            if ($time_switch == 2){ print SECOND "$_\n" }
        }
        close FIRST;
        close SECOND;
        close IN;
    }
```

8.2 Cronbach's alpha – source version (1)

Table 8-1. Study 1 – Cronbach's alpha: SR3i (Duke et al., 2018) – source version

Scale Score	Mean (SD)	Cronbach's alpha
Overall Score/ Rapport	3.62 (.46)	.840
Trust/ Respect	3.52 (.12)	.825
Expertise	3.78 (.14)	.869
Attentiveness	3.86 (.11)	.922
Cultural Similarity	2.74 (.06)	.730
Connected Flow	4.09 (.15)	.712

8.3 Cronbach's alpha – Interviewer version (1)

Table 8-2. Study 1 – Cronbach's alpha: SR3i (Duke, 2016) – interviewer version

Scale Score	Mean (SD)	Cronbach's alpha
Overall Score/ Rapport	3.23 (.41)	.932
Interpersonal connection	3.17 (.35)	.901

8.4 Interview script: study 1

8.4.1 Introduction: Information-gathering approach

Hello, my name is [*anonymised*] and I'll be conducting your interview today.

What is your name? _____

OK, well please feel free to call me [*anonymised*]. What do you prefer to be called?

Now [*participant's name*], before we start talking about the events in question, I just want to go over some ground rules and guidelines for the interview today, alright?

I want to let you know that this interview is being audio and video recorded. That is just for your protection and for mine, so that we get an exact record of what is said today, OK?

And because we will need to transcribe those videos and also just for common courtesy, we're going to do our best to not interrupt each other. So, when you're talking I'm not going to interrupt you and I hope you can do the same for me.

However, if throughout the interview you have any questions at all, please feel free to ask me.

Also, if I ask you to repeat something, or ask some similar questions, it's because want to make sure I am as thorough as possible and get all the correct information.

OK, just so we are on the same page, I will be interviewing you about the two tasks that just completed.

The primary purpose of this interview is to obtain as much information as possible. So during this interview, it is important that you tell me everything without editing anything out and given as much detail as possible. This is important because I wasn't there, so I don't know what happened.

OK, so we'll begin the interview now.

8.4.2 Introduction: Accusatory-interrogation method

I need to talk with you about the two tasks that you completed today. I am certain that you looked at the instructions during the puzzle task. This is a problem because it could compromise the data gathered during your study session, which will lead to the researcher having to discard the data gathered from you today. Now, I am sure you didn't mean any harm when you looked at the instructions. In fact, I believe you were just trying to be a good person and help the experimenter. And if asked for help, most people probably would have done the same thing. But I hope you can see why this is a problem.

[*Questions*]

I also need to speak with you about the board game task. I don't think that you actually played the board game. I understand why you would lie about it – you want to do better than the other participant, and you want the chance to win the board game. In fact, I would do the same thing as you if I were participating in this study.

[*Questions*]

8.4.3 Interview questions

I would like to talk to you about the puzzle task.

- Please tell me in as much details as possible about everything that happened when you were solving the wooden puzzle?
- Please tell me more about solving the wooden puzzle.
- Please describe to me in as much detail as possible what you saw during that task?
- Please tell me what you talked about during the task.
- Tell me how you felt during the wooden puzzle task.

- Please tell me everything that you have learned during that task today that you did not know before working on the puzzle?

Now I will ask you some more specific questions. You may have already answered them, but if that is the case, please answer them again.

- Please describe the puzzle.
- How did you decide with which puzzle piece you have to start with to solve the puzzle?
- What part of the puzzle did you found most challenging?
- Can you tell me as much as possible about the solution you found?
- How did you find the puzzle?
- What else can you tell me about solving the wooden puzzle?

I would now like to talk to you about the board game task. When you were asked to play a board game with a partner.

- Please tell me in as much details as possible about everything that happened while playing the board game.
- Please tell me more about playing the board game.
- Please describe to me in as much detail as possible what you saw during that task?
- Please tell me what you talked about during that task.
- Tell me how you felt during the task.
- Can you please tell me everything that you have learned during the second task today that you did not know before?

Now I will ask you some more specific questions. You may have already answered them, but if that's the case, please answer them again.

- Please describe the board game.

- How did you decide with which location you have to start to get more clues?
- Which part of the board game did you visit during your game, or which locations did you go to?
- What part of the board game did you find mist challenging?
- Can you tell me as much as possible about the solutions you found?
- What is your answer to the crime that was investigated during the Board Game? (What was your solution?)
- What did you find the board game?
- What else can you tell me about the board game?

[After questioning]. Thank you very much. I have all the information we need for now. You can wait there and the research assistant will be in to see you.

8.5 Cronbach's alpha – Source version

Table 8-3. Study 2 – Cronbach's alpha: SR3i (Duke et al., 2018) – source version

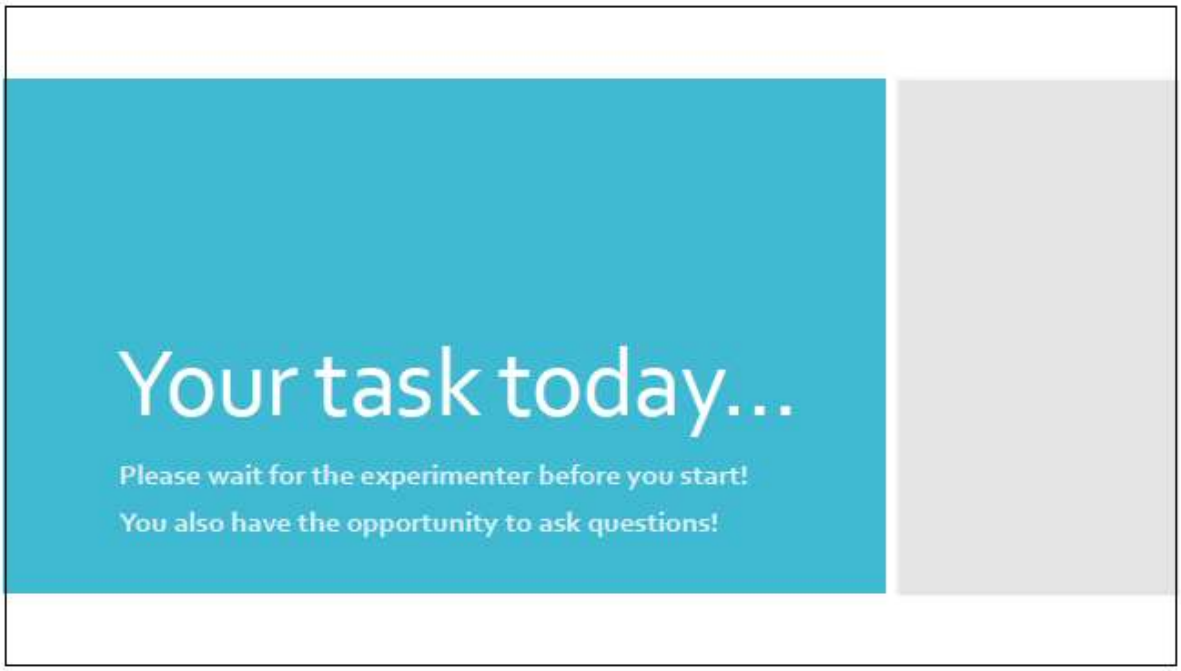
Scale Score	Mean (SD)	Cronbach's alpha
Overall Score/ Rapport	3.42 (.44)	.867
Trust/ Respect	3.39 (.25)	.805
Expertise	3.67 (.39)	.814
Attentiveness	3.74 (.17)	.885
Cultural Similarity	2.67 (.06)	.783
Connected Flow	3.48 (.27)	.690

8.6 Cronbach's alpha – Interviewer version

Table 8-4. Study 2 – Cronbach's alpha: SR3i (Duke, 2016) – interviewer version

Scale Score	Mean (SD)	Cronbach's alpha
Overall Score/ Rapport	3.44 (.42)	.867
Interpersonal connection	3.45 (.21)	.812

8.7 Suspect-task: market, power point



Your trip 1/9

You were traveling with your close friend, Anna Hastings (20), to Spain.

You were staying in a Hostel in Madrid and enjoyed 4 days together.

Your trip 2/9

You spend most of your days in Madrid sightseeing...

Plaza de Cibeles

Puerta del Sol

Gran Via

Prado Museum

Your trip 3/9

... and trying local food and bars.

Your trip 4/9

- Now you are on your way back, alone, as Anne took an earlier flight to Tenerife, Canary Islands, yesterday to visit her grandparents who are there on an 8 weeks winter break.

Your trip 5/9

- Your last day in Madrid, you spent alone wandering through town and visiting the local markets.
- You stop at your favourite pastry shop for a treat.
- Eating your pastry and enjoying the sun, you receive a text from Anne.

Your trip 6/9

Your trip 7/9

- You finish your pastry, and then make your way over to the place where Anne saw the handbag.
- The place is not too far from the pastry shop and on your way to the hostel.
- You find the bag and buy it for Anne.
- Then you make your way back to the hostel.

Your trip 8/9

- Back in the hostel, you have dinner with Christian, Marco and Sofie, you met at the hostel bar and made friends with over the last couple of days.

Your trip 9/9

- After dinner, you pack your bag because next morning you are flying back to Lancaster via Manchester Airport.

Please wait for the experimenter

8.8 Truthful information: Study 2

The following details were coded to obtain the amount of truthful information a suspect disclosed during Study 2. The details were based on the case vignette see Appendix A - 8.8. The following truthful details were coded as 1 = mentioned, 0 = missing. Additional information is given in parentheses e.g., Together (signifies time spent with Anne) or information in quotation marks have to be named together e.g., “Tooth paste”.

Truthful information:

Detail, Travel/ Travelling, Friend, Anne/ Ann/ Anna, Hastings, Spain, Hostel/ Hotel, Madrid, 4 days/ Four days, Together (signifies time spent with Anne), Sightseeing, Plaza de Cibeles / Palace/ White building, Puerto del Sol/ Square, Gran Via/ Shopping mile , Prado Museum/ Museum, Local, Food, Bars, Paella, Churro/ Churros, Return/way back, Alone [Anne took], Early/ earlier, Flight, Tenerife, Canary Islands, Visit/ visiting, Grandparents , Market, Pastry, Bag/ Handbag, Buy/ Buying, Dinner, Christian, Marco, Sofie. Pack/ packing, Lancaster, Manchester, Airport, Morning [flight], Two, Book/ Books, Phone, Charger, Plaster, Towel, Toiletries, Shampoo, Sun crème, Toothbrush, “Tooth paste”

8.9 Interview script: Study 2

8.9.1 Information-gathering approach

Interviewer 1

[Free narrative: Hello, I want to talk to you about your luggage. Please put it on the floor in front of you.]

I need to establish whether you brought any illegal items to the UK, such as alcohol, tobacco, animals or animal products. Bringing any of those items could have severe consequences such as a fine or even imprisonment depending on the item.

But, let's talk first.

Before we start I just want to go over some ground rules for today, alright?

For your protection and for mine I will record this so we get a full account of what was said today, OK?

Also, when you're talking I'm not going to interrupt you and I hope you can do the same for me.

If you have any questions, please ask me. I might ask you to repeat some things because I want to make sure I understand everything.

The main purpose here is to get as much information as possible. So, it is important that you tell me everything in as much detail as possible without leaving things out. This is important because I wasn't there, so I don't know what happened.

OK, so we'll begin the interview now.

- Where did you travel from into the UK?
- What was the purpose of your trip?
- Who did you spend your holiday with?

    - Where is your friend now? [Just ask this question if participants mentions a friend]
- Please tell me in as much details as possible about everything that you did during your holiday!
- Please tell me more about your holiday?

  [Pointing at the bag.]
- Is this your bag?
- Has anyone asked you to put something in your bag for them?
- Have you left your suitcases unattended since packing them?

Interviewer 2

[Free narrative: Apologies for the interruption, but my colleague needs to deal with an urgent phone call. I will take over the interview. He/she already asked you where you traveled from into the UK, and why you were traveling. He/ she talked about your bag, and if someone asked you to put something for them into your bag, and if you left your bag unattended at any point.
Let's continue with the interview.]

- Please tell me everything that you did since you packed your bag.
- Please tell me in as much detail as possible what you packed.
- Please tell me if there are any goods you need to declare.
- What else can you tell me about what is in your bag?

Thank you that is all I need to know for now.

8.9.2 Accusatory-interrogation method

Interviewer 1

[Free narrative: Hello, I want to talk to you about your luggage. Please put it on the floor in front of you.]

I need to establish whether you brought any illegal items to the UK, such as alcohol, tobacco, animals or animal products. Bringing any of those items could have severe consequences such as a fine or even imprisonment depending on the item.

I thought you looked suspicious when you approached so I am sure if I look in this bag, I'll see something.

This is a problem because it could have severe consequences for you such as a fine or even imprisonment depending on the item.

Now, I am sure you did not mean any harm when you brought an illegal item into the UK. Actually, I believe you just wanted to bring a nice souvenir from your holidays or a present for your friends and family. This happens to quite a lot of people actually. They pack things in their bag they should not and do not know about the consequences. And, I mean it is just a holiday souvenir in the end, hardly a thing that would cause any bother. Still, I hope you can see why this is a problem.

OK, so we'll begin the interview now.

- Where did you travel from into the UK?
- What was the purpose of your trip?
- Who did you spend your holiday with?
    - Where is your friend now? [Just ask this question if participants mentions a friend]

- Please tell me in as much details as possible about everything that you did during your holiday!
- Please tell me more about your holiday!

  [Pointing at the bag.]
- Is this your bag?
- Has anyone asked you to put something in your bag for them?
- Have you left your suitcases unattended since packing them?

Interviewer 2

The interviewer script for the second interviewer was identical for both interview styles, please see 8.9.1 'Interviewer 2' for the detailed transcript.

8.10 Cronbach's alpha – Source version

Table 8-5. Study 3 – Cronbach's alpha: SR3i (Duke et al., 2018) – source version

Scale Score	Mean (SD)	Cronbach's alpha
Overall Score/ Rapport	3.72 (.38)	.895
Trust/ Respect	3.54 (.24)	.785
Expertise	4.01 (.15)	.817
Attentiveness	3.96 (.09)	.857
Cultural Similarity	2.92 (.07)	.775
Connected Flow	3.77 (.20)	.826

8.11 Cronbach's alpha – Interviewer version

Table 8-6. Study 3 – Cronbach's alpha: SR3i (Duke, 2016) – interviewer version

Scale Score	Mean (SD)	Cronbach's alpha
Overall Score/ Rapport	3.38 (.43)	.936
Interpersonal connection	3.26 (.18)	.920

8.12 Case vignette

Your case

Please imagine yourself in the following situation:

You work on a military base as a local contractor. You are not part of the army but help out with logistical support delivering food and equipment from the local airport.

The base has recently been experiencing a lot of theft of equipment, such as engine parts for vehicles.

A couple of days ago, a close friend of yours told you that he is part of the smuggling ring, and that they are short on drivers at the moment. He asked you to smuggle equipment out of the base. As you could really use that extra money, you agreed to help smuggle equipment.

As a driver you know of various ways you could smuggle parts. The easiest way would be to hide the parts in with the rest of the stock on a lorry. Other ways are to break the parts down so they can be hidden in much smaller and less conspicuous vehicles like the small rickshaws many of the locals use to drive on and off base, or even hidden in donkey packs.

Your friend told you that the smugglers are breaking down the parts and hiding them in the rickshaw engines. You do not know who is else is part of the smuggling ring, only that you have heard the other drivers talking about how people are smuggling parts out of the base:

The lorries are too risky because of the number of times they will be checked, and the donkeys usually bring food supplies so metal parts would gather too much attention. Using the army's own vehicles would be the safest way to bypass the checkpoints but the army usually uses its own engineers to fix them when they break so opportunities to get the parts on board would be limited and very risky. On the other hand, few of the soldiers at the checkpoints have the mechanical knowledge to be able to spot the extra parts fitted to the rickshaw engines.

However, you decide for the following strategy to smuggle the parts: You break down the parts, put them in the military vehicle. Then you avoid the checks at the base checkpoint, and then take the parts out at the other end. It is the riskiest thing to do, but also the least likely to be discovered.

You are worried about what might happen to you or your family if anyone found out you helped with the investigation. Be wary: you need to give the interviewer enough information that you remain a source and therefore under the protection of the police. On the other hand, try to avoid giving them any information that might incriminate you or your friends.

8.13 Interview script: Study 3

8.13.1 Introduction: Information-gathering approach

Hello, I will talk with you today about the equipment theft at the military base. I need to establish whether you know anything about the incidents. But, before we start I just want to go over some ground rules for today, alright? For your protection and for mine I will record this, so we get a full account of what was said today, OK? Also, when you're talking, I'm not going to interrupt you and I hope you can do the same for me. If you have any questions, please ask me. I might ask you to repeat some things because I want to make sure I understand everything. The main purpose here is to get as much information as possible. So, it is important that you tell me everything in as much detail as possible without leaving things out. This is important because I wasn't there, so I don't know what happened.

OK, so we'll begin the interview now.

8.13.2 Introduction: Accusatory-interrogation method

Hello, I need to talk with you about the equipment theft at the military base. After speaking with other drivers, I am certain that you know something about smuggling stolen equipment. This is a problem because it could compromise our trust in you as a source, and worse, you might lose the protection that we can guarantee you. Now, I am sure you didn't mean any harm when you smuggled. Actually, I believe you were just trying to help a friend when you decided smuggling equipment as well. And, most people probably would have done the same thing. I mean the military base is huge, a piece of missing equipment here and there would not cause any bother. Still, I hope you can see why this is a problem.

OK, so we'll begin the interview now.

8.13.3 Introduction: Control

Hello, I will talk with you today about the equipment theft at the military base.

8.13.4 Interview questions

- Please tell me what you do at the base.
- Please tell me in as much detail as possible everything that you know about the smuggling.
- Please tell me more about the smuggling.
- How would you smuggle equipment out the military base?
- Which part would you find most challenging of smuggling equipment?
- What can you tell me about who is involved?
- What else can you tell me about the smuggling?

Thank you that is all I need to know for now.

8.14 Truthful information: Study 3

The following details were coded to obtain the amount of truthful information a suspect disclosed during Study 3. The details were based on the case vignette see Appendix A - 8.12. The following truthful details were coded as 1 = mentioned, 0 = missing. Additional information is given in parentheses or information in quotation marks have to be named together. Synonyms or related words that are coded as well are separated with a back slash "/".

Truthful information:

Work, Military, Base, Contractor, Logistics/ Logistical support, Delivering/ deliver/ transport, Food, Equipment, Airport, "Engine parts", Vehicle/ Vehicles, Friend, Smuggling ring/ smuggler ring, Smuggle, Money, Driver, Hide/ Can be hidden, Parts/ Pieces, Stock, Lorry/ Truck, Break down, Smaller, Rickshaw/ Rickshaws, Donkey, Packs, "Rickshaw engine"/ "Rickshaw engines", "Metal parts", "Army vehicle"/ Army's own vehicle", Checks/ Checkpoint/ Checkpoints, Engineer/ Engineers, Fix/ Fixing, "Military vehicle"/ "Military vehicles"

8.15 Validation: Measuring mimicry via motion capture suits

In this thesis, I tested a proxy measure for rapport via mimicry using motion capture suits. This is a relatively new measure, and has been used before by Van der Zee (2013). To make sure that the mimicry measure is correct, I tested the MatLab and Perl Codes provided by manipulating the input. I use the fact that mimicry scores are calculated by how congruent the movement of two interaction partners are. For example, we assume that the behavioral data recorded with motion capture suits is the individual shadow of each interaction partner. With

each interaction, we record two shadows. To obtain the mimicry score, we put the two shadows on top of each other facing in the same direction i.e., one shadow needs to be mirrored (see Chapter 2, Figure 2-3). The mimicry score breaks down as follows: the congruent area of the shadow is mimicry, and the remaining area of the shadow is the movement that did not overlap and therefore does not count into the mimicry score. As mimicry is part of movement, dynamic time warping (DTW, Rabiner, & Juang, 1993) is used to obtain a best fit of mimicry over time. The more congruent the two shadows are, the more overlap there is, and raw mimicry values are close to zero. One way to test if the mimicry scores obtained from my studies are correct, is by knowing the input. When I enter participant data, I have no control of how much mimicry participants show. Therefore, here I manipulate the input in four ways to create "perfect" mimicry. I equipped a colleague and myself[12] with the motion capture suits. We then touched hands to be able to create nearly perfect mimicry scores. We mimicked my left side, her right side for mirror matching, and my right side, her right side for limb matching (see Figure 8-1).

[12] She uses the suits for her experiments as well, and therefore had the expertise to equip me.

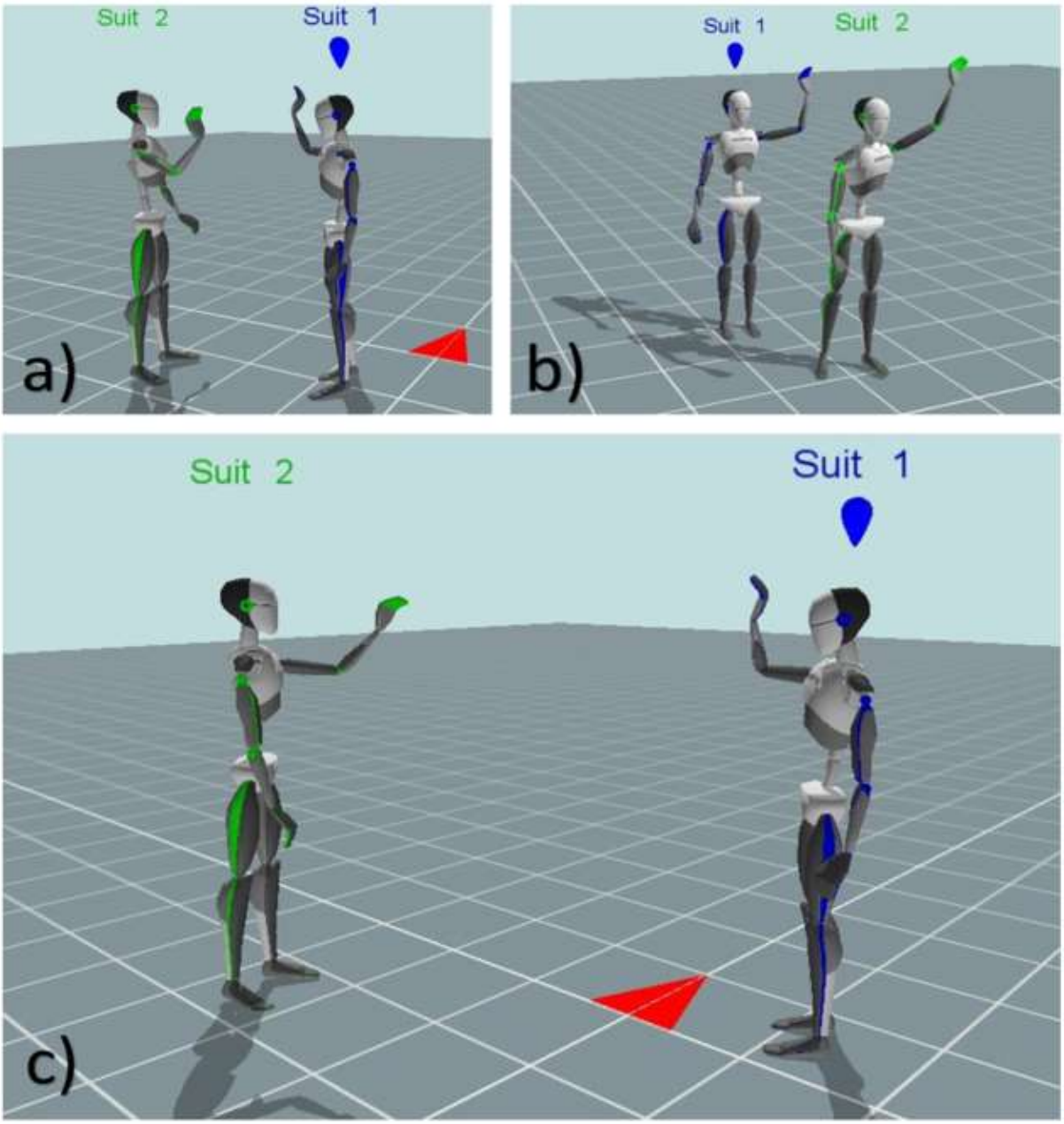


Figure 8-1. Mimicry test.

As Table 8-7 shows the obtained mimicry scores are nowhere near zero, and also differ for the exact same movement (first 30 sec and second 30 sec[13]). A second researcher who run the codes obtained the same values.

Table 8-7. Validation of mimicry measured via motion capture suits.

		Mimicry		
Pair	Explanation with reference to Picture X	First 30 sec	Second 30 sec	Difference
1	(a) Creating "perfect" mimicry with a colleague, facing each other, both moving their right arm	58.62	57.67	0.95
2	(a) Creating "perfect" mimicry with a colleague, facing each other, both moving their left arm	64.72	61.62	3.1
3	(b) Creating "perfect" mimicry with a colleague, one is facing the other ones back for same limp coordination, left arm moving	58.85	57.53	1.32
4	(b) Creating "perfect" mimicry with a colleague, one is facing the other ones back for same limp coordination, right arm moving	63.64	58.08	5.56
5	(c) Creating "perfect" mimicry with a colleague, facing each other touching right hand to ensure congruent movement	58.08	58.01	0.07
6	(c) Creating "perfect" mimicry with a colleague, facing each other touching both hands to ensure congruent movement	62.71	64.71	-2

[13] I recorded a total of 60 seconds, and cut the videos in two halves, each 30 seconds. This way I could also test if the values I obtain were the same within the same recording as well.

8.16 Histograms for the Rapport scale '3RS3i'

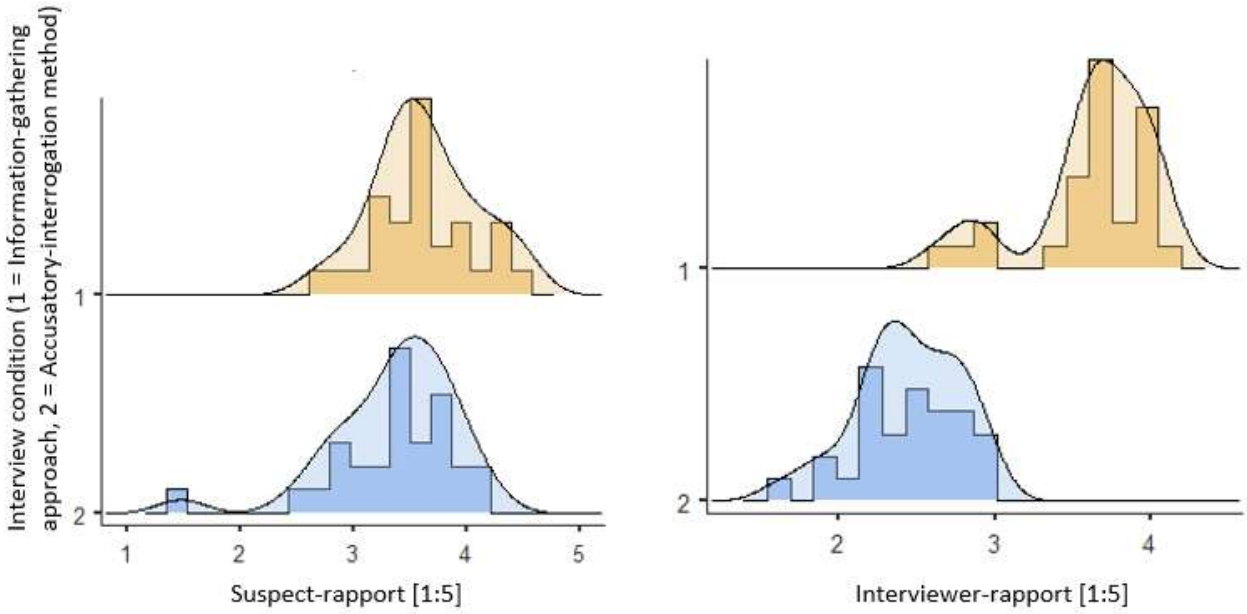


Figure 8-2. Histograms of suspect-rapport (left) and interviewer-rapport (right) for study 1

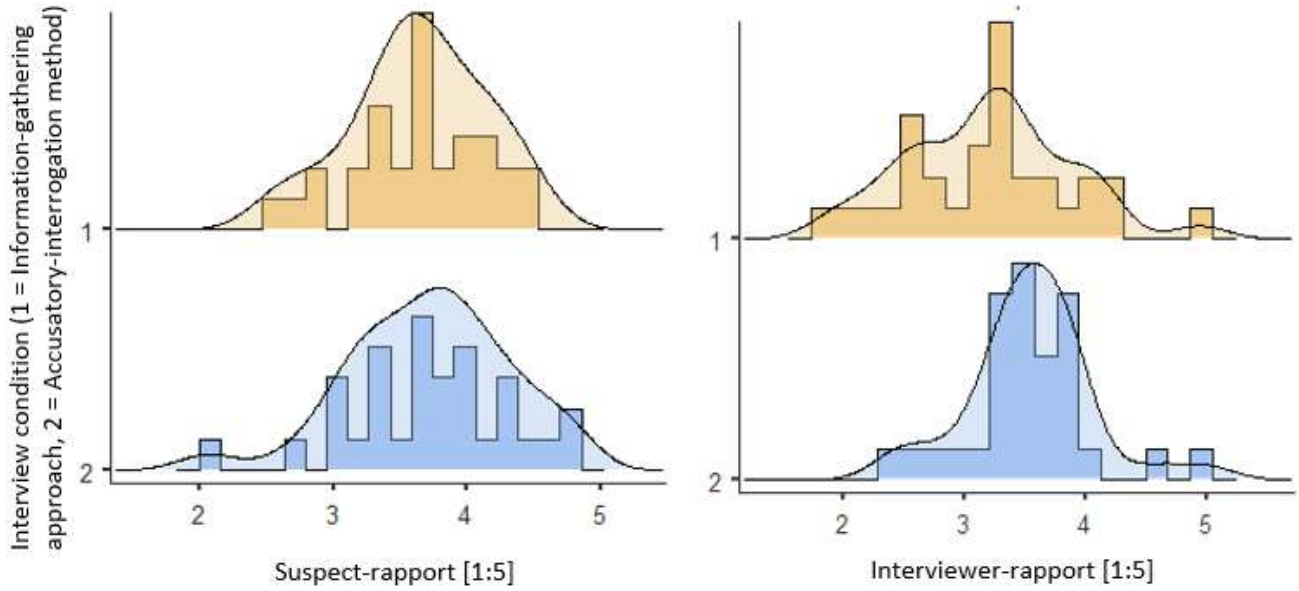


Figure 8-3. Histograms of suspect-rapport (left) and interviewer-rapport (right) for study 2

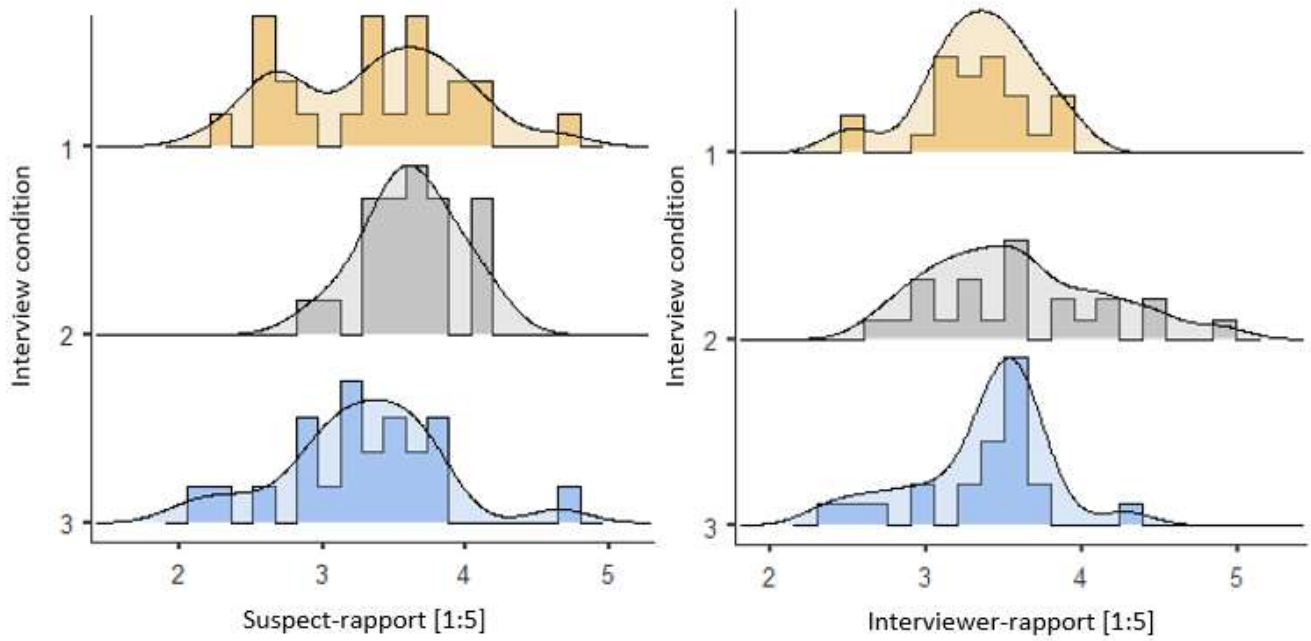


Figure 8-4. Histograms of suspect-rapport (left) and interviewer-rapport (right) for study 3 by condition (1 = Information-gathering approach, 2 = Accusatory-interrogation method, 3 = Control condition).

8.17 Histogram: Mimicry

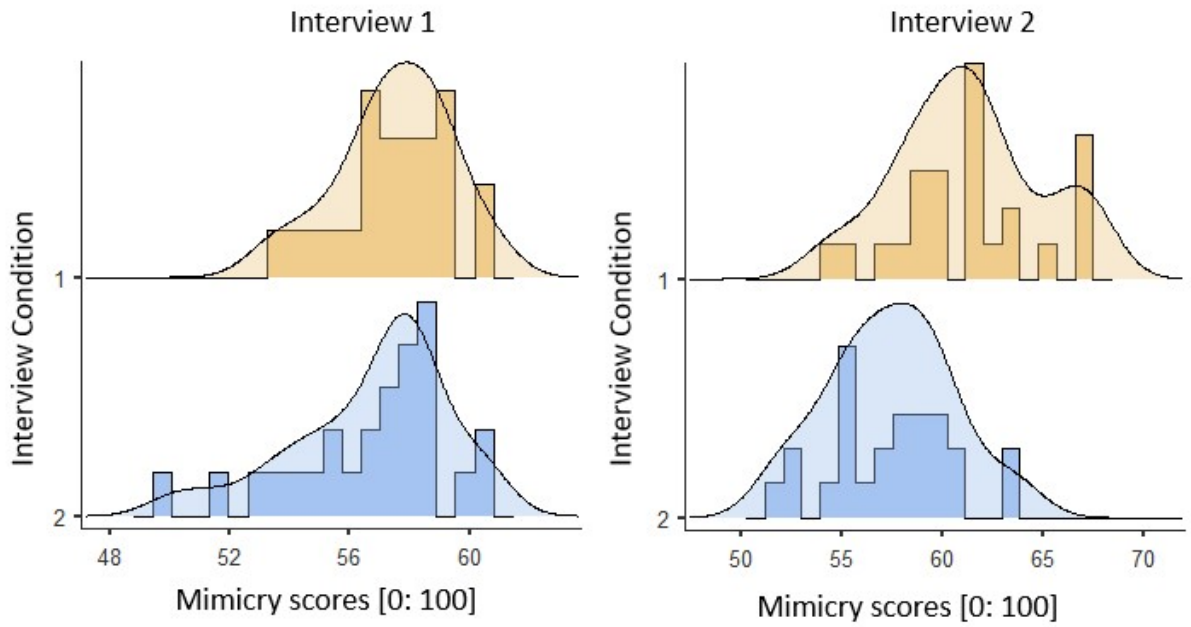


Figure 8-5. Histograms of mimicry for the first interview session (left) and the second interview session (right) for study 1 by condition (1 = Information-gathering approach, 2 = Accusatory-interrogation method).

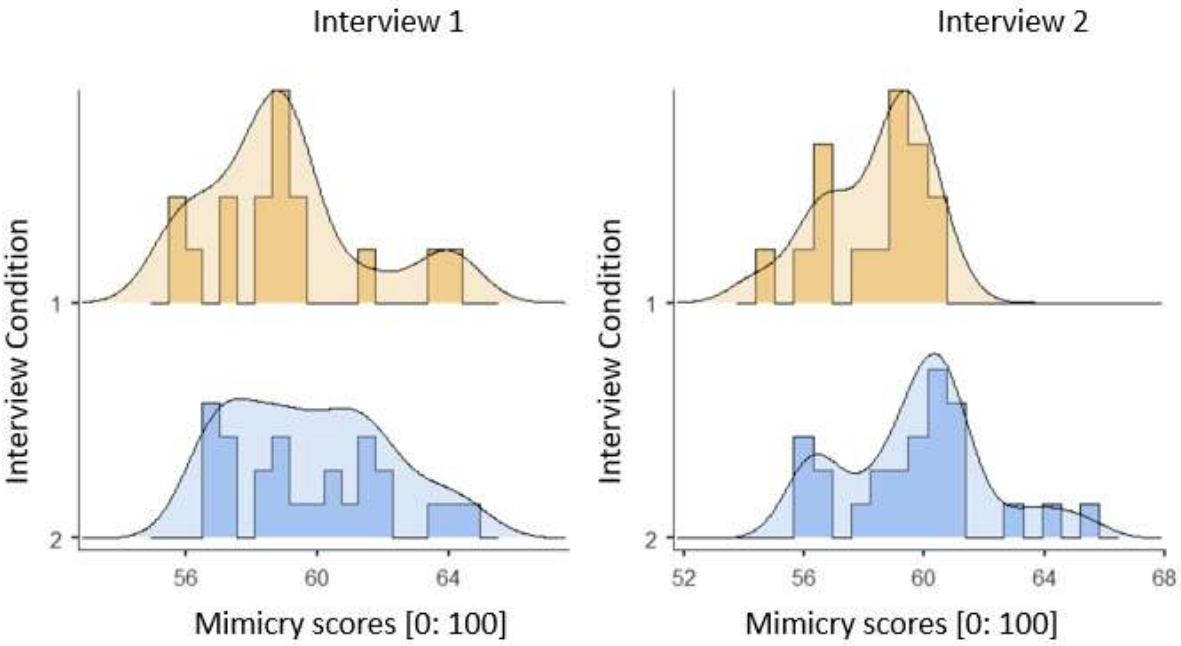


Figure 8-6. Histograms of mimicry for the first interview session (left) and the second interview session (right) for study 1 by condition (1 = Information-gathering approach, 2 = Accusatory-interrogation method).

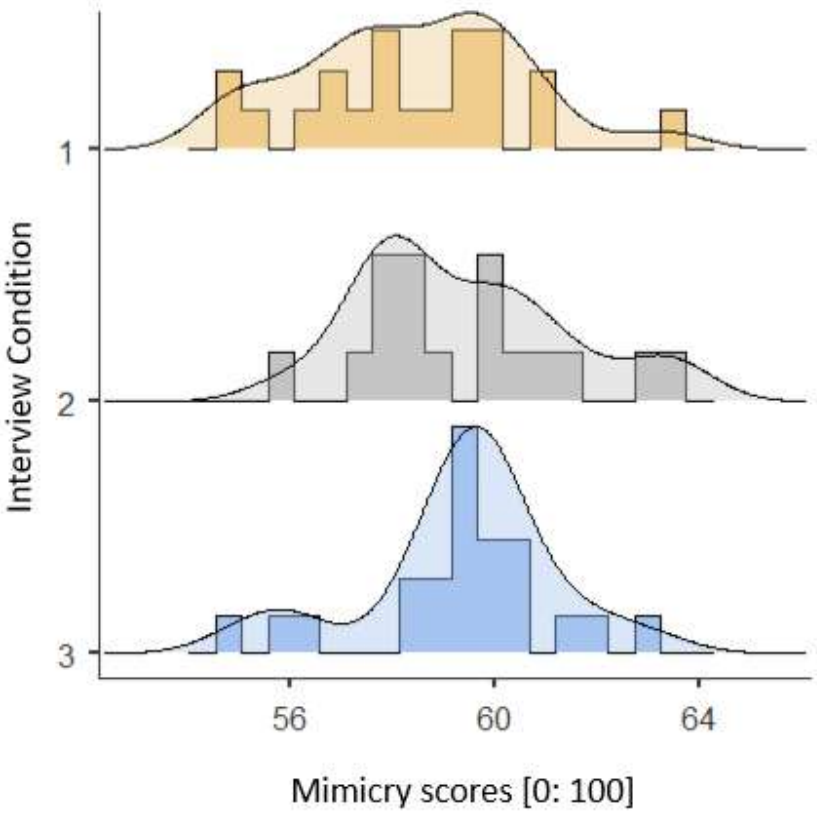


Figure 8-7. Histograms of mimicry for study 3 by condition (1 = Information-gathering approach, 2 = Accusatory-interrogation method, 3 = Control condition).

8.18 Overview: Results across studies

Table 8-8. Overview of study results for study 1 (*M*, *SD*, *N*)

	Information-gathering approach						Accusatory-interrogation method					
	Session 1			Session 2			Session 1			Session 2		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Suspect-rapport	3.63	0.45	28	3.64	0.42	26	3.35	0.56	29	3.6	0.44	26
Interviewer-rapport	3.62	0.39	28	3.51	0.41	26	2.44	0.33	29	3.35	0.31	26
Mimicry	57.5	1.88	24	61.2	3.59	24	56.7	2.63	26	57.4	3.06	25
Disclosed information	209	96.5	28	122	44.6	25	131	65.3	28	90.8	40.5	26

Table 8-9. Overview of study results for study 2 (*M*, *SD*, *N*)

	Information-gathering approach						Accusatory-interrogation method					
	Session 1			Session 2			Session 1			Session 2		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Suspect-rapport	3.63	0.5	31	3.65	0.63	31	3.71	0.61	31	3.84	0.52	31
Interviewer-rapport	3.2	0.68	31	3.65	0.63	31	3.55	0.51	31	3.25	0.64	31
Mimicry	58.9	2.47	16	58.3	1.73	16	59.8	2.38	25	59.7	2.41	25
Disclosed information	65	32.2	31	45.2	23.2	31	75.6	34.4	31	34.4	16.6	31
Truthful information	16.4	5.38	31	10.1	2.5	31	16.1	4.71	31	8.68	3.15	31

Table 8-10. Overview of study results for study 3 (*M*, *SD*, *N*)

	Interview style	**N**	**Mean**	**SD**	**SE**
Suspect-rapport	Accusatory	24	3.36	0.616	0.1257
	Control	22	3.26	0.560	0.1194
	Investigative	23	3.61	0.320	0.0667
Interviewer-rapport	Accusatory	24	3.34	0.355	0.0725
	Control	22	3.37	0.435	0.0927
	Investigative	23	3.59	0.562	0.1172
Mimicry	Accusatory	21	58.40	2.153	0.4698
	Control	22	59.37	1.833	0.3907
	Investigative	17	59.42	2.073	0.5028
Disclosed information	Accusatory	24	45.96	20.802	4.2463
	Control	22	48.73	50.528	10.7726
	Investigative	23	57.09	59.917	12.4935
Truthful information	Accusatory	24	11.42	3.175	0.6481
	Control	22	9.68	2.378	0.5070
	Investigative	23	11.91	2.843	0.5928

Note. Accusatory = Accusatory-interrogation method, Investigative = Information-gathering approach

9 Appendix B: The impact of guilt and cooperation on rapport (Study)

Note: This appendix is a draft of a study that was originally intended to be part of the thesis. However, the design was flawed so it was not possible to draw clear conclusions. The study did not clearly fit into the narrative of the thesis. So, I decided to report the study here for completeness and transparency.

In a criminal investigation, witnesses have first-hand information about a crime that can further an investigation and be used as evidence in court (Fisher, Milne, & Bull, 2011). Therefore, it is crucial for the police that witnesses are cooperate as interviewers rely on the accuracy of information provided by the witnesses (Fisher, 1995). To ensure that witness accounts are as accurate and detailed as possible, a few protocols for interviewing cooperative witnesses have been establish.

The Cognitive Interview for adult witness account (CI, Fisher & Geiselman, 1992) and the NICHD protocol for interviewing children (Sternberg et al., 2001) can be named as the two most prominent. To motivate a witness to give statement and to increase cooperation, rapport has been shown to be a successful method. Rapport can aid building a productive relationship based on cooperation and respect between the interviewer and the suspect (Abbe & Brandon, 2013). Rapport-building, when interviewing cooperative witnesses, can increase the overall quality of the witness recall (Collins et al., 2002), and further decreases the amount of inaccurate details when witnesses were provided with post-event misinformation (Vallano et al., 2011). However, as mentioned above, these interview protocols were developed to interview cooperative witnesses. One exception might be conversation management however; conversation

management is not well researched (E.g., Snook, Eastwood, Stinson, Tedeschini & House, 2010). Further, much of the focus on how to achieve cooperation has focused on rapport (Alison, 2013).We can however not assume that every witness wishes to cooperate, as they do not want to get involved in the criminal investigation (Confrey, 2017; De La Fuente Vilar, Horselenberg, & Van Koppen, 2018; Wheeler, Gabbert, Clayman, & Jones, 2017). This may be due the witnesses incriminating themselves or the perpetrator, or more generally, the witness might not trusting law enforcement. It is therefore a mistaken belief that witnesses will automatically cooperate with the police (Fyfe & Smith, 2007; Roberts, 2010).

Even more demanding is the interview of hostile suspects, which is one of the main challenges of the investigative interview (Goodman-Delahunty & Howes, 2014). When interviewing hostile suspects, again, rapport can lead to an increase in trust, information provision and aids to facilitate cooperation (Alison, 2013). In police interviews, rapport increases suspect's responsiveness and cooperation (Bull & Soukara, 2010). Rapport-based cooperation can increase suspect motivation to give a statement (Collins, Lincoln, & Frank, 2002).

We know that rapport is supposed to increase cooperation (Bull & Soukara, 2010), but this causality could easily be in the other direction. Especially if rapport is only measured after the interview. Further, because rapport is measured mostly post-hoc, rapport ratings may be biased by interview success due to post hoc rationalization. I.e., different interview styles could lead to more information provision even without rapport. For example, interviews focusing on the Information-gathering approach might be evaluated as more positively for reasons unrelated to rapport. In addition, a positive appraisal of the interview leads to high self-reported rapport due to halo effect (Nisbett & Wilson, 1977). I.e. because the suspect was cooperative, the

investigator assumes that rapport was established as part of the suit of appraisals that follow a positive affective percept.

In the following study, I manipulated the level of cooperation (cooperative vs uncooperative behavior) to determine whether cooperation does lead to a greater perception of rapport. I research the level of cooperation not only within non-guilty suspects but within guilty suspects as well, as I further wish to know whether the link between cooperation and rapport is different depending on whether the suspect is actually guilty or not. I.e. does cooperation affect rapport, and if so is this relationship inhibited depending on whether the suspect has done something wrong or not. It is however possible that guilt is impacting on the affective appraisal of the suspect if the suspect is in fact guilty. I.e., maybe an interviewer can build rapport with a cooperative suspect that is innocent, but if a suspect is admitting wrongdoing then this might prevent the halo-effect as the interviewer is now also learning negative information about the suspect. Therefore, rapport should be lower if it is an affective appraisal, whereas if rapport reflects cooperation guilt should have no impact.

Further, if cooperation does not increase rapport then we can be more confident in prior literature that shows that the causal effect is genuinely rapport that leads to cooperation because self-reported rapport is not likely to be just be a product of the level of cooperation.

Therefore, I hypothesized that different cooperation instructions affect rapport and the amount of disclosed information (as measured in number of details provided divided by word count). Specifically:

H1: Rapport should be higher in the cooperative condition than the uncooperative condition for both guilty and non-guilty suspects.

H2: I expect suspect-rapport and interviewer-rapport to be positively correlated.

H3: I expect mimicry to be higher in cooperative participants than in uncooperative participants.

H4: I expect that high experienced rapport is positively correlated with mimicry.

H5: Information provision should be higher in cooperative condition than in the uncooperative condition.

9.1 Disclaimer

The original design was a 2 (Kowledge: Guilty knowledge vs. Non-guilty knowledge) x 2 (Suspect behaviour: Cooperative vs. Uncooperative) x 2 (Task order: Time 1 vs Time 2) between-between-between-subject design. However, this design was shortened to a 2 (Kowledge: Guilty knowledge vs. Non-guilty knowledge) x 2 (Suspect behaviour: Cooperative vs. Uncooperative) x 2 (Task order: Time 1 vs Time 2)-**within**-between-between-subject design with the Suspect knowledge as the within factor. Power analyses with $\beta = 0.80$, $\alpha = 0.05$ and a medium effect size $f = 0.25$ required now instead of 100 groups of participants just 36. As this study requires the recruitment of two participants at a time so a total N = 200 would be logistically not achievable. Therefore, I aimed to create a within subjects design (see above). However, during data analyses, I reaslised that I was not controlling behaviorin one experimental group, “Non-guilty knowledge x Uncooperative behaviour” I.e. because innocent participants were not instructed to be cooperative or uncooperative there is a missing experimental groupwhich leaves me with an unbalanced design for data analysis (see Table 9-1).

Table 9-1. Groups used for analyses

	Cooperative	Uncooperative
Guilty knowledge		
Non-guilty knowledge		

For the interview, participants received clear instructions for the assessment centre task (being cooperative or uncooperative) but there was no instruction for them when they were in the uncooperative condition for the assessment centre task that they should also not talk about the book task. I.e., cooperation was manipulated before the interview, solely for the guilty knowledge task. This means that it was unclear to participants whether or not they should follow the instructions given during the assessment centre task during the book task or not and so I could not control how participants chose to behave in this task. This was an error that occurred in an attemt to streamline the research design. Still, I was able to make a number of comparisons that tested some of my hypotheses. Here are the proposed options to analyse the data:

Option 1: One could use the scores from the non-guilty knowledge task as a baseline. I.e. an estimate of the amount of rapport, information provision or mimicry for each suspect when no instructions are given/ however there are statistical and logical problems with this analysis. Statistically, to use the scores from the non-guilty knowledge task as a baseline requires independent scores for all DVs for this task. Independent scores only exist for mimicry and disclosed information. However, rapport is only measured once (after both interviews). Therefore, rapport has identical values between the non-guilty knowledge and guilty knowledge task. This means an ANCOVA controlling for the baseline is impossible because both the DV and covariate are identical. Logically, this analysis choice also assumes that the instruction participants were given for the ACT task had no impact on their behaviour when discussing the book task. This cannot be known and it seems unlikely.

Option 2: To run the analyses as a One Way ANOVA with the guilty knowledge task as an 'uninstructed' baseline or control group. I.e. comparing three groups, uninstructed, guilty cooperative and guilty uncooperative. However, this has similar problems to Option 1. Again, the scores for rapport would be identical for both tasks. Not accounting for counting the same participants twice makes this a worse approach for mimicry and disclosed information. It also shares the assumption that there was no systematic bias introduced into the book task by instructions for cooperation on the ACT task.

Option 3: A compromise would perhaps be a 2 (task; guilty knowledge vs non-guilty knowledge) x 2(cooperation vs non-cooperation) x 2(Task order) mixed effects ANOVA. Still I get some problems here: (a) the guilty knowledge and the non-guilty knowledge task were completely different tasks. Therefore, differ by more than just the guilt component. (b) A mixed effects ANOVA assumes that an interaction exists that cannot exist. For example, Guilty knowledge x Cooperation suggests four groups:

- Guilty knowledge + Cooperative behaviour,
- Guilty knowledge + Uncooperative behaviour,
- Non-guilty knowledge + Cooperative behaviour and,
- Non-guilty knowledge + Uncooperative behaviour.

The main problem is that cooperation was only actually manipulated for the guilty knowledge i.e., the Assessment centre task, which means the study is unbalanced. I.e. a mixed effect ANOVA assumes that cooperation was manipulated for both the non-guilty and the guilty knowledge task. In addition, there is no way to account for this within the design. The final two groups do not exist and therefore should be labelled “Non-guilty knowledge + No instruction”. However, Non-guilty knowledge + “No instruction” cannot be built into the analysis (since it

does not fit into the assumed factorial structure). However, an advantage of this approach is that it does allow simultaneous consideration of all three manipulated factors, even if the effect of cooperation remains not fully interpretable. However, a mixed effects ANOVA is also not possible for rapport because again, it was only measured once in which case t-tests testing the effect of cooperation on just guilty participants may be a plausible way of dealing with the design.

Option 4: Using t-tests to compare the effect of cooperation on participants with just guilty knowledge and ignoring the effect of the book task. This approach means that there are no uninterpretable elements of the analysis and but also assumes that the impact of the non-guilty task is random between both groups. However, a mixed effects ANOVA for mimicry and disclosed information provision with scores for the guilty knowledge and the non-guilty knowledge task at least allows for the more relevant factors to be analysed (e.g., Cooperation, Guilty knowledge, and Task order).

In summary, there is no clear solution to fix an unbalanced design, and all of the options mentioned above have drawbacks. However, option 2 is clearly not feasible. Option 1 and 3 are only possible if there are multiple measures available for every DV. Yet, multiple measures are just available for mimicry and disclosed information. Option 3 allows for more thorough consideration of all variables than option 1 and 4, and is no more biased than option 4. Still, for variables that are only measured once i.e., rapport, only option 4 is possible. Therefore, I analyse mimicry and disclosed information using option 3 (2 (guilty knowledge vs non-guilty knowledge) x 2(cooperation vs non-cooperation) x 2(Task order) mixed effects ANOVA) and rapport is analysed using option 4.

9.2 Method

9.2.1 Participants

Participants in the current study were undergraduate students (N = 80) from Lancaster University. The participants were recruited via SONA (an online recruitment platform) and flyers around campus. One pair of participants were excluded from the analysis because they were committing actual fraud while signing the consent form[14].

The final sample consisted of 39 pairs (N = 78). The sample consisted of 54 women (M_{age} = 21.59, SD = 3.09) and 24 men (M_{age} = 23.46, SD = 5.57). Sixty-three percent of participants were native English speakers. Participants were not matched on gender, resulting in 12 mixed gender pairs, 6 male and 21 female pairs.

9.2.2 Design and procedure

The procedure differs depending on whether the participant took part as the suspect or the interviewer. Participants assigned themselves to the role of the suspect or the interviewer upon arrival at the laboratory. The study was either advertised as an "Assessment Centre Task" or an "Interviewer Task". Participants who signed up to the "Assessment Centre Task" arrived 10 minutes before the participants that were the interviewers to start the mock crime.

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[14] A participant had not shown up for the experiment unexcused multiple times, which lead to the participant being blocked from the online recruitment system SONA. After three unexcused no-shows, they sent an e-mail to explain their situation, and I signed them up again. Instead of themselves, they sent a friend to take part who signed every document in the other person's name. This was detected by the experimenter, and the data was not used for data analyses.

9.2.2.1 The suspect-task

The suspect completed two tasks: the first task was a mock crime i.e., an assessment centre task, to load suspects with guilty knowledge. The second task, the book task, was the non-guilty knowledge task.

During the Assessment Centre Task, participants were asked to fill in for a sick employee. At the final subtask of the Assessment Centre Task, participants signed a document in the sick person's name and thereby committed fraud. This meant that they had guilty knowledge about this task for the interview phase (Ströfer et al., 2016). Then, a confederate entered the room ten minutes into the first task to end it. The confederate told the participant that the experimenter was busy and checked the documents from the Assessment Centre Task. In instances where the participant did not originally sign the document, the confederate reminded the participant to sign it as it was part of the task and was easily earned money. The confederate then gave the participant instructions for the second task[15] of the pre-interview stage.

The second task consisted of the participant collecting a book from a room, thus loading them with non-guilty knowledge. After unlocking the door, participants also found a wallet in the box of books. It was the participant's own choice if they left the wallet in the room or reported the wallet to the experimenter. Participants returned to their room and met the experimenter. The experimenter mentioned to the participant that they signed a document in someone else's name and that they thereby committed fraud. Participants were then told to do one of the following for the upcoming interview: (a) conceal that they signed the document (uncooperative condition), or (b) admit that they signed the document (cooperative condition).

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[15] Reminder: The second task was used for the original design but due to a missing manipulation, I do not consider this data for analyses. However, I report the procedure for the sake of completeness.

9.2.2.2 The interviewer task

For the interview stage, the participant who signed up for the role as the interviewer was given an interview script that contained questions concerning the suspect's task. The interviewer had 10 minutes to memorize these questions. The interviewer was allowed to use the script during the interview. The script was visibly hidden from the suspect (see Figure 8) but pinned to a wall as holding the interview script in their hands would possibly inhibit the interviewers' movement and therefore potentially affect mimicry. I informed the suspect that the interviewer may use a script so that the use of the script would not interrupt the natural interview flow. In addition to the instructions regarding the interview setting and script, the interviewer was instructed to act as natural as possible to simulate an every-day human interaction. The interviewer was also instructed to speak in a calm manner and not to raise his/her voice or use other techniques of intimidation (leaning forwards, starring the suspect in the eyes, using angry facial expressions, raising their voice).

Figure 9-1. Interview setting, the interviewer (left) and suspect (right) facing each other both equipped with the motion capture suits

9.2.2.3 The interview

During the interview, both the suspect and the interviewer were equipped with motion capture suits. The suspect and the interviewer were standing, facing each other in front of two room dividers (see Figure 8). The experimenter sat at a desk behind the room dividers to monitor the recording of the motion capture data. Whether interviewers first asked about the Assessment Centre Task or the book task was counterbalanced in the design. The suspects and interviewers were motivated to perform well during the interview with an incentive of £50.00; all participants entered a prize draw to win £50.00 no matter their actual performance during the interview.

Following the interview, participants were placed back to back on two separate tables in the same room; and asked to complete the rapport questionnaire (WAI) and a trust questionnaire.

9.3 Results

As a reminder, during data analyses, I reaslised that I was missing an experimental ("Non-guilty knowledge x Uncooperative behaviour"). In the results I present the number of comparisons, I could still make, that tested my hypotheses.

9.3.1 H1: Rapport

Suspect-rapport, i.e. rapport experienced by the suspect, was not significantly higher for participants in the cooperative condition (M = 3.48, SD = 0.52) compared to participants in the uncooperative condition (M = 3.35, SD = 0.86), t (35.60) = 0.86, p = .398.

Further, there was no significant effect for interviewer-rapport as well, t (29.16) = 0.10, p = .917, comparing interviewer-rapport in the cooperative condition (M = 3.75, SD = 0.45) with the uncooperative condition (M = 3.68, SD = 0.55). The H1 that, rapport should be experienced

as being higher in the cooperative condition than in the uncooperative condition needs to be rejected.

The histogram (Figure X left) shows that suspects' answers peaked around the middle ("neither agree nor disagree"). The histogram (Figure X right) shows that interviewers' answers were all above three ("neither agree nor disagree"), and might show that interviewer has thought they conducted a successful interview.

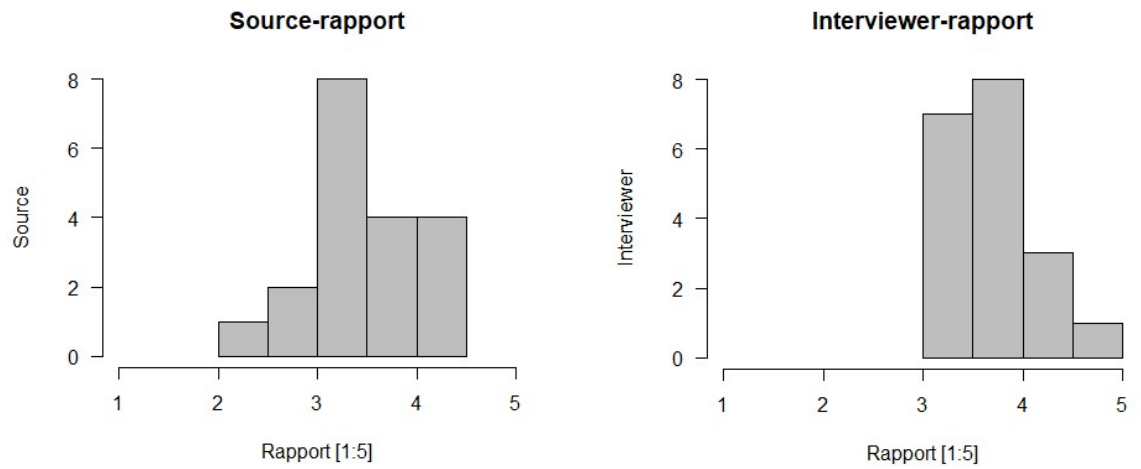

Figure 9-2. Histogram for suspect-rapport (left) and interviewer-rapport (right).

9.3.2 H2: Suspect-rapport and interviewer-rapport

A linear regression found no significantly positive correlation between suspect-rapport and interviewer-rapport (r = .12, p = .329).

9.3.3 H3: Mimicry

A 2 (Guilty knowledge: Guilty knowledge vs non-guilty knowledge) x 2 (Cooperative behaviour: cooperation vs non-cooperation) x 2 (Task order: first vs. second) mixed effects

ANOVA design was used for the analysis of mimicry. While the Cooperative behaviour condition was not fully manipulated, this formulation allows for a comparison of the effect of interview order, i.e., in which order were the suspects interviewed about which task, which is necessary to test whether coordination increases over time.

There was no main effect of Guilty knowledge F (1, 35) = 1.32, p = .259, η^2 = 0.01 on mimicry. There was also no main effect of Cooperative behaviour F (1, 35) = 0.11, p = .746, η^2 < 0.01. There was also no main effect of Task order F (1, 35) = 0.01, p = .928, η^2 < 0.01. There was no interaction effect of Guilty knowledge and Cooperative behavior, F (1, 35) = 0.01, p = .917, η^2 < 0.01. There was no interaction effect of Guilty knowledge, Task order and Cooperative behaviour, F (1, 35) = 3.56, p = .068, η^2 = 0.02. However, there was an interaction effect of Guilty knowledge and Task order, F (1, 35) = 29.10, p < .001, η^2 = 0.14.

Tukey-post hoc analyses revealed that mimicry is lower when suspects are questioned first about the guilty knowledge task (M = 58.32, SD = 3.49) than the innocent knowledge task (M = 62.70, SD = 3.15), t(35) = -3.20, p = .015. Further, at time 2, mimicry is higher in the guilty knowledge task (M = 62.52, SD = 2.28) than in the innocent knowledge task (M = 58.26, SD = 2.85), t (35) = 4.38, p < .001. In summary, when a suspect is first questioned about the guilty knowledge task (M = 58.32, SD = 3.49) mimicry remains low for the second questioning i.e., the innocent knowledge task. However, when a suspect is first questioned about the innocent task, mimicry remains higher for the guilty knowledge task as well.

9.3.4 H4: Rapport and mimicry

Suspect-rapport and mimicry did not significantly correlate for neither the cooperative (r = -.32, p = .180) nor the uncooperative (r = .13, p = .578) condition. However, interviewer-rapport

and mimicry were negatively statistically significantly correlated in the cooperative condition (r = -.51, p = .026); while interviewer-rapport and mimicry were positively statistically significantly correlated in the uncooperative condition (r = .57, p = .022). The H3 i.e., rapport is positively correlated with mimicry, can only be partially accepted for interviewer-rapport in the uncooperative condition.

9.3.5 H5: Disclosed information

Again, a 2 (Guilty knowledge: Guilty knowledge vs non-guilty knowledge) x 2 (Cooperative behaviour: cooperation vs non-cooperation) x 2 (Task order: first vs. second) mixed effects ANOVA design was used for the analysis of disclosed information. While the Cooperative behaviour condition was not completely manipulated, the following analyses allows for a comparison of the effect of interview order i.e., in which order were the suspects interviewed about which task, which is necessary to test whether coordination increases over time.

There was a main effect of Guilty knowledge F(1, 33) = 10.30, p = .003, η^2 = 0.02. There was no main effect of Cooperative behaviour F (1, 33) = 1.59, p = .216, η^2 = 0.01. There was also no main effect of Task order F (1, 33) = 3.57, p = .068, η^2 = 0.03. There was no interaction effect of Guilty knowledge and Task order, F (1, 33) = 0.16, p = .692, η^2 = 0.00. There was no interaction effect of Guilty knowledge and Cooperative behavior, F (1, 33) = 0.18, p = .678, η^2 = 0.00. There was no interaction effect of Guilty knowledge, Task order and Cooperative behaviour, F (1, 33) = 0.47, p = .498, η^2 = 0.00.

Tukey post hoc analysis revealed that suspects with guilty knowledge reveal more information (M = 88.26, SD = 49.64) than suspects with innocent knowledge (M = 70.32, SD = 31.68), t(33) = 3.21, p = .003. Again, this analysis assumes that the design is balanced.

9.4 Discussion

In this study, I explored how suspect Cooperation, Guilty knowledge, and the Task order in which suspects are interviewed affected rapport, mimicry and disclosed information in the investigative interview. My results have to be viewed with caution. As discussed above the original design is unbalanced. However, I overcame the initial error during data analyses, though with caveats addressed in 3.1 Disclaimer, and will now discuss the results.

9.4.1 Rapport

I manipulated suspect cooperation to test whether suspect cooperation can lead to rapport in the same way rapport is assumed to lead to cooperation. The current study found no difference for both suspect-rapport and interviewer-rapport between cooperative and uncooperative conditions. This finding suggests that the direction of causality is 'rapport leads to cooperation' and not the other way around. Thus, from a practical perspective there might be no need to establish rapport when a suspect is already cooperative and disclosing information during the interview. Instead of focusing on rapport building beyond what is required to maintain cooperation, the emphasis should be on helping the suspect provide accurate information. For example, following the principles of the narration and probing stages of the Enhanced Cognitive Interview. However, this would also mean that interview manuals should further focus on interview strategies that can turn a hostile suspect into a cooperative suspect because it does seem that interviewer rather than suspect behaviour determines rapport.

However, an alternative explanation might be that the cooperation-manipulation might not be strong enough. An indicator for a weak manipulation might be the lack of difference in information provided by the suspect between the Cooperative and Uncooperative condition.

However, for detail count in this study I did not distinguish between relevant and irrelevant information so it is plausible that uncooperative suspects were deliberately providing irrelevant details as a deceptive strategy (Strömwall & Willén, 2011[16]).

Further, it might be questionable if the mock crime involving fraud was sufficient to induce guilt with students aged around twenty-one. However, this mock crime has been successfully been used with Ströfer et al. (2016). Although Ströfer et al. (2016) found that perceptions of cognitive load and stress were similar for participants that were telling the truth or telling partial lies, with differences only for those that lied throughout. It may be that not specifying that uncooperative participants should have been instructed to be partially or entirely uncooperative may have reduced the effectiveness of the manipulation.

Finally, another explanation might be an inadequateness of the WAI as a rapport-measure for short interactions. Looking at the items of the WAI makes it apparent that it was designed for long and more involved interactions e.g., “My relationship with my interview partner during the interview was important to me”; “My interview partner and I worked together to set the goals for the interview”; “I did not know what outcome to expect of the interview”. The diagnostics of the WAI show that participants show a strong tendency towards the middle (“neither disagree nor agree”) concerning these items (see Figure 9). For this reason, I will change my self-report measure of rapport for future studies from WAI to the RSi3 (Duke 2013; Duke et al., 2018). The RS3i is based on the Tripartite model of rapport, and therefore the items fit the three-component structure of rapport: mutual attentiveness, positivity, and coordination. It seemed therefore a

[16] Willén proposed that there will be a disclosure statement regarding this study (Date of knowledge: 17.03.2020).

better conceptual fit to measure rapport with a questionnaire based on the Tripartite model of rapport I use as my primary definition of rapport rather than focusing on working alliance via the WAI.

9.4.2 Rapport as a shared perception

While the overall ratings of rapport were higher for both interviewer and suspect in the cooperative condition than the uncooperative condition, these differences were not statistically significant. There were no statistically significant correlations observed between interviewer and suspect rapport. However, as rapport describes a relationship and must be studied between dyads (Bernieri, 2005); rapport should be assumed to be a shared perception. Further, rapport is defined as consisting of mutual attentiveness, positivity and coordination (Tickle-Degnen & Rosenthal, 1987), and is described as the flow of a conversation (Rogers, 1980), there should be a common denominator when rating rapport between two people. Yet, previous researchers also found no correlation within the suspect-rapport and interviewer-rapport (Bernieri & Gillis, 2001; Duke, 2013). Another explanation could be again the adequateness of the measure used. I.e. the WAI insufficiently captures rapport and this lack of validity is reflected in a lack of correlation between interviewer and suspect rapport. Alternatively, rapport in the investigative interview might lack genuineness and reflect pseudo-rapport (DePaulo & Bell, 1990), due to the power dynamic between interviewer and suspect or the rigidness of the experiment. It is not yet clear though how pseudo-rapport affects the interview outcomes (Abbe & Brandon, 2013). It might be that pseudo-rapport can be detected by suspect-rapport and interviewer-rapport not being associated. If we assume the Cooperative behaviour manipulation was efficient than pseudo-rapport might explain the lack of difference in the suspect's statements.

9.4.3 Mimicry

The study further found that when a suspect is questioned first about the Guilty knowledge task mimicry remains low for the Non-guilty knowledge task. Further, when a suspect is questioned first about the Non-guilty knowledge task, mimicry remains high for the Guilty knowledge task as well. This finding indicates that the order in which a suspect is interviewed about events matters. What happens first (guilty vs. innocent) seems to determine what happens later in the interview, which may reflect thin slicing. Thin slicing describes the ability to find patterns or being able to infer about characteristics and details of a state or situation from a limited window of experience (Ambady & Rosenthal, 1992). That is what happens early in the interview sets the tone for later behaviour. This might suggest that it could be more productive to begin interviews with accessible topics that are not challenging for the suspect in order to build initial rapport, with more challenging aspects of the interview held until later. This fits with most investigative interview protocols (e.g., PEACE) but is counter to the recommendation to begin interviews with direct confrontation e.g., in the Reid technique. Being able to judge the interview situation by first impression would also explain why there was no effect of Cooperative behaviour on rapport because of primary importance was whether the suspect had to begin with a difficult versus a less difficult topic.

The current study found no differences in mimicry between the Cooperative and Uncooperative behaviour conditions. These findings are contrary to predictions that mimicry is higher in cooperative participants than in uncooperative participants. However, as mimicry can aid cooperation (Maddux, Mullen & Galins, 2008), it seems possible that these results are due to setting the Cooperative manipulation before the interview. Suspects therefore did not need any nonverbal information about the interview being cooperative or not from the interviewer. People

unintentionally and mutually mimic one another's body movements, in particular if they are also motivated to cooperate and to affiliate (Lakin & Chartrand, 2003; Maddux, Mullen, & Galinsky, 2008). If cooperation is set in advance, there is no need to make an effort to affiliate.

It also seems possible that these results are due to mimicry playing a role to help people transition from the out-group to the in-group. Lakin, Chartrand, and Arkin (2008) researched the role of mimicry in participants who felt excluded. They found that excluded individuals show higher scores in mimicry than in-group members. The individuals mimicked a confederate probing as an in-group member more than an out-group member. As both the suspect and the interviewer were Lancaster University students and therefore within the same peer group, there might be no need to increase rapport to become an in-group member as both already are. I.e., the lack of differences of mimicry between the Cooperative and Uncooperative condition might be due to both participants being an in-group.

9.4.4 Mimicry and rapport

My findings did not show a positive correlation between suspect-rapport and mimicry. My study findings for suspect-rapport do not support the findings from other studies such as people who were mimicked reported feelings of rapport towards the mimicker (Chartrand & Bargh, 1999) or a direct link between mimicry and liking (Bailenson & Yee, 2005; Kot & Kulesza, 2016; Kouzakouva, van Baaren, & van Knippenberg, 2010). Stevanovic et al. (2017) found that mimicry might help during an interaction when close coordination is harder to achieve, and therefore more valued than when the interaction goes smooth anyways and does not require additional fine-tuning. In line with this theory, less mimicry was observed within dyads engaging in discussion rather than conversations (Paxton and Dale, 2013). An investigative interview can be described as being closer to a discussion than a conversation. That is an

investigative interview has a power dynamic based on authority (interviewer), and further, just like in a discussion, the interviewer and the suspect might have opposing opinions and views about a topic and try to come to an agreement. If this is the case then mimicry may not be a good measure of rapport within an interview setting. However, as discussed above the lack of mimicry can also be explained by them again not making the decision to cooperate or not. If suspect behaviour has limited impact on rapport or mimicry then it follows that these two variables may not be strongly associated within this setting.

However, interviewer-rapport and mimicry were significantly positive correlated in the uncooperative condition; and significantly negative correlated in the cooperative condition. Several studies showed that mimicry is higher in people with well-established rapport (La France, 1979; Scheflen, 1964), and it works vice-versa: mimicry results in increased rapport (Chartand & Bargh, 1999; see Chartrand & Van Baaren, 1999 for an extensive review). Higher rapport in the uncooperative condition might indicate that more effort is necessary to increase or build cooperation when the interview is uncooperative. Higher rapport in the uncooperative condition might also indicate a need to affiliate on the part of the interviewer caused by the lack of cooperation from the suspect leads to mimicry.

A negative association between interviewer-rapport and mimicry in the cooperative condition could indicate that there was no need to mimic as the interaction was already cooperative. If participants perceive cues that suggest the interaction is cooperative, there is no need to mimic. People unintentionally and mutually mimic one another's body movements in particular if they are also motivated to cooperate and to affiliate (Lakin & Chartrand, 2003; Maddux, Mullen, & Galinsky, 2008).

9.4.5 Disclosed information

Findings suggest that suspects with guilty knowledge disclosed more information than suspects with non-guilty knowledge. However, the guilty knowledge task i.e., the Assessment Centre Task, was more elaborate than the non-guilty knowledge task i.e., the book task. Within the Assessment Centre Task, participants had to complete four different tasks varying in complexity. While in the book task, participants had a key to unlock an office further down the hallway from the lab. In the office was a box of books, participants saw a wallet, picked up the book and returned. However, participants were still instructed to "not talk about the signature" (uncooperative condition) and had clear directions for the interview whether they felt guilty about it or not.

Yet another explanation might be that interviewers were participants as well. Therefore, the sincerity and professionalism of an investigative interview could not be replicated. This effect might have even been enhanced as both the interviewer and the suspect were wearing identical looking motion capture suits, inclusive headbands and gloves, which might make both appear even more like an in-group as simply sharing a peer group. Research found that participants act more favorably towards in-group members (Chen & Li, 2009), and therefore might disclose information as well.

9.5 Limitations

Based on conversations during debriefs, committing fraud during an experimental study did not elicit a negative effect. Based on this experience, for the remaining studies in the thesis, I added the manipulation check of how guilty participants felt during the interview.

Another limitation is that one experimenter equipped both participants in identical motion capture suits, and at the same time (this was due to logistical necessity). Though I tried to reduce

the time, the suspect and the interviewer met before the interview up to 5 minutes. Five minutes might still be enough time to establish rapport before the interview started. For future studies, the suspect and the interviewer do not meet or see each other until the interview starts.

Further, for the calibration both interaction partners need to stand for approximately 30 seconds in a T-Pose to calibrate the software. The same calibration process and the same dress/ outfit could confound our experiment by creating minimal group formation (Diehl, 1990). And, participants identifying as in in-group might impact on mimicry: Mimicry is found to be higher between members of an in-group (Bourgeois & Hess, 2008; Yabar et al., 2006).

9.6 References

References for this study are listed in ‘7. References’