



**Interpersonal Sensemaking and Cooperation in Investigative  
Interviews: The Role of Matching**

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This thesis is submitted in partial fulfilment of the requirements for the degree of Doctor of

Philosophy

Lancaster University

Department of Psychology

September 2023

Postgraduate Research Degrees  
**FORM: PERMISSION TO  
SUBMIT A THESIS IN ALTERNATIVE FORMAT**

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Technology


**Research Degree Title:**

Interpersonal sensemaking and cooperation in investigative interviews: The role of matching.

**Date Thesis due for Submission:** April 2023

*This is to confirm that the above named student has been granted permission to submit a PhD or  
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### **Declaration**

I declare that this thesis is my own work completed solely by myself under the supervision of Profs. Paul Taylor and Stacey Conchie. It has not been submitted in substantially the same form for the award of a higher degree elsewhere.

## Acknowledgements

Research is a collective endeavour and there are therefore too many people to thank for helping me on this long journey.

I first want to thank my supervisors, Profs. Paul Taylor and Stacey Conchie for all your valuable help and support during my PhD. Doing a PhD during the Covid-19 pandemic has not been easy, and I can imagine it must have been just as difficult for you having to be “online supervisors” throughout most of this crazy ride. Paul, thank you for giving me access to highly valuable data and helping me understand the nitty gritty parts of the statistical analyses. Seeing all your hard work has been a huge inspiration. Stacey, thank you for being extremely supportive right through and for your wise words when I needed it the most. I am very much looking forward to continue working with you on the next project.

I would like to thank my PhD confirmation panel members Dr. Sally Linkenauger and Prof. Mark Levine for asking clarifying questions and helping me keep the long-term goal of getting the PhD thesis over the finish line in mind.

A massive thanks to all the friends whom I have had the privilege to get to know during my time at Lancaster. You know who you are and all of you have certainly made a valuable and precious mark on my PhD journey. I am very thankful for having been a small part of your life during the last few years.

Christie, thanks for being my academic go-to person for offloading my complaints about academia. You made the time in Lund and beyond much more enjoyable. Your dedication has proved that it is never too late to start something new.

To Farhan and Eva, you both had faith in me as an academic when I was not even sure I could be one. Having you as teachers and mentors has shaped the researcher I am today and I am forever indebted to you for supporting and believing in me.

I also owe a big thank you to all my former colleagues at Örebro University who provided an extremely welcoming and rewarding atmosphere for me as a young and inexperienced lecturer.

To Shijie, what would I have done without you? Doing a PhD in the middle of a global pandemic is challenging, but being able to spend my time with you made it all so much better. Thank you so much for all your support and love.

Finally, heaps of gratitude to my family who have always been incredibly supportive of me throughout this challenging time. Thank you for always believing and having confidence in me. I do not think I have realised all the sacrifices you have made in order to bring me up in this world. For that, I will be forever grateful.

### Statement of Authorship

**Chapter 3 – Sjöberg, M., Taylor, P. J., & Conchie, S. M. (2023). Sensemaking and cooperation in investigative interviews: The role of matching. *Manuscript prepared for publication.***

Conception and design of study: Sjöberg, Taylor, & Conchie

Acquisition of data: Sjöberg

Data analysis: Sjöberg

Data interpretation: Sjöberg, Taylor, & Conchie

Drafting the manuscript: Sjöberg

Revising the manuscript: Sjöberg, Taylor, & Conchie

**Contribution of first author: 85%**

**Chapter 4 – Sjöberg, M., Taylor, P. J., & Conchie, S. M. (2023). The role of conversational matching in creating trust and cooperation in police interviews. *Manuscript prepared for publication.***

Conception and design of study: Sjöberg, Taylor, & Conchie

Acquisition of data: Sjöberg

Data analysis: Sjöberg

Data interpretation: Sjöberg, Taylor, & Conchie

Drafting the manuscript: Sjöberg

Revising the manuscript: Sjöberg, Taylor, & Conchie

**Contribution of first author: 85%**

**Chapter 5 – Sjöberg, M., Taylor, P. J., & Conchie, S. M. (2023). The influence of motivational frame matching on interaction outcomes and reciprocal matching. *Manuscript prepared for publication.***

Conception and design of study: Sjöberg, Taylor, & Conchie

Acquisition of data: Sjöberg

Data analysis: Sjöberg

Data interpretation: Sjöberg, Taylor, & Conchie

Drafting the manuscript: Sjöberg

Revising the manuscript: Sjöberg, Taylor, & Conchie

**Contribution of first author: 85%**

**Chapter 6 – Sjöberg, M., Taylor, P. J., & Conchie, S. M. (2023). A cylinder model of communication behaviours in military investigative interviews: Motivational frame matching and interview outcomes. *Manuscript prepared for publication.***

Conception and design of study: Sjöberg, Taylor, & Conchie

Acquisition of data: Taylor

Data analysis: Sjöberg & Taylor

Data interpretation: Sjöberg, Taylor, & Conchie

Drafting the manuscript: Sjöberg

Revising the manuscript: Sjöberg, Taylor, & Conchie

**Contribution of first author: 85%**

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### **Abstract**

Theories of interpersonal sensemaking predict that cooperation emerges in interactions where speakers are matched on motivational frames and use a cooperative rather than competitive orientation. However, while there has been correlational research supporting the positive effects of motivational frame matching, this has not been investigated experimentally. This PhD thesis provides the first evidence of a causal link between motivational frame matching and cooperation and trust in an investigative interviewing context. Five experiments found that a cooperative orientation and motivational frame matching consistently led to more positive interaction outcomes (e.g., willingness to cooperate and trust the interviewer). However, within a competitive orientation interaction, the results were mixed. When participants were not actively involved in the interaction (Chapter 3), motivational frame matching during competitive interviews led to less positive interaction outcomes and this was largely driven by the relational and identity motivational frame matching. Conversely, when participants were actively responding to the interviewer at each interview round (Chapters 4-5), motivational frame matching led to more positive interaction outcomes, regardless of the orientation. Participants round-by-round interview responses showed that interacting with a matching interviewer led to more participant reciprocal matching, and this tendency was magnified in the competitive orientation interaction.

Chapter 6 moved out of the laboratory to examine authentic military investigative interviews. The communication behaviours within these interviews largely followed a cylindrical model structure, with instrumental, relational, and identity motivational frames being communicated across cooperative, competitive, and avoidant orientations, with different levels of intensity. Analyses of motivational frame matching found an interaction between confessions and the direction of matching: Interviews containing a confession saw more motivational frame matching by the suspect of the interviewer's frames but not more matching by the interviewer of the suspect's motivational frames; interviews where the

interviewer had received interview training—compared to interviews where they had not—contained more overall motivational frame matching.

In sum, the findings of this thesis suggest that motivational frame matching leads to more positive interaction outcomes and greater reciprocal matching, but that the orientation, as well the directionality of the motivational frame matching, matters for the size and direction of these positive outcomes.

# Chapter 1



## **Chapter 1: Thesis introduction**

From communication accommodation theory (Giles & Ogay, 2007) to linguistic style matching (Niederhoffer & Pennebaker, 2002), researchers have proposed that people adapt and adjust their way of communicating depending on the person they are communicating with. One conceptualisation of communication accommodation is matching of motivational frames (Taylor, 2002). When two people are matching motivational frames, they could be said to have made sense of each other's goals and motivations and, as a result, can respond accurately to them. This central aspect of interpersonal sensemaking is a dynamic and interactive process that involves careful listening and appropriate responding to the motivations and goals of one's counterpart (Taylor, 2014).

While previous research on investigative interviews has focused on the benefits of rapport (Gabbert et al., 2021), authority (Matsumoto & Hwang, 2019), reciprocity (Matsumoto & Hwang, 2018), and strategic use of evidence (Hartwig et al., 2006), there is less research on how interpersonal sensemaking, and particularly matching of motivations, might be beneficial within an investigative interview. Correlational evidence suggests that matching of motivational frames is associated with more successful resolutions in crisis negotiations (Ormerod, Barrett, & Taylor, 2008), but there is limited experimental evidence of motivational frame matching and how it may lead to positive interaction outcomes. Hence, the aim of the current PhD research was to provide the first experimental evidence of a causal relationship between motivational frame matching and positive investigative interview outcomes. A secondary aim was to investigate whether a similar cylinder structure of motivational frames and orientations as observed in crisis negotiations (Taylor, 2002) would also be found in a sample of military investigative interviews. To answer the first aim, five experimental studies manipulated motivational frame matching in mock investigative interviews with varying levels of orientations (cooperative vs. competitive) and different

social contexts (investigative interviews vs. pub conversations). The second aim was achieved by looking at communication behaviours in authentic military investigative interviews and, with the help of proximity coefficients (Taylor, 2006) and smallest space analysis (Bloombaum, 1970), exploring their co-occurrences in a multidimensional space.

Naturally, interpersonal sensemaking is an extremely complex phenomenon that can be studied from an innumerable number of focal points and areas. Throughout the current PhD thesis, interpersonal sensemaking is conceptualised and operationalised through the cylinder model of communication (Taylor, 2002). By limiting the definition of interpersonal sensemaking to the cylinder model, it becomes possible to manipulate successful or unsuccessful interpersonal sensemaking and look at its influence on a range of interaction outcomes (e.g., cooperation and trust). It also enables predictions about the potential beneficial outcomes of successful interpersonal sensemaking to be carefully tested.

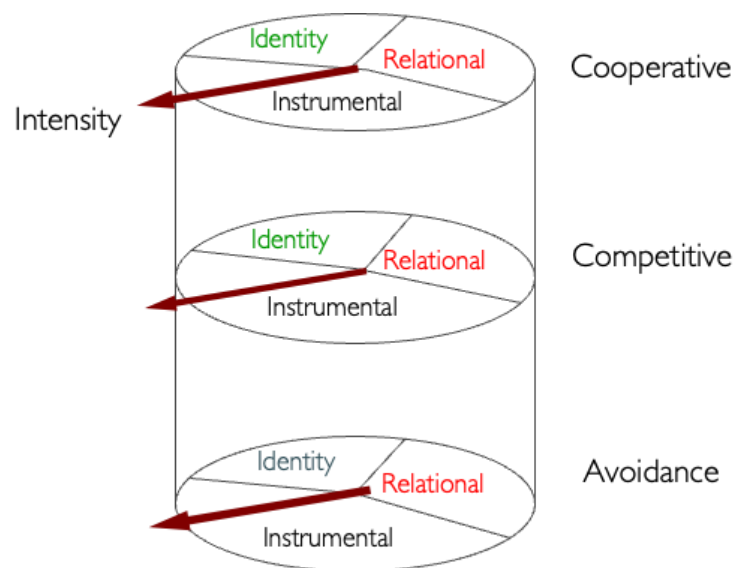
### **Conceptualising Sensemaking with the Cylinder Model**

In an interaction, there are several ways people may use and frame interpersonal communication. Early work by the Nobel laureate Thomas Shelling (1980) accentuated the way people negotiate gains and losses during an interaction. This instrumental view of communication has been especially influential in economics (Gibbons, 1991) and negotiation theory (Kuhn, 1962), but also in the behavioural sciences more broadly (Azar, 2019). Others have instead focused on the inherently relational aspect of interactions. For example, Drake and Donohue (1996) showed that communication in divorce mediations often centred around relational issues such as power and affiliation, and that resolutions often depended on how well these were being managed and handled by both parties. Finally, issues of how the speaker is perceived by others, including notions of ‘face’, have been stressed by some researchers as crucial in interpersonal interactions (Goffman, 1982; Rogan & Hammer, 1994). For instance, Rogan and Hammer (1994) argued that negotiations often break down

because of failed ‘facework’ (how face is negotiated and taken care of). Bringing these different motivations together, Taylor (2002) argued that all of them, the instrumental, the relational, and the identity, constituted important motivational frames that may dominate an interaction at any one point in time, and, as shown in Figure 1, can be represented in the form of a cylinder model.

**Figure 1**

*The cylinder model (taken from Taylor, 2002)*



While the motivational frames define what a speaker is trying to achieve, they say less about how the speaker orientates to doing so. The cylinder model proposes speakers may also take one of three main orientations towards an interaction at any one point in time (i.e., the spine of the cylinder). First, they may take an avoidant orientation where they might try to end or stonewall progress in the interaction. This is especially common at the early stages of a hostage negotiation when the hostage taker is trying to deliberate their available options (Voss, 2016). Another way this could occur is when a suspect avoids talking about incriminating details in an otherwise truthful account (Vrij & Mann, 2001). While an

avoidant orientation might permeate an entire interaction, it is not uncommon for it to transition into a competitive orientation. Here, the suspect might actively challenge or provoke the interviewer with behaviours such as threats or accusations (Sjöberg, Taylor, & Conchie, 2023). For example, Arnold (2021) observed that suspects accused of domestic offences often displayed competitive behaviours in response to challenging questions. Similarly, Donohue and Taylor (2003) found that, when backed into a corner with limited alternatives, terrorists often became aggressive and competitive with their negotiator as a way of regaining some power in the relationship (a phenomenon described as the ‘one-down effect’). The last commonly observed orientation is cooperative. Here, suspects are willing to problem solve with the interviewer and offer suggestions as to what might have happened during the incident (Wells & Brandon, 2019). This could be the start of finding common ground, that is, the interviewer and suspect would agree on the circumstances and sequence of events that led up to the crime in question (Taylor, 2014).

The final dimension of the cylinder model relates to the intensity of the communication. Intense language includes profanities, accusations, and criticisms, and is often associated with elevated emotionality and stress (Bowers, 1962). When speakers use high-intense language, it is usually a sign that the topic is important to them (Sjöberg et al., 2023), and might therefore provide important information about the speaker and their underlying goals and motivations. The cylinder model postulates that when speakers communicate through high-intensity language, they tend to be highly fixated on a certain goal or aim. In order to re-frame the interaction, it is often necessary to reduce the intensity of the communication (Taylor, 2014). This is echoed in observations from international conflicts, where a lowering of the intensity was found to be a predictor of whether the opposing parties would subsequently sit down and interact with each other (Bercovitch & Jackson, 2001). From a biological perspective, reducing the intensity of an interaction might reduce the fight-

or-flight system and make the opposing parties more likely to see the issue clearly (O'Connor, Arnold, & Maurizio, 2010).

In sum, interpersonal sensemaking is about making sense of someone's motivations and orientations, while simultaneously gauging their level of intensity. Done well, it could be theorised to facilitate interpersonal interactions and eventually lead to more positive interaction outcomes (e.g., cooperation and trust).

### **Measuring the Outcomes of Sensemaking**

An important goal of an investigative interview is to get as much reliable and valid information from a potential suspect as possible (Jakobsen, Langballe, & Schultz, 2017). There has been a proliferation of research examining more effective ways of obtaining cooperation and reliable information from suspects (Meissner, Kelly, & Woestehoff, 2015). For example, the Scharff technique works by combining a friendly demeanour with the illusion of the interviewer 'knowing it all' and has been found to produce reliable information from suspects (Oleszkiewicz, Granhag, & Montecinos, 2014). Similarly, the strategic use of evidence technique is an interview approach that utilises the suspect's need to appear consistent with the presented evidence and their previous statements to gain information from them (Granhag & Hartwig, 2014). In order to get valid information, suspects must initially be willing to cooperate with an interviewer. Indeed, research has found that the willingness to cooperate with an interviewer was associated with information gain from suspects (Brandon et al., 2019). Hence, both willingness to cooperate and willingness to provide information might be two important measures of positive interaction outcomes within investigative interviews. Both measures are used in the current research to assess positive interaction outcomes.

In addition to the provision of information, there are other outcomes that might be valuable in an investigative interview. For example, the concept of rapport, described as a

positive working relationship between the suspect and interviewer (Abbe & Brandon, 2014), has received a lot of attention in the interviewing literature. One way an interviewer can build rapport is by reflecting back the core beliefs and values that a suspect might communicate (Alison & Alison, 2020). This serves two main functions. First, it forces an interviewer to listen carefully to a suspect's account of what has happened. Second, it shows the suspect that they are sufficiently interested in them to listen to them. For example, Miner (1984) described how a town sheriff skilfully applied active listening with a liquor store robber to discover that he recently had been left by his girlfriend for another man. Once the robber had been given the chance to tell his story, he was happy to confess to the crime. Recognising this evidence, the current research used 'feelings of being understood' and 'listened to by the interviewer' as two important relational outcome variables in an investigative interview.

While the willingness to cooperate and feelings of being understood are important outcome variables, suspects might also care about being treated fairly (Goffman, 1982; Kleinman, 2006). In their examination of an interview with a murder suspect, Wells and Brandon (2019) observed that a failure by the interviewer to respect the suspect's identity almost led the suspect to end the interview. Similarly, Holmberg and Christianson (2002) found that sexual offenders who were treated with a lack of respect from their interviewer often felt alienated and were less likely to provide a confession. Supporting this finding, Kebbell et al. (2010) asked sexual offenders about the ideal way for an interviewer to treat them and found that humane and respectful treatments were perceived to be the most effective strategy for obtaining a confession. These findings all point to the importance of preserving a suspect's 'face', which can be defined as the way they are perceived by other people in social interactions (Oetzel & Ting-Toomey, 2003). In order to measure these more identity focused outcome variables, the current research explored participants' feelings of being respected and treated fairly, as well as their tendency to identify with the interviewer.

Finally, before suspects are willing to open up about their wrongdoings, it might be important for them to trust the interviewer (Brimbal et al., 2019). Trust has been found to be an important predictor of cooperation in conflict situations (Balliet & Van Lange, 2013), with investigative interviews being one obvious example of such situations. Trust has been defined as an intention to accept vulnerability based on a positive expectation of how another person will behave in the future (Rousseau et al., 1998). Since a suspect in an investigative interview risks being prosecuted if found guilty, they are inherently in a vulnerable position relative to the interviewer. Hence, their trust in the interviewer might affect whether they are willing to share potentially incriminating information or not. Thus, a measure of trust is used in the current PhD research to capture trust intentions.

To summarise, the current PhD research measured participants' willingness to cooperate and provide information, their feelings of being understood and listened to, their feelings of being respected and treated fairly, and their intention to trust the interviewer, all as potential positive outcome variables in an investigative interview. Providing several outcome measures is valuable as it could be theorised that motivational frame matching might influence some, but not all, of the outcome variables (University of Minnesota Libraries, 2016).

### **Value and Contribution of the Current Thesis**

The main theoretical contribution of the current thesis is to provide an experimental evidence base for the benefit of interpersonal sensemaking and, in particular, matching of motivational frames from the cylinder model on positive interaction outcomes such as cooperation and trust. Although previous studies have pointed to the relationship between successful interpersonal sensemaking and resolution in crisis negotiations (Ormerod, Barrett, & Taylor, 2008), this link has not been established experimentally. The lack of experimental evidence on motivational frame matching is unfortunate considering that correlational

research cannot establish causality, which is an important hallmark of a cumulative science, of which psychology aspires to be (Bunge, 2009; Eronen & Bringmann, 2021; Kampen, 2011). Hence, the current set of studies addressed this research gap by manipulating interpersonal sensemaking through motivational frame matching and looking at its effect on interaction outcomes.

A related contribution concerns the influence of motivational frame matching within both cooperative and competitive interactions. While it has been shown that motivational frame matching was associated with interaction success (Ormerod, Barrett, & Taylor, 2008), it is still unclear whether matching leads to positive outcomes for both cooperative and competitive interactions. For instance, Richardson et al. (2019) found that language style matching was associated with task success in a cooperative and symmetric interaction, but task failure when the interaction was competitive and symmetric. Assuming similar mechanisms might influence motivational frame matching, it is unclear whether matching would lead to more positive interaction outcomes for competitive as well as cooperative interactions. Consequently, the current research investigated the effects of motivational frame matching on positive interaction outcomes for both cooperative and competitive interactions.

The current research did not manipulate avoidant orientations, largely because the majority of previous experimental research focuses on cooperative and competitive orientations (Bonta, 1997; Bowen, Winczewski, & Collins, 2017; Kelley et al., 2003; Richardson et al., 2019). Thus, it would have been difficult to develop a clear set of pre-registered hypotheses about the expected results of motivational frame matching in avoidant interactions. Furthermore, avoidant interactions, by their very nature, involve an absence of interaction (e.g., via “no comments” statements), which would have been difficult to experimentally manipulate in a realistic way. Hence, the decision was taken to limit the experimental studies to cooperative and competitive interactions.



A potential limitation with the cylinder model is that it has so far mainly been observed within crisis negotiation interactions (Taylor, 2002; Taylor & Donald, 2004). This is unfortunate as there are important differences between crisis negotiations and investigative interviews which might have implications for the generalisability across contexts. For instance, a crisis negotiation often comes with significant time pressure (Voss, 2016), which may increase the intensity of the interaction and make it more emotionally charged (Rogan & Hammer, 1994). Despite these differences, the cylinder model has proved useful as a framework for understanding suspect interviews. For example, previous training interventions involving the cylinder model (as well as other interview techniques such as rapport tactics) have found that it led to more cooperation from suspects, and subsequently, more information gain (Brandon et al., 2019). Similarly, the High-Value Detainee Interrogation Group's review of the science included the cylinder model and motivational frame matching as useful tools to assess and gain cooperation from suspects (HIG, 2016). This provides some tentative evidence that motivational frame matching training might benefit investigative interviewers when they are trying to elicit reliable information from suspects.

While many theories in psychology aspire to explain causal relationships, it is still common for them to have been developed using correlational research methods (e.g., surveys; Eronen & Bringmann, 2021). This is unfortunate as these types of designs make it difficult to establish causality (Russo, 2011). On the other hand, experimental research methods provide a useful way of manipulating variables while holding other variables constant. By doing this, it becomes possible to explore the potential causal relationship between two variables (e.g., successful interpersonal sensemaking and positive interaction outcomes). The process of establishing causality is important in science (Antonakis et al., 2010), and some have argued that a phenomenon has not really been properly understood

unless one can explain the underlying mechanisms of that phenomenon (Eronen & Bringmann, 2021). By experimentally manipulating motivational frame matching and looking at its effect on interaction outcomes, it is believed that the phenomenon of interpersonal sensemaking would be better understood.

At the same time, experimental studies come with a range of limitations, the most prominent being that experiments are not necessarily a real representation of the social phenomena of which they are trying to study (Aanstoos, 1991). This, in turn, means that the results from experimental studies might not generalise particularly well to the ‘messy’ outside world (Tajfel & Fraser, 1978). To address these potential limitations, the current PhD research also explored the communication behaviours within authentic transcripts from military investigative interviews and whether they followed a similar cylinder structure as in Taylor (2002). This type of triangulation of research findings based on different types of methodologies and data sources has been described as a good way to bridge the limitations that exists between different research methodologies and approaches (Thurmond, 2001).

Another contribution of the current research is the inclusion of both experimental and authentic investigative interview data. This is a benefit compared to previous studies, which have tended to use only one or the other type of the two data sources (e.g., Taylor, 2002 used archival data; Richardson et al., 2019 used experimental data), and allows for a type of triangulation of research findings which has been encouraged in the social sciences (Thurmond, 2001; Mathison, 1988). This is particularly useful considering that the experimental studies of the current PhD thesis used online participant samples, which carries certain risks in terms of data quality and participant motivations (Chandler, Mueller, & Paolacci, 2014). Still, research suggests that online samples usually offer a more diverse set of participants (Goodman, Cryder, Cheema, 2013), meaning that the variability around the

measures might be larger, and hence, any significant results are likely to be more robust (compared to using university samples).

Furthermore, the development of the current experimental paradigm constitutes a significant contribution to the existing research literature. By manipulating interpersonal sensemaking through matching of motivational frames from the cylinder model (Taylor, 2002), it was possible to compare situations of successful and unsuccessful sensemaking and look at their respective effect on interaction outcomes. This might open the door to explore related variables (e.g., power, social identity) and how they influence people's interpersonal sensemaking processes.

### **Sensemaking across Time**

Although successful interpersonal sensemaking can be evaluated at the end of an interaction, it is important to also understand how the interaction is progressing across time. By looking at whether participants matched the interviewer's frame at each round of the interview, the current experimental paradigm enabled analyses of how coordinated (i.e., in sync) the interviewer and suspect were and what factors influenced this (Chapter 4 & 5). Examining turn-by-turn reciprocal matching offered a more fine-grained way of investigating motivational frame matching than merely obtaining perceptions at the end of the interaction (Chapter 3). This approach not only extends previous work on the cylinder model (cf. Ormerod, Barrett, & Taylor, 2007; Taylor, 2014) but it also represents a departure from the aggregate coding approach that dominates the interviewing literature (Alison & Alison, 2017).

The examination of turn-by-turn matching made it possible to actively manipulate a range of additional variables (e.g., interviewer matching, orientation & social context) to see how they influence participant's reciprocal matching. The introduction of this 'repeated measures' approach is in line with a growing literature advocating for within participants

measures as a way of increasing statistical power, and making the statistical tests more sensitive (Lamb, 2003). Relatedly, there have been specific calls for taking time into perspective when studying forensic processes (Taylor et al., 2008), such as investigative interviews. Hence, soliciting responses from participants at each round of the interview enables a more fine-grained analysis of interpersonal sensemaking and may contribute to a wider understanding of its underlying processes.

### **Directionality of Motivational Matching**

The overall motivational frame matching could give a general idea of the structure of the interaction. However, it does not capture the direction of this matching (i.e., who is matching who). The directionality of matching might give a clue as to how the interaction is going and who is dictating how the interaction is framed. This is supported by research showing that people have a tendency to accommodate and match their communication styles with people they like or want to be liked by (Giles & Ogay, 2007). For example, one study showed that subjects were more likely to copy an art piece made by an attractive compared to an unattractive accomplice (van Leeuwen et al., 2009). Moreover, research has demonstrated that the more the CFO (chief financial officer) adopted and followed the language style of the CEO (chief executive officer), the higher the chance that the CFO would get a higher salary package and become a member of the board (Shi, et al., 2019). In line with this, another study investigated the interpersonal communication present in angel pitches and showed that entrepreneurs who started to match the opinions of their angel investor had a greater chance of receiving funding (Sanchez-Ruiz et al., 2021).

These results go in line with schema theory, which indicates that interaction accommodation (e.g., matching) is influenced by social norms of how people ought to behave (Dalton et al., 2010). Building on the assumption that such norms may also be present in investigative interviews, Richardson et al. (2014) demonstrated that, in interviews where the

suspect confessed, they matched the language style of the interviewer to an increasing extent. Theorising that similar mechanism may also be at play for motivational frame matching, it could be hypothesised that the directionality of matching (i.e., who matches who) could impact the interview outcome.

A related question is whether motivational frame matching leads to interaction success (e.g., confessions), or on the other hand, whether interaction success leads to motivational frame matching. Based on the presented evidence above, it could be postulated that the causal relationship goes in the direction of motivational frame matching leading to higher interaction success. The reason for this is that interaction success is usually measured at the end of an interaction (e.g., the suspect confessing to their crime or feeling listened to and understood by the interviewer), while motivational frame matching is measured at the beginning and throughout the interaction. For a causal relationship to be established, it is required that the variation in the predictor variable (e.g., motivational frame matching) comes before the variation in the outcome variable (e.g., suspect confessions; Shadish et al., 2002). Since the establishment of motivational frame matching comes before interaction success, it could be assumed that the causal relationship indeed goes from motivational frame matching -> interaction success.

### **Sensemaking vs. Rapport**

Within the investigative interviewing literature, rapport has become somewhat of a ubiquitous term. For example, in their review of rapport in investigative interviews, Gabbert et al. (2021) found more than 6,500 articles dealing with the topic. Despite the dominance of rapport in the investigative interviewing literature, the current PhD thesis is focused on interpersonal sensemaking, which has been conceptualised as the way in which people communicate and the goals and motivations that underlie those ways (Taylor, 2013). In contrast, rapport has been defined as a positive working relationship between the suspect and

interviewer (Abbe & Brandon, 2014) and to consist of mutual attention, coordination, and positivity (Tickle-Degnen & Rosenthal, 1990). Hence, rapport is arguably more focused on the interaction as a whole and how it is progressing whereas sensemaking is concerned with the language people use and what it says about their underlying goals and motivations. Importantly, there might be situations in which successful sensemaking has occurred without the development of any kind of rapport. For example, a brief conversation between two football players regarding who should take a free kick can be said to have made sense of each other if they successfully agree on who should take the free kick. On the other hand, they would likely not have developed any kind of rapport with each other during this short interaction. This is just one example of how sensemaking and rapport are related, but clearly different psychological constructs.

### **Overview of the Thesis**

The PhD research seeks to answer three related research questions: (1) Does motivational frame matching lead to more positive interaction outcomes? (2) Under what conditions does motivational frame matching lead/not lead to more positive interaction outcomes? and (3) Can the communication behaviours within military investigative interviews be captured by a similar cylinder structure as in Taylor (2002), and if so, is matching of motivational frames from this cylinder associated with more positive interaction outcomes? To answer these questions, this thesis presents five experiments looking at the experimental manipulation of motivational frame matching and its associated outcomes. The experiments are then supplemented by one archival study that investigated whether the communication behaviours in the investigative interviews showed a cylinder structure, and if so, whether matching of motivational frames was associated with confessions.

Chapter 3 reports two experiments (Experiments 1 and 2), which provide the first experimental evidence of a positive effect of motivational frame matching on investigative

interview outcomes. In these two experiments, participants read (Experiment 1) or watched (Experiment 2) a short mock investigative interview between a suspect and an interviewer, while assuming the role of the suspect. The interviews were manipulated to be motivationally matched (instrumental, relational, or identity) or motivationally non-matched, in either a cooperative or a competitive orientation. Results found that motivational frame matching led to significantly higher willingness to cooperate and greater feelings of being understood among the participants, but only in a cooperative interaction. In a competitive interaction, motivational frame matching led to less willingness to cooperate and identify with the interviewer.

Chapter 4 describes a pilot experiment that tests a new paradigm to manipulate motivational frame matching in a more active way than in Experiment 1 and 2. In this experiment, rather than passively assuming the role of the suspect (as in the first two experiments), participants actively interacted with the interviewer by responding in either an instrumental, relational, or identity motivational frame. Depending on the experimental condition, interviewers would then respond in the same frame (matching condition), or a different frame (non-matching condition), in either a cooperative or competitive orientation. The results found no significant effects of motivational frame matching on any of the dependent variables. However, participants who interacted with a matching interviewer showed more reciprocal motivational frame matching, but only at the beginning of the interview. While the results of the experiment did not go in line with the pre-registered hypotheses, it provided insights on how to change the experiment in order to more precisely manipulate motivational frame matching.

Having modified the manipulation from the previous experiment, Chapter 5 included two experiments that again aimed to have participants actively respond to the interviewer in either an instrumental, relational, or identity motivational frame. Depending on the

experimental conditions, they were then responded to by the interviewer in either the same motivational frame (matching condition), or with a different motivational frame (non-matching condition), in either a cooperative or competitive way. Hence, the design of these two experiments was the same as for the pilot experiment in the previous Chapter, but with an improved manipulation of motivational frame matching. To generalise the results, the second of the two experiments changed the social situation from an investigative interview to a pub conversation between two rival sports supporters. Results showed that in both contexts, for both cooperative and competitive interactions, motivational frame matching led to more positive interaction outcomes.

While Chapters 3-5 all contained experimental studies where motivational frame matching was experimentally manipulated, Chapter 6 contained an archival study featuring authentic military investigative interview transcripts. The two related aims within this chapter were (i) to explore whether a similar cylinder structure as observed in Taylor (2002) within crisis negotiations also would be observed within military investigative interviews, and (ii), to see whether matching of motivational frames from this cylinder would be associated with more suspect confessions. The results were largely in line with Taylor's (2002) cylinder model, and confession interviews saw more motivational frame matching by the suspect of the interviewer's frame (but not more motivational frame matching by the interviewer of the suspect's frame), than non-confession interviews.

Finally, the discussion chapter reflected on the findings of the current PhD thesis and what theoretical and practical implications they have for the wider investigative interviewing literature. Theoretically, the findings provide evidence for a causal link between motivational frame matching and positive interaction outcomes, and this was connected and interpreted with the help of existing theories such as communication accommodation theory (Giles & Ogay, 2007) and interaction alignment theory (Garrod & Pickering, 2004). From a practical



perspective, the current findings may provide guidance for investigative interviewers about how best to match and make sense of suspects' motivations in order to maximise their willingness to cooperate and provide information.

### **Which Studies Were Run When?**

As the current studies took place over a significant period of time, it might be useful to know which studies/experiments were run when and how they contributed to each chapter. Specifically, the first experiment to be conducted was the experiment in Chapter 4 (which was conducted before the two experiments in Chapter 3). The reason for putting the first study of the PhD in Chapter 4 (rather than Chapter 3), was that it had the same “active participant” design as the latter two experiments in Chapter 5. In contrast, the two experiments in Chapter 3 had participants merely observe the investigative interview, and hence, this constituted a more “passive participant” design. The archival study in Chapter 6 constituted a different type of study altogether, and as a result, was put in a different chapter at the end of the PhD thesis. In terms of timing, the experiment in Chapter 4 was conducted in May 2020, the two experiments in Chapter 3 were conducted between April and December 2021, the two experiments in Chapter 5 were conducted between May and August 2022, and the archival study in Chapter 6 was conducted between August 2020 and August 2021 (the data coding) and November 2021 and January 2023 (statistical analyses).

# Chapter 2

## **Chapter 2: Literature review**

The current chapter will focus on reviewing literature around general and interpersonal sensemaking. Sensemaking is a broad concept that has been studied from many different disciplines (e.g., from a psychological, organisational, and communication research perspective, Taylor, 2002; Wrzesniewski et al., 2003). In the current PhD thesis, the focus is on interpersonal sensemaking conceptualized through Taylor's (2002) cylinder model. However, before going into the cylinder model, it is important to get a better understanding of what sensemaking is and how it has been defined. Furthermore, the focus in the current literature review will be on research with a particular relevance for investigative interviews.

In the current chapter, a distinction is made between general and interpersonal sensemaking. General sensemaking refers to the processes that deal with structuring and organising the complex stream of inputs from the external environment while interpersonal sensemaking is focused on the way people organise and make sense of interpersonal interactions (e.g., investigative interviews or crisis negotiations). While the current PhD thesis is focused on interpersonal sensemaking, it is valuable to initially get an understanding of the concept of general sensemaking.

### **General Sensemaking**

The concept of sensemaking was introduced by Karl Weick (1995) as referring to the way that people understand and structure the unknown reality in order to better be able to act in the world. Although the current thesis is focused on interpersonal sensemaking from a legal psychological perspective, sensemaking as a concept has mostly been studied within an organisational and management context. Here sensemaking often refers to the way workers or employees make sense of their work environment around them (Wrzesniewski et al., 2003). Central to this literature is the idea that people have a desire to understand and make sense of the world (Baumeister & Vohs, 2002).

A central idea is that reality is an ongoing process that results from individuals' efforts to create structure and make sense of situations that has happened in the past. An important component of sensemaking is that people try their best to make events rationally accountable to themselves and others. This means that, rather than acting and living in a specific reality that exists outside of the individual, that reality is actively constructed, in part as a way to justify enacted behaviours, through sensemaking processes (Weick, 1993). In the context of an investigative interview, sensemaking processes may bias an interviewer into thinking that a suspect is guilty (before obtaining enough evidence to confirm this belief). This, in turn, may make them more likely to ask inappropriate, guilt presumptive questions, which could make it more difficult to obtain accurate and detailed information from the suspect (see Meissner et al., 2017, for a discussion about the dangers of using guilt presumptive interview techniques).

As a concept, general sensemaking has been proposed to consist of a three-step process (Ancona, 2012). The first step involves coming up with a tenable map or plan for how something in the world works. An example of this could be an investigative interviewer's first impression of a suspect as looking agitated or frustrated. Drawing from previous experiences of agitated and frustrated suspects, the interviewer may well conclude that it would be difficult to get the suspect to cooperate and provide information. The second step involves collecting data to examine the validity of the initial plan or map. Sticking with the investigative interviewing example, the interviewer may carefully ask the suspect an open question to gather evidence as to their willingness to cooperate. In the case that the suspect immediately starts to open up about what has happened to them, the interviewer would then have to re-evaluate their initial sensemaking map (e.g., "the suspect seems more willing to open up than I initially thought"). This updated map would then serve as the basis for the interviewer's sensemaking processes for the rest of the interview (until contradictory

information is presented; Ancona, 2012). The updating of the beliefs based on contradictory or conflicting information constitutes the third step of the sensemaking process. In this way, the sensemaking process is especially activated when the previous sensemaking map has been proven incorrect (i.e., there is a mismatch between the sensemaking map and the empirical data).

Indeed, researchers have argued that sensemaking processes often become activated as a result of a discrepancy between the expected and experienced state of the world (Weick et al., 2005). When this occurs, there is a change from being engrossed in behaviours and projects to the experience that things are no longer understandable. In order to make sense of this disturbance, people may initially look for ways that their old understandings can provide a working plan for how to deal with the new situation. However, if the old frameworks are unable to provide a roadmap that can help understanding, then this necessitates the activation of sensemaking processes.

Another way to understand general sensemaking is that it is about the interplay between interpretation and action (Weick et al., 2005). While a substantial line of research has focused on the choices that people make in naturalistic situations (e.g., see the naturalistic decision-making literature; Klein, 2008), interpretation is more focused on a system of meaning and understanding, and how this relates to actions. For example, Snook (2001) described how sensemaking, and not decision making, was the most appropriate level of analysis to explain a friendly fire incident over Iraq in 1994 where two civilian helicopters were shot down by two F-15 pilots, killing 26 people. For most people, it might be natural to ask what made the pilots decide to pull the trigger (i.e., focusing on bad people making bad decisions). However, according to Snook (2001), this way of looking at the situation would focus on the individual decision maker without adequate attention being paid to the contextual and situational explanations. Instead, by framing the event around the making of

meaning (i.e., sensemaking), the attention shifts away from the individual decision maker onto a larger outside context. This opens up the possibility that several variables might have contributed to the accident, including those that lie outside of the individual.

In other words, sensemaking might be understood as a way that people can claim meaning out of less positive experiences. For example, Fine (1996) showed how restaurant chefs were using sensemaking to re-define themselves as artists and their work as a form of art. This, in turn, highlighted the skilled components of their job and transformed it from a blue-collar vocation into a more professional occupation. Such cognitive reappraisal might provide a way to make meaning out of difficult situations. Conversely, an investigative interviewer may help a suspect to make sense of their situation by highlighting that they have a lot of things to be thankful and grateful for before asking more information probing questions that might upset the suspect.

### **The Need for Sensemaking**

It has been argued that the need for sensemaking is most important when our comprehension of the surrounding world has become compromised. This may happen when the surrounding environment is changing quickly which could make people feel unprepared to deal with new challenges. In relation to this, a common distinction is made between technical and adaptive challenges (Heifetz et al., 2009). While technical challenges can be solved within one's current framework, adaptive challenges require a response outside of normal competence. Such adaptive challenges might be relatively common within an investigative interview. For instance, Oleszkiewicz et al. (2022) recently discussed the importance of adaptability among effective investigative interviewers. Adaptability includes behavioural, cognitive, and emotional adjustments that help people manage new and unexpected situations (Martin et al., 2013). The American Psychological Association has defined adaptability as "the capacity to make appropriate responses to changed or changing

situations; the ability to modify or adjust one's behaviour in meeting different circumstances or different people" (VandenBos, 2007, p. 17). In the current context, this could include a sudden desire from the suspect to terminate the interview without forewarning. If this happens, the investigative interviewer would need to skilfully adapt to the situation by, for example, giving back autonomy to the suspect and letting them drive the agenda for the interview.

In an 'undercover' study where participants had to act like 'agents' in a situation that required an adaptive response, Oleszkiewicz et al. (2022) found that adaptability (as rated by experienced practitioners) was related to the practitioners' ratings of trustworthiness, rapport, and belief in whether the participants would accomplish their mission. Specifically, they tested whether adaptability was important for the completion of an experimental undercover mission. The mission involved collecting a secret hidden note inside a book in a professor's office. However, when the participants showed up to the office, the professor was not there, but instead a research assistant of the professor. Hence, participants had to rapidly adapt to the unexpected situation and come up with a plausible reason for why they needed to borrow the book. It was found that this scenario successfully elicited adaptive responses, with participants reporting the need to adjust their responses in order to complete the task.

Similarly, in an investigative interview, it is likely that the suspect would bring up unexpected and surprising information from time to time. In those situations, it would likely be important for the interviewer to adapt to this information and respond appropriately. While it could be argued that sensemaking is the first step in this process, adaptability might be a particularly important part of the second step (responding appropriately). In other words, a good sensemaker would need to be adaptable and able to change their way of communicating with a suspect, pointing to the importance of adaptability as an important component of the

investigative interviewer skillset. Hence, sensemaking and adaptability might be two closely related concepts.

While general sensemaking is a useful concept to better understand how people make meaning out of complex experiences in general, it does not necessarily capture how such sensemaking processes takes place in interpersonal situations (i.e., interpersonal sensemaking).

### **Interpersonal Sensemaking**

Interpersonal sensemaking is a process of social inference which revolves around interpreting another individual and their intentions, goals, and motivations for the interaction (Taylor, 2014). Researchers have argued that interpersonal sensemaking is dependent on intrapersonal sensemaking (Wrzesniewski et al., 2003). This means that in order to develop sensemaking in the interpersonal realm, people first need to make sense of their own experiences and assign them meaning. The case could be made that interpersonal sensemaking is central to social interaction (of which investigative interviews are a special kind of social interaction). A basic goal of interpersonal sensemaking is to establish a shared understanding or “common ground” (Yeomans et al., 2022, p. 1). While it is easy to remember situations when we have had common ground with a fellow conversation partner, it is more difficult to explain how we arrived there in the first place. Interpersonal sensemaking may offer a framework that can be helpful in reaching common ground and understanding with another person (e.g., a suspect).

Despite the central role of interpersonal sensemaking to social interactions, it has largely been ignored by the investigative interviewing literature (Sjöberg et al., 2023a). Instead, research in this area has tended to focus on what type of questions to ask or the importance of rapport (see Gabbert et al., 2021, for a recent review of rapport within professional investigative contexts). While all important, the idea that there are correct or true



ways of conducting an investigative interview is too simplistic. Instead, it often depends on the individual characteristics of the suspect (e.g., how willing they are to cooperate or their level of involvement in the crime) and the surrounding context (e.g., is the investigative interview conducted in a time critical manner or under more relaxed circumstances?). A clear example of this comes from Beune et al. (2010) who found that, in certain situations, challenging or criticizing the suspect was useful for eliciting more information from suspects. Similarly, Alison et al. (2013) found that investigative interviewers sometimes used challenging and robust questioning tactics at key moments in the interview to increase information gain. Of course, this does not mean that such behaviours should be used all the time. Instead, it suggests that an interviewer needs to continually make sense of what a suspect is communicating and respond in an appropriate and suitable way. This two-step process (first making sense of someone's underlying goals and motivations within an investigative interview, and second, responding in an appropriate way) lies at the heart of successful interpersonal sensemaking.

A concrete example of what it means to be good at making sense of someone's goals and motivations comes from the US military. Although soldiers need to be able to engage in combat with enemies, they also must be able to communicate with civilians and locals in a peaceful way (Klein & Borders, 2015). This is necessary in order to reduce antagonism and opposition among the local population. Unfortunately, during the US military operations in Afghanistan and Iraq, the deployed American soldiers often failed to communicate in a friendly way with the locals. In an effort to improve the way soldiers communicated with civilians, the US military coined the term the 'good stranger' to refer to soldiers who seemed to be able to communicate with locals without evoking hate or aggression from them (Klein & Borders, 2015). A soldier with proficiency in interpersonal sensemaking would likely be able to understand the goals and motivations of the civilian population (e.g., their fear of

having a family member being killed in combat), and use this interpersonal sensemaking to produce better conversations. This type of good stranger could therefore serve as a concrete example of what lies at the heart of successful interpersonal sensemaking. The same principles would most likely also apply in the investigative interview room. For example, it would probably be difficult to get a suspect to talk about a potential criminal event if they are worried that their family member might be in danger if they disclose any information. Therefore, an investigative interviewer proficient in interpersonal sensemaking would first address the suspect's concerns about their family before moving on to the more instrumental issues (e.g., asking questions about the particular crime the suspect is accused of committing).

### **Frames and Framing**

A key idea in interpersonal sensemaking is that people tend to frame their interpersonal interactions by focusing on a particular motivation or goal. At any one point in time during a conversation, people may have different goals and motivations that they want to convey (Taylor, 2014). Framing the interaction around those goals may increase the likelihood that they will be reached. The idea of framing has received significant attention within the communication and negotiation literature (Drake & Donohue, 1996). In an effort to highlight the different approaches common within framing research, Putnam and Holmer (1992) identified three different perspectives: (i) The cognitive heuristics perspective, (ii) the frame categories perspective, and (iii) the issue development perspective.

The cognitive heuristics perspective tends to focus on how people's decision making is biased through psychological concepts such as loss aversion and confirmation bias (Kahneman, 2011). In line with this, early negotiation research found that negotiators with a negative framing (i.e., focused on avoiding losses) achieved lower gains, behaved more competitively, and were less concessionary compared to negotiators who had a positive

framing (i.e., focused on maximising gains; Neale & Bazerman, 1985). Similarly, in an investigative interview, it could be theorised that how an interviewer frames the interaction with a suspect (e.g., presuming the suspect is guilty) might have a large influence on the outcome of the investigative interview. Indeed, research has shown that guilt presumptive interview techniques (e.g., the read technique) are less effective at obtaining information from suspects than informational gathering interview approaches (e.g., the PEACE technique; Meissner et al., 2017).

In contrast to the cognitive heuristics perspective, the frame categories perspective argues that people have internal expectancy maps that they evoke to help guide them through an interpersonal interaction (Drake & Donohue, 1996). For instance, early work in this area suggested that negotiators draw on substantive frames to get an understanding of what the negotiation is about, what the preferred solutions might be, and how to interpret behaviours by self or others (Gray, 1991). In this situation, frames refer to cognitive systems for processing and organising information into already known categories. This idea is somewhat similar to the cognitive schemas concept (Kibler, 2011). For instance, an experienced suspect may have been interviewed several times by the police, and as a result, would have a clear understanding of what to expect during an investigative interview (i.e., their cognitive schemas would be relatively extensive). On the other hand, a suspect who is being interviewed by the police for the first time might only have basic cognitive schemas of what to expect from an investigative interview (e.g., based on observations of investigative interviews from books, tv-series, and movies).

Finally, the issue development perspective is about conflict and argumentation and how these develop and change throughout an investigative interview. As the interview progresses, different issues are likely to be highlighted by the suspect and interviewer. While the suspect and interviewer may come to the investigative interview with clear notions of

what the other wants to talk about, these are likely to change during the interview as both parties refine and hone their arguments (Drake & Donohue, 1996). For example, an investigative interviewer may arrive to the interview room expecting the suspect to behave aggressively and competitively only to be met with a crying and desperate suspect, begging for their mercy. In this case, the interviewer would have to update their understanding of the issue in order to better make sense of the suspect.

The cognitive heuristics perspective, the frame categories perspective, and the issue development perspective are three ways that the frame concept can be used to better understand interpersonal sensemaking processes. Another way is to perceive interpersonal sensemaking as a form of meaning making. This is the focus of the next section.

### **Interpersonal Sensemaking as Meaning Making**

Interpersonal sensemaking has been used as a framework to understand how the behaviours of others and interpersonal cues relate to the meaning of work and other social situations (Wrzesniewski et al., 2003). Researchers have often assumed that people are motivated to make sense of their surroundings (including their work), in order to discern its meaning which, in turn, may shape how they act towards other people. Indeed, a central argument in this literature is that the interpersonal interactions people have with others influence the meaning they derive at work. Similarly, in an investigative interview, a suspect's cues would have to be interpreted by the interviewer, and vice-versa, which may influence the meaning and significance that is derived from the investigative interview. Framed in another way, interpersonal sensemaking could be argued to focus on the black box between inputs (e.g., communication behaviours such as insults or compliments) and outcomes (e.g., understanding the meaning behind the communication behaviours; Wrzesniewski et al., 2003). In other words, interpersonal sensemaking can function as a way to make meaning out of interpersonal interactions. This can be understood as describing the

way that people construct meaning from the interpersonal cues they receive by other people, as well as the type of cues and situations they seek out.

A conversation, such as an investigative interview, could be theorised to consist of several aggregated micro-level experiences. Over time, these aggregated micro-level experiences may add up to an overall evaluation of the interpersonal interaction and how it is going. This includes whether the interaction partners are making sense of each other and whether they are matching motivational frames (Taylor, 2014). For example, if a suspect is motivated to tell their story of what led up to a particular crime, but an investigative interviewer keeps asking for meticulous details about the suspect's whereabouts during the time of the crime, it is natural to assume that the suspect will be frustrated. If this keeps going on for a long time, it is not unreasonable to assume that the suspect may completely shut down communication (e.g., by terminating the investigative interview; Wells & Brandon, 2019).

Some research also suggests that people are more motivated to engage in sensemaking when they have problematic experiences (Weick, 1995). This is perhaps not entirely unsurprising. For instance, research suggests that people are more motivated to seek out meaning and purpose after negative or traumatic experiences (Henson et al., 2021). Similarly, it has been argued that interpersonal sensemaking, conceptualized through the cylinder model, is most needed when an investigative interview is not going well (e.g., the suspect is resistant and not willing to engage with the interviewer, HIG, 2016). This suggests that interpersonal sensemaking might be most important in interactions in which there is a mismatch between the goals and motivations of the suspect compared to the interviewer.

### **Models of Interpersonal Sensemaking**

In addition to Taylor's (2002) cylinder model (which was described in Chapter 1), there are also other models that focus on sensemaking within interpersonal interactions.

This section will focus on four well-known models: Wrzesniewski et al.'s (2003) interpersonal sensemaking model, the conversational circumplex (Yeomans et al., 2022), the animal circle model (Alison & Alison, 2020), and relating theory (Birtchnell, 2014).

Wrzesniewski et al. (2003) developed a theoretical model of interpersonal sensemaking focusing on how people make meaning out of their work. This process begins with noticing the cues and behaviours of other people. After this, these behaviours and cues are processed and made sense of. An important part of the model is interpersonal cues. These cues can be both direct and subtle. A direct interpersonal cue can be helping a colleague with a work task while an indirect interpersonal cue may be a glance during an interview. These cues provide important signals for how others view us and other people which is helpful for the process of interpersonal sensemaking. An example of a subtle cue comes from Dutton (2003) who described how an administrative assistant at a university put together a document and asked her professor (i.e., her manager) whether he would like to double check the document before sending it out. The administrative assistant described how the professor told her that he was confident that she had done the work for so long and therefore, he did not need to double check her work. This is a good example of how a subtle cue of confidence in the assistant's work was communicated indirectly. Specifically, the fact that the professor did not want to double check the work suggested to her that he was confident enough in her ability to handle the task by herself.

Such interpersonal cues may also be present in an investigative interview. For instance, a suspect might inconspicuously "test" the interviewer by seeing how they react to a piece of sensitive personal information (e.g., telling the interviewer that they promised their mother to not get involved in trouble). If the interviewer directly dismisses this information (e.g., "you don't seem like a person who would honour a promise to their mother"), this is likely to send a signal to the suspect that the interviewer is not really willing to listen to their

side of the story. If such behaviours keep occurring, it is not unthinkable to assume that the suspect may eventually terminate the interview.

A related observation is that people often engage in motivated interpersonal sensemaking. This means that, while there is an endless stream of interpersonal cues that can be attended to, people often have to choose which cues to focus on. Such choices may stem from a motivated reasoning about which cues are most likely to reinforce the person's view of themselves (Wrzesniewski et al., 2003). This also has the additional realisation that people may be more sensitive to certain cues compared to their peers. For example, a person who has not been invited to the company Christmas party may interpret this as a careless mistake while another person may interpret the same interpersonal cue as an intentional act to exclude them from the Christmas party. This clearly shows how the same interpersonal cues can be interpreted in two different ways depending on the people who are doing the interpretation.

The start of an interpersonal sensemaking process according to Wrzesniewski et al. (2003) consist of noticing the interpersonal cue, discerning whether it is positive or negative, and finally assigning meaning to the cue. Noticing an interpersonal cue requires that the person pays attention to the social environment around them and the signals that other people send. An example of this could be a suspect who notices that an interviewer keeps ignoring them when they are talking about difficulties in their life, but suddenly pays attention to them when the suspect mentions details related to the crime. This could send the signal to the suspect that the interviewer is not interested in them as a person and only interested in obtaining information that can lead to a confession.

Interestingly, Garfinkel (1967) observed that behaviour that goes in line with taken for granted expectations tend not to be noticed. On the other hand, behaviours that go against expectations tend to be noticed much more (Fiske & Taylor, 1991). Such behaviours would therefore be more likely to activate an interpersonal sensemaking process. Within an

investigative interview, expected behaviours might be things such as asking and answering questions, apologising for one's actions, and challenging evidence. On the other hand, if the suspect starts screaming and panicking, this may go against an interviewer's initial expectations, and therefore, be more probable to be noticed.

To infer whether an interpersonal cue is positive or negative, one must interpret its meaning. This fits with earlier theories suggesting that people make overall evaluations of whether a situation is positive, neutral, or negative (Lazarus & Folkman, 1984), that may help organisms survive better in their environment (Lazarus, 1991). In an investigative interview situation, positive cues might be signs that the interviewer is actively listening and acknowledging the suspect, while negative cues could be behaviour that demonstrate that the interviewer is not interested in listening to the suspect. Since human systems are generally more likely to focus on negative compared to positive stimuli (Pratto & John, 1991), it could be theorized that negative cues would have a larger effect on the interpersonal sensemaking process compared to positive cues. For the current PhD thesis, this means that nonmatching interactions may be judged more negatively compared to matching interactions (see later chapters in the current PhD thesis for evidence supporting this notion).

The last step of interpreting interpersonal cues relate to inferring the motive behind why a person behaved in a certain way (Wrzesniewski et al., 2003). This often arises due to surprising or unexpected behaviour which requires more effort to interpret. Inferring the underlying motivations behind someone's behaviour is also a core part of interpersonal sensemaking as understood in Taylor's (2002) cylinder model. By figuring out another person's goals and motivations, it becomes possible to infer whether a person's behaviour is diagnostic of their personality or merely a result of situational pressures (Wrzesniewski et al., 2003). For example, if a suspect keeps forgetting an interviewer's name, the interviewer may interpret this as a sign that the suspect is not very respectful or has bad attention to details.



However, once the interviewer discovers that the suspect has not slept for several days, the sensemaking process may change and the interviewer may attribute the suspect's behaviour to their lack of sleep. In this way, interpersonal sensemaking is a continuous and ever-changing process that is dependent on the external environment as well as the continuous evaluation of the sensemaker.

### **The Conversational Circumplex**

In an attempt to describe the main motivations and goals in interpersonal sensemaking, Yeomans et al. (2022) came up with the conversational circumplex. Naturally, two people can have competing goals during an interpersonal interaction. For instance, a suspect in a police interview may have the goal of being polite and cooperative, while at the same time, not disclose information related to the crime. Being aware of these conflicting goals is the first step in successful interpersonal sensemaking.

The conversational circumplex model consists of informational and relational motivations and goals that people may have in interpersonal conversations. An important point of this work is that people have goals in conversations that needs to be attended to if the conversation is to go well. However, it is often not straightforward to know what goals someone has within an interaction and there might sometimes even be conflicting goals. Hence, grouping the different goals into two broad categories (informational & relational goals) serves to simplify the inherent complexity of interpersonal conversations.

In the conversational circumplex, informational goals relate to the extent to which a person attempts to give or receive accurate information about the world (Yeomans et al., 2022). Highly informational communication involves things such as learning and brainstorming ideas. On the other hand, low informational communication could be things such as filling time or avoiding awkwardness. When having informational goals, the aim is based on communicating and receiving information. To fulfil this goal, speakers may ask

questions, clarifying statements, or providing directions. On the other hand, when the conversational goals are low in informational focus, the speaker may avoid answering questions or direct the conversation onto trivial matters, such as talking about the weather (Yeomans et al., 2022). They may also lie to conceal information, which could be a tactic to minimise shared information (Dyner, 2020).

In contrast to informational goals, relational goals are focused on building a relationship (or attacking an already established relationship) with another person (Yeomans et al., 2022). Highly relational language includes behaviours such as apologising or flattering the other person. These often serve as a way to boost the relationship and bring two people closer to each other. For example, Oostinga et al. (2018) showed that apologising after having committed a communication error was sometimes an effective strategy for investigative interviewers in order to help restore the relationship with the suspect and increase rapport. Conversely, low relational language includes behaviours such as claiming credit or assigning blame to the other person. If such behaviours dominate an interaction, it is easy to see it ending up in stalemate or conflict.

Based on the distinction between informational and relational goals, a good investigative interviewer with proficiency in sensemaking would recognise that, while their own goal might be to have a productive and cooperative interview, the suspect might have the opposite goal (e.g., not to reveal any information that may incriminate them or their family). In such a situation, it is important to actively listen to the suspect in order to accurately identify their goals for the conversation. Indeed, research from crisis negotiations have showed that in transition periods (i.e., the perpetrator and negotiator were speaking at cross purposes with each other), successful negotiators spoke approximately 40% less than unsuccessful negotiators (Ormerod et al., 2008). Hence, it appears that successful negotiators identified when the goals of the suspect were not aligned with their goals, and in an effort to

re-orient the negotiation, engaged in more active listening to better align their goals with those of the perpetrator. This is one example of how interpersonal sensemaking can facilitate the social inference process of identifying someone's interaction goals.

### **Animal Circle Model**

Another model that focuses on how to make sense of interpersonal communication is Alison and Alison's (2020) animal circle model. While the model was initially developed to understand rapport, it can offer valuable insights into interpersonal sensemaking as well as complimenting Taylor's (2002) cylinder model. The animal circle model uses four animal prototypes (i.e., t-rex, mouse, lion, & monkey) to represent the four primary ways of relating in interpersonal communication. These four ways have their origin in the two dimensions of orientation and power. On the orientation dimension, behaviours can range from extremely competitively such as aggression and intimidation (high t-rex behaviours) to highly cooperative behaviours such as being supportive and encouraging (high monkey behaviours). Interestingly, this corresponds almost perfectly with the orientation dimension from the cylinder model (2002), suggesting that the two models share some similarities. Similar to the cylinder model, Alison and Alison (2020) argued that highly competitive behaviours on the part of the interviewer (e.g., insults) would likely be followed by similarly competitive behaviours by the suspect (e.g., intimidation). Conversely, cooperative behaviours by the interviewer (e.g., compliments) would likely be followed by cooperative behaviours by the suspect (e.g., providing information). In this way, the behaviours on the orientation dimension would tend to attract similar types of behaviours. In particular, for the cooperative (monkey behaviours) and competitive (t-rex behaviours) axes, the behaviours are believed to reinforce each other in either a virtuous (i.e., cooperative) or vicious (i.e., competitive) cycle.

The second dimension of the animal circle model is power. Specifically, who wants to be in charge of whom. This can range from highly powerful behaviours such as controlling or

being bossy (high lion behaviours) to low power behaviours such as being patient and humble (high mouse behaviours). An interesting observation from the animal circle model is that the power dimension has opposite predictions when it comes to matching behaviours. In other words, high power invites the other person to be low power, and vice versa. This idea of complementarity is well known in psychology (Tiedens & Fragale, 2003). For example, if a suspect wants to be in control and direct the interview, it would be difficult for the interviewer to also fight to control the interview. Instead, the interviewer would be much better off letting the suspect direct the interview (i.e., the suspect being high power; the interviewer being low power). On the other hand, if the suspect is weak and insecure (e.g., they express hesitation and fear about what will happen if they talk to the interviewer) it would be beneficial for the interviewer to take control of the interview and clearly direct the suspect about what is expected of them. This type of adaptability (Oleszkiewicz et al. 2022) is an important component of being a good interpersonal sensemaker and a skilled conversationalist more generally.

In an attempt to apply this to an investigative interviewing context, Alison and Alison (2020) constructed two different versions of the animal circle model: one good, and one bad. For example, bad t-rex behaviours include being sarcastic, attacking, and judgmental. It is easy to see how these behaviours might be negatively received by most suspects. On the other hand, a good t-rex may be critical, forthright, and assertive. These behaviours would probably be much better received by most suspects. Similarly, bad monkey behaviours include being overfamiliar and desperate, while good monkey behaviours involve being social and friendly. Hence, each animal has a positive and a negative version of the animal circle.

A good sensemaker would firstly identify where their counterpart is located based on the animal circle model. For instance, a suspect may show signs of being disengaged and conflict avoidant (bad mouse behaviours). A good interviewer would then take a lion

approach in power (since opposites attract on the power dimension), while switching to the good animal circle. That is, instead of being a bad lion (demanding and pedantic), it would be better if the interviewer tries to be a good lion (being in charge and setting the agenda). This is more likely to lead to a better interview outcome. Being able to recognise when a suspect is communicating based on the bad circle, and how to respond, is a type of social inference that is at the heart of interpersonal sensemaking.

### **Relating Theory**

A key part of successful interpersonal sensemaking has to do with figuring out the intentions and goals of another person. An important part of this process is to assess how another person relates to oneself. This is the main focus of relating theory (Birtchnell, 2014). Relating theory starts from the notion that building relationships is one of the most important things that humans need in order to thrive and develop (Kalaitzaki & Birtchnell, 2016). Relating theory has many similarities with Bowlby's attachment theory (Bowlby, 1969). Specifically, Bowlby proposed that developing relationships with others were critically important for a person's development. A key concept for Bowlby was attachment, which involves forming an early and strong relationship to a caregiver (usually the mother). Similarly, relating theory assumes that people have the innate ability to develop relationships with other people. According to this theory, an interpersonally competent person has developed the ability to relate to other people in positive ways in all of the states of relatedness (see the different ways of relatedness below; Kalaitzaki & Birtchnell, 2016). This is a type of social inference that is closely related to interpersonal sensemaking.

Relating theory postulates that there are eight different ways of relating to another person within an interpersonal encounter. These include submissive, aggrandizing, autonomous, collaborative, detached, connected, objective, and subjective (Birtchnell, 2014). In addition, these eight ways of relating have both a good and a bad version of relating. The

theory involves two different axes, one horizontal that goes from being closely involved with others to being clearly separated from others, and another vertical axis describing how people relate to others from an upper or lower position (Birtchnell, 2014).

In terms of the eight ways of relating to another person, submissive individuals would tend to prioritise other's goals over their own and therefore, may let the other person drive the agenda (e.g., the suspect shows a willingness to agree to whatever the interviewer wants them to do). On the other hand, people high in aggrandizing would be focused on obtaining power and status, and as a result, would be likely to drive the agenda of the investigative interview (e.g., the suspect speaks loudly and boasts about their achievements). Autonomous individuals would put a high value on independence and self-reliance. They might feel uncomfortable when others are making decisions on their behalf and might have a hard time asking others for help (e.g., the suspect reacts negatively when the interviewer provide suggestions of what the suspect might say or do). When people are collaborative, they are focused on building collaborative win-win relationships with other people. They may do this by using empathy and perspective-taking, as well as resolving conflicts constructively (e.g., the suspect is imagining the crime from the victim's point of view). In contrast, detached individuals may prioritise being distant from others. They may be uncomfortable with intimacy and relatively introverted (e.g., the suspect avoids making eye contact with the interviewer and is generally quiet). On the other hand, people that are highly connected value close intimacy with other people. They may be warm and empathetic (e.g., the suspect asks the interviewer how they would feel if they were in the suspect's position). People who are objective value logic and reason. They place high importance on fairness and try to see both sides of an issue (e.g., the suspect requests to see the factual evidence of the case). Finally, subjective individuals would place a high value on their internal subjective feelings rather

than facts and information (e.g., the suspect “feel” like the interviewer is against them and not listening to anything they say).

These four models (Wrzesniewski’s interpersonal sensemaking model (Wrzesniewski, 2003), the conversational circumplex (Yeomans et al., 2022), the animal circle model (Alison & Alison, 2020), and relating theory (Birtchnell, 2014)), all provide interesting perspectives on how to better understand interpersonal sensemaking. However, the focus in the current PhD thesis is on Taylor’s (2002) cylinder model.

### **A Word on Witnesses, Victims, and Covert Human Intelligence Sources**

Although the current PhD thesis is mainly focused on interpersonal sensemaking and motivational frame matching as it relates to suspect interviews, it could be hypothesised that similar mechanisms would also apply for other type of interviews (e.g., with witnesses, victims, and covert human intelligence sources). In fact, one could perhaps even go one step further and argue that similar mechanisms would apply for most types of interpersonal interactions. This is further supported by the fact that many theories and models of suspect interviews have taken their inspiration from other fields. For example, Alison et al.’s (2013) ORBIT model has drawn inspiration from the motivational interviewing and counselling literature (Miller & Rollnick, 2002), as well as Birtchnell’s (2014) relating theory. In addition, de la Fuente Vilar (2020) drew on some of the suspect interviewing literature when examining witness interviews. This suggests that there might be something more fundamental about the interpersonal processes that happens in investigative interviews, be it suspect interviews, witness interviews, or interviews with covert human intelligence sources.

At the same time, de la Fuente Vilar (2020) pointed out that there are several important differences between suspect and witness interviews that may make it problematic to generalise across the two contexts. For example, while a witness interview tends to focus on past events (e.g., what the witness has seen or heard in the past), a suspect interview may,

in addition to descriptions about past events, also involve intentions about future actions (e.g., “what bank were you planning on robbing next weekend?”). Hence, it is important not to overgeneralise the findings of the current thesis to all types of investigative interviews. Indeed, psychological theories have often been accused of extending their results to a broader and more general context than can reasonably be supported by the initial study (Brewin, 2022). For instance, Brunswik (1947) stated that “proper sampling of situations and problems may in the end be more important than proper sampling of subjects, considering the fact that individuals are probably on the whole much more alike than are situations among one another” (p. 179).

What this indicates is that one must be careful in generalising the findings from situation A to situation B, if the experimental sampling was only done in situation A. To expect the interpersonal sensemaking mechanisms that were observed in the current suspect interviews to also generalise to other forms of interviews (e.g., victim, witness, or covert human intelligence interviews) would, in the words of Yarkoni (2022) be akin to a form of overgeneralisation. Specifically, Yarkoni (2022, p. 7) argued that: “the majority of psychologists have no compunction about verbally generalizing their results not only to previously unseen subjects, but also to all kinds of other factors that have not explicitly been modeled – to new stimuli, experimenters, research sites, and so on”.

Relating to the current context, since the studies within this PhD thesis were all concerned with suspect interviews (except for the second experiment in chapter 5 that dealt with a pub conversation between two rival sports supporters), it is difficult to know whether the results would generalise to other intelligence gathering interviews (such as victim, witness, or covert human intelligence interviews). Moreover, it could be theorised that changing the situation from a suspect interview to a witness or victim interview may influence some the effects of the interpersonal sensmaking processes (e.g., a witness might be



more willing to provide information as they probably have less to lose from doing so compared to a suspect<sup>1</sup>). This means that one must be careful when making inferences from one situation to another without having properly tested the theories and models in the situation one wants to generalise the results to.

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<sup>1</sup> Of course, there are situations when witnesses, for a variety of reasons, might not be willing to provide information.

## Chapter 3

Chapter 3 includes the first two experiments demonstrating a positive effect of motivational frame matching on investigative interviewing outcomes. In order to ensure that the entire interviews were either fully matched or fully non-matched, participants could not actively respond to the interviewer, but instead read (or watched) the interviews as they unfolded. Furthermore, to ensure that the effect of motivational frame matching was reliable and replicable across presentation medium, both a text-based (experiment 1) and video-based (experiment 2) experiment was included. The two experiments in this chapter were conducted between April and December 2021. Hence, they were conducted after the first study of the PhD which was conducted in May 2020 (see Chapter 4 below).

Sensemaking and cooperation in investigative interviews: The role of matching

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### **Abstract**

Theories of interpersonal sensemaking predict that cooperation emerges in interactions where speakers are matched on motivational frames and cooperative rather than competitive in orientation (Taylor, 2002). The purpose of the current study was to provide the first evidence of a causal link between motivational frame matching and cooperation and trust in an investigative interviewing context. Over two experiments ( $N = 776$ ), participants took the role of a suspect during an interaction with an interviewer. During the interaction, the interviewer and suspect either matched motivational frames (in an instrumental, relational, or identity motivational frame) or not, in either a cooperative or competitive way. It was found that within a cooperative orientation interaction, motivational frame matching led to significantly higher willingness to cooperate and greater feelings of being understood among the participants. In contrast, within a competitive orientation interaction, motivational frame matching led to significantly less willingness to cooperate and identify with the interviewer.

*Keywords:* investigative interview; sensemaking; motivational frame matching; cooperation; cylinder model

## Sensemaking and cooperation in investigative interviews: The role of matching

As countries move away from accusatorial to information gathering approaches of investigative interviewing (Meissner et al., 2017), several constructs have been highlighted as leading to greater cooperation and better information elicitation. These include rapport, perspective taking, empathy, and active listening (Russano et al., 2019). While all important, there has been less focus on how interviewers supposedly make sense of suspects' communication and how they may respond appropriately. This phenomenon, termed interpersonal sensemaking (Taylor, 2002; Taylor & Donald, 2014), is an important skill for anyone who engages with people, such as interviewers, because it provides the foundation for inferences about the other's intent and decisions about how to respond. The current study examines sensemaking in investigative interviews. It builds upon previous correlational work on sensemaking to test experimentally whether effective sensemaking of speakers' motivations leads to more positive interaction outcomes.

### **Sensemaking in Investigative Interviews**

In the context of police interactions, sensemaking refers to the ability of the interviewer to make sense of the motivations and goals that underpin a suspect's behaviour (Arnold, 2021; Wells & Brandon, 2019). The majority of research on sensemaking has focused on crisis negotiations, where Taylor (2002) identified instrumental, relational, and identity motivations as three common frames for engaging in an interaction. Suspects in an instrumental frame would mainly be focused on the concrete problems at hand and motivated to solve them. Suspects in a relational frame would mostly be concerned with either building or attacking the relationship they have with the interviewer. Finally, suspects in an identity frame would tend to focus on their own needs, values, and beliefs (Wells & Brandon, 2019). As Taylor and Donald (2007) showed, these frames not only dominate periods of dialogue as

officer and suspect move from issue to issue, but they also dominate whole interactions when the context dictates the focus of discussion.

Laver and Hutcheson (1972) identified three different types of information communicated in interpersonal situations that align to these motivations: (i) cognitive information (similar to informational concerns), (ii) interaction-management information (similar to relational concerns), and (iii) indexical information (similar to identity concerns). This suggests that the cylinder model might capture a more universal description of interpersonal communication that would be relevant in a range of different situations, including investigative interviews. Consistent with this idea, Arnold (2021) found that instrumental, relational, and identity motivational frames were prominent in a sample of English police interviews, providing further support of the relevance of such motivational frames to investigative interviews.

Communication Accommodation Theory and similar theories about interaction processes propose that people tend to align their way of communicating to the extent that they want to associate and be liked by another person, and that doing so enables the development of a common understanding and cooperation (Giles & Ogay, 2007; Wachsmuth, 2013). For instance, research suggests that conversational transitions, such as initiations and terminations, often is carefully negotiated and coordinated (Stokoe, 2021). One measure of interpersonal coordination is language style matching which provides a measure of how much two speakers coordinate their use of function words (Niederhoffer & Pennebaker, 2002).

Research on language style matching shows how similarity and synchrony in the type of language used underpins sensemaking. Richardson et al. (2019) examined how power and affiliation interacted with language style matching to predict success on a problem-solving task that required participants to make sense of each other. They found that task success was related to higher language style matching, but only for pairs with a symmetrical power

relationship. In the forensic area, language style matching has been shown to be related to successful negotiation outcomes (Taylor & Thomas, 2008), and confessions in investigative interviewing situations (Richardson et al., 2014).

In relation to the cylinder model, previous research found that matching of motivational frames was associated with positive outcomes in crisis negotiations (Ormerod et al., 2008). Specifically, negotiations that ended peacefully saw a gradual increase in the length of motivational frame matching episodes between the perpetrator and the police negotiator, with the opposite trend observed in unsuccessful negotiations (Ormerod et al., p. 26). Giebels et al. (2017) also found greater motivational frame matching between negotiators and perpetrators who shared their cultural background, suggesting that interpersonal sensemaking might be facilitated by having access to shared cultural experiences. Focusing on the positive outcomes of successful interpersonal sensemaking, an evaluation of the effectiveness of motivational frame matching for authentic investigative interviews (together with other interviewing techniques such as motivational interviewing and the cognitive interview) found a positive effect on suspect's cooperation and information gain (Brandon et al., 2019).

Hence, it could be theorised that matching of motivational frames would lead to more positive perceptions of the interviewer and a greater willingness to cooperate with them. However, this has not been demonstrated experimentally, making it difficult to know whether matching leads to cooperation or is merely associated with it. By experimentally manipulating motivational frame matching, it is possible to closely examine its influence on interaction outcomes. Furthermore, it enables careful examination of how other variables (e.g., orientation) interacts with motivational frame matching. Providing experimental evidence on the effectiveness of motivational frame matching is important. This is because it is taught to interviewers around the world and was included in the High Value Detainee

Interrogation Group's (HIG, 2016) review of the science of interrogation. Establishing causal relationships has been described as a hallmark of a cumulative science, of which psychology aspires to be (Eronen & Bringmann, 2021).

In this study, we aim to present the first experimental evidence for a causal link between motivational frame matching and positive investigative interviewing outcomes. Based on the evidence above, we hypothesised that matching of motivational frames would lead to more positive interaction outcomes within an investigative interview (H1).

### **Orientation to Interaction**

In addition to the motivational frames, the cylinder model also identifies three types of orientations people take to their interactions with others: cooperative, competitive, and avoidant (Taylor, 2002). Specifically, a suspect taking a cooperative orientation towards the interaction is seeking to engage, problem-solve, and work toward a common objective. On the other hand, a suspect in a competitive orientation will show hostility and rigidity in thought, often giving one-sided justifications for their position and an unwillingness to consider alternatives. Finally, a suspect in an avoidant orientation will withdraw from an interaction, either deliberately or because of a light response. They may look away, making excuses or avoiding speaking altogether (Wells & Brandon, 2019). For practical and theoretical reasons, in this paper, we focus on the cooperative and competitive orientations to the interaction.

Studies of orientation in investigative interviews show overwhelmingly that orientating cooperatively to gather information is most likely to lead to cooperation from suspects (Meissner et al., 2015). Observing real investigative interviews, cooperative interview approaches have been demonstrated to lead to increased perceived rapport which, in turn, increased cooperation (Brandon et al., 2019), indicating the effectiveness of such approaches within an information gathering approach. Among American inmates themselves,



perspective taking and rapport were also mentioned as two of the most important factors for how the inmates wanted investigative interviewers to have treated them during their own interviews (Cleary & Bull, 2019). These findings highlight the beneficial outcomes of treating suspects in a positive and respectful way. Based on these findings, we hypothesised that a friendly and positive interaction between the investigative interviewer and suspect (i.e., a cooperative orientation) would lead to more positive interaction outcomes within an investigative interview (H2).

As outlined by Sjöberg et al. (2023), the effect of matching motivations is dependent on the type of orientation a suspect takes. Specifically, it could be expected that motivational frame matching might lead to positive interaction outcomes when the suspect and interviewer are communicating in a cooperative way, but lead to worse interaction outcomes when the suspect and interviewer are communicating in a competitive way. For example, Levenson and Gottman (1983) found that arguing spouses matched their physiological arousal levels as their arguments increased in intensity. More recently, Richardson et al. (2019) showed that language style matching was associated with task success for cooperative and symmetric dyads, while for competitive and symmetric dyads, language style matching was instead related to task failure. These findings indicate that matching within interactions is not ubiquitously positive or negative but rather, depends on the context of the interaction. Finally, research has suggested that when people are competing with each other, matching (i.e., language style matching) actually lead to worse negotiation outcomes (Ireland & Henderson, 2014). These findings indicate that matching within interactions is not ubiquitously positive or negative but rather, depends on the context of the interaction.

A way to resolve these supposedly contradictory observations about matching (that it can relate to both positive and negative interpersonal outcomes) would be to interpret matching and synchrony as signs of increased attention between interaction partners

(Chartrand & Bargh, 1999; Ireland & Henderson, 2014). Hence, Ireland and Henderson (2014) suggested that matching is not inherently positive or negative, but rather, depends on the goals and motivations of the speakers. This goes in line with a social engagement theory of matching which suggests that matching might be a sign that two people are actively focused on each other (Dalton et al., 2010; Ireland & Henderson, 2014). Another way to understand this is that motivational frame matching might lead to communication spiralling, with positive or negative outcomes dependent on the orientation taken towards the interaction (cooperative vs. competitive). In line with this, it was hypothesised that motivational frame matching would lead to more positive interaction outcomes within a cooperative orientation, but lead to less positive interaction outcomes within a competitive orientation (H3).

#### **A Note on Measuring Success**

To study in detail the effects of sensemaking requires a sophisticated measurement of the outcomes desired within investigative interviews. Arguably, the most important outcome is gaining information that has some legal or operational value. For this to occur, suspects must first be willing to cooperate with the interviewer. Indeed, research suggests that cooperation often is necessary to obtain valuable information from suspects (Brandon et al., 2019). Hence, in the current study, both willingness to cooperate as well as providing information are used as two measures of positive interaction outcomes.

There are, however, other interaction outcomes that might be valuable for interviewers beyond information capture. One of the most studied is rapport, which we define as a positive working relationship between the suspect and interviewer (Abbe & Brandon, 2014). Critical components of rapport concern the ability to actively listen and empathise with a suspect (Alison & Alison, 2017), which, if done successfully, ensures suspects feel that they are being listened to and understood. In line with this, we measure feelings of being understood to tap into the interpersonal relationship between the suspect and interviewer.

Allowing a suspect to save face and treating them with respect might also be beneficial within an investigative interview for facilitating more positive interaction outcomes (Kleinman, 2006). For instance, Wells and Brandon (2019) described how a failure by the interviewer to fully respect a suspect led to a near termination of the interview. This is echoed in a study by Holmberg and Christianson (2002) who found that sexual offenders who did not feel respected by the investigative interviewer experienced feelings of alienation and a reduced likelihood of providing a confession. Similarly, Oxburgh and Ost (2011) argued that validating a suspect's concerns would likely make them feel more accepted. To tap into these interaction outcomes, we measured suspects' feelings of being treated with respect by the interviewer.

Finally, having a willingness to trust the interviewer might be crucial in order for them to start opening up about what happened (Brimbal et al., 2019). Balliet and Van Lange's (2013) meta-analysis showed that trust was a particularly important predictor of cooperation in situations with large conflict of interests (such as investigative interviews). We define interpersonal trust as an intention to accept vulnerability that is largely based on a positive expectation of how another person will act in the future (Rousseau et al., 1998). Working from this definition, Gillespie (2003; 2015) developed the behavioural trust inventory comprising two related constructs, (i) a willingness to rely on another person and, (ii) a willingness to disclose sensitive information. The current research examined these two elements of a suspect's trust.

In sum, the current research examined suspects' willingness to provide information and cooperate with the interviewer, feelings of being understood, being treated fairly and with respect, and intention to trust the interviewer, all as potential positive interaction outcomes.

## Experiment 1

The first experiment was designed to look at the effect of motivational frame matching on positive interaction outcomes. By experimentally manipulating motivational frame matching through a scrip-based investigative interview, it was possible to compare matched and non-matched interactions against each other.

### Method

#### Participants

An a-priori power analysis suggested 359 participants were needed to achieve a power  $> .9$ , with a small to medium effect size of  $f = .20$  in the population (Cohen, 1988; Faul et al., 2007). Accordingly, we recruited 381 participants in return for financial compensation (£1.5; payment set in Prolific). Of these, four were excluded for failing to accurately respond to the attention check question. This left 377 participants for final analysis.

Two hundred and sixty-eight self-declared as women, 108 as men, and 1 as other. They were aged between 18-76 years ( $M = 36.77$ ,  $SD = 12.68$ ). Most of them identified as White ( $n = 324$ ), while the rest identified as either Asian ( $n = 18$ ), Mixed ( $n = 9$ ), or Black/African/Caribbean ( $n = 26$ ). The study received ethical approval from Lancaster University (ethics reference number: FST20068).

#### Materials

**Investigative interview.** The interview was a 5-round text-based interaction. Table 1 gives an example of a matching and non-matching interview script.

**Table 1**

*Example interview scripts from a motivationally matched and nonmatched cooperative*

*interview*

Interview round	Motivationally matched interview	Motivationally nonmatched interview
1	Interviewer: I am investigating the suspicion against you regarding the possession of illicit substances. Can you explain to us what happened? (Ins)	Interviewer: I am investigating the suspicion against you regarding the possession of illicit substances. Can you explain to us what happened? (Ins)
1	Suspect: Of course, it was just a normal day at work. Nothing special at all from what I can remember. (Ins)	Suspect: Thank you for asking. After all, it is nice to know that you care about how I feel. To be honest, I am not feeling great at the moment. (Rel)
2	Interviewer: Great, let's start from the beginning and tell us what happened. What did you do in the morning? (Ins)	Interviewer: Great, let's start from the beginning and tell us what happened. What did you do in the morning? (Ins)
2	Suspect: Sure, I woke up and made breakfast around 8am. Then I drove to work and started my shift early. (Ins)	Suspect: Indeed, I do not think I have done something wrong. People who know me always say very good things about me and I would never do anything wrong. (Ide)
3	Interviewer: Did you notice anything unusual at that time? Any information might be of value to us. (Ins)	Interviewer: Did you notice anything unusual at that time? Any information might be of value to us. (Ins)
3	Suspect: Everything was normal and I do not think anyone was there. I usually arrive before my co-workers. (Ins)	Suspect: That is nice to hear from you. It seems you are willing to listen to my story which means a lot to me and I really appreciate it. (Rel)
4	Interviewer: Speed forward to later in the day, what was the last thing you did before returning home? (Ins)	Interviewer: It sounds like respect and admiration from other people are very important to you. I am sure we can find a way to uphold your admirable reputation. (Ide)
4	Suspect: I joked around a while with my co-workers before getting the keys to my car and then I went back home. (Ins)	Suspect: I am very grateful to you for letting me tell my side of the story. It would mean a lot to me if you also tried and support my story. (Rel)
5	Interviewer: Thank you for providing this information, it is very valuable. (Ins)	Interviewer: Thank you for providing this information, it is very valuable. (Ins)
5	Suspect: No worries, hope it is helpful information. (Ins)	Suspect: No worries, thanks for honouring my concerns. (Ide)

*Note.* Ins = Instrumental frame, Rel = Relational frame, Ide = Identity frame

In addition, the orientation of the interaction was manipulated as either cooperative (i.e., interviewer and suspect behaved in a relatively friendly manner or competitive (i.e., they took a more hostile approach). For example, a cooperative statement made by the interviewer was “Thank you for providing this information, it is very valuable”. In contrast, a competitive

statement was “Well, I already told you the charges against you. Now it is time for you to start speaking up and give me some information”.

*Validity of the scripts.* Before the experiment, we verified that the conversational encounters were perceived by experts to conform to one of the three motivational frames (instrumental, relational, or identity). Three people familiar with the cylinder model assigned the interviewer questions and suspect responses into either instrumental, relational, or identity motivational frames, as well as either the cooperative or competitive orientations. The raters showed perfect (100%) agreement in correctly assigning both the motivational frames and the orientations, suggesting that the encounters conformed well to their respective frame or orientation.

**Post-interview measures.** After the participants had completed the interview, they answered questions relating to whether they, as suspects, would cooperate and provide information to the interviewer (i.e., instrumentally focused), whether they felt understood by the interviewer (i.e., relationally focused), how much they identified with the interviewer, and whether the interviewer had treated them with dignity and respect (i.e., identity focused). In addition, we also measured their intention to trust the interviewer.

*Cooperating and providing information to the interviewer.* Participants were asked whether they would be willing to cooperate with the interviewer and, if they had information about the crime, how likely they would be to give this information to the interviewer. These single-item measures were answered on a 7-point Likert scale anchored by 1 (*Not at all willing*) to 7 (*Completely willing*). This measure showed very good internal reliability (Cronbach’s  $\alpha = .89$ ).

*Feeling understood by the interviewer.* This measure focused on the participants’ feelings about the interviewer and whether they felt understood by the interviewer. An example item was “I felt understood by the interviewer”. In total, there were three items in

this scale and they were all answered on a 7-point Likert scale anchored by 1 (*Disagree strongly*) to 7 (*Agree strongly*). The scale demonstrated excellent Cronbach's  $\alpha = .96$ .

*Perceptions of being treated with respect.* To tap into participants' identity focused concerns, two set of questions asked whether they felt the interviewer had treated them with dignity and respect. An example item was "I felt the interviewer treated me with dignity". As before, this scale was answered on a 7-point Likert scale anchored by 1 (*Disagree strongly*) to 7 (*Agree strongly*).

*Inclusion of other in the self scale.* We used the 'inclusion of other in the self' scale (Aron et al., 1992) to measure interpersonal closeness with the interviewer. This scale presents pairs of circles with varying degrees of overlap and asked a participant to select the pair of circles that best described their relationship with the interviewer. As this scale tapped into somewhat similar concerns as the previous two identity focused questions (*Pearson's r > .6*), they were merged into a single identity scale. This scale demonstrated very good internal reliability (Cronbach's  $\alpha = .89$ )

*Intention to trust.* We used items from Gillespie's (2003; 2011) behavioural trust inventory to tap into participants' intention to trust the interviewer. The items included both a willingness to disclose information to the interviewer (e.g., "How willing are you to share your personal feelings with your interviewer?") as well as a willingness to rely on the interviewer (e.g., "How willing are you to rely on your interviewer's task-related skills and abilities?"). These items were answered on a 7-point Likert scale from 1 (*Not at all willing*) to 5 (*Completely willing*). This measure showed excellent internal consistency (Cronbach's  $\alpha = .97$ ).

*Demographic questions.* Before the termination of the study, participants answered questions about their age, gender, ethnicity, and country of residence.

## **Procedure**

Participants on the Prolific website who self-selected for participation were given information about the study and provided informed consent. They were then sent to the Qualtrics experimental platform where the study took place. Prolific is an online platform that connects researchers with potential research participants while Qualtrics is a powerful online survey and experimental platform. They were then given background information about the crime the suspect was accused of. As they observed a short interaction between the interviewer and the suspect, they were asked to imagine being in the suspect's shoes and think about how they would feel if they were in the same situation. Depending on the condition, the interaction was either completely matched (instrumental, relational, or identity motivational frames) or randomly non-matched. In addition, the interaction was either cooperative or competitive. After the interview, participants answered the post-measures and were debriefed.

## **Open Science Statement**

The hypotheses for this study were pre-registered on the Open Science Framework (<https://osf.io/6dpny/>). The data and R-scripts used to analyse the data are also available online (OSF-project currently private to facilitate double-blind peer review). See Appendix C for the rationale behind this.

## **Results**

Before carrying out the statistical analyses, outliers were removed and replaced with the next highest/lowest score in line with Tabachnick and Fidell (2013). The removal of outliers did not change the direction or significance of the statistical tests. Table 1 shows the descriptive statistics for the outcome variables.



**Table 1**

*Means (SD) for frame (matching vs. nonmatching) and orientation (cooperative vs. competitive) across all the dependent variables*

Dependent variables	Cooperative		Competitive	
	Matching	Nonmatching	Matching	Nonmatching
W. to cooperate with interviewer	<b>6.09 (1.24)</b>	<b>5.61 (1.48) *</b>	<b>2.47 (1.42)</b>	<b>3.05 (1.48) *</b>
W. to provide information	5.44 (1.52)	5.28 (1.56)	<b>2.84 (1.63)</b>	<b>3.49 (1.68) *</b>
Feeling understood	<b>5.77 (1.52)</b>	<b>4.59 (1.56) ***</b>	1.79 (1.63)	2.07 (1.68)
Identification with int.	<b>5.37 (1.03)</b>	<b>4.85 (1.14) **</b>	<b>1.61 (0.80)</b>	<b>1.91 (0.82) *</b>
Trust intention	<b>4.94 (1.28)</b>	<b>4.45 (1.47) **</b>	2.01 (0.87)	2.39 (1.01)

*Note.* Pairs in bold indicate a statistically significant difference

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

In order to investigate the effect of matching and orientation on the outcome variables, a multivariate analysis of variance was initially carried out. This test was entered as 4 (frame: instrumental vs relational vs identity vs non-matched) X 2 (orientation: cooperative vs competitive) between subjects MANOVA. Initial analyses suggested that all the outcome variables correlated relatively highly with each other ( $r > .7$ ), which is advised for MANOVA (Pallant, 2005). While the Box's M-test for the homogeneity of covariance matrices was significant,  $\chi^2(105) = 262.48, p < .001$ , it has been argued that for large samples, such as in this study, the Box's M-test tends to be too severe (Tabachnick & Fidell, 2013). Nevertheless, the Pillai's Trace statistic was used throughout the analyses as it is often the most robust (Pallant, 2005; Tabachnick & Fidell, 2013).

For the combined dependent variables, there was a significant effect of frame,  $F(3, 369) = 4.52, p < .001, Pillai's Trace = .17, \eta_p^2 = .06, 95\% CI [.03, 1.00]$ , a significant effect of orientation,  $F(3, 369) = 265.22, p < .001, Pillai's Trace = .78, \eta_p^2 = .78, 95\% CI [.76, 1.00]$ , and a significant interaction between frame and orientation,  $F(3, 369) = 5.21, p < .001, Pillai's Trace = .20, \eta_p^2 = .07, 95\% CI [.03, 1.00]$ . To break

down these differences, separate analysis of variance tests were conducted for each dependent variable.

### **Willingness to Cooperate and Provide Information**

**Willingness to cooperate.** There was a significant main effect of orientation  $F(1, 369) = 563.28, p < .001, \eta_2^p = .61$ , but not of motivational frame  $F(3, 369) = 2.00, p = .11, \eta_2^p = .017$ , on willingness to cooperate with the interviewer. Moreover, there was a significant interaction effect between frame and orientation,  $F(3, 369) = 3.33, p = .020, \eta_2^p = .026$ .

As predicted, participants were more willing to cooperative in the cooperative ( $M = 5.69, SD = 1.30$ ) compared to the competitive interaction ( $M = 2.79, SD = 1.41; \beta = 1.43, t = 20.77, p = < .001$ ), supporting **H2** (a friendly and positive interaction between the investigative interviewer and suspect would lead to more positive interaction outcomes).

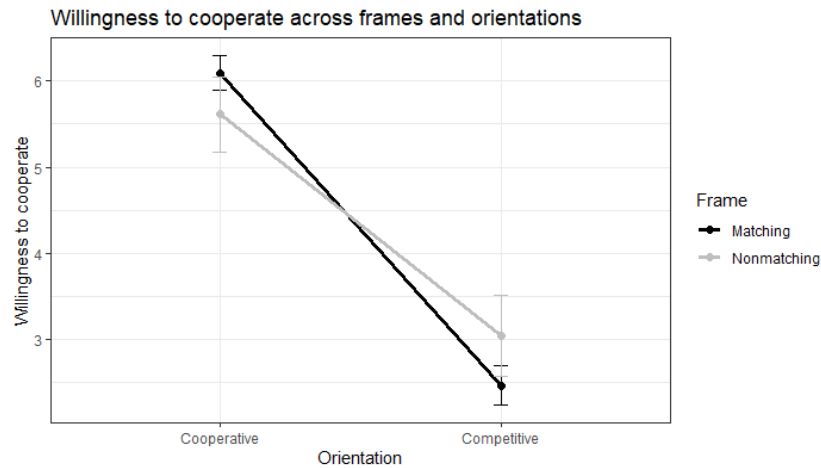
Planned simple effects tests<sup>2</sup> showed that, for the cooperative interaction, participants were more willing to cooperate in the matching ( $M = 6.09, SD = 1.24$ ) versus non-matching interaction ( $M = 5.61, SD = 1.48; \beta = .12, t = 2.07, p = .0395$ ). However, for the competitive interaction, participants were more willing to cooperate with the interrogator in the non-matching ( $M = 3.05, SD = 1.48$ ) compared to the matching condition ( $M = 2.47, SD = 1.42; \beta = -.14, t = -2.37, p = .0186$ ), lending support for **H3** (motivational frame matching would lead to more positive interaction outcomes for a cooperative orientation but lead to less positive interaction outcomes for a competitive orientation). This interaction is displayed in Figure 1.

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<sup>2</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

**Figure 1**

*Interaction between frame (matching/nonmatching) and orientation (cooperative/competitive) on willingness to cooperate with interviewer*



**Willingness to provide information.** There was a main effect of frame,  $F(3, 369) = 2.97, p = .031, \eta_2^p = .024$ , a main effect of orientation,  $F(1, 369) = 215.89, p < .001, \eta_2^p = .37$ , and a significant frame by orientation interaction,  $F(3, 369) = 3.64, p = .013, \eta_2^p = .029$ , on the willingness to provide information to the interviewer.

As predicted, participants were more willing to provide information in the cooperative ( $M = 5.40, SD = 1.53$ ) compared to the competitive interaction ( $M = 2.98, SD = 1.66; \beta = 1.19, t = 14.69, p < .001$ ), lending support for **H2** (a friendly and positive interaction between the investigative interviewer and suspect would lead to more positive interaction outcomes).

Using simple effects tests<sup>3</sup>, within a cooperative interaction, there was no significant difference between the matching ( $M = 5.44, SD = 1.52$ ) and nonmatching condition ( $M =$

<sup>3</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

5.28,  $SD = 1.56$ ;  $\beta = .039$ ,  $t = .58$ ,  $p = .562$ ). However, within a competitive interaction, motivational frame matching did lead to a lower willingness to provide information ( $M = 2.84$ ,  $SD = 1.63$ ) than when the interaction was motivationally nonmatched ( $M = 3.49$ ,  $SD = 1.68$ ;  $\beta = -.16$ ,  $t = -2.26$ ,  $p = .025$ ). This gives partial support for **H3** (motivational frame matching would lead to more positive interaction outcomes for a cooperative orientation but lead to less positive interaction outcomes for a competitive orientation).

### Feeling Understood

In terms of feelings of being understood by the interviewer, there was a significant main effect of frame<sup>4</sup>,  $F(3, 369) = 10.41$ ,  $p < .001$ ,  $\eta_2^p = .051$ , a main effect of orientation,  $F(1, 369) = 334.89$ ,  $p < .001$ ,  $\eta_2^p = .70$ , as well as a significant interaction effect between them,  $F(3, 369) = 14.073$ ,  $p < .001$ ,  $\eta_2^p = .22$ .

As predicted, participants felt significantly more understood by the interviewer in the cooperative ( $M = 5.46$ ,  $SD = 1.48$ ) compared to the competitive interaction ( $M = 1.90$ ,  $SD = 1.12$ ;  $\beta = .49$ ,  $t = 29.80$ ,  $p < .001$ ), supporting **H2** (a friendly and positive interaction between the investigative interviewer and suspect would lead to more positive interaction outcomes).

Furthermore, simple effect tests<sup>5</sup> showed that, for a cooperative interaction, participants felt more understood by the interviewer in the matching ( $M = 5.77$ ,  $SD = 1.52$ ) compared to the non-matching condition ( $M = 4.59$ ,  $SD = 1.56$ ;  $\beta = .076$ ,  $t = 5.59$ ,  $p < .001$ ), while for the competitive interaction, there was no difference in feelings of being understood between the matching ( $M = 1.79$ ,  $SD = 1.63$ ) versus the non-matching condition ( $M = 2.07$ ,  $SD = 1.68$ ;  $\beta = -.027$ ,  $t = -1.93$ ,  $p = .054$ ), partially supporting **H1** (matching

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<sup>4</sup> Due to violations of the assumption of homoscedasticity, the Box-Cox transformation was performed before running the analysis.

<sup>5</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

of motivational frames would lead to more positive interaction outcomes) and **H3** (motivational frame matching would lead to more positive interaction outcomes for a cooperative orientation but lead to less positive interaction outcomes for a competitive orientation).

### Identification with Interviewer

Regarding the tendency to identify with the interviewer, there was a significant main effect of both frame<sup>6</sup>  $F(3, 369) = 6.033, p < .001, \eta_2^p = .053$ , and orientation  $F(1, 369) = 499.050, p < .001, \eta_2^p = .81$ , as well as a significant interaction effect,  $F(3, 369) = 25.66, p < .001, \eta_2^p = .30$ .

In line with expectations, participants identified more with the interviewer in the cooperative ( $M = 5.24, SD = 1.08$ ) compared to the competitive interaction ( $M = 1.67, SD = .81; \beta = .50, t = 40.63, p < .001$ ), supporting **H2** (a friendly and positive interaction between the investigative interviewer and suspect would lead to more positive interaction outcomes).

Moving on to the matching hypotheses, simple effect tests<sup>7</sup> demonstrated that, for a cooperative interaction, participants identified more with the interviewer in the matching ( $M = 5.37, SD = 1.03$ ) compared to the non-matching condition ( $M = 4.85, SD = 1.14; \beta = .030, t = 2.92, p = .0038$ ), while for a competitive interaction, participants identified more with the interviewer in the non-matching ( $M = 1.91, SD = .82$ ) versus the matching condition ( $M = 1.61, SD = .80; \beta = -.027, t = -2.55, p = .011$ ), partially supporting **H1** (matching of motivational frames would lead to more positive interaction outcomes), and supporting **H3** (motivational frame matching would lead to more positive interaction outcomes for a

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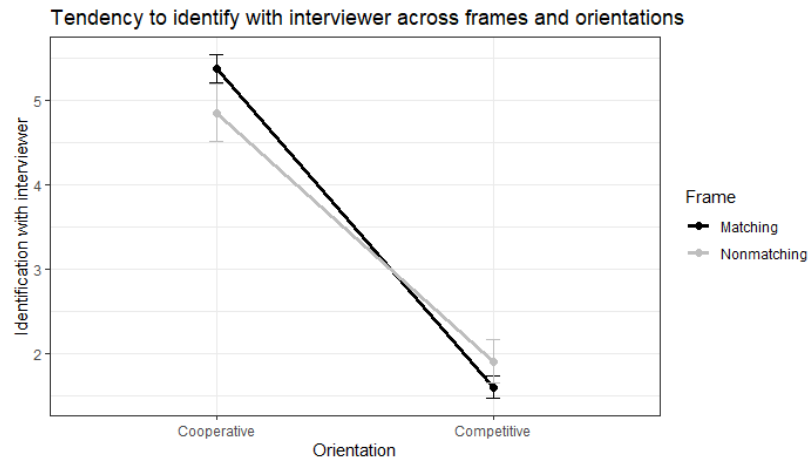
<sup>6</sup> Due to violations of the assumption of homoscedasticity, the Box-Cox transformation was performed before running the analysis.

<sup>7</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

cooperative orientation but lead to less positive interaction outcomes for a competitive orientation). This interaction is displayed in Figure 2.

## Figure 2

*Interaction between frame (matching/nonmatching) and orientation (cooperative/competitive) on tendency to identify with interviewer*



## Interviewer Trust

When it came to the intention to trust the interviewer, there was a significant main effect of frame  $F(3, 369) = 4.92, p = .0023, \eta_2^p = .0048$ , a main effect of orientation  $F(1, 369) = 169.19, p < .001, \eta_2^p = .60$ , as well as a significant interaction effect between frame and orientation,  $F(3, 369) = 6.78, p < .001, \eta_2^p = .052$ .

As expected, participants trusted the interviewer more in the cooperative ( $M = 4.82, SD = 1.34$ ) compared to the competitive interaction ( $M = 2.09, SD = .91; \beta = 1.35, t = 23.21, p = < .001$ ), in line with **H2** (a friendly and positive interaction between the investigative interviewer and suspect would lead to more positive interaction outcomes).

For the matching hypotheses, simple effect tests<sup>8</sup> demonstrated that, for a cooperative interaction, participants trusted the interviewer more in the matching ( $M = 4.94, SD = 1.28$ ) compared to the non-matching condition ( $M = 4.45, SD = 1.47; \beta = .12, t = 2.49, p = .013$ ), while for a competitive interaction, there was no significant difference between the matching ( $M = 2.01, SD = .87$ ) and non-matching conditions ( $M = 2.39, SD = 1.02; \beta = -.093, t = -1.87, p = .062$ ), partially supporting **H1** (matching of motivational frames would lead to more positive interaction outcomes), and **H3** (motivational frame matching would lead to more positive interaction outcomes for a cooperative orientation but lead to less positive interaction outcomes for a competitive orientation).

### Discussion Experiment 1

The aim of the first experiment was to investigate a potential causal link between motivational frame matching and positive interaction outcomes within an investigative interview. While motivational frame matching did not lead to a higher willingness to provide information within a cooperative interaction, it did lead to a higher willingness to cooperate with the interviewer, greater feelings of being understood, trust, and identify with the interviewer. Conversely, within a competitive interaction, motivational frame matching led to less willingness to cooperate, provide information, and trust the interviewer. As expected, interacting with a friendly and positive interviewer led participants to be more willing to cooperate, provide information, feeling understood, identify, and trust the interviewer. These results provide the first evidence of a causal link between motivational frame matching and positive interaction outcomes, such as willingness to cooperate, in investigative interviews.

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<sup>8</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

## Experiment 2

While the first experiment found a significant effect of motivational frame matching on positive interaction outcomes, a potential limitation might have been that the script-based interview was somewhat abstract and hypothetical. Hence, to increase the realism of the experiment and to make it more closely resemble an authentic interview situation, Experiment 2 had participants watch a video of a simulated investigative interview. Similar to Experiment 1, the aim of Experiment 2 was to investigate the role of motivational frame matching on positive interaction outcomes. These changes, from a script based to a video-based version of the experiment, constituted the only modifications from the first to the second experiment.

## Method

### Participants

An a-priori power analysis suggested that 359 participants were needed to reach a power  $> .9$ , provided a small to medium effect size of ( $f = .20$ ) in the population (Cohen, 1988; Faul et al., 2007). Hence for this experiment, we recruited 408 participants in return for financial compensation (£.85; payment set in Prolific). Before data analysis, we removed 9 participants from the dataset as they failed to accurately answer the attention check question. This left 399 participants for final data analysis. Of the remaining participants, 259 self-declared as women, 135 as men, and 5 as other. Their ages ranged from 18-80 years ( $M = 38.49$ ,  $SD = 13.4$ ). Most of them identified as White ( $n = 301$ ), while the other participants identified as either Asian ( $n = 26$ ), Mixed ( $n = 10$ ), Black/African/Caribbean ( $n = 56$ ), or other ( $n = 6$ ). The study received ethical approval from Lancaster University (ethics reference number: FST21012).

### Materials

**Interview video.** A simulation of an investigative interview was constructed with the help of two confederates, one acting as the suspect and the other as the interviewer. The



confederates were psychology students with some previous acting experience. The interviewer asked five questions to the suspect who then answered each question. Following on from Experiment 1, the questions and answers were either of the same motivational frame (i.e., matched instrumental, matched relational, or matched identity), or randomly non-matched motivational frames. These were combined with either an interaction where the suspect and interviewer took a cooperative orientation towards the interaction, or one where they instead took a competitive orientation.

*Validity of the interview videos.* To ensure that the interview videos accurately conformed to the matching (instrumental, relational, and identity motivational frames) and non-matching conditions, two independent raters familiar with the cylinder model, but unfamiliar with the study hypotheses, judged each of the scripts in terms of the interactants' motivational frame and orientation. Their agreement was perfect (100%) and conformed to the study design, suggesting that the scripts used in the videos corresponded well to their experimental conditions.

**Post-interview measures.** After the participants watched the interview, they answered the same questions as Experiment 1. The internal reliability was again very good for the scale measures: feeling understood (*Cronbach's*  $\alpha = .94$ ), tendency to identify with interviewer (*Cronbach's*  $\alpha = .83$ ), and intention to trust the interviewer (*Cronbach's*  $\alpha = .96$ ).

## **Procedure**

Participants who volunteered to take part on the Prolific website were given information about the study and provided informed consent. They were then sent to the Qualtrics experimental platform where the study took place. Prolific is an online platform that connects researchers with potential research participants while Qualtrics is a powerful online survey and experimental platform. They were then given some background information about

the crime the suspect was accused of. As they observed the 5-round video interaction between the interviewer and the suspect, they were asked to imagine taking the suspect's perspective and to think about how they would feel if they were in the same situation. Depending on the condition, the interaction was either completely matched (instrumental, relational, or identity motivational frames) or randomly non-matched. In addition, the interaction was either cooperative or competitive. After the interview, participants answered the post-measures and were debriefed.

### Results

Consistent with Experiment 1, outliers were removed and replaced with the next highest/lowest score in line with Tabachnick and Fidell (2013). Again, the removal of outliers did not change the direction or significance of the statistical tests. Descriptive statistics for the five outcome variables across frames and orientations are displayed in Table 2.

**Table 2**

*Means (SD) for frame (matching vs. nonmatching) and orientation (cooperative vs. competitive) across all the dependent variables*

Dependent variables	Cooperative		Competitive	
	Matching	Nonmatching	Matching	Nonmatching
W. to cooperate with interviewer	<b>5.88 (.96)</b>	<b>5.47 (1.08) *</b>	<b>2.52 (1.16)</b>	<b>3.23 (1.69) ***</b>
W. to provide information	5.57 (1.27)	5.20 (1.60)	3.39 (1.70)	3.72 (1.73)
Feeling understood	<b>5.73 (.98)</b>	<b>5.08 (1.37) ***</b>	2.49 (1.38)	2.58 (1.41)
Identification with int.	5.21 (1.01)	4.96 (1.02)	<b>2.42 (1.22)</b>	<b>2.77 (1.40) *</b>
Trust intention	4.75 (1.14)	4.44 (1.37)	2.34 (1.12)	2.69 (1.29)

*Note.* Pairs in bold indicate a significant difference

\* $p < .05$ , \*\*\* $p < .001$

Similar to experiment 1, to investigate the effect of matching and orientation on the outcome variables, a multivariate analysis of variance was performed. This test was entered

as a 4 (frame: instrumental vs relational vs identity vs non-matched) X 2 (orientation: cooperative vs competitive) between subjects MANOVA. Preparatory analyses indicated that all the outcome variables correlated highly with each other ( $r > .5$ ), which is recommended for MANOVA (Pallant, 2005). As for the previous experiment, the Box's M-test for the homogeneity of covariance matrices was significant,  $\chi^2(45) = 160.07, p < .001$ . However, for large samples, such as in this study, the Box's M-test often is overly strict (Tabachnick & Fidell, 2013). Still, the Pillai's Trace statistic was used throughout the analyses as it is usually the most robust (Pallant, 2005; Tabachnick & Fidell, 2013).

For the combined dependent variables, there was a significant effect of frame,  $F(3, 391) = 2.53, p = .0011, Pillai's Trace = .094, \eta_p^2 = .03, 95\% CI [.01, 1.00]$ , a significant effect of orientation,  $F(1, 391) = 146.063, p < .001, Pillai's Trace = .65, \eta_p^2 = .65, 95\% CI [.61, 1.00]$ , and a significant interaction between frame and orientation,  $F(3, 391) = 3.29, p < .001, Pillai's Trace = .12, \eta_p^2 = .04, 95\% CI [.01, 1.00]$ . To break down these differences, separate analysis of variance tests were conducted for each dependent variable.

### **Willingness to Cooperate and Provide Information**

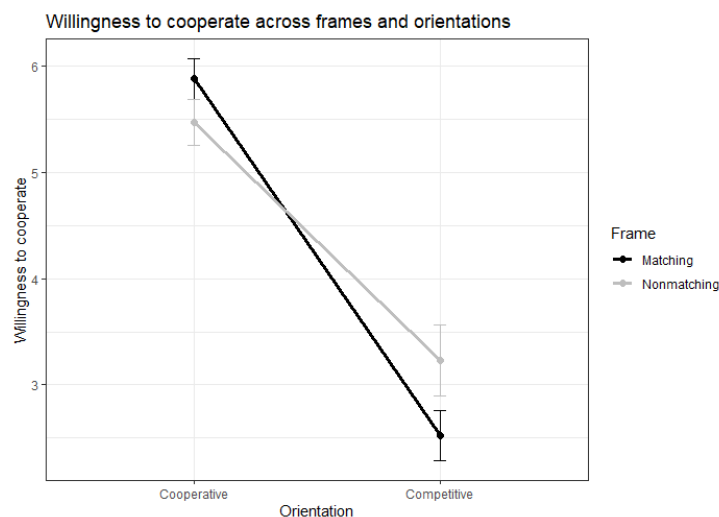
**Willingness to cooperate with interviewer.** There was a significant main effect of both frame  $F(3, 391) = 2.72, p = .0445, \eta_2^p = .0086$ , and orientation  $F(1, 391) = 148.66, p < .001, \eta_2^p = .56$ , as well as a significant interaction effect on the willingness to cooperate with the interviewer  $F(3, 391) = 8.039, p < .001, \eta_2^p = .058$ .

As predicted, participants were more willing to cooperate with the interviewer when the interaction was cooperative ( $M = 5.68, SD = 1.04$ ) rather than competitive in nature ( $M = 2.88, SD = 1.49; \beta = 1.40, t = 22.32, p < .001$ ), giving support for **H2** (a friendly and positive interaction between the investigative interviewer and suspect would lead to more positive interaction outcomes).

The significant interaction was followed-up with simple effects tests<sup>9</sup>. For the cooperative interaction, motivational frame matching led to significantly higher willingness to cooperate ( $M = 5.88$ ,  $SD = 0.96$ ) compared to a non-matched interaction ( $M = 5.47$ ,  $SD = 1.08$ ,  $\beta = 0.20$ ,  $t = 2.30$ ,  $p = 0.022$ ). Conversely, for the competitive interaction, motivational frame matching led to significantly less willingness to cooperate with the interviewer ( $M = 2.52$ ,  $SD = 1.16$ ) compared to the non-matching interaction ( $M = 3.23$ ,  $SD = 1.69$ ,  $\beta = -0.35$ ,  $t = -3.98$ ,  $p < .001$ ). This gives support for **H3** (motivational frame matching would lead to more positive interaction outcomes for a cooperative orientation but less positive interaction outcomes for a competitive orientation). The interaction is displayed in Figure 3.

### Figure 3

*Interaction between frame (matching/nonmatching) and orientation (cooperative/competitive) on willingness to cooperate with interviewer*



**Willingness to provide information to the interviewer.** While there was no main effect of frame  $F(3, 391) = 1.038$ ,  $p = .38$ ,  $\eta_2^p = .0094$ , there was a main effect of

<sup>9</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

orientation  $F(1, 391) = 41.028, p < .001, \eta_2^p = .25$ , with participants being more willing to provide information to the interviewer in the cooperative ( $M = 5.39, SD = 1.45$ ) compared to the competitive orientation ( $M = 3.56, SD = 1.72; \beta = .92, t = 11.55, p < .001$ ), again supporting **H2** (a friendly and positive interaction between the investigative interviewer and suspect would lead to more positive interaction outcomes). There was no interaction effect between frame and orientation,  $F(3, 391) = 2.17, p = .092, \eta_2^p = .016$ .

### Feeling Understood

There was a significant main effect of frame,  $F(3, 391) = 4.77, p = .0028, \eta_2^p = .023$ , and orientation,  $F(1, 391) = 85.58, p < .001, \eta_2^p = .56$ , as well as a significant interaction effect,  $F(3, 391) = 3.048, p = .029, \eta_2^p = .023$ , for feelings of being understood by the interviewer.

As predicted, participants felt more understood by the interviewer in the cooperative ( $M = 5.41, SD = 1.23$ ) versus the competitive interaction ( $M = 2.53, SD = 1.39; \beta = 1.44, t = 22.16, p < .001$ ), providing support for **H2** (a friendly and positive interaction between the investigative interviewer and suspect would lead to more positive interaction outcomes).

Simple effect tests<sup>10</sup> demonstrated that, within the cooperative interaction, participants felt more understood by the interviewer in the matching ( $M = 5.73, SD = 0.98$ ) compared to the non-matching condition ( $M = 5.08, SD = 1.37; \beta = .32, t = 3.53, p < .001$ ), while for the competitive interaction, there was no difference in feelings of being understood between the matching ( $M = 2.49, SD = 1.38$ ) versus the non-matching condition ( $M = 2.58, SD = 1.4115; \beta = -0.047, t = -0.51, p = .61$ ). These results go partially in line with **H3** (motivational frame matching would lead to more positive interaction outcomes for a

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<sup>10</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

cooperative orientation but lead to less positive interaction outcomes for a competitive orientation).

### Identification with Interviewer

There was a significant main effect of orientation,  $F(1, 391) = 50.12, p < .001, \eta_2^p = .55$ , but not frame,  $F(3, 391) = .89, p = .44, \eta_2^p = .026$ . However, there was a significant interaction effect between frame and orientation on the tendency to identify with the interviewer,  $F(3, 391) = 5.65, p < .001, \eta_2^p = .042$ .

As before, participants were more willing to identify with the interviewer in the cooperative ( $M = 5.08, SD = 1.02$ ) compared to the competitive interaction ( $M = 2.60, SD = 1.32; \beta = 1.24, t = 21.20, p < .001$ ), lending support for **H2** (a friendly and positive interaction between the investigative interviewer and suspect would lead to more positive interaction outcomes).

Using simple effects tests<sup>11</sup>, it was found that, within a cooperative interaction, motivational frame matching did not lead to a higher tendency to identify with the interviewer ( $M = 5.20, SD = 1.01$ ), compared to the nonmatching condition ( $M = 4.96, SD = 1.02; \beta = 0.12, t = 1.45, p = 0.15$ ). However, within a competitive interaction, motivational frame matching did lead to significantly less tendency to identify with the interviewer ( $M = 2.42, SD = 1.22$ ) in comparison with the nonmatching condition ( $M = 2.77, SD = 1.40; \beta = -.17, t = -2.09, p = .037$ ). This gives partial support for **H3** (motivational frame matching would lead to more positive interaction outcomes for a cooperative interaction but lead to less positive interaction outcomes for a competitive interaction).

### Interviewer Trust

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<sup>11</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

While there was no significant main effect of frame,  $F(3, 391) = 1.49, p = .22, \eta_2^p = .0005$ , there was a main effect of orientation,  $F(1, 391) = 58.75, p < .001, \eta_2^p = .42$ , with higher intentions to trust the interviewer in the cooperative ( $M = 4.60, SD = 1.26$ ) than the competitive interaction ( $M = 2.52, SD = 1.22; \beta = 1.039, t = 16.81, p < .001$ ). This provides support for **H2** (a friendly and positive interaction between the investigative interviewer and suspect would lead to more positive interaction outcomes). There was also a significant interaction effect between frame and orientation,  $F(3, 391) = 3.84, p = .0099, \eta_2^p = .029$ .

To explore the interaction further, simple effects tests<sup>12</sup> were used. However, while the overall interaction was significant, the individual tests demonstrated that there was no significant difference between the matching ( $M = 4.75, SD = 1.14$ ) and nonmatching conditions ( $M = 4.44, SD = 1.37$ ) for both the cooperative ( $\beta = 0.15, t = 1.75, p = 0.081$ ), and competitive interactions (matching:  $M = 2.34, SD = 1.12$ ; nonmatching:  $M = 2.69, SD = 1.29; \beta = -0.17, t = -1.94, p = 0.053$ ).

### Discussion Experiment 2

The aim of Experiment 2 was to validate and replicate the results from Experiment 1, but using a video interview instead of a script-based interview. The results between the two experiments were largely congruent, with matching leading to more positive interaction outcomes within a cooperative interaction (significant DVs: willingness to cooperate & feelings of being understood by the interviewer), but less positive interaction outcomes in a competitive interaction (significant DVs: willingness to cooperate & identify with the interviewer). Similar to the first experiment, the cooperative interview consistently led to more positive interaction outcomes on all outcome variables compared to when the interview was competitive.

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<sup>12</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

### **General Discussion**

The current paper sought to establish an initial evidence base of the influence of motivational frame matching on participants' willingness to cooperate and provide information, as well as their perceptions of feeling understood, identify and trust an investigative interviewer. Across two experiments, we found that within a cooperative interaction, motivational frame matching led to a higher willingness among participants to cooperate and feeling more understood by the interviewer. In contrast, within a competitive interaction, motivational frame matching led to a decrease in the willingness among participants to cooperate and identify with the interviewer. This gives support for the hypothesised interaction between motivational frame matching and the orientation taken towards the interaction. It is consistent with previous research (e.g., Ireland & Henderson, 2014) and a social engagement theory of matching (Dalton et al., 2010). The positive effects of motivational frame matching also supports previous correlational research from crisis negotiations (e.g., Ormerod et al., 2008).

Our findings provide a more nuanced picture than previous research. For example, Ormerod et al. (2008) found that motivational frame matching was associated with positive negotiation outcomes, regardless of whether the interaction was cooperative or competitive. We found that matching seems to not be ubiquitously positive, but to interact with the orientation taken towards the interaction. However, an important difference between our study and the study by Ormerod et al. (2008) is that the interactions were all balanced on the orientation dimension. In real interactions (such as in Ormerod et al., 2008) it is arguably rare for dialogue to be consistently competitive or cooperative in nature. Instead, the suspect and interviewer might occasionally take a cooperative orientation in an effort to display basic amiability towards each other. This could help explain some of the difference in the results between the two studies.



While previous research has demonstrated a positive association between language style matching and confessions in interrogations (Richardson et al., 2014), this is the first study so far to have established the positive effects of motivational frame matching in an investigative interviewing context. This is important as motivational frame matching might be somewhat easier to train to investigative interviewers and law enforcement investigators compared to language style matching. For example, elements of motivational frame matching have already been successfully taught to the US Air force office of special investigations (Brandon et al., 2019). In contrast, the use of function words (which forms the basis for calculating a language style matching score) is believed to occur largely unconsciously (Ireland & Pennebaker, 2010), which suggests that it might be more difficult to train interviewers to match a suspect's language style than motivational frame.

Looking more closely at the pattern of matching and non-matching across orientations revealed that, while not reaching statistical significance, all the outcome variables showed the same consistent pattern (i.e., more positive interaction outcomes in the matching condition and less positive outcomes in the non-matching condition for cooperative interviews; less positive interaction outcomes in the matching condition and more positive outcomes in the non-matching condition for competitive interviews). Furthermore, these tendencies were supported by the omnibus MANOVA analyses, suggesting that the interaction between frame and orientation was stable across outcomes variables. However, it is difficult to know the exact reason for why only certain outcomes variables reached statistical significance in the individual tests. One potential explanation could be that, despite attempts to make the interview as realistic as possible, it might have been too short to reliably create an impression of successful interpersonal sensemaking. Another reason could be the rather diverse sample which might have contributed to an increase in the within group variance (Fern & Monroe, 1996), attenuating some of the positive effects of matching. A final explanation could be that

certain outcome variables (e.g., feelings of being understood and listened to) more closely aligned with the concept of interpersonal sensemaking as conceptualised in the current study while other outcome variables (e.g., trust) might have been more of an indirect outcome.

In addition to the positive outcomes of motivational frame matching, we also found that a cooperative interview yielded significantly more cooperation and information gain, feelings of being understood, identification, and intention to trust the interviewer among participants. This supports previous research demonstrating the beneficial effects of a friendly and positive interaction on information yield and cooperation within investigative interviews (Brandon et al., 2019; Meissner et al., 2015; Russano et al., 2019).

An important feature of the current experimental design was that the suspect-interviewer interactions were balanced in terms of the orientation taken towards the interaction. Specifically, both the suspect and interviewer either took a cooperative or a competitive orientation towards the interaction. This likely helps explain why matching of motivational frames was not beneficial in the competitive interview. In such an interaction, matching would mean that both the suspect and interviewer were arguing around the same topics (Ireland & Henderson, 2014; Taylor, 2002). Hence, one could surmise that their argument would be more insistent compared to if they had not shared the same goals for the interaction (i.e., motivational frames). Relatedly, competitive matching might have led to a type of conflict spiralling. For example, there is some evidence that conflicts may spiral when interviewers reciprocate a competitive orientation (Alison & Alison, 2020), but the current study is the first to show that this could happen within just five utterances.

While the study provides the first experimental evidence of motivational frame matching and its associated positive outcomes, it is not without its limitations. First, having participants adopt the suspect's position may have reduced the realism of the study and removed the participants from being more actively engaged in the interaction. Although this

may have distorted the effects of the manipulation, we argue it would have attenuated rather than magnified the differences between the matching and non-matching conditions. However, clearly it would be valuable for future research to actively involve the participants in an interaction, to investigate how this might influence the outcomes of motivational frame matching.

Second, it could be theorised that the simulated interview may have been too short to reliably create a sense of motivation or goal in the suspect and interviewer. This could also have made the effects of matching based on these motivations or goals somewhat weaker and may explain why we did not find significant effects for all the outcome variables (although all were in the predicted direction). Additionally, since the current studies used balanced interaction rounds (both suspect and interviewer being fully cooperative or competitive), it will be important to investigate the effects of motivational frame matching for situations in which the suspect and interviewer have different orientations toward the interaction (e.g., competitive suspect-cooperative interviewer). For such interactions, it could be hypothesised that motivational frame matching would lead to greater cooperation and trust, particularly for getting a competitive suspect to start cooperating. These are all interesting avenues for future research.

### **Conclusions**

In two experiments, involving both script-based and video-based investigative interviews, we found that matching of motivational frames, as conceptualised in the cylinder model (Taylor, 2002), lead a suspect to be more willing to cooperate and provide information, feel understood, identify, and trust an investigative interviewer. However, this was moderated by orientation, such that motivational frame matching led to more positive interaction outcomes in a cooperative orientation interaction, but less positive interaction outcomes in a competitive orientation interaction. These findings suggest that motivational frame matching is linked with some positive interaction outcomes, but that the orientation

towards the interaction by the suspect and interviewer moderates these relationships. The current study provides the first experimental evidence of the influence of motivational frame matching on investigative interview outcomes.

## Chapter 4

The previous chapter provided the first evidence of a causal relationship between motivational frame matching and positive (or negative) investigative interview outcomes. However, one limitation with the two previous experiments was that participants were not actively involved in the interaction, but merely read (or watched) the interaction unfold in front of them. Hence, in order to make the experiment somewhat more realistic, the main goal of the experiment in Chapter 4 was to have participants actively involved in the investigative interview. In terms of timing, the experiment in Chapter 4 was conducted in May 2020, which was before the two experiments in Chapter 3. However, one limitation with the experiment in Chapter 4 was that the experimental manipulation of motivational frame matching might not have been very strong. Consequently, no significant effect of motivational frame matching was observed in the current experiment.

The role of conversational matching in creating trust and cooperation in police interviews

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### **Abstract**

Theories of interpersonal sensemaking predict that cooperation emerges in interactions when speakers are matched on motivational frames and cooperative rather than competitive in orientation (Taylor, 2002). Two hundred and six participants were randomly assigned to interact with an interviewer who either matched/did not match their motivational frame in either a cooperative/competitive way. Results indicated that matching of motivational frames led to increased participant coordination (in the form of reciprocal motivational frame matching), but only in the beginning of the interview. Matching of motivational frames did not, however, influence participants' trust intentions, willingness to cooperate, or feelings of being understood by the interviewer. While participants who interacted with a cooperative interviewer felt significantly more understood by them, they did not show significantly higher trust intentions or a greater willingness to cooperate with the interviewer.

*Keywords:* online investigative interview, motivational frames, cylinder model, cognitive matching, cooperative, competitive

## The role of conversational matching in creating trust and cooperation in police interviews

During police interviews, it is vital for the interviewer to build trust and cooperation with the suspect, to secure information that might be used as evidence in court (Abbe & Brandon, 2014). Research has shown cooperation in investigative interviews to be influenced by factors such as rapport, empathy, reciprocity, and liking (Alison et al., 2013; Granhag et al., 2015; Hwang & Matsumoto, 2020, Matsumoto & Hwang, 2018). Conversationally, theories like communication accommodation theory (Giles & Ogay, 2007) and interpersonal adaptation theory (Burgoon et al., 1995) suggest that cooperation emerges from the accommodation of, and adaption to, one's interaction partner.

The evidence to support this is diverse. For example, theories of matching of language and speaking styles have been shown in previous research to be related to positive interpersonal relations (Ireland et al., 2011; Kulesza et al., 2013). Similarly, matching has been studied using different modes of communication such as verbal (e.g., motivational frame matching, Giebels et al., 2017; Ormerod et al., 2008), linguistic (e.g., language style matching; Richardson et al., 2019) and nonverbal communication (e.g., gestures, mannerisms, and body movements; Abbe & Brandon, 2014). While there has been evidence of the effectiveness of matching in social and business settings (e.g., Chartrand et al., 1999; Maddux et al., 2008), it has only recently been emerging support of the positive effects of motivational matching in law enforcement research (Taylor & Thomas, 2008; Wells & Brandon, 2019), such as matching of motivational frames (Taylor, 2002). Unfortunately, much of this research has been correlational in nature, which means that the causal mechanisms behind matching in investigative situations are still not well understood. As a result, the current study investigated whether motivational frame matching (Taylor, 2002) would lead to higher cooperation and trust in an online investigative interview.

### **Cooperation in Interviews**



A growing body of research suggests that a cooperative and rapport-driven question strategy is the most effective way to elicit useful and valid intelligence information from suspects (Vrij et al., 2017). For example, one of the features of the PEACE model, an investigative interviewing technique developed to produce reliable information, is to engage and cooperate with suspects (Vrij et al., 2017). Similarly, the Scharff technique uses friendliness as a tactic to create a comfortable situation where suspects are more likely to reveal valuable insights (Granhag et al., 2015). Also, elements from motivational interviewing, such as empathy and acceptance of suspects, have been shown to be related to more reliable information elicitation in police interviews (Alison et al., 2013). By acting in a friendly and cooperative way toward suspects, it is believed that the interviewer may facilitate the building of rapport, which has been found to be positive for reliable information gathering in investigative interviewing situations (Abbe & Brandon, 2013; 2014; Vrij et al., 2017). Accordingly, we hypothesized that:

**H1:** that suspects who interact with a cooperative interviewer would be more likely to trust, cooperate, and feel understood by the interviewer compared to if the interviewer has a competitive (i.e., noncooperative) communication style.

### **Behavioural Matching**

Theories of conversation, such as Communication Accommodation Theory (Giles & Ogay, 2007) and Interactive Alignment Theory (Garrod & Pickering, 2004) make clear that cooperation emerges from speakers aligning their understandings and interpretation of one another's motivations. This emerges in the investigative interviewing literature in definitions of rapport, which speak to feelings of similarity and commonality between the suspect and the interviewer (Kelly et al., 2013) and on the need for being "in sync" with each other. Consistent with this idea, previous research has suggested that people who like each other tend to match their behaviour (including language style, nonverbal behaviour, verbal

communication, & facial expressions; Chartrand & Bargh, 1999; Chartrand & Lakin, 2013; Duffy & Chartrand, 2015; Iacoboni, 2008; Ireland et al., 2011; but see Dalton et al., 2010; Ireland & Henderson, 2014; Richardson et al., 2019, for a more nuanced discussion). There is also evidence pointing to the benefits of matching, even in situations in which people may not inherently like each other (e.g., in crisis negotiations). For instance, Ormerod et al. (2008) found that the level of motivational frame matching increases over time in successful crisis negotiations, but not for unsuccessful negotiations. Also, increased motivational frame matching was shown to be related to more cooperation and information elicitation in an authentic police interview with a suspect accused of murder (Wells & Brandon, 2019). Hence, in line with this argument, we hypothesized:

**H2:** that matching of motivational frames would lead a suspect to trust, cooperate, and feel more understood by an interviewer in an online investigative interview situation.

Within most interactions, there are communication schemas dictating how speakers are expected to respond and reply to each other (Dalton et al., 2010). One common expectation is that interaction partners try to make sense of what the other person is saying (Pelliccio & Walker, 2022), including their goals and motivations, and reciprocate these. In this way, reciprocal matching of motivations might constitute a subtle recognition and acknowledgement of the other person (Aafjes-van Doorn & Muller-Frommeyer, 2020; Niederhoffer & Pennebaker, 2002). Based on these assumptions, it could be surmised that participants who interact with an interviewer who consistently match their motivational frame would be more likely to reciprocate the interviewer's motivational frame. Thus, we hypothesised:

**H3:** that suspects would show a higher degree of reciprocal motivational frame matching in response to a matching interviewer in comparison to a nonmatching interviewer.

### **Timing of Matching**

While few studies have investigated the temporal aspect of matching, Wells et al. (2013) suggest the early stages of such an interaction revolve around the development of trust and rapport. Similarly, Lewicki and Bunker (1996) argue that the beginning of an interaction is especially important for the development of trust. In line with this, Jeong et al. (2020) showed that generous first offers in a negotiation led to higher perceptions of trust and a greater probability of negotiation success. Similarly, Sinaceur et al. (2013) showed that engaging in greater information exchange (by refraining from adamantly proposing a deal in the early stages of a negotiation) was related to increased negotiation success. Interestingly, the beneficial effects of early matching have also been found to be evident for motivational frames. Specifically, Taylor (unpublished manuscript) demonstrated that motivational frame matching by the negotiator was particularly important in the beginning of a crisis negotiation for the development of cooperation and positive negotiation outcomes. Similarly, using a group development paradigm, Nicholson (2016) found that language style matching was related to an increase in trust behaviour, but only when it occurred in the early relational phases. In summary, this points to the early stages of an interaction as potentially paramount in the development of interpersonal coordination and cooperation. Consequently, we hypothesize

**H4:** that motivational frame matching by the interviewer would influence suspects the most (in the form of aligning their motivational frames with that of the interviewer), at the early stages of the interview rather than the later stages.

## Method

### Participants

An a-priori power analysis suggested that approximately 199 participants were required to reach a power  $> .8$ , provided a small to medium effect size of  $f = .20$  in the population (Faul et al., 2007). Accordingly, we recruited 206 participants in return for financial compensation (£1.02; payment set in Prolific). Four participants were excluded

from the analysis because they failed to complete the experiment. Of the remaining 202 responders, 77 self-declared as women, 124 as men, and 1 as other. They were aged between 18-68 years ( $M = 28.96$ ,  $SD = 10.21$ ). Most identified as White ( $n = 147$ ), while the rest identified as either Asian ( $n = 15$ ), Mixed ( $n = 14$ ), Black/African/Caribbean ( $n = 13$ ), or Other ( $n = 12$ ). The study received ethical approval from Lancaster University (ethics review number: FST19108).

## Materials

**Pre-experimental questionnaires.** Before the start of the experiment, participants answered two measures related to their (1) modification of self-presentation and ability to infer others internal states, and (2) trust propensity.

*Modification of self-presentation and ability to infer others' internal states.* Adapted from Lennox and Wolfe (1984), this measure comprised 13 items, measured on a 6-point Likert scale from 1 (*Certainly, always false*) to 6 (*Certainly, always true*), that addressed participants ability to adapt to others in social situations. An example item from the self-presentation subscale was “In social situations, I have the ability to alter my behaviour if I feel that something else is called for”, while an example item from the sensitivity to expressive behaviour of others was “I am often able to read people’s true emotions correctly through their eyes”. This measure showed good internal consistency with a Cronbach’s  $\alpha = .79$ .

*Trust propensity.* Three items from Mayer and Davis (1999) measured the participants’ general trust in other people. While the original scale involved seven items, these three items were selected because they tapped into general trust (and not trust of specific individuals like salespeople or experts). An example item is “People should be cautious with strangers”. The items were measured on a 5-point Likert scale from 1

(*Disagree strongly*) to 5 (*Agree strongly*). The Cronbach's  $\alpha = .62$ , suggested acceptable internal consistency (Saleem & Bobak, 2005).

**Investigative interview.** The interview was a 5-step task where the interviewer asked questions to the participants, who then answered them with one of three responses that corresponded to each motivational frame. For half of the participants, the interviewer's orientation was cooperative; for the other half they were competitive. In the cooperative condition, the interviewer behaved in a relatively friendly manner towards the participant. For example, the first statement made by the interviewer was "I'm investigating an incident where a man was attacked and his wallet and phone taken. Did you happen to see what happened?" In contrast, in the competitive condition, the interviewer took a more accusatory approach with the first statement being "An elderly man had his wallet stolen yesterday. I have reason to believe you were part of a group that did it. You need to tell me what happened."

These two conditions were crossed with an interviewer who consistently either matched or did not match the motivational frame of the participants' response. For example, when the participant (enacting the suspect) started off the investigative interview with an instrumental statement (e.g., "I don't know anything about that [the crime]. What do you want from me?"), in the matching condition, the interviewer would also respond in an instrumental manner ("Okay, I understand. Could you help me by telling me what you were doing that day?"). In contrast, in the nonmatching condition, when the participant started off the investigative interview with an instrumental statement, the interviewer randomly responded in one of the other two motivational frames (relational motivational frame: "I can reassure you this isn't a witch hunt. I just need you to help me understand what happened.", or identity motivational frame: "You seem like a decent person, can you help me understand what happened?"). This allocation was predetermined from a random number generator to ensure

balanced rounds and avoid biased outcomes that can sometimes occur with randomization in smaller samples (Nguyen et al., 2017).

*Reliability check of the interview conversational encounters.* Before the main experiment, we evaluated whether the interviewer's canned responses conformed to one of the three motivational frames (instrumental, relational, or identity) and orientations (cooperative or competitive). Three people familiar with the cylinder model sorted the interviewer questions and suspect responses into either instrumental, relational, or identity motivational frames. We computed the average correctly classified responses across the three raters, which was 75.2%. Utterances where at least two raters disagreed were modified to better conform to their motivational frames. They were then sent back to the raters who agreed (100%) on their classification.

**Post-experimental measures.** After completing the interview, participants answered questions relating to their trust and perception of the interviewer, as well as if they would be willing to cooperate with the interviewer.

*Intention to trust.* To tap into participants' intention to trust the interviewer, we used eight items from Gillespie's (2003; 2011) behavioural trust inventory. The items included both a willingness to disclose information to the interviewer (e.g., "How willing are you to share your personal feelings with your interviewer?") as well as a willingness to rely on the interviewer (e.g., "How willing are you to rely on your interviewer's task-related skills and abilities?"). These items were answered on a 5-point Likert scale from 1 (*Disagree strongly*) to 5 (*Agree strongly*). This measure showed excellent internal consistency (Cronbach's  $\alpha = .89$ ).

*Cooperation with the interviewer.* We asked participants whether they as suspects would be willing to cooperate with the interviewer and, if they had information about the crime, how likely they would be to give this information to the interviewer. These items were

answered on a 7-point Likert scale anchored by 1 (*Not at all willing*) to 7 (*Completely willing*). This measure showed acceptable internal reliability (Cronbach's  $\alpha = .69$ ).

*Feeling understood by the interviewer.* We measured participants' feelings about the interviewer and whether they felt understood by them through three items: "I felt understood by the interviewer", "I felt the interviewer understood what I was trying to say", "I felt the interviewer 'listened' to my side of the story". They were all answered on a 7-point Likert scale anchored by 1 (*Disagree strongly*) to 7 (*Agree strongly*). The scale demonstrated excellent Cronbach's  $\alpha = .94$ .

*Demographic questions.* Participants answered questions about their age, gender, ethnicity, and country of residence.

## **Procedure**

Participants on the Prolific website self-selected for participation in the current study. They were then sent to the Qualtrics experimental platform where the study took place. Prolific is an online platform that connects researchers with potential research participants while Qualtrics is a powerful online survey and experimental platform. They were given information about the study, provided informed consent, were presented with the pre-measures, and then randomly allocated to one of the four experimental conditions. In the interview, the interviewer always started off the conversation (in either a cooperative or competitive way) and the participants then had to respond in either an instrumental, relational, or identity motivational frame. This repeated for four times resulting in a total of five interview utterings and five participant responses. After the investigative interview, participants answered the post-measures and were debriefed.

The data and R-scripts used to analyse the data have been made available online (<https://osf.io/u2e69/>; OSF-project currently private to facilitate double-blind peer review).

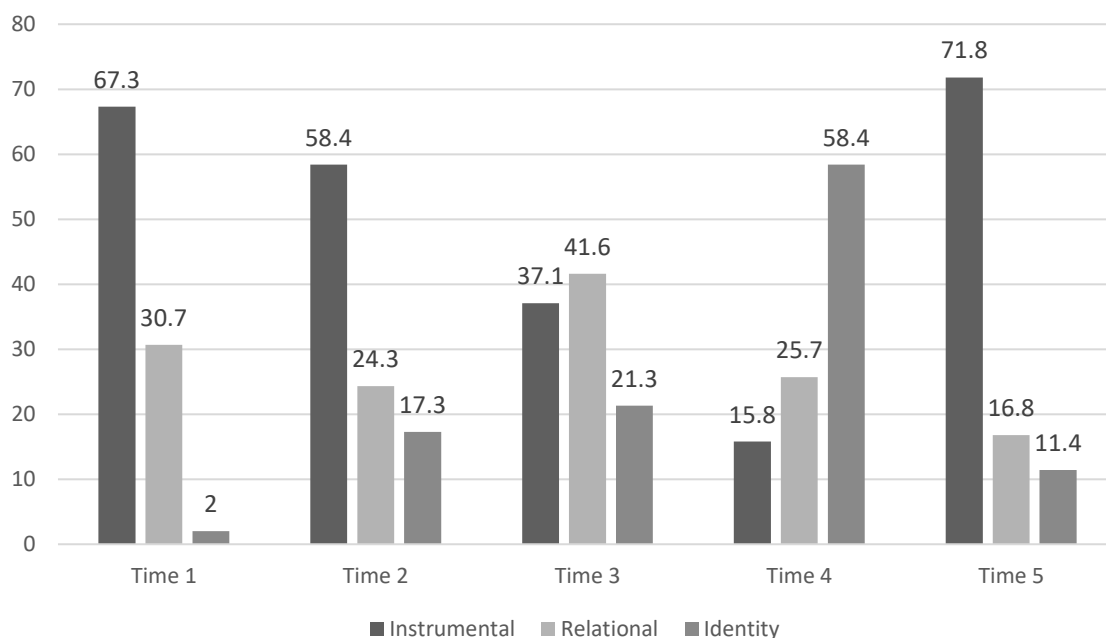
## Results

Before statistical analyses, missing data points on some of the outcome variables were estimated (6 participants had at least one missing data point) and imputed with the predictive mean matching method and univariate outliers modified to their next highest/lowest score to reduce their influence on the results while keeping their ordinal properties intact (Little, 1988; Tabachnick & Fidell, 2007). Statistical analyses carried out before and after these changes did not change the direction or significance of the results.

Figure 1 shows the percentage of instrumental, relational, and identity motivational frames in each part of the interview. As observed, the instrumental frame was chosen most frequently in the first, second, and last interview rounds, whereas relational and identity motivational frames were most common in the third and fourth interview rounds, respectively.

**Figure 1**

*Percentage of motivational frames for the different time points in the interview*



Looking instead at the pattern of participant matching (when participants chose the same frame as the interviewer) in the different rounds of the interview, Table 1 shows that the



instrumental frame was matched more often in the second and last round of the interview, whereas the relational and identity frames were matched most often in the third and fourth rounds of the interview, respectively.

**Table 1**

*Proportion of participants who matched the instrumental, relational, and identity motivational frames in each round of the interview*

Motivational frame	Round 2	Round 3	Round 4	Round 5
	participant	participant	participant	participant
	matching (%)	matching (%)	matching (%)	matching (%)
Instrumental	63.77%	34.88%	19.70%	82.46%
Relational	31.31%	55.00%	23.38%	33.33%
Identity	26.47%	18.42%	50.85%	12.66%

*Note.* The percentages in each round do not sum to 100% since the distribution of total interviewer question frames were different in each round of the interview (which in turn was a combination of the interviewer matching condition & participant responses).

Participants had four possibilities of matching the interviewer's motivational frame in the interview (after the second, third, fourth, & fifth interaction, respectively).

Table 2 shows the descriptive statistics for the outcome variables across the four experimental conditions.

**Table 2**

*Means (SD) for frame (matching vs. nonmatching) and orientation (cooperative vs. competitive) across all the dependent variables*

Dependent variables	Cooperative		Competitive	
	Matching	Nonmatching	Matching	Nonmatching
W. to cooperate with interviewer	4.85 (1.48)	4.92 (1.53)	4.98 (1.29)	4.91 (1.09)
Feeling understood	3.17 (1.80)	3.35 (1.75)	2.53 (1.41)	2.69 (1.35)
Trust intention	3.86 (1.31)	3.91 (1.38)	3.75 (1.13)	3.76 (1.08)

*Note.* None of the Matching-Nonmatching pairs were significantly different from each other

## Interviewer Matching and Cooperation

In order to investigate the effect of matching and orientation on the outcome variables, a multivariate analysis of covariance was initially executed. This test was entered as 2 (frame: matching vs nonmatching) X 2 (orientation: cooperative vs competitive) between subjects MANCOVA, with participants' trust propensity and self-presentation and ability to infer others' internal states as covariates. Preliminary analyses demonstrated that all the outcome variables correlated reasonably highly with each other ( $.13 \leq r \leq .68$ ), which is acceptable for a multivariate analysis (Pallant, 2005; Tabachnick & Fidell, 2013). While the Box's M-test for the homogeneity of covariance matrices was significant,  $\chi^2(30) = 55.34, p = .0032$ , there is a tendency for this test to be too strict for large samples (Tabachnick & Fidell, 2013), such as in the current study. Even so, the Pillai's Trace statistics was reported as it tends to be the most robust (Pallant, 2005; Tabachnick & Fidell, 2013).

For the combined dependent variables, there was no significant effect of frame,  $F(4, 192) = .15, p = .96, Pillai's Trace = .0032, \eta_p^2 = .0057, 95\% CI [.00, 1.00]$ , no significant effect of orientation,  $F(4, 192) = 1.65, p = .16, Pillai's Trace = .033, \eta_p^2 = .05, 95\% CI [.00, 1.00]$ , and no significant interaction between frame and orientation,  $F(4, 192) = .055, p = .99, Pillai's Trace = .0011, \eta_p^2 = .0011, 95\% CI [.00, 1.00]$ . The covariates trust propensity,  $F(4, 192) = 1.74, p = .14, Pillai's Trace = .035, \eta_p^2 = .03, 95\% CI [.00, 1.00]$ , and self-presentation and ability to infer others' internal states,  $F(4, 192) = .83, p = .51, Pillai's Trace = .017, \eta_p^2 = .02, 95\% CI [.00, 1.00]$ , were both not significant.

To investigate whether matching of motivational frames and the cooperative/competitive behaviour of the interviewer had an impact on participants willingness to cooperate with the interviewer, while statistically adjusting for the participants' trust propensity,  $F(1,196) = .036, p = .85, \eta_p^2 = .00$ , and self-presentation and ability to

infer others' internal states,  $F(1,196) = .31, p = .58, \eta_p^2 = .002$ , a two-way ANCOVA was carried out. In this model, there was no main effect of matching of motivational frames,  $F(1, 196) = .002, p = .96, \eta_p^2 = .00$ , no main effect of the cooperativeness of the interviewer,  $F(1, 196) = .067, p = .80, \eta_p^2 = .00$ , and no interaction effect between them,  $F(1, 196) = .065, p = .80, \eta_p^2 = .00$ . This did not support **H1** (suspects who interact with a cooperative interviewer would be more willing to cooperate with the interviewer) or **H2** (matching of motivational frames would lead a suspect to cooperate more with the interviewer).

Another ANCOVA was carried out to investigate the influence of matching of motivational frames and the cooperative/competitive approach by the interviewer on participants' feelings of being understood by the interviewer. After adjusting for trust propensity,  $F(1,196) = 5.20, p = .024, \eta_p^2 = .026$ , and self-presentation and ability to infer others' internal states,  $F(1,196) = .18, p = .68, \eta_p^2 = .001$ , there was no main effect of motivational frame matching,  $F(1,196) = .25, p = .62, \eta_p^2 = .001$ . However, there was a main effect of the cooperativeness of the interviewer,  $F(1,196) = 8.62, p = .004, \eta_p^2 = .042$ . Specifically, participants who interacted with a cooperative interviewer ( $M = 3.27, SD = 1.77$ ) felt more understood by the interviewer than those who interacted with a competitive interviewer ( $M = 2.64, SD = 1.38$ ). This gives some support for **H1** (suspects who interact with a cooperative interviewer would feel more understood by the interviewer). Still, there was no interaction effect between matching of motivational frames and the cooperativeness of the interviewer on participants' positive feelings toward the interviewer,  $F(1,196) = .009, p = .93, \eta_p^2 = .001$ .

Finally, an ANCOVA was executed to investigate whether matching of motivational frames and the cooperative/competitive behaviour of the interviewer had an impact on the intention to trust the interviewer, while statistically adjusting for participants' trust

propensity,  $F(1,196) = 1.82, p = .18, \eta_p^2 = .009$ , and self-presentation and ability to infer others' internal states,  $F(1,196) = .67, p = .42, \eta_p^2 = .003$ . There was no main effect of matching of motivational frames,  $F(1,196) = .008, p = .96, \eta_p^2 = .00$ , no main effect of the cooperativeness of the interviewer,  $F(1,196) = .65, p = .42, \eta_p^2 = .003$ , and no interaction,  $F(1,196) = .003, p = .96, \eta_p^2 = .00$ , on participants' trust intentions. Hence, this did not lend support for **H1** (suspects who interact with a cooperative interviewer would be more willing to trust the interviewer) or **H2** (matching of motivational frames would lead a suspect to trust the interviewer more).

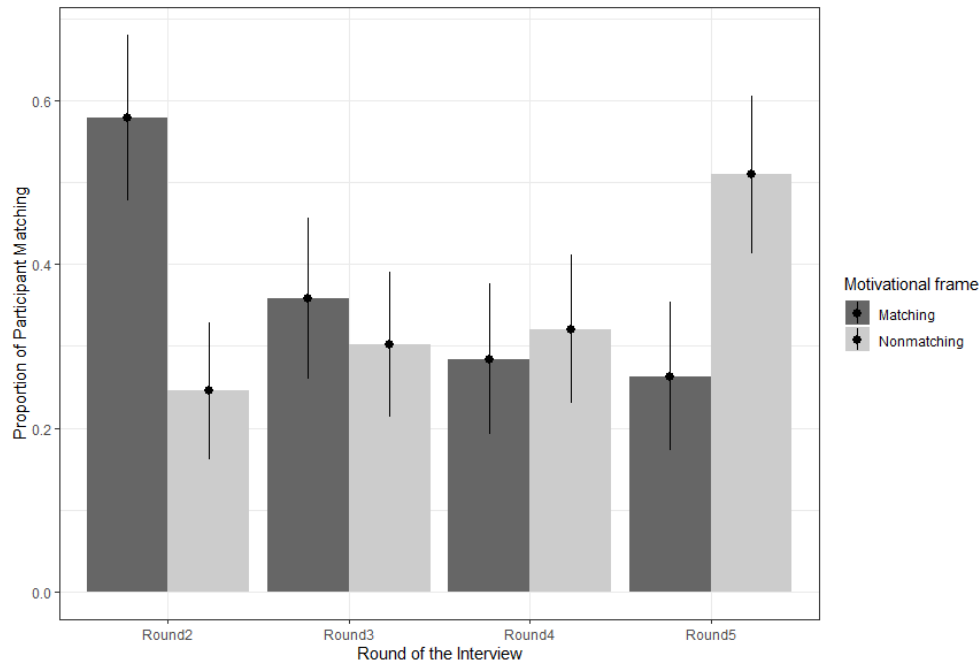
Together, these results suggest that while matching of participants' motivational frames did not have a significant influence on their willingness to cooperate, trust, or feelings of being understood. However, interacting with a cooperative interviewer made participants feel more understood by the interviewer (but not cooperate or trust them more).

### **Level of Matching (Dependent variable) per Interview Round**

Looking at Figure 2, one can observe that the average proportion of participant matching was higher in the matching condition for the second round of the interview, while the proportion of participant matching was higher in the nonmatching condition in the fifth round of the interview.

**Figure 2**

*Average proportion of participant matching for each round of the interview for the matching and nonmatching conditions*



In order to investigate whether participants matched the interviewer's motivational frame in the different interview rounds (**H4**: motivational frame matching by the interviewer would influence suspects the most (in the form of aligning their motivational frames with that of the interviewer), at the early stages of the interview rather than the later stages), and whether this was dependent on interacting with a matching/nonmatching and a cooperative/competitive interviewer (**H3**: suspects would show a higher degree of motivational frame matching in response to a matching interviewer in comparison to a nonmatching interviewer), a mixed ANOVA was carried out. As can be observed in Table 6, there was a significant Matching X Interview Round interaction,  $F(3, 594) = 13.63, p < .001$ ,  $\eta_p^2 = .064$ .

**Table 3**

*Results of mixed analysis of variance for proportion of matched frames by the participant for cooperative vs. competitive, matching vs. nonmatching interviewer, and interview (int.) round*

Effect	<i>F</i>	<i>p</i>	$\eta_p^2$
Intercept	423.876	< .001***	.682
Cooperation	2.726	.100	.014
Matching	.448	.504	.002
Int. Round	2.333	.076	.012
Cooperation X Matching	.188	.665	.001
Cooperation X Int. Round	1.290	.277	.006
Matching X Int. Round	13.627	< .001***	.064
Cooperation X Matching X Int. Round	1.152	.327	.006

\*\*\* $p < .001$

Indeed, formal simple effects tests confirmed that participant matching was higher in the matching condition ( $M = .572$ ,  $SE = .047$ ) compared to the nonmatching condition for the first interview round ( $M = .245$ ,  $SE = .045$ ;  $p < .001$ ). In contrast, participant matching was higher in the nonmatching condition ( $M = .508$ ,  $SE = .046$ ) compared to the matching condition in the last interview round ( $M = .259$ ,  $SE = .048$ ;  $p < .001$ ). All other differences were non-significant ( $p > .05$ ). This gives some support for **H3** (suspects would show a higher degree of motivational frame matching in response to a matching interviewer compared to a nonmatching interviewer) as well as **H4** (motivational frame matching by the interviewer would influence suspects the most (in the form of aligning their motivational frames with that of the interviewer), at the early stages of the interview rather than the later stages).

## Discussion

The aim of this research was to investigate if matching of motivational frames would lead to more trust and cooperation in a brief investigative interview. Looking at motivational frame matching in police interviews, it was shown that when the interviewer consistently matched the participants' motivations, the participants responded by initially matching the interviewer's frame in the beginning of the interview but then matched less as the interview progressed. These findings echo previous research demonstrating matching to be most effective when it occurred early in a negotiation (Ireland & Henderson, 2014; Swaab et al., 2011). Hence, one could theorize that matching of motivational frames at the beginning of a police interview would have the highest likelihood of creating coordination from the suspect in the form of reciprocal motivational frame matching. Importantly, the increased motivational frame matching from the suspects only happened at the early stages of the interview and did not hold up as the interview continued. One possible explanation for why matching from the interviewer did not result in increased participant matching as the interview progressed could be because participants did not expect matching from a more powerful individual (the interviewer in this case). As an example of this, Richardson et al., (2019) demonstrated that increased language style matching was related to successful task completion in a group assignment, but only when the group members had similar social power. In an online police interview situation, participants might have had the expectation that an interviewer would have more power than them and therefore, not expecting matching to naturally occur. These are theoretical speculations, and it will be important for future research to clarify the link between motivational frame matching, trust, cooperation, and the role that expectations about matching have on the matching behaviour of suspects and interviewers in police interviews.

While interviewer motivational frame matching seemed to lead to more reciprocal matching from participants (at least in the beginning of the interview), interviewer matching

did not seem to have an influence on participants' trust intentions, cooperation or feelings of being understood. This suggests that matching of motivational frames from the interviewer might not reliably lead to increased trust and cooperation in suspects. Importantly, there are several differences between the previous matching literature and the current study which might help explain the non-significant results. For example, previous studies looking at motivational frame matching have often been conducted with real world transcripts of interactions (e.g., Ormerod et al., 2008; Giebels et al., 2017). Such interactions are naturally much longer than the interview scripts used in the current study. This, in turn, might make it easier to identify when interaction partners have made sense of each other. Second, it could have been the case that the experimental manipulation of the three motivational frames was very similar to each other. If so, that means that it would have been difficult for participants to get a feeling for when the interviewer had made sense of them (by matching their motivational frame) and when they had not.

Finally, we found that participants who interacted with a cooperative interviewer reported feeling more understood by the interviewer (but did not trust or cooperate more with them). This suggests that, while a cooperative interviewer might be beneficial for promoting feelings of being understood, it may not always translate into actual cooperative behaviour (such as giving information about a crime). At the same time, given the range of evidence suggesting being cooperative leads to more cooperation from suspect (Abbe & Brandon, 2014; Granhag et al., 2015; Vrij et al., 2017), these results would have to be interpreted with caution.

### **Limitations**

There are several limitations with the current research that needs to be taken into consideration. One challenge with matching based on meta level concepts (such as motivational frames) might be that there could be some overlap between different



motivational frames. This, in turn, could have meant that it was difficult to know whether they were distinctly different from each other. At the same time, a validity check was carried out with people familiar with the cylinder model in order to ensure that the questions and answers adhered to their respective frame. This would have ensured that, while no guarantee, the three motivational frames were sufficiently different enough from each other to be accurately classified into their correct frame.

In addition to the motivational frames, there could have been other differences between the conversational scripts that may have been due to other factors (e.g., number of words per question, number of personal pronouns in each question etc.). It is possible that these differences may explain some of the observed findings, and not the differences relating to the motivational frames. In other words, it might have been difficult to know that a certain statement was purely instrumental, purely relational, or purely identity. This introduces the problem of knowing the reasons behind why a particular participant chose a certain response to the interviewer's questions.

Finally, it could also be the case that matching based on the motivational frames may lead to more trust and cooperation from a suspect, but only during longer interactions where suspects have time to clearly communicate their motivations and the interviewer would have time to adequately interpret the suspect's motivations. Since the interaction in the current study was quite short and constantly forced participants to choose between one of three motivations, this could have resulted in participants' motivations not being adequately ubiquitous and internalized. As a result, matching of the motivational frames perhaps did not strongly influence the participants' trust and cooperation with the interviewer.

### **Future Research**

Drawing from the limitations of the current study, there are potential avenues for future research. As mentioned above, there could have been some issues with the reliability

and validity of the conversational scripts in the interview. Hence, it would be important for future studies to clearly distinguish between the three motivational frames and make sure that they do not contain elements from the other two motivational frames. A good way to do this would be to simplify the motivational frames and make them as different from each other as possible.

Furthermore, since the motivational frames were concerned with the suspects' motivations within the interview situation, it might be valuable to highlight this even more in future studies. For example, one could start by explicitly telling participants to enact a certain motivational frame before the start of the interview. One could then manipulate whether an interviewer would subsequently match or not match those motivations in the remainder of the interview. For example, in the instrumental condition, the participant may be told that they should focus on getting the best deal (instrumental) and not be too concerned with the relationship with the interviewer (relational) or whether the interviewer treats them in a respectful way (identity). Whether the interviewer will match those motivations in the interview or not could then be experimentally manipulated.

One could also hypothesize that certain motivational frames (e.g., relational) works better for eliciting more matching in an investigative interview situation than other motivational frames (e.g., instrumental). For instance, Leander et al. (2012, study 1) manipulated whether an experimenter was more task oriented or affiliative (similar to the instrumental & relational motivational frames), and whether the experimenter matched the participant or not. They found that matching had a positive effect, but only when the experimenter was affiliative (relational). When the experimenter instead was more task oriented (instrumental), matching led to more negative outcomes. Based on these findings, one could hypothesize that different motivational frames (e.g., relational) may prompt people

to react more positively to matching whereas other motivational frames (e.g., instrumental) may predispose people to react more negatively to matching.

Thus, rather than matching of motivational frames per se leading to increased trust and cooperation, it might be that certain motivational frames predispose people to be responsive to certain types of behaviours, which then leads to more trust and cooperation. Another way to say this is that certain motivational frames may come with their own set of assumptions and expectations on how a certain person should behave in order to be perceived as trustworthy. When a person behaves in accordance with these expectations, trust and cooperation may follow, whereas if a person's behaviour goes against these expectations, it might be more difficult to reach positive interpersonal relations. These offer interesting hypotheses for future research.

### **Conclusions**

This study found that matching of motivational frames led to increased participant coordination (in the form of reciprocal motivational frame matching, but only in the beginning of the interview). However, matching of motivational frames did not have an impact on participants' trust intentions, willingness to cooperate, or feelings of being understood by the interviewer. While a cooperative interviewer made participants feel more understood, it did not have an influence on their trust intentions or cooperation. This suggests that matching of motivational frames might lead to some positive outcomes in an investigative interview situation, such as increased entrainment, but that these positive outcomes are limited to the early stages of the interaction and does not seem to extend to increased trust and cooperation from suspects. For future research, it would be important to increase the efficacy of the experimental paradigm to get a clearer understanding of the potential positive effects of motivational frame matching in investigative interviews.

## Chapter 5

Since the experiment in Chapter 4 did not pan out exactly as expected (no positive effects of motivational frame matching on interaction outcomes), the main aim of the two experiments in Chapter 5 was to improve the manipulation of motivational frame matching to get a more accurate understanding of its potential positive effects. In addition, it was also investigated whether motivational frame matching would have similar beneficial effects in a more informal social situation (i.e., a pub conversation between two rival sports supporters) compared to an investigative interview. The two experiments in this chapter were conducted between May and August 2022. In other words, they were conducted after the experiments in Chapter 3 and 4.

The influence of motivational frame matching on interaction outcomes and reciprocal matching.

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### **Abstract**

Theories of interpersonal sensemaking postulate that positive interaction outcomes emerge in interactions where speakers match on motivational frames and use a cooperative rather than competitive orientation (Taylor, 2002). Across two experiments ( $N = 1,107$ ), we provide the first evidence of a causal link between motivational frame matching and positive interaction outcomes (e.g., cooperation) in an intelligence gathering context. In both experiments, participants actively responded through instrumental, relational, or identity motivational frames toward an investigative interviewer or rival sports supporter. Operating over five conversation rounds, the interviewer/rival supporter consistently matched or did not match participants' motivational frames. After the interaction, participants answered questions relating to their perceptions of the interaction partner. Results showed that within a competitive interaction, motivational frame matching consistently led to more positive interaction outcomes on all measured variables. Within a cooperative interaction, motivational frame matching also led to more positive interaction outcomes for all measured variables (in the investigative interview) and greater feelings of being understood and a higher willingness to identify with the rival supporter (in the pub conversation). In both experiments, participants displayed more reciprocal matching when interacting with a matching versus a nonmatching interaction partner, and this tendency was stronger for competitive than cooperative interactions, pointing to the importance of successful interpersonal sensemaking, particularly in hostile interactions.

*Keywords:* information gathering; sensemaking; motivational frame matching; cooperation; cylinder model

## The influence of motivational frame matching on interaction outcomes and reciprocal matching.

When conducting investigative interviews, research indicates that an information gathering approach, where the goal is to solicit information, is superior to an accusatorial approach, with its focus on obtaining a confession (Alison & Alison, 2017). Within the information gathering approach, concepts such as rapport (Gabbert et al., 2021), active listening (Noesner & Webster, 1997), and self-disclosure (Childs & Walsh, 2017) have all been mentioned as key drivers of information gain from suspects. While all important, less is known about how suspects and interviewers make sense of each other and how this interpersonal sensemaking might contribute to cooperation and information gain. Interpersonal sensemaking has been termed ‘the forgotten skill’, in that many people within the legal system agree that sensemaking is important, but few studies explore how to create and sustain it (Taylor, 2013).

Analyses of sensemaking in police-suspect interactions (Taylor, 2002; Taylor & Donald, 2004, 2007; Watson et al., 2022) found that negotiators’ motivations for engaging in an interaction may be grouped into instrumental, relational, or identity focused. Later research has demonstrated matching of these motivations to be associated with cooperation and conciliation (Ormerod et al., 2008; Wells & Brandon, 2019). Yet, as this previous research was largely correlational in nature, it is unclear whether matching of such motivations is causally related to positive interaction outcomes. Consequently, the aim of the current study was to examine whether experimentally manipulating motivational frame matching would lead to more positive interaction outcomes within two intelligence gathering situations; an investigative interview and a casual pub conversation between rival sports supporters (Natapoff, 2004).

## Sensemaking in Investigative Interviews

Interpersonal sensemaking refers to the ability of a person (e.g., an interviewer) to make sense of another person's (e.g., a suspect's) underlying goals and/or motivations (Taylor, 2013), which then enables an appropriate response. For example, a suspect may be concerned about the criminal sentence that they might receive if they confess to a particular crime. An effective sense-maker would recognise this underlying concern and draw it out in their own responses, rather than switching to another topic that has nothing to do with the potential sentence (Wells & Brandon, 2019). By acknowledging the suspect's motivation and taking it seriously, the interviewer signals that the suspect is worthy of interpersonal respect and recognition (Ury, 1991). This might then constitute a subtle form of interpersonal acknowledgment that may lead to more positive interaction outcomes (Burgoon, 1993).

Looking more systematically at suspect dialogue, Taylor (2002) observed that, within crisis negotiations, the behaviours of perpetrators could reliably be clustered into instrumental, relational, or identity motivations. While instrumental motivations related largely to the facts and information about a certain issue, relational motivations related more to the relationship between the speakers and how they managed their relationship. Finally, identity motivations revolved around personal worth and respect as well as notions of "face" (Goffman, 1967). In line with seeing interpersonal sensemaking as an alignment of motivations, Ormerod, Barrett, and Taylor (2008) found that motivational frame matching between the perpetrator and crisis negotiator was associated with more successful outcomes (e.g., the hostages were released or the perpetrator agreed not to take his own life). This gives some indication that matching of motivations might be an important part of successful interpersonal sensemaking. This led to the first hypothesis:

**H1:** Matching of motivational frames will lead to more positive interaction outcomes compared to nonmatching interactions.



## **Orientation towards the Interview**

In addition to having certain motivations, interaction partners may also display different orientations toward the interaction. Taylor (2002) identified cooperative, competitive, and avoidant orientations as being commonly displayed by suspects, which together with the three motivational frames mentioned above, created a cylinder model of communication behaviours. A cooperative orientation is characterised by mutual agreements and a willingness to make concessions with the other party. A competitive orientation reflects hostility and antagonism on the part of interaction partners who are not willing to make sacrifices to fulfil each other's goals or motivations. Finally, an avoidant orientation is characterised by relatively disengaged or withdrawn behaviour. Typical here are attempts to shift the topic of discussion or to dismiss the need to communicate at all (Wells & Brandon, 2019).

While no research has directly compared these orientations in investigative interviews, evidence from research comparing information gathering (cooperative) and accusatorial (competitive) interviews give insights into their relative impact on an interaction. The large body of research supports the information gathering approach as being superior in gaining accurate and valid information from suspects (Alison & Alison, 2017; Meissner et al., 2015; Russano et al., 2019). This is also true for authentic military interviews, where informational gathering approaches such as active listening and rapport tactics led to increased cooperation and information gain from suspects (Brandon et al., 2019). This formed the basis of the second hypothesis:

**H2:** A cooperative (as opposed to a competitive) interaction will lead to more positive interaction outcomes.

## Matching and Orientation

Although matching would generally be perceived as leading to more positive interaction outcomes, there might be situations when this is not necessarily the case. For example, Sjöberg et al. (2023b) recently found that, within a competitive interaction, motivational frame matching led to less willingness by participants to cooperate with the interviewer and lower feelings of being respected. This is supported by research showing that language style matching can be associated with both positive (Ireland & Pennebaker, 2010) and negative interaction outcomes (Ireland & Henderson, 2014), as well as evidence of coordination of communication and physiology among couples during conflicts (Levenson & Gottman, 1983; Rehman et al., 2017). In this way, matching might work by intensifying the dominant orientation, be that cooperative or competitive. This suggests that motivational frame matching might backfire in cases where both of the parties have a more hostile agenda, leading to the third hypothesis:

**H3:** There is an interaction between matching and orientation such that a cooperative and matching interaction will lead to more positive interaction outcomes than a competitive and matching interaction.

## Reciprocal Matching

As mentioned above, several theories predict that interactions where the interaction partners aspire to connect with each other tend to align their communication. This interpersonal alignment could be theorised to represent a form of subtle cooperation between interaction partners (Meinecke & Kauffeld, 2019). Indeed, research has demonstrated that alignment in language style between a suspect and interviewer was associated with more information gain in investigative interviews (Richardson et al., 2014). More recently, research has argued that individuals have certain expectations of what should take place in an interaction (e.g., the other person will make sense of what I am saying; Pelliccio & Walker,

2022), and that when such expectations are violated, it might create a negative response by the other party (Burgoon, 1993). This links to the notion that individuals have communication schemas for how people should act towards each other (Dalton et al., 2010), including notions of who should follow whom within an interaction and who is supposed to decide the direction of the interaction. Taken together, this indicates that reciprocal matching might constitute a form of subtle acknowledgement of the other person (Aafjes-van Doorn & Muller-Frommeyer, 2020; Niederhoffer & Pennebaker, 2002). Based on these presumptions, it was hypothesised that participants who interacted with an interviewer who consistently matched their motivational frame would, in turn, be more likely to engage in reciprocal matching with their interaction partner. Stated formally,

**H4:** Interviewer/rival supporter matching will lead to more reciprocal participant matching. In other words, participants will reciprocate matching more in the matching vs the nonmatching condition.

### **The Role of Context**

While investigative interviews are fundamental to the collection of information from suspects, there are other contexts where information collection occurs. For example, in certain situations, officers may interview family or friends of the suspect in order to obtain legally relevant information (Carter, 1990). Or they may seek information from a covert human intelligence source (Nunan et al., 2020). Once a relationship has been established between a source and their handler, they will often meet in informal situations (e.g., a pub rather than a police station). Indeed, in their study of human intelligence source handlers, Nunan et al. (2020, p. 251) found that one source handler believed that “the investigative interview in my view within the police they take part in a particular format, in a particular location...whereas a debrief isn’t that, it can be any location”. This indicates that some information gathering within law enforcement is likely taking place outside of the traditional

interview room. Hence, it is important to extend the research beyond formal investigative interviews to other less well-studied environments. As a result, we focus here on both an investigative interview and a pub conversation between rival sports supporters.

### **Positive Interaction Outcomes**

The main goal of an information gathering conversation is to obtain information from a suspect (Jakobsen et al., 2017). To obtain this information, suspects must be willing to cooperate, with their willingness leading to the actual provision of information (Brandon et al., 2019). However, apart from the provision of information, good sensemaking can lead to other positive outcomes, which our experiments sought to capture. First, the concept of rapport, described as a positive working relationship between the suspect and interviewer (Abbe & Brandon, 2014), is often cited as a positive outcome. Two important aspects of rapport concern the ability to empathise and actively listen to the suspect (Alison & Alison, 2017), and if employed successfully, a suspect may feel that they are being listened to and understood by the other person. Consequently, we measured feelings of being listened to and understood by the other person.

Second, suspects might also be concerned with the act of saving face and protecting their dignity during an interview (Goffman, 1967; Kleinman, 2006). This is echoed in research showing that a failure by the interviewer to protect the respect and integrity of the suspect can sometimes lead the suspect to terminate the interview (Wells & Brandon, 2019). Holmberg and Christianson (2002) observed that sexual offenders who were disrespected by the interviewer often felt alienated and had a lower probability of providing a confession. Likewise, Oxburgh and Ost (2011) mentioned that validating a suspect's apprehensions would facilitate their feelings of being accepted. Hence, we measured participants' feelings of being respected and treated fairly as well as their tendency to identify with the other person.

Third, trusting the interviewer is positively related to being willing to open up about wrongdoings (Brimbal, et al., 2019), an important predictor of cooperation in conflict situations (Balliet & Van Lange, 2013), and it has a significant positive relationship with matching (Vicaria & Dickens, 2016). In the literature, trust has been defined as an intention to accept vulnerability based on a positive expectation of how another person will act in the future (Rousseau et al., 1998). Thus, we measured participants' intentions to trust the interviewer/rival supporter.

In total, we measured participant's willingness to cooperate and provide information to the interviewer/rival supporter, their feelings of being listened to and understood by the interviewer/rival supporter, the extent to which they felt respected and treated fairly by the interviewer/rival supporter, as well as their intentions to trust the interviewer/rival supporter, all as measures of possible positive interaction outcomes.

## Method

### Participants

Recruitment of participants took place via Prolific, an online platform that connects researchers with potential research participants. In total, 550 participants (373 women), ranging in age from 18 to 89 years ( $M = 40.28$ ,  $SD = 13.74$ ), participated. The majority came from UK and Ireland (480 participants), while 31 came from North America, 22 from Australia and New Zealand, 9 from South Africa, 7 from Europe, and 1 from Japan. Most identified as White ( $n = 506$  participants), followed by Black/African/Caribbean/Black British ( $n = 17$ ), Asian/Asian British ( $n = 14$ ), mixed/multiple ethnic groups ( $n = 9$ ), and Other ( $n = 4$ ). The study received ethical approval from Lancaster University (ethics reference number: FST20068)

### Materials

**Investigative interview.** Participants took part in a five-round text-based simulation of an investigative interview. Over five rounds, the interviewer asked questions of the

participants, who in turn responded. The participants could respond with a message that was of an instrumental, relational, or identity motivational frame. Depending on the experimental condition, the interviewer then either matched participant's motivational frame, or did not match participant's motivational frame. This matching/nonmatching was repeated five times after which the interaction ended.

To manipulate the orientation taken towards the interview, half the interviews featured a cooperative interviewer while the other half interacted with a competitive interviewer. Since most previous literature has tended to focus on cooperative and competitive interactions (Bonta, 1997; Bowen et al., 2017; Kelley et al., 2003; Richardson et al., 2019), as well as the fact that an avoidant interaction by its very nature involves “no comment” statements, which would be problematic to simulate experimentally, we focused only on the cooperative and competitive orientations.

*Reliability check of the interview conversational scripts.* To ensure that all the interview questions and responses fell reliably into their respective motivational frame and orientation, two people unfamiliar with the study hypotheses (but familiar with the cylinder model) rated each conversational script as belonging to one of the instrumental, relational, and identity motivational frames, as well as the orientation of the interaction (cooperative vs. competitive). Their agreement was 100% with the intended disposition of the script, suggesting the interview scripts were a good representation of their respective motivational frames and orientations.

**Post-interview measures.** At the end of the interview, participants answered questions about whether or not they would be willing to cooperate and provide information to the interviewer (instrumentally focused), whether or not they felt understood and listened to by the interviewer (relationally focused), and whether or not they felt respected by the

interviewer (identity focused). Participants were also asked if they would trust the interviewer.

*Cooperating and giving information to the interviewer.* To measure participants' willingness to cooperate with the interviewer, they were asked whether they would be willing to cooperate with the interviewer and, if they had information about the crime, how likely they would be to give this information to the interviewer. These two items were answered on a 7-point Likert scale anchored by 1 (*Not at all willing*) and 7 (*Completely willing*; these were single item measures and so did not have a Cronbach's  $\alpha$  score).

*Feeling understood by the interviewer.* Three items tapped into participants' feelings of being understood and listened to by the interviewer. One example question was "I felt understood by the interviewer". The items in this scale were answered on a 7-point Likert scale anchored by 1 (*Disagree strongly*) and 7 (*Agree strongly*). The scale demonstrated excellent Cronbach's  $\alpha = .97$ .

*Perceptions of being treated fairly.* We used two items to measure whether participants felt like they were being treated fairly and with respect. These included "I felt the interviewer treated me with dignity", and "I felt the interviewer was respectful". The items in this scale were also answered on a 7-point Likert scale anchored by 1 (*Disagree strongly*) and 7 (*Agree strongly*) and showed excellent internal reliability (Cronbach's  $\alpha = .98$ ).

*Inclusion of other in the self scale.* This single-item scale from Aron et al. (1992) was used to measure interpersonal closeness to the interviewer. Participants were presented with five pairs of circles with varying degrees of overlap, and asked to select the pair that best described their relationship with the interviewer. Since this measure was similar to the perceptions of being treated fairly items, we combined them into a single scale (Cronbach's  $\alpha = .88$ ).

*Intention to trust the interviewer.* Participants' intentions to trust the interviewer was measured with Gillespie's (2003; 2015) Behavioural Trust Inventory, and included both a willingness to disclose information to the interviewer ("How willing are you to share your personal feelings with your interviewer?"), and a willingness to rely on the interviewer ("How willing are you to rely on your interviewer's task-related skills and abilities?"). They were answered on a 7-point Likert scale from 1 (*Not at all willing*) to 7 (*Completely willing*). The scale demonstrated very good internal reliability (Cronbach's  $\alpha = .96$ ).

*Demographic questions.* At the last stage of the study, participants were asked about their gender, age, ethnicity, and country of residence.

## **Procedure**

Participants were given background information about the study and requested to provide informed consent before commencing. After this, participants were provided with information about the crime the suspect was accused of committing. They were told that they, as suspects, would interact with a police interviewer and that they had to respond to the interviewer's questions by selecting one of a predefined set of responses. After responding, they would then see the interviewer's next utterance and had to respond, again by selecting a response.

Depending on the condition, the interviewer would either consistently match the motivational frames of the participant's responses (instrumental, relational, or identity) or randomly not match their response. Both interviewer questions and suspect response options were either cooperative or competitive in nature, depending on what condition they were assigned (i.e., cooperation-competition was a between-subjects variable). After the interview, participants answered the post-experiment questionnaire, thanked for their participation, and debriefed about the purpose of the study.



The hypotheses for the current study were preregistered on the Open Science Framework (experiment 1: <https://osf.io/b9v48/>; experiment 2: <https://osf.io/fkhp7/>). The data and R-scripts used to analyse the data are also available online (OSF-project currently private to facilitate double-blind peer review).

### Results

Before carrying out the statistical analyses, participants who failed to correctly answer the attention check question were removed. Furthermore, extreme outliers ( $Q3/Q1 \pm 3 \cdot IQR$ ) were altered to their next highest/lowest score in line with Tabachnick and Fidell (2007). Analysing the results without these outliers did not change the direction or significance of the subsequent statistical analyses.

To investigate if matching of motivational frames (**H1**) and a cooperative rather than a competitive interaction (**H2**) led to more positive interaction outcomes, and whether there was an interaction effect between the two (**H3**), analysis of variance tests were carried out<sup>13</sup>. As shown in Table 1, there were significant main effects of both frame and orientation for all the outcome variables. There was also a significant interaction effect observed for the tendency to identify with the interviewer. To further explore the differences between matching and nonmatching interactions in both the cooperative and competitive conditions, planned simple effects tests were computed.

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<sup>13</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

**Table 1**

*F*-statistic (with  $\eta_p^2$  effect sizes) for each analysis of variance tests for the dependent variables

Dependent variable	Frame	Orientation	Frame X Orientation
W. to cooperate	5.54 (.028)*	296.21 (.54)***	.39 (.001)
W. to provide information <sup>a</sup>	4.52 (.017)*	43.91 (.14)***	.008 (.000)
Feeling understood <sup>a</sup>	17.45 (.074)***	551.38 (.68)***	.41 (.001)
Tendency to identify <sup>a</sup>	12.91 (.097)***	670.19 (.74)***	6.24 (.011)*
Trust intention	7.35 (.017)**	215.34 (.43)***	.60 (.001)

<sup>a</sup>Due to the violation of the assumption of homogeneity of variance, the Box-Cox transformation was adopted.  
\* $<.05$ , \*\* $<.01$ , \*\*\* $<.001$

### Willingness to Cooperate and Provide Information

These tests confirmed (1) that motivational frame matching led to significantly higher willingness to cooperate with the interviewer (**H1**) in both the cooperative (matching:  $M = 5.79$ ,  $SD = 1.28$ ; nonmatching:  $M = 5.39$ ,  $SD = 1.33$ ;  $\beta = .20$ ,  $t = 2.35$ ,  $p = .019$ ) and competitive conditions (matching:  $M = 2.90$ ,  $SD = 1.54$ ; nonmatching:  $M = 2.36$ ,  $SD = 1.38$ ;  $\beta = .27$ ,  $t = 3.25$ ,  $p = .0012$ ), (2) that motivational frame matching led to significantly higher willingness to provide information in both the cooperative (matching:  $M = 5.73$ ,  $SD = 1.50$ ; nonmatching:  $M = 5.32$ ,  $SD = 1.58$ ;  $\beta = .69$ ,  $t = 2.13$ ,  $p = .034$ ) and competitive conditions (matching:  $M = 4.37$ ,  $SD = 1.87$ ; nonmatching:  $M = 3.86$ ,  $SD = 1.99$ ;  $\beta = .73$ ,  $t = 2.27$ ,  $p = .024$ ). Furthermore, with reference to **H2**, participants were more willing to cooperate with the interviewer when the interaction was cooperative ( $M = 5.59$ ,  $SD = 1.32$ ) rather than competitive ( $M = 2.63$ ,  $SD = 1.48$ ;  $\beta = -2.96$ ,  $t = -25.006$ ,  $p = <.001$ ). Finally, participants were also more willing to provide information to the interviewer when the interaction was cooperative ( $M = 5.52$ ,  $SD = 1.55$ ) rather than competitive ( $M = 4.11$ ,  $SD = 1.95$ ;  $\beta = 2.16$ ,  $t = 9.48$ ,  $p = <.001$ ).

### Feeling Understood

Concerning **H1**, motivational frame matching led to significantly greater feelings of being understood in both the cooperative (matching:  $M = 5.61$ ,  $SD = 1.23$ ; nonmatching:  $M = 4.90$ ,  $SD = 1.44$ ;  $\beta = .084$ ,  $t = 4.18$ ,  $p < .001$ ) and competitive conditions (matching:  $M = 2.13$ ,  $SD = 1.15$ ; nonmatching:  $M = 1.55$ ,  $SD = .84$ ;  $\beta = .10$ ,  $t = 5.11$ ,  $p < .001$ ).

Furthermore, in terms of **H2**, participants felt more understood by the interviewer in the cooperative ( $M = 5.25$ ,  $SD = 1.38$ ) versus the competitive interaction ( $M = 1.84$ ,  $SD = 1.05$ ;  $\beta = .48$ ,  $t = 33.91$ ,  $p < .001$ ).

### Identification with Interviewer

In connection with **H1**, motivational frame matching led to significantly higher tendency to identify with the interviewer in both the cooperative (matching:  $M = 5.16$ ,  $SD = 1.08$ ; nonmatching:  $M = 4.64$ ,  $SD = 1.09$ ;  $\beta = .061$ ,  $t = 3.59$ ,  $p < .001$ ) and competitive conditions (matching:  $M = 2.03$ ,  $SD = 1.03$ ; nonmatching:  $M = 1.37$ ,  $SD = .64$ ;  $\beta = .12$ ,  $t = 7.17$ ,  $p < .001$ ). Furthermore, with regard to **H2**, participants identified more with the interviewer in the cooperative ( $M = 4.90$ ,  $SD = 1.12$ ) compared with the competitive interaction ( $M = 1.70$ ,  $SD = .92$ ;  $\beta = .47$ ,  $t = 39.18$ ,  $p < .001$ ).

### Interviewer Trust

Regarding **H1**, motivational frame matching led to significantly higher willingness to trust the interviewer in the cooperative condition (matching:  $M = 4.65$ ,  $SD = 1.40$ ; nonmatching:  $M = 4.24$ ,  $SD = 1.33$ ;  $\beta = .20$ ,  $t = 2.71$ ,  $p = .0069$ ), but not in the competitive condition (matching:  $M = 2.44$ ,  $SD = 1.14$ ; nonmatching:  $M = 2.19$ ,  $SD = 1.07$ ;  $\beta = .12$ ,  $t = 1.64$ ,  $p = .10$ ). Furthermore, in terms of **H2**, participants trusted the interviewer more in the cooperative ( $M = 4.44$ ,  $SD = 1.38$ ) compared to the competitive interaction ( $M = 2.32$ ,  $SD = 1.11$ ;  $\beta = 1.065$ ,  $t = 20.019$ ,  $p < .001$ ).

## Participant Reciprocal Matching

To explore whether participants reciprocated matching more in the matching vs the nonmatching condition (**H4**), a mixed effects logistic regression model was carried out. Analyses were carried out with the *lme4* package in R (Bates, Mächler, Bolker, & Walker, 2015). In line with Brown (2021), the model was built up step-by-step, starting with a null model featuring the fixed effects of frame and orientation, then introducing a random intercept for interview rounds, and later adding in random slopes for motivational frames and orientations across interview rounds. As expected, the model with interview round included as a random intercept fitted the data significantly better than the null model ( $\chi^2 = 60.54, df = 2, p < .001$ ). Introducing random slopes for motivational frames within interview rounds ( $\chi^2 = 141.21, df = 2, p < .001$ ), and random slopes for orientations across interview rounds ( $\chi^2 = 78.37, df = 3, p < .001$ ), both significantly contributed to improve the fit of the model. To decompose this model, each interview round was analysed separately with respect to the motivational frames and orientations. Table 2 provides summary statistics for these analyses.

**Table 2**

*Means (SD) for frame (matching vs. nonmatching) and orientation (cooperative vs. competitive) across all interview rounds*

Interview Rounds	Cooperative		Competitive	
	Matching	Nonmatching	Matching	Nonmatching
Round 1	.63 (.49)	.65 (.48)	.31 (.46)	.41 (.49)
Round 2	<b>.87 (.33)</b>	<b>.74 (.44)**</b>	<b>.68 (.47)</b>	<b>.20 (.39)***</b>
Round 3	<b>.87 (.33)</b>	<b>.62 (.49)***</b>	<b>.77 (.42)</b>	<b>.17 (.37)***</b>
Round 4	<b>.93 (.26)</b>	<b>.66 (.48)***</b>	<b>.93 (.26)</b>	<b>.09 (.28)***</b>
Round 5	<b>.67 (.47)</b>	<b>.39 (.49)***</b>	<b>.83 (.38)</b>	<b>.39 (.49)***</b>

*Note.* Pairs in bold indicate a statistically significant difference.  
 \*\* $p < .01$ , \*\*\* $p < .001$

For the first interview round, there was no significant difference in participants' reciprocal matching when they interacted with a matching or nonmatching interviewer in

neither the cooperative ( $\beta = .11, z.ratio = .43, p = .67^{14}$ ) nor the competitive conditions ( $\beta = .44, z.ratio = 1.71, p = .10$ ).

However, from the second time point, participants demonstrated higher reciprocal matching when they interacted with a matching interviewer compared to a nonmatching interviewer, both in the cooperative ( $\beta = -.88, z.ratio = -2.70, p = .0084$ ) and competitive conditions ( $\beta = -2.16, z.ratio = -7.67, p < .001$ ). This was also true for the third interview round: cooperative ( $\beta = -1.46, z.ratio = -4.65, p < .001$ ) and competitive interaction ( $\beta = -2.84, z.ratio = -9.27, p < .001$ ), the fourth interview round: cooperative ( $\beta = -1.85, z.ratio = -4.94, p < .001$ ) and competitive interaction ( $\beta = -4.89, z.ratio = -10.97, p < .001$ ), as well as the fifth interview round: cooperative ( $\beta = -1.14, z.ratio = -4.50, p < .001$ ) and competitive interaction ( $\beta = -2.043, z.ratio = -7.10, p < .001$ ). These results provide support for **H4** (Interviewer matching will lead to more reciprocal participant matching).

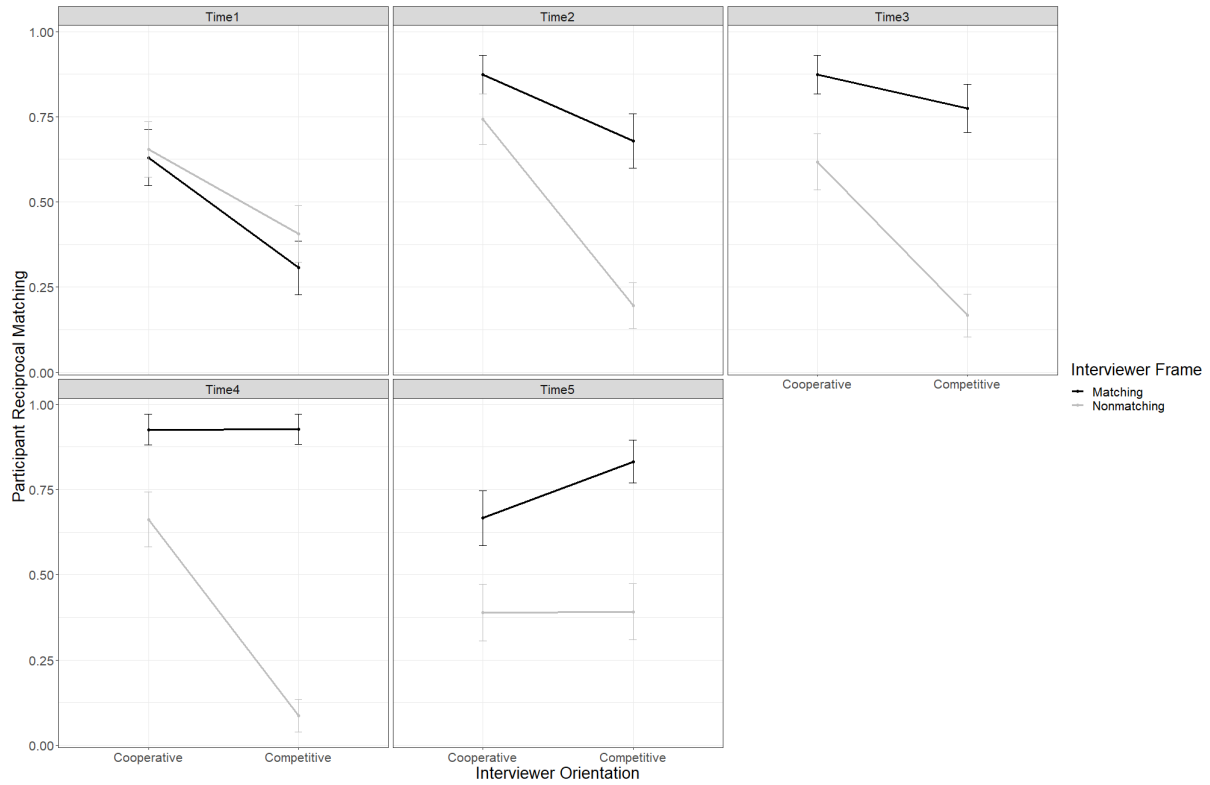
Figure 1 presents the same effects of matching over time visually, to aid interpretation. As can be seen from Figure 1, the difference between a matching and nonmatching interviewer for participant reciprocal matching was larger in the competitive than in the cooperative interaction. This was confirmed by examining how the level of participant reciprocal matching varied across the matching and nonmatching conditions (**H4**). As observed in Figure 2, for both the cooperative ( $\chi^2 = 33.73, df = 5, p < .001$ ) and competitive interactions ( $\chi^2 = 149.25, df = 5, p < .001$ ), there was a positive relationship between participants' proportion of reciprocal matching when they interacted with a matching interviewer (blue circles indicate positive residuals while red circles indicate negative residuals), but a negative relationship when they interacted with a nonmatching interviewer, supporting **H4**.

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<sup>14</sup> The Benjamini-Hochberg correction was applied throughout these analyses.

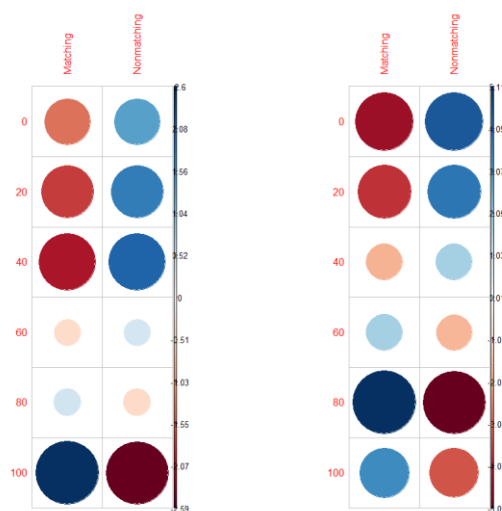
**Figure 1**

*Proportion of participant reciprocal matching at each interview round across motivational frames and orientations*



## Figure 2

*Pearson residuals from the chi-square test of independence for proportion of participant reciprocal matching across the matching and nonmatching conditions for the cooperative (left) and competitive (right) interactions. Red circles indicate less observations than would be expected by chance, and blue circles indicate more observations than would be expected by chance*



## Discussion Experiment 1

Experiment 1 manipulated motivational frame matching and the orientation taken towards the interaction to explore how these influenced interaction outcomes and reciprocal matching. Across all the dependent measures, interacting with a matching interviewer led to more positive interaction outcomes. This was true for both a cooperative and competitive interaction, although the trend was larger when the interaction was competitive. This goes somewhat contrary to recent findings that found an interaction between motivational frame matching and the orientation taken towards the interaction, with competitive and matching interactions generally being perceived less positively (Sjöberg et al., 2023b). However,

looking more closely at the results from that previous study, it appears that competitive matching based on the relational and identity motivational frames often was perceived more negatively than the instrumental frame (see Appendix A). This goes in line with observations from negotiations where attacking a counterpart's identity or relationship often is detrimental to negotiation success (Ury, 1991). Furthermore, in an investigative interview, participants may have expected the conversation to focus on the facts and information about the case, and when this was not the case, they perceived the interaction more negatively. In the current experiment, within the competitive interaction, most participants chose the instrumental frame, regardless of whether the interviewer matched their motivations or not (see Appendix B). This prevented an accurate comparison between matching and nonmatching of the relational and identity motivational frames (since most participants chose the instrumental frame in the competitive interaction). Experiment 2 aimed to address this.

### **Experiment 2**

To extend the current experiment to other information gathering contexts, the social situation of the second experiment was changed from an investigative interview to a pub conversation between two rival sports supporters. We made this change for four reasons. First, a pub is a social space where people are expected to share both personal and public information (Thurnell-Read, 2021), in contrast to an investigative interview where the main aim of the conversation is the provision of information (Jakobsen et al., 2017). Second, the focus on compliance ought to be lower in a pub conversation than in an investigative interview. This is because an investigative interview has a clear asymmetrical power relationship, with the interviewer having more power and authority than the suspect (Brandon et al., 2019). Third, while the stakes in an investigative interview could be life changing, the stakes in a pub conversation are usually lower. Fourth, in today's policing, soliciting information may happen at different stages of an investigation (not just at the interview stage; Natapoff, 2004), and it is important to develop an understanding for how interpersonal



sensemaking may contribute to information gain and trust in these non-structured situations. Hence, this was the focus of Experiment 2.

## Method

### Participants

In total, 564 participants were recruited via Prolific. After elimination of participants who incorrectly answered the attention check question or dropped out before the completion of the study, 557 participants were left for data analysis. Of these, 221 identified as male, 335 as female, and 1 as other. They were between the ages of 19 to 80 years ( $M = 41.02$ ,  $SD = 13.06$ ). The majority came from UK and Ireland (509 participants), while 17 came from Australia and New Zealand, 16 from North America, 9 from South Africa, 5 from mainland Europe, and 1 from Israel. Most identified as White ( $n = 519$  participants), followed by Black/African/Caribbean/Black British ( $n = 14$ ), Asian/Asian British ( $n = 12$ ), mixed/multiple ethnic groups ( $n = 9$ ), and Other ( $n = 3$ ). The study received ethical approval from Lancaster University (ethics reference number: FST19108).

### Materials

**Pub conversation.** In the current experiment, participants partook in a five-round text-based simulation of a pub conversation between two rival sport supporters. Over five rounds, the rival supporter asked questions to the participant, who, as the supporter of the other team, responded after each conversation round. As in the first experiment, participants could respond in either an instrumental, relational, or identity motivational frame, and depending on the experimental condition, the rival supporter would either match or not match the participant's frame. This continued for five rounds until the conversation terminated. As before, the orientation was manipulated by having half of participants interact with a cooperative, and half interact with a competitive rival supporter.

*Reliability check of the pub conversational scripts.* To ensure that all the pub conversation questions and responses fell reliably into their respective motivational frame

and orientation, two people unfamiliar with the study hypotheses (but familiar with the cylinder model) rated each conversational script as belonging to one of the instrumental, relational, or identity motivational frames, as well as the orientation of the interaction (cooperative or competitive). Their agreement was 100% with the intended frame and orientation, suggesting the conversational scripts adhered well to their respective frame and orientation.

**Post-conversation measures.** After the pub conversation, participants answered questions about whether they would be willing to cooperate as well as provide information to the rival supporter (these were single item measures and so did not have a Cronbach's  $\alpha$  score), whether they felt understood by the rival supporter (Cronbach's  $\alpha = .97$ ), whether they felt respected and would be willing to identify with the rival supporter (Cronbach's  $\alpha = .91$ ), and finally, whether they had the intention of trusting the rival supporter (Cronbach's  $\alpha = .93$ ). These were the same post-conversation measures as in the first experiment and will therefore not be elaborated on further.

*Demographic questions.* At the last stage of the experiment, participants were asked to provide their gender, age, ethnicity, and country of residence.

## **Procedure**

Before starting the study, participants were provided with background information about the study and asked to provide informed consent. Later, participants were informed about the pub conversation, and told that they would interact with a rival supporter by responding via a set of predefined responses. Once they had responded, they would see the rival supporter's response and would then respond again. This repeated over five rounds until the conversation ended.

As in the first experiment, the rival supporter would constantly either match (in an instrumental, relational, or identity frame) or randomly not match the motivational frame of

the participant. The rival supporter and participant's answers and questions were either both cooperative or competitive, depending on the experimental condition. After the conversation, participants answered the post-conversation questions, were debriefed about the hypotheses of the study, and compensated for their participation.

### Results

Before statistical analyses, extreme outliers ( $Q3/Q1 \pm 3*IQR$ ) were altered to their next highest/lowest score in line with Tabachnick and Fidell (2007). Analysing the results without these outliers did not change the direction or significance of the subsequent statistical analyses.

To investigate if matching of motivational frames (**H1**) and a cooperative rather than a competitive interaction (**H2**) led to higher willingness to cooperate with the rival supporter, and whether there was an interaction effect between the two (**H3**), analysis of variance tests were carried out<sup>15</sup>. As shown in Table 3, there were significant main effects of frame and orientation, as well as significant interaction effects for all the dependent variables except willingness to provide information, hence largely supporting the three hypotheses. However, closer inspection of the significant interaction effects (**H3**), showed that, rather than a crossover interaction (matching leading to more positive interaction outcomes in the cooperative condition, but less positive interaction outcomes in the competitive condition), the effect was a proportional interaction in which the pattern of results was the same across the experimental conditions (matching in general being associated (although not always significantly) with more positive interaction outcomes in both the cooperative and competitive conditions).

### Willingness to Cooperate and Provide Information

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<sup>15</sup> As these tests were pre-registered and each related to an individual hypothesis (i.e., individual testing), they were not subjected to alpha-adjustments as advised by Rubin (2021).

These tests confirmed (1) that motivational frame matching led to significantly higher willingness to cooperate with the interviewer (**H1**) in the competitive (matching:  $M = 3.59$ ,  $SD = 1.58$ ; nonmatching:  $M = 2.55$ ,  $SD = 1.48$ ;  $\beta = .52$ ,  $t = 6.41$ ,  $p < .001$ ) but not in the cooperative conditions (matching:  $M = 6.08$ ,  $SD = 1.00$ ; nonmatching:  $M = 5.79$ ,  $SD = 1.24$ ;  $\beta = .14$ ,  $t = 1.79$ ,  $p = .0749$ ), (2) that motivational frame matching led to significantly higher willingness to provide information to the interviewer in the competitive (matching:  $M = 5.09$ ,  $SD = 1.50$ ; nonmatching:  $M = 4.53$ ,  $SD = 1.75$ ;  $\beta = .28$ ,  $t = 3.22$ ,  $p = 0.0014$ ) but not in the cooperative conditions (matching:  $M = 5.66$ ,  $SD = 1.31$ ; nonmatching:  $M = 5.53$ ,  $SD = 1.22$ ;  $\beta = .065$ ,  $t = .742$ ,  $p = .46$ ). Furthermore, with reference to **H2**, participants were more willing to cooperate with the interviewer when the interaction was cooperative ( $M = 5.94$ ,  $SD = 1.30$ ) rather than competitive ( $M = 3.07$ ,  $SD = 1.65$ ;  $\beta = 1.43$ ,  $t = 25.15$ ,  $p < .001$ ). Finally, participants were also more willing to provide information to the interviewer when the interaction was cooperative ( $M = 5.60$ ,  $SD = 1.26$ ) rather than competitive ( $M = 4.81$ ,  $SD = 1.65$ ;  $\beta = .39$ ,  $t = 6.36$ ,  $p < .001$ ).

**Table 3**

*F*-statistic (with  $\eta_p^2$  effect sizes) for each analysis of variance test for the dependent variables

Dependent variable	Frame	Orientation	Frame X Orientation
W. to cooperate	41.085 (.06)***	239.95 (.53)***	10.66 (.02)**
W. to provide information	10.34 (.01)**	10.66 (.07)**	3.051 (.005)
Feeling understood	71.82 (.12)***	561.72 (.71)***	11.22 (.02)***
Tendency to identify	110.83 (.12)***	541.50 (.73)***	36.14 (.06)***
Trust intention	47.97 (.06)***	103.81 (.37)***	14.33 (.03)***

\*\* $< .01$ , \*\*\* $< .001$

### Feeling Understood

In terms of **H1**, motivational frame matching led to significantly greater feelings of being understood in both the cooperative (matching:  $M = 6.06$ ,  $SD = .889$ ; nonmatching:  $M = 5.56$ ,  $SD = 1.24$ ;  $\beta = .25$ ,  $t = 3.73$ ,  $p < .001$ ) and competitive conditions (matching:  $M =$

2.88,  $SD = 1.36$ ; nonmatching:  $M = 1.74$ ,  $SD = .91$ ;  $\beta = .57$ ,  $t = 8.48$ ,  $p < .001$ ).

Furthermore, in connection with **H2**, participants felt more understood by the rival supporter in the cooperative ( $M = 5.81$ ,  $SD = 1.11$ ) versus the competitive interaction ( $M = 2.31$ ,  $SD = 1.29$ ;  $\beta = 1.75$ ,  $t = 36.84$ ,  $p < .001$ ).

### **Identification with Rival Supporter**

Regarding **H1**, motivational frame matching led to significantly higher tendency to identify with the rival supporter in both the cooperative (matching:  $M = 5.66$ ,  $SD = .87$ ; nonmatching:  $M = 5.42$ ,  $SD = .89$ ;  $\beta = .12$ ,  $t = 2.015$ ,  $p = .044$ ) and competitive conditions (matching:  $M = 2.95$ ,  $SD = 1.24$ ; nonmatching:  $M = 1.72$ ,  $SD = .84$ ;  $\beta = .61$ ,  $t = 10.53$ ,  $p < .001$ ). Furthermore, in terms of **H2**, participants identified more with the rival supporter in the cooperative ( $M = 5.54$ ,  $SD = .89$ ) compared with the competitive interaction ( $M = 2.34$ ,  $SD = 1.22$ ;  $\beta = 1.60$ ,  $t = 38.89$ ,  $p < .001$ ).

### **Trusting the Rival Supporter**

Finally, with regard to **H1**, motivational frame matching led to significantly higher willingness to trust the rival supporter in the competitive condition (matching:  $M = 3.64$ ,  $SD = 1.17$ ; nonmatching:  $M = 2.74$ ,  $SD = 1.14$ ;  $\beta = .45$ ,  $t = 6.93$ ,  $p < .001$ ), but not in the cooperative condition (matching:  $M = 4.95$ ,  $SD = .96$ ; nonmatching:  $M = 4.75$ ,  $SD = 1.03$ ;  $\beta = .10$ ,  $t = 1.57$ ,  $p = .12$ ). Furthermore, concerning **H2**, participants trusted the rival supporter more in the cooperative ( $M = 4.85$ ,  $SD = 1.00$ ) compared to the competitive interaction ( $M = 3.19$ ,  $SD = 1.23$ ;  $\beta = .83$ ,  $t = 18.18$ ,  $p < .001$ ).

### **Participant Reciprocal Matching**

In order to explore whether participants reciprocated matching more in the matching vs the nonmatching conditions (**H4**), a mixed effects logistic regression model was carried out (analyses were carried out with the *lme4* package in R; Bates, Mächler, Bolker, & Walker, 2015). In line with Brown (2021), the model was built up step-by-step, starting with

a null model featuring the fixed effects of frame and orientation, then introducing a random intercept for conversation rounds, and later adding in random slopes for motivational frames and orientations across conversation rounds. As expected, the model with conversation round included as a random intercept fitted the data significantly better than the null model ( $\chi^2 = 117.41, df = 2, p < .001$ ). Introducing random slopes for motivational frames within conversation rounds ( $\chi^2 = 153.12, df = 2, p < .001$ ), and random slopes for orientations across conversation rounds ( $\chi^2 = 68.023, df = 3, p < .001$ ), both significantly contributed to improve the fit of the model.

**Table 4**

*Means (SD) for frame (matching vs. nonmatching) and orientation (cooperative vs. competitive) across all interview rounds*

Interview Rounds	Cooperative		Competitive	
	Matching	Nonmatching	Matching	Nonmatching
Round 1	.48 (.50)	.40 (.49)	.39 (.49)	.53 (.50)
Round 2	<b>.70 (.46)</b>	<b>.45 (.50)***</b>	<b>.76 (.43)</b>	<b>.25 (.43)***</b>
Round 3	<b>.89 (.31)</b>	<b>.38 (.49)***</b>	<b>.92 (.27)</b>	<b>.32 (.47)***</b>
Round 4	<b>.95 (.22)</b>	<b>.76 (.43)***</b>	<b>.89 (.31)</b>	<b>.30 (.46)***</b>
Round 5	.39 (.49)	.49 (.50)	<b>.85 (.36)</b>	<b>.55 (.50)***</b>

Note. Pairs in bold indicate a statistically significant difference.

\*\*\* $p < .001$

To look at whether participants matched the interviewer at each stage of the interview, and whether reciprocal matching was different for cooperative or competitive interactions, each interview round was analysed separately with respect to the motivational frames and orientations. A summary of these analyses is presented in Table 4. For the first conversation round, there was no significant difference in participants' reciprocal matching when they interacted with a matching or nonmatching rival supporter in neither the cooperative ( $\beta = -.32, z.ratio = -1.33, p = .28^{16}$ ) nor the competitive conditions ( $\beta = .54, z.ratio = 2.21, p = .092$ ). However, from the second time point, participants demonstrated higher

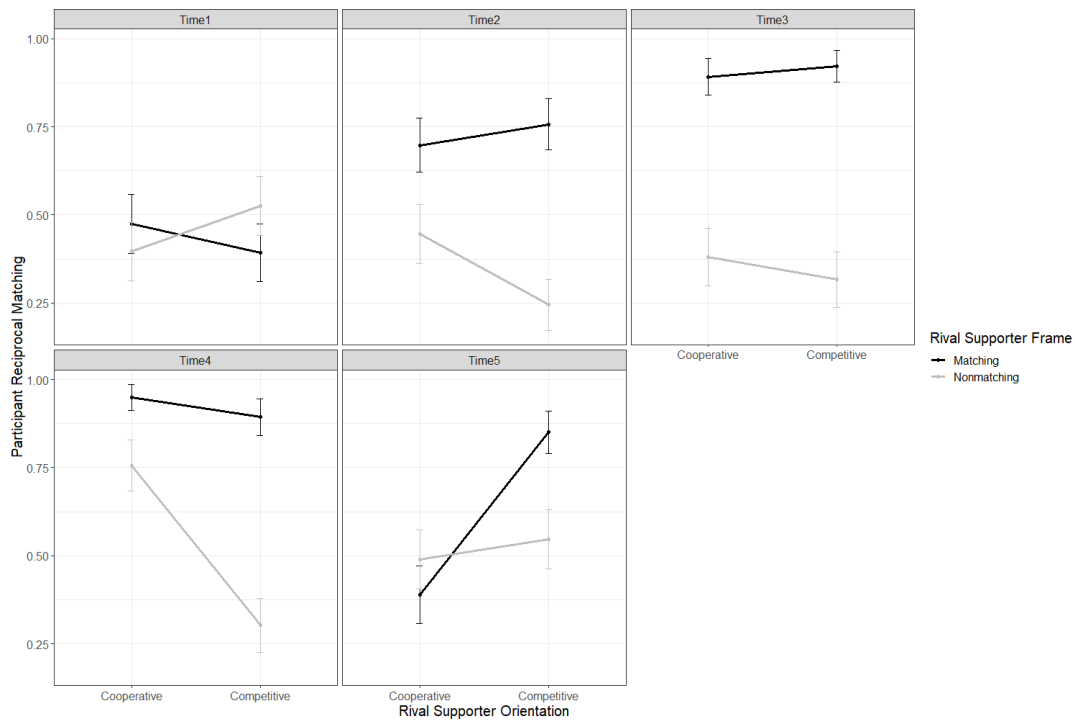
<sup>16</sup> The Benjamini-Hochberg correction was applied throughout these analyses.

reciprocal matching when they interacted with a matching rival supporter compared to a nonmatching rival supporter, both in the cooperative ( $\beta = -1.054$ ,  $z.ratio = -4.19$ ,  $p < .001$ ) and competitive conditions ( $\beta = -2.27$ ,  $z.ratio = -8.12$ ,  $p < .001$ ). This was the same for the third conversation round for both the cooperative ( $\beta = -2.60$ ,  $z.ratio = -8.004$ ,  $p < .001$ ) and competitive interactions ( $\beta = -3.23$ ,  $z.ratio = -8.90$ ,  $p < .001$ ), as well as for the fourth conversation round, both within a cooperative ( $\beta = -1.81$ ,  $z.ratio = -4.16$ ,  $p < .001$ ) and competitive interaction ( $\beta = -2.96$ ,  $z.ratio = -8.97$ ,  $p < .001$ ). Finally, for the last conversation round, participants were more likely to reciprocate towards a matching compared to a nonmatching interviewer, but only in the competitive condition ( $\beta = -1.55$ ,  $z.ratio = -5.31$ ,  $p < .001$ ) and not in the cooperative condition ( $\beta = .41$ ,  $z.ratio = 1.69$ ,  $p = .11$ ). These results generally provide support for **H4** (Interviewer matching will lead to more reciprocal participant matching).

Figure 3 presents the same effects of matching over time visually, to facilitate interpretation. As observed from Figure 3, the difference between a matching and nonmatching rival supporter for participant reciprocal matching was larger in the competitive than in the cooperative interaction. This was further confirmed by carrying out a chi-square test of independence. As can be seen in Figure 4, for both the cooperative ( $\chi^2 = 53.52$ ,  $df = 5$ ,  $p < .001$ ) and competitive interactions ( $\chi^2 = 126.44$ ,  $df = 5$ ,  $p < .001$ ), there was a positive relationship between participants' proportion of reciprocal matching when interacting with a matching interviewer (blue circles indicate positive residuals whereas red circles indicate negative residuals), but a negative relationship when they interacted with a nonmatching interviewer, providing support for **H4**.

**Figure 3**

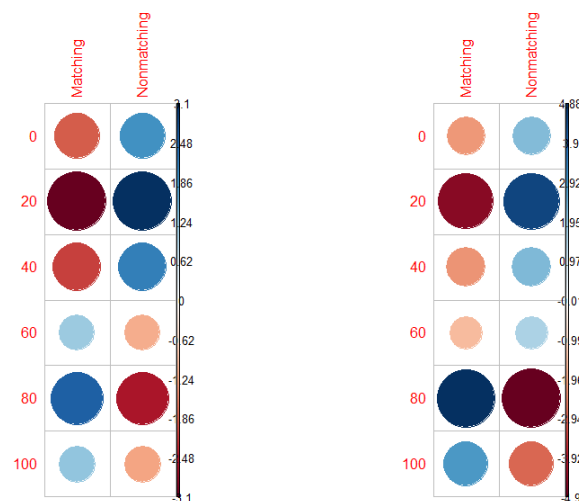
*Proportion of participant reciprocal matching at each conversation round across motivational frames and orientations*





## Figure 4

*Pearson residuals from the chi-square test of independence for proportion of participant reciprocal matching across the matching and nonmatching conditions for the cooperative (left) and competitive (right) interactions. Red circles indicate less observations than would be expected by chance, and blue circles indicate more observations than would be expected by chance*



## Discussion Experiment 2

While Experiment 1 investigated the effect of motivational frame matching and the orientation taken towards the interaction within an investigative interview, Experiment 2 expanded this research by manipulating the same variables during a pub conversation between two rival sports supporters. Consistent with Experiment 1, within a competitive interaction, interacting with a matching rival supporter led to higher willingness to cooperate, provide information, feeling understood, identify and trust the rival supporter. Within a cooperative interaction, a matching rival supporter led to greater feelings of being understood and identify with the rival supporter, but not higher willingness to cooperate, provide information, or trust them (although they were all in the predicted direction). Again, the results support Sjöberg et al. (2023b) for the cooperative interaction, but somewhat contrasts

with the results for the competitive interactions, where in that study, matching of motivational frames led to less positive interaction outcomes.

### **General Discussion**

Across two experiments, participants took part in an interaction with an investigative interviewer or rival sports supporter, who either matched or did not match their motivational frame, in either a cooperative or competitive way. It was shown that motivational frame matching generally led to more positive interaction outcomes in both contexts, particularly when the interaction was competitive. This is the first known study that has demonstrated a causal link between motivational frame matching and positive interaction outcomes, using active responses from participants. The findings go in line with a growing evidence base demonstrating the positive effects of motivational frame matching on interaction outcomes (Ormerod et al., 2008; Sjöberg et al., 2022; Taylor, 2014; Wells & Brandon, 2019). However, as mentioned above, while Sjöberg et al. (2023b) found positive effects of matching within a cooperative interaction, they found negative effects of matching within a competitive interaction. One potential explanation behind these different results could be that, in the previous study by Sjöberg et al. (2023b), participants could not actively respond during the interaction. Instead, they were merely asked to imagine being the suspect and how they would experience the interaction from the suspect's perspective. This meant that the experimenters could control whether the entire interaction was motivationally fully matched or fully nonmatched. On the other hand, in the current study, participants could freely select how to respond to their interaction partners, which meant that it was relatively rare for an interaction to be fully matched or fully nonmatched.

Furthermore, follow-up analyses in Sjöberg et al. (2023b) found that the negative effect of matching in the competitive interaction was largely driven by relational and identity frame matchings. They argue this suggests that participants perceived competitive matching on relational and identity frames as more detrimental than competitive instrumental frame

matching. This is echoed in observations from tough negotiations where it was often better to argue fervently about the issues at hand than to attack a counterpart's identity (Ury, 1991). Interestingly, in this study, most participants chose the instrumental frame, suggesting they were gravitating towards factual responses over more relational or identity responses. This, in turn, would have meant that in the matching condition, their instrumental frame responses would have been matched by instrumental frame responses by the interviewer. On the other hand, in the nonmatching condition, participants' instrumental frame responses would have been reciprocated with either relational or identity frame responses, both of which in previous experiments were associated with negative effects within a competitive interaction. This could help explain some of the differences in results between the two studies.

While motivational frame matching led to both more positive interaction outcomes and reciprocal matching, this effect tended to be larger within a competitive than a cooperative interaction. One reason for this could be that, within a cooperative interaction, the positive effects of matching was overshadowed by the overall cooperativeness of the interaction. On the other hand, when the interaction was competitive, matching might have had a greater saliency since the overall interaction was more hostile, which might have made participants more sensitive to signs of frame matching in their interaction partner. This is consistent with arguments that successful interpersonal sensemaking is most important during intense interaction episodes (Wells & Brandon, 2019). For example, Wells and Brandon argued that, within a competitive interaction, motivational frame matching is vital to reduce the intensity of the interaction and get entrainment with the suspect. It is not until the suspect and interviewer are on the same page that the interviewer may begin to shift motivational frames and expect the suspect to follow. In other words, motivational frame matching might be especially important when the interaction is confrontational or competitive in nature.

As expected, in both experiments, interacting with a cooperative interaction partner consistently led to more positive interaction outcomes across all measured variables. This supports the growing evidence for the use of an information gathering over an accusatorial approach to elicit accurate information (Alison & Alison, 2017; Gabbert et al., 2021; Meissner et al., 2015; Russano et al., 2019). Furthermore, the size of the effect of orientation on positive outcomes was consistently larger than the effect sizes of motivational frame matching, suggesting that maintaining a cooperative orientation might be more important than the matching of motivations. However, since the interactions in the current experiments were balanced on orientation, it is unclear how this would change if orientation was allowed to vary across conditions.

As expected, it was found that participants displayed more reciprocal frame matching when they interacted with a matching rather than a nonmatching interaction partner. This supports previous research showing that alignment in language style was associated with more information gain in investigative interviews (Richardson et al., 2014). A possible explanation for this observation could have been that reciprocal matching from the interviewer/rival supporter might have constituted a subtle form of acknowledgement of the participants (Aafjes-van Doorn & Muller-Frommeyer, 2020; Niederhoffer & Pennebaker, 2002), who, in turn, may have responded with increased reciprocal matching as a result. This links to the notion that people have schemas for how to act towards each other during interpersonal interactions (Dalton et al., 2010), including when to follow or lead during an interaction. This is the first study to demonstrate that successful interpersonal sensemaking, through the use of motivational frames, may facilitate increased reciprocal sensemaking from participants in investigative interactions.

### **Limitations**

There are several limitations with the current research that warrant attention. First, there could have been a possibility that there was some conceptual overlap between the instrumental, relational, and identity frame conversational scripts. If so, that would have meant that matching based on them would likely not have been a fully accurate measure of interpersonal sensemaking. While this is a limitation with the current research, it is likely that this would have attenuated rather than strengthened the positive effects of motivational frame matching. This is because in such a situation, the matching and nonmatching conditions would have been more similar to each other, and hence, it would have been harder to distinguish successful from unsuccessful interpersonal sensemaking. Moreover, a reliability check with two independent raters confirmed that the conversational scripts fell reliably into their respective motivational frame, indicating they were a good representation of the three frames.

Second, since the interaction was relatively short, this could have meant that participants did not have an adequate time to develop a sense of whether successful sensemaking and motivational frame matching did take place or not. Indeed, while the temporal aspect has been brought up as an important consideration in forensic research (Taylor et al., 2008), it is unclear exactly how long it takes to build successful interpersonal sensemaking (Taylor, 2013; 2014, Wells & Brandon, 2019). Still, the short nature of the interaction would likely have made the positive effects of motivational frame matching weaker rather than stronger.

Finally, since both of the current experiments were conducted online, it is impossible to ensure that participants were not distracted or inattentive during certain parts of their participation. Indeed, some researchers have been critical of using online participants for this very reason (Fleischer et al., 2015), while others have argued for the beneficial effects of using online samples, including reaching more diverse participant samples (Goodman et al.,

2013). To minimise these potential limitations, attention checks were included to ensure that participants were paying attention during the course of the experiment and participants who failed to fully complete the experiment were excluded from data analysis.

### **Future Research**

While participants could choose their motivational frame in each round of the interaction, they could not choose between a cooperative or competitive orientation. This is, clearly, an unnatural constraint. Thus, an interesting avenue for future research would be to let participants choose, not only motivational frame, but also orientation. This would enable analyses regarding matching of both motivational frames and orientations simultaneously.

Another interesting future research stream would be to look at differences between cultures in how matching of certain motivations leads to more cooperation and reciprocal matching. For example, it could be hypothesized that individuals from certain cultures are more sensitive to challenges of their reputation and honour (i.e., identity motivations; Giebels & Taylor, 2009; Taylor, 2002), suggesting that matching of those motivations might backfire with certain populations. A final potential avenue for future research would be to look at interpersonal sensemaking in other contexts (e.g., witness interviews) to see if motivational frame matching leads to positive interaction outcomes, also in those situations.

### **Conclusions**

Over two experiments, participants interacted with either an investigative interviewer or rival sports supporter over five rounds, and later answered questions relating to the perceptions of their interaction partner. Within a competitive interaction, motivational frame matching consistently led to more positive interaction outcomes for all the measured variables. Within a cooperative interaction, motivational frame matching also led to more positive interaction outcomes for all measured variables (in the investigative interview) and greater feelings of being understood and a higher willingness to identify with the rival supporter (in the pub conversation). In addition, it was found that participants displayed more reciprocal matching

when interacting with a matching versus a nonmatching interaction partner, and that this tendency was stronger for competitive interactions. In sum, the results provide support for a causal link between motivational frame matching and positive interaction outcomes as well as reciprocal matching behaviour.

## Chapter 6

While Chapters 3-5 all featured experimental studies where motivational frame matching was actively manipulated by the authors, Chapter 6 contained an archival study based on authentic military investigative interview transcripts. The aim of this chapter was first, to explore whether a similar cylinder structure of communication behaviours as found in Taylor (2002) within crisis negotiations, would also be observed in the current sample of military investigative interviews, and second, to see whether matching of motivational frames from this cylinder model was associated with more confession- and post-training interviews. The current archival study was conducted throughout the PhD studies (the data coding took place between August 2020 and August 2021, while the statistical analyses took place between November 2021 and January 2023).



A cylinder model of communication behaviours in military investigative interviews:

Motivational frame matching and interview outcomes

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### **Abstract**

Two set of studies aimed to explore (i) the structure of communication behaviours in a sample of military investigative interviews ( $N = 24$ ) to establish their underlying motivational frame structure, and (ii) the potential benefit of matching of those motivational frames. In the first study, similarly to Taylor (2002), the communication behaviours ( $N = 39,399$ ) largely followed a cylindrical structure, with instrumental, relational, and identity motivational frames being communicated across cooperative, competitive, or avoidance orientations. Looking at the matching of these motivational frames, study 2 found an interaction between confession and the direction of motivational frame matching. Interviews containing a confession contained more motivational frame matching by the suspect of the interviewer's frames (but not vice versa). Interviews where the interviewer had received interview training (relative to interviews where they had not), contained more overall motivational frame matching. These findings suggest that military investigative interviews are, to a certain extent, being shaped at the level of motivational frames and their coordination.

*Keywords:* Cylinder model, motivational frame matching, investigative interviews, interview outcomes, interview training

A cylinder model of communication behaviours in military investigative interviews:

### Motivational frame matching and interview outcomes

Research on investigative interviews has long focused on the way suspects and interviewers communicate with each other (Meissner et al., 2021). While factors such as rapport, reciprocity, and authority have all been associated with cooperation (Matsumoto & Hwang, 2018a; 2018b; 2021), less is known about the construction of dialogue: how turn-by-turn behaviours in interviews form understanding between interviewer and suspect that engenders cooperation. One way to facilitate this understanding is through successful interpersonal sensemaking and matching of motivations (such as motivational frame matching; Taylor, 2013; 2014). Previous research suggests that motivational frame matching is associated with positive resolutions in crisis negotiations (Ormerod et al., 2008). However, less is known about the positive effects of motivational frame matching, such as increased suspect confessions, in investigative interviews. Hence, in the first part of the current article, the structure of communication behaviours within a sample of military investigative interviews was initially investigated, including the underlying motivations and orientations behind each communication behaviour. In the second part of the article, the coordination (i.e., matching) of these motivations and orientations was investigated as well as their relationship to investigative interviewing outcomes.

### **Models of Interpersonal Sensemaking**

While there are several theories of how people make sense of one another in dialogue, such as Interactive Alignment Model (Garrod & Pickering, 2004) or Communication Accommodation Theory, (Giles & Ogay, 2007), only Taylor's (2002) cylinder model ties directly to individual behaviours and the structure of communication. The cylinder model thus provides direct evidence of how speakers use communication at any one point in time; what Taylor describes as their motivations and orientation to dialogue. The cylinder model

suggests that, at any one point in time, suspects tend to frame their interactions based on either instrumental, relational, or identity motivations (Sjöberg et al., 2023a; Taylor, 2002; see Laver & Hutcheson, 1972 for a similar classification). For example, a suspect in an instrumental frame would be providing information or bargaining with the interviewer in order to achieve a certain goal or outcome. On the other hand, when in a relational frame, a suspect might build up the relationship they have with the interviewer through the use of jokes or puns, or conversely, attack or break down their relationship with the interviewer by interrupting or refusing to listen to them. At last, suspects framing their interaction around identity motivations might try to enhance their sense of self through exaggerating their positive features, or by intimidating the interviewer into submission (Taylor, 2013).

Although the three motivations provide information on a suspect's goals and motivations, they do not say anything about their underlying orientation towards the interaction. At its most basic level, the cylinder model distinguishes a person's main orientation towards an interaction as either avoidant, competitive, or cooperative (Taylor, 2002; Sjöberg et al., 2023a). Relatedly, Kübler-Ross (1969) identified denial (similar to the avoidance orientation), anger (similar to the competitive orientation), and acceptance (similar to the cooperative orientation), as predictable responses to crisis events, supporting the universality of the three orientations to interpersonal interactions. When in an avoidant orientation, a suspect might simply deploy a 'no comments' strategy to show the interviewer that they are not interested in engaging in the interaction. In contrast, a suspect in a competitive orientation might be attacking or criticising the interviewer while simultaneously supporting their own sense of self through bragging or boasting. Finally, a cooperative suspect would be willing to problem-solve with the interviewer and provide information which might be used to progress the case. At any one point in time, suspects might frame their motivations around instrumental, relational, or identity concerns, while taking an

avoidant, competitive, or cooperative orientation towards the interaction. This creates nine different combinations of motivations and orientations that form part of the cylinder model of communication behaviours (Taylor, 2002).

The last dimension of the cylinder model concerns the intensity of the communication behaviours (Taylor, 2002). High intensity behaviours include profanity and insults, while low intensity behaviours comprise the provision of information about one's whereabouts during the time of the crime or apologising for one's actions (Sjöberg et al., 2023a). While the intensity dimension is often overlooked, it can play a key role in how an interaction play out. It has been suggested that in order to get a suspect to move around the cylinder model and change motivational frame, it is often necessary to lower the intensity of the interaction (Brandon et al., 2018; Sjöberg et al., 2023a). For example, if a suspect relentlessly demands to see their family, they are unlikely to be willing to share any information until the family need has been addressed and acknowledged.

### **Rationale for Testing the Cylinder Model with Military Investigative Interviews**

The cylinder model has been observed in both actual (Taylor, 2002; Taylor & Donald, 2007) and simulated crisis negotiations (Taylor & Donald, 2004), and police interviews (Arnold, 2021). Here we investigated whether or not a cylinder structure could be observed in a sample of military investigative interviews. While Taylor argued the structure of communication would be universal, there are reasons the cylinder model may not generalise to the military interviewing context. For example, a crisis negotiation often involves significant time pressure, especially at the beginning of an interaction (Voss, 2016). This contrasts with investigative interviews where time is usually not the main constrain. Second, within a crisis negotiation, it is normally relatively unambiguous who the perpetrator is and what crime they have committed (e.g., in order for there to be a hostage negotiation, there has to be a hostage taker). On the other hand, a suspect in a military investigative interview is

supposedly innocent until proven otherwise, and it is therefore impossible to infer guilt on the part of the suspect. Third, people might have different expectations on what will take place in a crisis negotiation and a military investigative interview, which might influence the way people are communicating in these types of situations. In light of these differences, it is valuable to examine whether a similar cylinder structure of communication behaviours that was found in Taylor (2002), and Taylor and Donald (2004) within crisis negotiations, would also be observed in a sample of military investigative interviews. Based on the previous literature, it was hypothesised that,

**H1:** The communication behaviours in the current set of military interviews would roughly follow a cylinder model structure where behaviours fall into regions as outlined in Table 1 (see below), expressed through different levels of intensity.

### **Motivational Matching, Cooperation, and Outcomes**

While interpersonal matching may occur on many different levels, from the linguistic (Niederhoffer & Pennebaker, 2002) to the kinesthetic (Chartrand & Lakin, 2013), matching of communicative framing constitute a relatively underexplored area. Indeed, Taylor (2013) argued that motivational matching and interpersonal sensemaking had largely been a forgotten skill among interviewers and crisis negotiators. Nonetheless, research suggests that motivational frame matching may have positive effects. For example, Ormerod et al., (2008) found that motivational frame matching was associated with peaceful resolutions in crisis negotiations (e.g., the hostages were released without violence). Interestingly, when the negotiator and perpetrator were out of sync with each other (i.e., they were not matching frames), successful negotiators tended to reduce the amount they spoke by 40%, compared to their unsuccessful counterparts, arguably in an attempt to re-attune and subsequently match the perpetrator's motivations. More recently, Sjöberg et al. (2023b) manipulated motivational frame matching experimentally to explore whether matching would causally lead to more

positive interaction outcomes in investigative interviews. As expected, when suspects interacted with an interviewer who consistently matched their motivational frame, they were more willing to cooperate and trust the interviewer. This provides initial evidence that motivational frame matching is not only associated, but also leads to, more positive interaction outcomes (e.g., confessions) in investigative interviews. Assuming similar mechanisms might also influence matching of motivations, it was hypothesised that

**H2:** military investigative interviews where the suspect confessed to the offence would see more overall motivational frame matching compared to interviews without a confession.

Due to the promising research evidence regarding motivational frame matching on interview outcomes, it has been incorporated into the high-value detainee interrogation group's review of the science of investigative interviews (HIG, 2016) and included in actual investigative interviewing training programs (Brandon et al., 2019). Hence, matching of motivations might offer a practical way of building entrainment and common ground with suspects. For instance, Brandon et al. (2019) evaluated an interview training programme within a US military organisation that involved motivational frame matching, as well as other interview techniques such as active listening and rapport tactics, on interview outcomes. Reassuringly, they found that, compared with pre-training interviews, interviewers who had received interview training increased their active listening and perceived rapport with suspects, which led to more cooperation and information gain from suspects. While motivational frame matching was not explicitly measured, it could be postulated that, since motivational matching was part of the interview training, this would also have been improved. Hence, extrapolating from these findings, it was hypothesised that,

**H3:** relative to pre-training interviews, post-training interviews would see more motivational frame matching.

### **Directionality of Motivational Matching**

While the overall level of matching may say something valuable about the structure of the interaction as a whole, it does not capture the direction of this matching (i.e., who is matching who). This directionality of matching might provide an important piece of information about how the interaction is progressing and who is controlling the framing of the interaction. Indeed, research suggests that people tend to accommodate and match their communication styles with people they like or want to be liked by (Giles & Ogay, 2007). For instance, one study found that participants were more likely to imitate an art piece created by an attractive as opposed to an unattractive confederate (van Leeuwen et al., 2009). Furthermore, Shi et al. (2019) found that the more the CFO (chief financial officer) adopted and followed the language style of the CEO (chief executive officer), the higher likelihood that the CFO would become a member of the board and receive a higher salary package. Likewise, Sanchez-Ruiz et al. (2021) looked at the interpersonal communication styles displayed in angel pitches and found that entrepreneurs who increasingly matched the opinions to that of the angel investor were more likely to receive funding.

These findings are consistent with schema theory, which suggests that interaction accommodation (e.g., matching) is driven by social norms about how people should behave in different situations (Dalton et al., 2010). Working from the assumption that such schema-driven communication also should have relevance for verbal matching in investigative interviews, Richardson et al. (2014) found that, for interviews where the suspect confessed to their crime, suspects increasingly adopted the language style of their interviewers. In fact, there was a gradual increase in the extent to which suspects matched their interviewer's language style, but only in confession interviews. Postulating that similar mechanisms might play out based on motivational frame matching, this suggests that the directionality of the matching (i.e., who matches who) may influence the interview outcome. In particular, the



previous research suggests that confessions are likely driven by suspects increasingly matching the language style of their interviewer. On the assumption that motivational frame matching operates similarly, we hypothesised:

**H4:** for confession interviews, there would be more motivational frame matching by the suspect of the interviewer (than vice versa).

### **Outline of the Current Study**

We begin this study by examining the structure of communication behaviours in a set of military investigative interviews, seeking to replicate the cylindrical structure. We then investigated whether there was a difference in motivational frame matching between confession and non-confession interviews, as well as between pre- and post-training interviews. Our focus was on the role and direction of matching between interviewer and suspect.

## **Method**

### **Transcription Interviews**

Data were 24 interviews conducted as part of investigations into offences by military personnel, accused of drug use ( $n = 12$ ), sexual assaults ( $n = 8$ ), extortions ( $n = 1$ ), and other related offences ( $n = 3$ ). Due to the sensitive nature of the interview transcripts, they were transcribed by trained security personnel<sup>17</sup>. Their sensitive nature also meant that information about the suspects or interviewers (including their rank) could not be shared. The interviews ranged in length from 19 minutes to 169 minutes ( $M = 96$ ,  $SD = 43.33$ )<sup>18</sup>, and included 39,399 coded utterances ( $M = 1731.92$ ,  $SD = 600.90$ ). The study received ethical approval from Lancaster University (ethics reference number: FST20065).

### **Procedure**

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<sup>17</sup> The sensitive nature of the interviews meant that they could not be shared on the open science framework.

<sup>18</sup> Some transcripts only reported the length of the interview at the end of the questioning phase (and not at the end of the interview), meaning the full length of some interviews was slightly longer.

**Behavioural Codes.** Initially, a coding dictionary was developed from ten transcripts of interviews not part of the study data. Through a grounded theory approach (Glaser & Strauss, 1967), behavioural categories were identified and iteratively refined until they appeared to adequately fit the diversity of displayed communication behaviours within the interviews. Moreover, some categories were adopted from previous research (e.g., the table of ten influencing behaviours; Beune, Giebels, & Sanders, 2009; and the cylinder model; Taylor, 2002). This approach ensured that the current communication behaviours comprehensively reflected the characteristics of the current interviews. In total, 54 communication behaviours were identified and formed part of the final coding dictionary. The coding dictionary can be found on the open science framework (<https://osf.io/26xg3/>). In order to ensure the coding scheme was reliably applied to the transcripts, two coders unfamiliar with the study hypotheses randomly second-coded thirteen of the twenty-four transcripts (~ 54% of interviews). The agreement across the coders was 74% (Cohen's  $\kappa = .73$ ; range: .67-.82), indicating good to substantial agreement across coders (Beune et al., 2010; Fleiss et al., 2003; McHugh, 2012). Substantial disagreements were addressed and discussed before coding the remaining transcripts.

### **Proximity Coefficient Analysis**

For each interview, the behavioural codes were ordered in a sequence and their co-occurrences examined using proximity coefficients (Taylor, 2006). These coefficients provide a measure of how closely two behaviours occur across an interview. The idea behind this notion is that co-occurring behaviours are serving a similar function within the dialogue compared to those that occur further apart (Beune et al., 2010; Taylor, 2006). That is, they are associated with the speaker's current sensemaking and their ordering reflects the "patterning of actions in time" (Argyle & Kendon, 1972, p. 23; Russell & Trull, 1986). The proximity coefficients can range from 0.00 to 1.00. The former means that two behaviours occur at the

first and last step of the interaction only, and is thus a theoretical minimum that is unlikely to occur. The latter indicates that two behaviours consistently occur right after each other (Taylor, 2006), which is more plausible if certain cues strongly elicit a certain response. The higher a proximity coefficient, the more two communication behaviours co-occur across the interaction.

### **Smallest Space Analysis**

Following Taylor and Donald (2007), we derive a visual representation of the behavioural proximities using smallest space analysis (SSA-I). SSA-I is a non-metric multidimensional scaling technique (Bloombaum, 1970) that represents each variable (a behaviour in our case) as a point in a geometric space. The theory behind this technique states that psychological concepts usually consist of a range of items rather than a set of discrete items, and that classification can be done by partitioning the points within the same geometric space into sub-areas (Shye & Elizur, 1994). SSA-I represents the ranking of proximity coefficients by the distances between the variables in the space. The higher the coefficient, the closer together their representing points appear.

Representing the relative rank order of coefficients by distances in space is difficult to achieve when there are many relationships to show. SSA-I seeks to minimise the disparity between rank order and distances, and reports this through a 'goodness of fit' measure known as the coefficient of alienation. While researchers have disagreed over the critical threshold for such measures, Donald (1994) mentioned .20 as a potential acceptable cut-off value, but higher values are reported, particularly for complex models (e.g., a coefficient of alienation of .22 in Taylor & Donald, 2004). The smaller the coefficient of alienation, the better the representation of the correlations by the SSA plot. Furthermore, the correlations can be plotted in one, two, three, or higher order dimensions to achieve an adequate fit. Importantly,

the dimensions do not represent meaningful categories (e.g., like in factor analysis), but geometrical directions required to locate a point in space.

The hypotheses for the current study were preregistered on the Open Science Framework (<https://osf.io/26xg3/>).

### Results

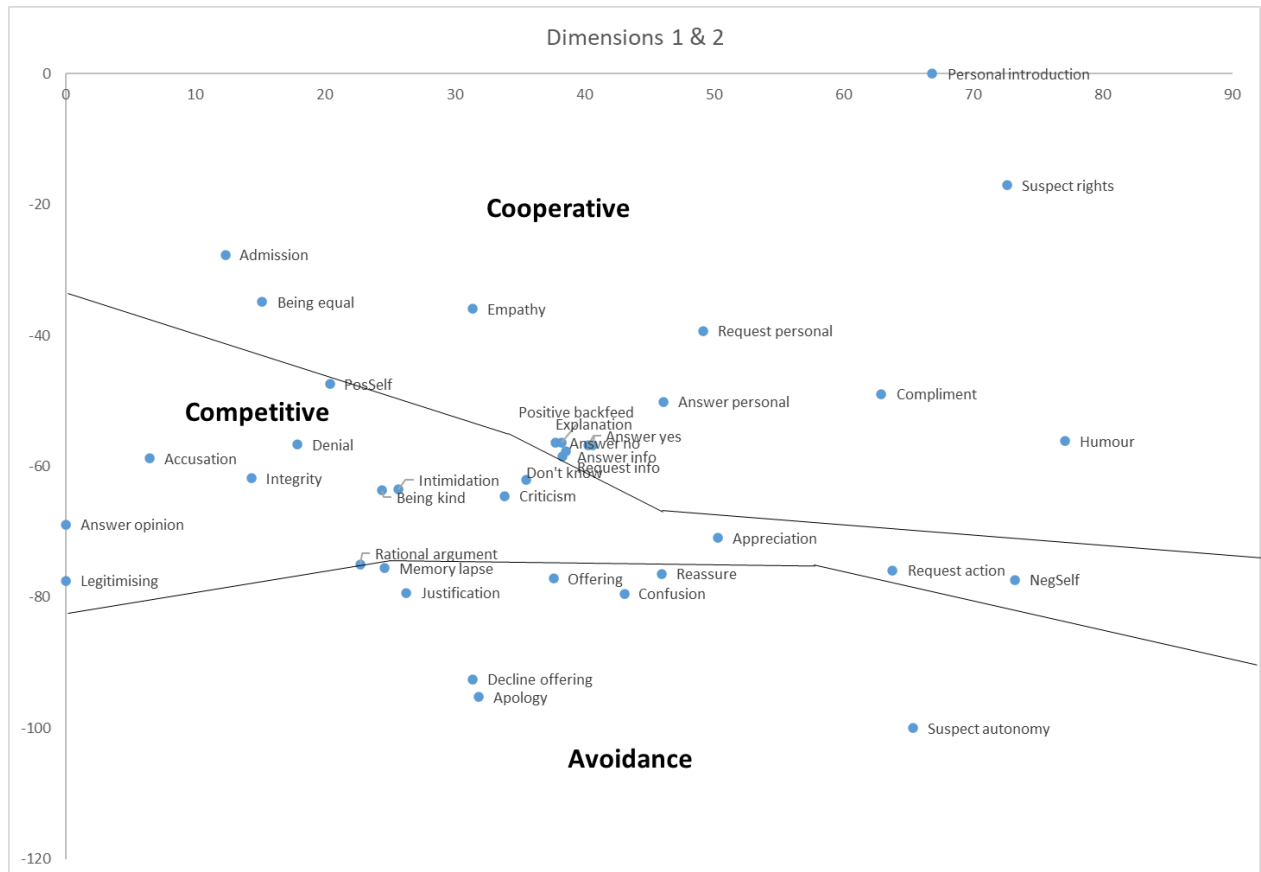
To reduce the possibility of a compromised reliability for rarely occurring codes (Watson et al., 2022), infrequent codes (< 100 observations) were removed before analysis<sup>19</sup>. This left 37 behavioural codes for the final analysis. Figure 1 shows the first and second dimension of the SSA-I analysis. This plotting had a coefficient of alienation of .22 in 18 iterations, which is satisfactory, especially considering the large number of communication behaviours (Taylor, 2002; Taylor & Donald, 2004). As can be seen in Figure 1, it was possible to demarcate different areas of the plot relating to avoidance, competitive, and cooperative orientations. Avoidant behaviours appear at the bottom of the plot and include rejecting or dismissing calls for more information by the interviewer, claiming to not remember what had happened (e.g., ‘Memory lapse’), or being confused about the question or why they were being suspected of committing a certain offense (e.g., ‘Confusion’). Communication behaviours that were more competitive in orientation were located in the middle of the plot. These include ‘Intimidation’ which was often used to threaten the other party to engage (or avoid to engage) in a certain action, and ‘Accusation,’ which often served to attack or bombard the other party with serious allegations of what they had done. Finally, cooperative behaviours are found toward the top of the plot formed a broad category of positive and constructive behaviours. Examples here include providing information to specific questions (e.g., ‘Answer info’), or complimenting (e.g., ‘Compliment’), or joking (e.g., ‘Humour’) with the other person.

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<sup>19</sup> Removal of rarely occurring codes improved the coefficient of alienation from .26 to .22.

**Figure 1**

*Smallest space analysis of communication behaviours across the 24 investigative military interviews with regional interpretations showing avoidance, competitive, and cooperative levels of interaction for the first and second dimensions*



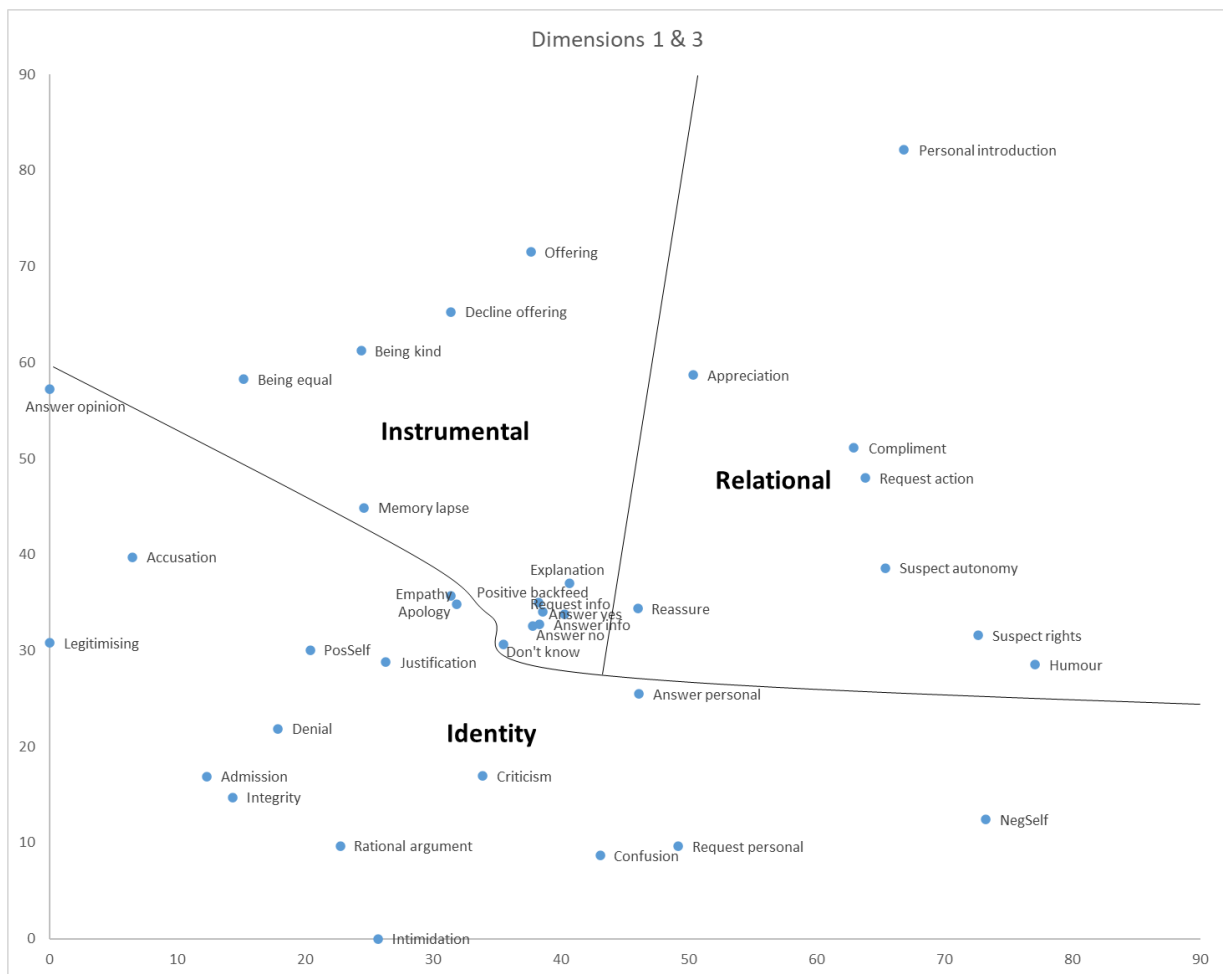
*Note.* Coefficient of alienation = .22 in 18 iterations.

Figure 2 gives an interpretation of the same SSA-I analysis for the motivational frames. As can be seen in Figure 2, there appeared to be separate areas relating to communication behaviours about instrumental, relational, and identity motivations. Communication behaviours that were mainly focused on the transmission of factual information (e.g., ‘Answer info’), or the absence of knowledge about a certain topic (e.g., ‘Don’t know’), were clustered towards the upper left side of the plot. Communication behaviours that centred on the relationship between the suspect and interviewer were located

towards the top right-hand side of the plot. This included behaviours such as ‘Appreciation’, which was often uttered as a way of thanking the other party for something they had said or done, and ‘Compliment’, which was often a way of commending or praising the other person’s actions or personal qualities. Finally, the bottom part of the plot was filled with communication behaviours that mainly related to the identity of the speaker. This could either be through attacking or condemning the other person (e.g., ‘Criticism’), or restoring and re-affirming their sense of self by sympathising or empathising with them (e.g., ‘Empathy’).

**Figure 2**

*Smallest space analysis of communication behaviours across the 24 investigative military interviews with regional interpretations showing instrumental, relational, and identity motivational frames for the first and third dimensions*



*Note.* Coefficient of alienation = .22 in 18 iterations.

A breakdown of the communication behaviours into the three orientations (cooperative, competitive, & avoidance) and motivations (instrumental, relational, & Identity), together with typical examples of each communication behaviour, is presented in Table 1. In terms of the orientations, the largest number of communication behaviours were clustered into the cooperative orientation ( $n = 15$ ), followed by the competitive orientation ( $n = 14$ ), with relatively few communication behaviours in the avoidant orientation ( $n = 8$ ). Regarding the motivational frames, most communication behaviours related to identity motivations ( $n = 17$ ), followed by instrumental motivations ( $n = 12$ ), with fewest communication behaviours dealing with relational motivations ( $n = 8$ ).

While most behaviours seemed to be adequately classified into their respective orientation and motivational frame, some had a somewhat unexpected location. For instance, 'Being kind', and 'Appreciation' both fell into the competitive region on the SSA plot, while they would arguably both be more suitably categorised as cooperative communication behaviours. One reason for this could be that sometime these communication behaviours might have been used as a way to placate aggression rather than cooperating per se. Similarly, while 'Reassure' and 'Apology' both fell into the avoidance region of the SSA plot, it could be suggested that they would be more suitably categorised as cooperative communication behaviours. Again, one explanation for this discrepancy could be that some of the behaviours (e.g., 'Apology') might have been used as a way to politely show disengagement or detachment from the topic, rather than as a genuine display of remorse. Still, some misplacements of codes are to be expected considering that the technique operates from the assumption that the codes are merely a small subsample of a much larger population of theoretically relevant codes (Shye, 2014), and may therefore not be a cause for concern since most of the codes fell into their expected region.

**Table 1**

*Breakdown of the communication behaviours (with typical examples) into orientations and motivational frames according to the SSA-I*

Motivational frame	Cooperative	Competitive	Avoidance
Instrumental	Request info ("So you work out on the flight line?") Answer info ("I'm Back Shop") Explanation ("So we have to read you your Article 31 rights") Answer no ("Oh no, no") Answer yes ("Yeah, yeah") Positive backfeed ("Oh wow") Being equal ("I've been there")	Don't know ("I don't know") Being kind ("We want to make sure that you're going to get well rested")	Memory lapse ("I don't remember any particular names") Offering ("We'll give you water, restroom, or anything like that") Decline offering ("Oh no, I'm good")
Relational	Personal introduction ("I'm agent 'A', by the way") Compliment ("See, you're just like very educational") Suspect rights ("You have the right to military legal counsel free of charge") Humour ("Sounds funny")	Appreciation ("We do appreciate that") Request action ("If you could go ahead and sign right there")	Reassure ("I just want to make sure this is all good") Suspect autonomy ("But, again, it's your choice")
Identity	Admission ("I did it") Empathy ("I know you're tired") Answer personal ("I want to go there") Request personal ("How'd you like living there?")	Answer opinion ("It depends on what the situation is") Accusation ("We can prove that you lied to us") Legitimising ("Like no one throws it away") PosSelf ("We're pretty good at what we do") Integrity ("You're completely honest with it") Denial ("I didn't do it") Criticism ("You just blatantly lied to my face the whole interview") Rational argument ("There you go, that's why you have I-Phone")	Apology ("Sorry for the wait") Justification ("And that's why we asked about the polygraph") Confusion ("I'm just confused")



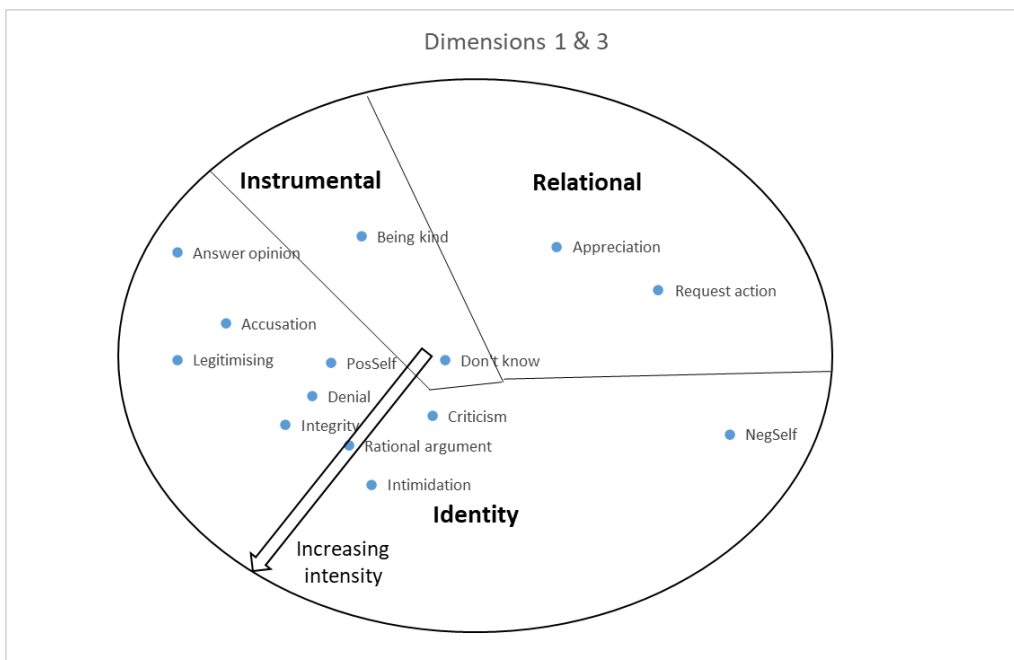
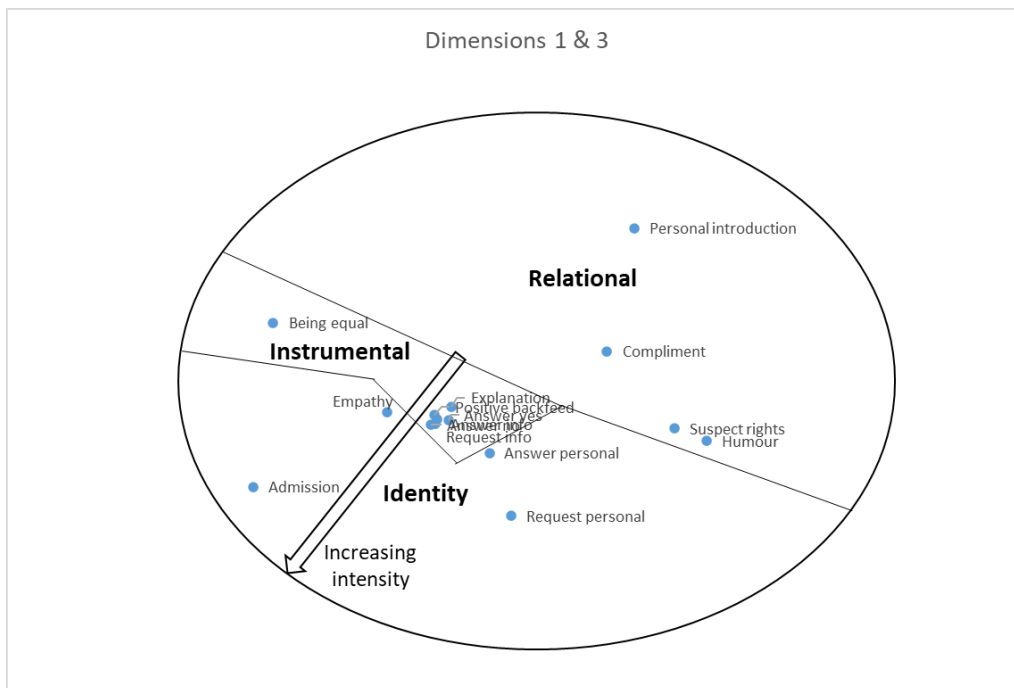
Intimidation (“Lying to  
Federal agents puts your  
shit pile up to here”)  
NegSelf (“I should know  
better”)

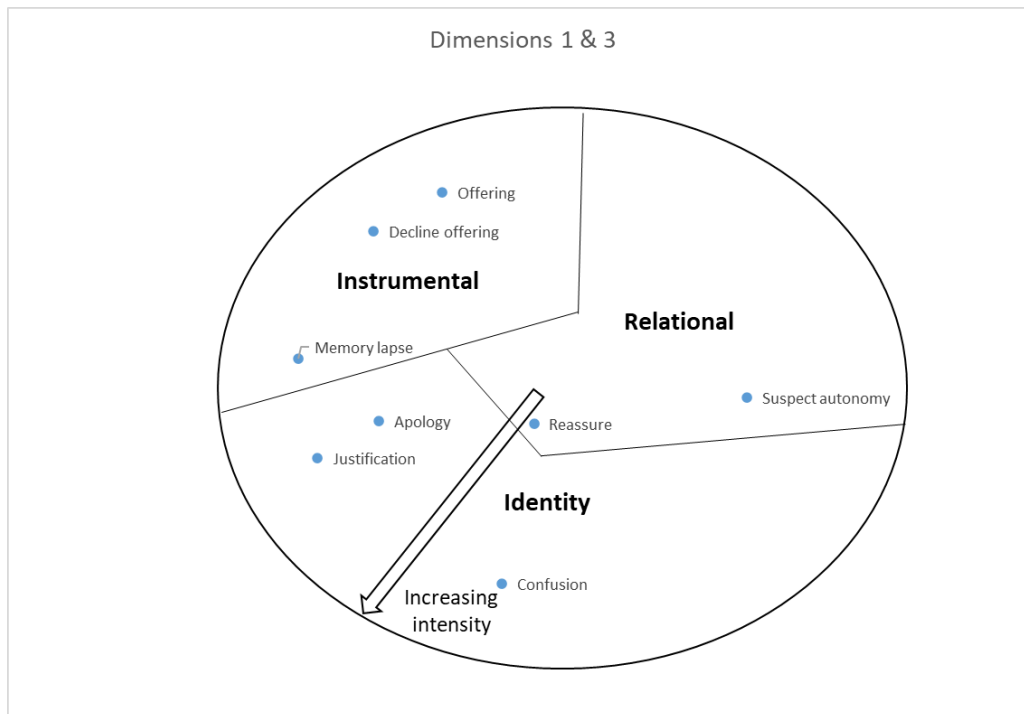
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The final facet of the cylinder model (Taylor, 2002) relates to the intensity of the communication behaviours. This facet takes a radial approach to the SSA partitioning (i.e., radiating out from the middle, like the ripples of a stone dropped in water), with communication behaviours located more centrally hypothesised to be less intense than those toward the edge of each orientation. To visually inspect this facet, the SSA plot was partitioned according to the motivational frames, but separated by each orientation. As shown in Figure 3, for the cooperative orientation (top plot in Figure 3), communication behaviours that dealt with admitting to part or all of the offence (‘Admission’), or joking with the other person (‘Humour’), were located towards the edges of the SSA plot. On the other hand, more common communication behaviours such as ‘Answer info’ and ‘Explanation’ were located more centrally in the plot, implying as might be expected, that they were more common and less in intensity. For the competitive orientation (middle plot), there were evidence of more intense communication behaviours, such as ‘Accusation’, ‘Intimidation’, and ‘Legitimising’, being located more towards the edges of the SSA space, while less intense behaviours such as ‘Don’t know’ and ‘PosSelf’ were located in the centre of the plot. Finally, for the avoidant orientation (bottom row of figure), strong statements of refusal to provide information, which might be considered more intense, such as ‘Memory lapse’ as well as communication behaviours aimed at justifying a certain position without necessarily backing it up with evidence (‘Justification’), were both located further away from the centre of the plot. In contrast, less intense behaviours such as ‘Reassure’, and ‘Apology’ were both located towards the middle of the plot.

**Figure 3**

*Dimensions 1 and 3 of the SSA-I showing the motivational frames with the intensity facet depicted with an arrow. The configuration is divided into the cooperative (top), competitive (middle), and avoidance (bottom) orientations*





### Discussion Study 1

The aim of the first study was to explore whether the cylinder structure of communication behaviours observed by Taylor (2002) for crisis negotiations could also be observed in a sample of investigative military interviews. Overall, we found support for the orientation (avoidance, competitive, & cooperative), motivational frame (instrumental, relational, & identity) and intensity facets of the cylinder model. This, together with Arnold's (2021) recent study on the cylinder model in police interviews, suggests that the cylinder model might capture something fundamental about interpersonal communication, not just in crisis negotiations, but also in investigative interviews. If so, this strengthens the rationale for the inclusion of the model into HIG's (2016) review of the science of investigative interviewing and affirms the model as a useful framework for breaking down communication behaviours into overarching orientations and motivational frames.

While the current study identified separate regions for the three orientations and motivations, it is important to note that some behaviours did not fall in their predicted region. Most notably, the codes 'Being kind', and 'Appreciation' fell into the Competitive region on

the SSA plot, while they arguably are more cooperative communication behaviours. One reason for this could be that sometimes these behaviours might have been used as a way to display passive aggression through a veneer of being cooperative and kind. Still, it is fairly common in smallest space analysis for some codes to be misplaced on the SSA configuration. For instance, while Taylor (2002) labelled ‘profanity’ as a relational communication behaviour based on the smallest space analysis, Taylor and Donald (2004)’s solution placed it into the identity motivational frame. In other words, although some of the current communication behaviours might have been a bit misplaced, most of them appeared in the expected place.

There were also relatively few communication behaviours in the relational-competitive and relational-avoidance categories. One potential reason for this could be the relatively polite and courteous way in which the current interviews were being conducted. In particular, while communication behaviours within crisis negotiations might be fairly intense and often involve matters of life and death (Thompson et al., 2022), the current interviews might have been fairly composed and calm. Additionally, there might have been a lot of indirect communication going on between the suspect and interviewer where the meaning would not merely have been conveyed through the words but also by gestures, tone of voice, and body postures (Ting-Toomey & Dorjee, 2018), all of which were not captured in the current interview transcripts. Some behaviours coded as instrumental might actually have been considered more relational or identity, had the context and customs of the current military organisation been better known.

## Study 2

Having established the structure of communication behaviours in the military investigative interviews, Study 2 sought to focus on the role of matching on interview outcomes. Specifically, we investigated whether, **H2**: there would be more motivational frame matching in confession interviews (relative to non-confession interviews), **H3**: more

motivational frame matching in post-training interviews (relative to pre-training interviews), and **H4**: more matching by the suspect of the interviewer's motivational frames, rather than the opposite, for confession interviews (relative to non-confession interviews).

## **Method**

### **Re-coding of Communication Behaviours**

Rather than examining the hypotheses based on the obtained SSA-I classification, we retained the theoretically derived classifications (Beune et al., 2009; see Table 2). There were three reasons for this. First, as mentioned above, there were a few behavioural codes that were clearly located in the incorrect frame and orientation, and keeping them there would likely result in a biased measure of matching. Instead, these codes could be considered better placed in a different frame and orientation, based on theoretical accounts, and so, these were modified in the current study. Second, the fact that a majority (> 50%) of the observed communication behaviours were coded as 'Request info' or 'Answer info' might have meant that the resulting configuration was less than optimal. This is because such situations may create a limited representation of the content universe (the theoretically plausible behavioural codes; Shye, 2014), which in turn, could bias the resulting configuration. Third, it could be argued that the nature of the current military investigative interviews as being rather polite and well-mannered hindered a good representation of the full content universe and the associated motivational frames and orientations. This might have led to the SSA-I configuration being less than optimal for capturing the underlying motivational frames and orientations of the behavioural codes. Hence, the decision was taken to conduct the motivational frame matching analyses on the theoretically derived cylinder configuration<sup>20</sup>.

In total, 17 out of 37 communication behaviours changed positions from the obtained SSA-I solution to the theoretical classification, and only two behavioural codes ('Being kind'

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<sup>20</sup> The results analysed with the obtained SSA-I configuration from study 1 is available on the open science framework (<https://osf.io/26xg3/>).

& 'Justification') changed both orientation and motivational frame. In other words, the majority of the codes stayed in the same position across the two studies.

**Table 2**

*Breakdown of the communication behaviours into orientations and motivational frames according to the theoretical classification*

Motivational frame	Cooperative	Competitive	Avoidance
Instrumental	Request info	Decline offering*	Memory lapse
	Answer info	Rational argument**	Don't know
	Explanation	Justification	
	Answer no		
	Answer yes		
	Positive backfeed		
	Offering*		
Relational	Appreciation		
	Personal introduction		
	Request action		
	Suspect autonomy		
	Suspect rights		
	Humour*		
	Reassure*		
	Being equal**		
	Being kind**		
Identity	Admission	Legitimising**	Confusion
	Empathy*	PosSelf*	Accusation*
	Answer personal	Integrity	Denial*
	Request personal	Criticism*	
	NegSelf*	Intimidation**	
	Compliment*		
	Apology*		
	Answer opinion		

\*Codes from Taylor (2002)

\*\*Codes from Beune, Giebels, and Sanders (2009)

Each code was re-coded into their associated motivational frame and orientation.

Moreover, to enable analyses of the directionality of the matching (i.e., suspect matching the interviewer vs. the interviewer matching the suspect), the type of speaker (interviewer vs. suspect) was included in the codes.

### Measures of Motivational Matching

The re-coded data were subjected to a proximity coefficient calculation in the ProxCalc software (Taylor, 2006). Since the diagonal of the resulting proximity coefficient matrix can be interpreted as a measure of reciprocity (i.e., immediate and delayed matching;

Taylor, 2006, p. 46), the analysis focused on the diagonal of the resulting proximity coefficient matrix. Moreover, since the type of speaker (interviewer vs. suspect) was included in the overarching frames, it was possible to get a measure of the extent to which the interviewer matched the suspect's frame, as well as the extent to which the suspect matched the interviewer's frame, by looking at the diagonal of the proximity coefficient matrix. To explore the above stated matching hypotheses, the level of interviewer to suspect matching, as well as the level of suspect to interviewer matching, was subsequently compared between confession and non-confession interviews.

### **Measures of Interview Outcomes and Training**

In the current investigative interviews, suspect confessions were treated as a form of interview outcome. Of the 24 interviews, 15 contained a confession, while 9 did not. Furthermore, the data included 12 pre-training and 12 post-training interviews. The Fisher's exact test<sup>21</sup> confirmed that there was no significant relationship between the number of confessions in the pre- and post-training interviews ( $p = .40$ ), suggesting that the number of confessions was roughly the same across the pre- and post-training interviews.

## **Results**

### **Overall Matching**

To investigate whether there was more overall motivational frame matching in the confession interviews as compared to the non-confession interviews, the average level of matching (measured through the diagonal of the proximity coefficient matrix; Taylor, 2006) was analysed. There was no difference in overall motivational frame matching between confession interviews ( $M = .92, SD = .10$ ) and non-confession interviews ( $M = .90, SD =$

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<sup>21</sup> The assumption of at least five observations in each cell of the conventional Chi-square test was violated, and therefore, Fisher's exact test was carried out.

.12),  $t(253) = -1.24, p = .22; d = .16, 95\% CI [-.09, .39]$ <sup>22</sup>, providing no support for **H2** (more motivational frame matching in confession interviews, relative to non-confession interviews). However, as hypothesised, there was more motivational frame matching in the post-training interviews ( $M = .93, SD = .093$ ) compared to the pre-training interviews ( $M = .90, SD = .13$ ),  $t(231.89) = 2.18, p = .0299; d = .274, 95\% CI [.02, .52]$ , supporting **H3** (more motivational frame matching in post-training interviews, relative to pre-training interviews)<sup>23</sup>.

### Matching Direction and Interview Outcome

To further explore the directionality of the matching (i.e., who matched who; H4), the extent to which the suspect matched the interviewer, and the extent to which the interviewer matched the suspect, was compared between confession and non-confession interviews. As shown in Figure 4, there was more suspect to interviewer motivational frame matching in the confession interviews ( $M = .94, SD = .075$ ) than the non-confession interviews ( $M = .91, SD = .10$ ),  $t(123) = 2.018, p = .0458; d = .363, 95\% CI [-.02, .74]$ <sup>24, 25</sup>, but no significant difference in interviewer to suspect motivational frame matching between confession interviews ( $M = .90, SD = .12$ ) and non-confession interviews ( $M = .898, SD = .14$ ),  $t(128) = .16, p = .87; d = .029, 95\% CI [-.37, .36]$ <sup>4</sup>.

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<sup>22</sup> The t-test assumed equal variances since visual inspection of residuals indicated homoscedasticity. Although observations were slightly skewed, the t-test has been shown to be robust to such violations, especially for large samples (Snijders, 2011).

<sup>23</sup> This hypothesis was not supported for the obtained SSA-I configuration. Please see the supplemental material on the open science framework (<https://osf.io/26xg3/>).

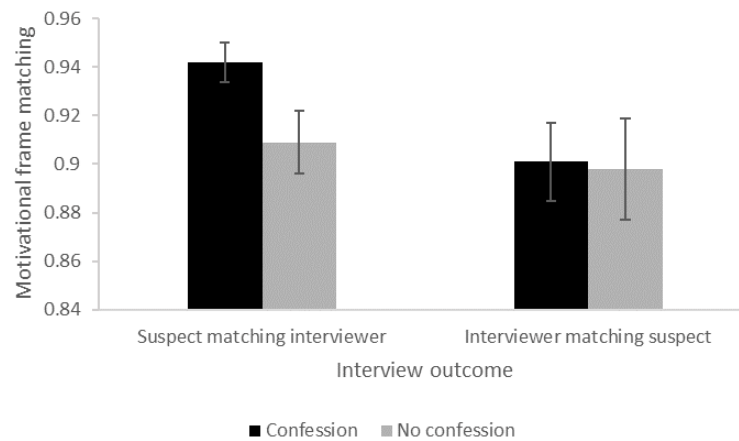
<sup>24</sup> The t-test assumed equal variances since visual inspection of residuals indicated homoscedasticity. Although observations were slightly skewed, the t-test has been shown to be robust to such violations, especially for large samples (Snijders, 2011).

<sup>25</sup> This hypothesis was not supported for the obtained SSA-I configuration. Please see the supplemental material on the open science framework (<https://osf.io/26xg3/>).



**Figure 4**

*Mean motivational frame matching as a function of lead speaker and interview outcome. Error bars represent standard errors*



### **General Discussion**

In line with previous research showing language style matching to be related to successful confessions in police interrogations, particularly for suspects matching the interrogator (Richardson et al., 2014), the current findings showed significant differences in how suspects and interviewers were matching each other's motivational frames and how this related to suspect confessions and investigative interview training. However, in contrast to previous research which found that the magnitude and timing of motivational frame matching was related to successful resolutions (Ormerod et al., 2008), this study found that the direction of the matching (who matches who) played an important role in determining the outcome of the investigative interviews. Specifically, confession interviews were associated with more matching of the interviewer's motivational frame by the suspect, while there was no difference in the extent to which suspects matched interviewer's motivational frames, or vice versa, for non-confession interviews. Hence, who matches who might play a meaningful role in whether a confession arises in an investigative interview.

One potential explanation for this finding could be that in confession interviews, suspects might increasingly have adopted the interviewer's viewpoint of what happened

(including the actions that led to the offence). This in turn, might have manifested through increased motivational frame matching (see Richardson et al., 2014 for a similar argument regarding language style matching). In contrast, suspects in non-confession interviews might have been more hesitant about adopting the interviewer's view of what happened and as a result, showed less motivational frame matching with them.

Our results connect well with previous studies focusing on language style matching and interrogation outcomes (e.g., Richardson et al., 2014), and provide initial evidence that similar patterns of matching may occur at the motivational frame level. The findings also go in line with communication accommodation theory (Giles & Ogay, 2007), and suggests that matching of motivational frames might follow similar patterns of coordination and alignment as more basic building blocks of interpersonal communication (e.g., Gonzales et al., 2010; Ta et al., 2017).

We also found more overall motivational frame matching in interviews in which the interviewer had received interview training compared to where they had not. This suggests that training that includes aspects of the cylinder model and motivational frame matching can shape interviewers to adopt more overall motivational frame matching. However, while post-training interviews showed more overall motivational frame matching, follow-up analyses found no difference between pre- and post-training interviews in the extent to which interviewers matched suspects' motivations, or the extent to which suspects matched interviewers' motivations. This suggests that the interview training might have influenced the interaction as a whole, rather than making the interviewer following the suspects' motivational frames or vice versa. Since good interpersonal sensemaking is an interactive and reciprocal process between two individuals (Sjöberg et al., 2023a; Wells & Brandon, 2019), these findings are perhaps not overly surprising, and it could be hypothesised that increased

motivational frame matching by the interviewer would have facilitated more motivational frame matching from suspects (and vice versa).

In terms of the practical applications of the present findings, motivational frame matching might offer a relatively effortless way that investigative interviewers can make sense of the motivations and goals of their interviewees. This argument is further strengthened by the fact that motivational frame matching may be somewhat easier to train than language style matching. For example, Brandon et al. (2019) successfully included motivational frame matching in their training material to investigative interviewers (together with other effective interview techniques such as rapport tactics and the cognitive interview). However, in contrast to motivational matching, language style matching is thought to occur largely nonconsciously (Ireland & Pennebaker, 2010) which would likely make it difficult for an interviewer to match the language style of the suspect while simultaneously thinking about what follow-up questions to ask etc. Hence, matching of motivations might constitute an appropriate middle-ground between being too concentrated on the smallest building blocks of language (e.g., function words; Gonzales et al., 2010), and being overly general and focused on the interaction as a whole (e.g., rapport tactics; Abbe & Brandon, 2013).

### **Limitations**

As for all studies, there are several limitations with the current research that should be mentioned. First, by looking at motivational frames through interview transcripts, the communication behaviours had to be inferred based on the language used by the suspect and interviewer. As mentioned above, this would have meant that a lot of communication that happened “between the lines” would have got lost in this kind of analysis (Kvale, 2007). One example of communication behaviours which this type of analysis might have a hard time picking up, are irony or metaphors, where the meaning is not conveyed by what is said but rather how it is said (Winner, 1997). Hence, while focusing on the words uttered by the

speakers have the obvious benefit of limiting the number of behavioural codes analysed and ensuring an acceptable level of reliability, it risks missing important nuances that might influence the interaction in more subtle ways.

In addition, by reducing the communication behaviours down to the overarching motivational frames, the analysis likely reduced some of the variability in the data, and with it, the ability to find a signal (motivational frame matching) through the noise (random variability in the precision of the measures). Adding on to this, a majority of the communication behaviours (> 50%) were classified as instrumental-cooperative, meaning that suspects and interviewers were mostly asking and answering informational/instrumental questions to each other. While not necessarily a serious issue, this could point to the fact that the current coding scheme was not as sensitive to pick up on small nuances in the suspect's and interviewer's communication behaviours.

A final limitation with the observed findings concerns the fact that it was not possible to discern ground truth for the confessions. Hence, it is impossible to know whether some of the confessions might have been false confessions. Still, previous research has estimated that false confessions are relatively rare in suspect interviews (e.g., 1.2%; Gudjonsson et al., 2004), which would suggest that the results may not be overly driven by false confessions.

### **Future Research**

Based on the findings of this study, there are several potential avenues for future research. First, since the data for the current study was based on archival interview transcripts, it was not possible to experimentally manipulate motivational frame matching. Hence, future studies might want to compare investigative interviews being conducted by interviewers who have been explicitly instructed to continuously match their suspect's motivational frame with interviewers who have not. This would then enable stronger claims

to be made about the causal mechanisms behind the potential benefit of motivational frame matching on interview outcomes.

Second, since some recent research suggests that there might be situations when matching might backfire (e.g., when matching occurs based on a competitive orientation; Sjöberg et al., 2023b), it would be interesting to compare matching based on each of the cooperative, competitive, and avoidance orientations to see if there are differences in the effectiveness of matching in terms of the three orientations for interaction success. Based on the results from Sjöberg et al. (2023b), it could be hypothesized that matching would only lead to more positive outcomes when in a cooperative orientation.

Relatedly, it would be interesting to zoom in and explore what happens immediately following a confession. Initial exploratory analyses of the current interview transcripts suggested that just before suspects confessed, investigative interviewers often skilfully adapted their influencing tactics depending on the type of suspect they were talking to. For instance, some interviewers tended to intimidate their suspects into confessing (e.g., “Now it’s not the time for you to be lying to federal agents”), while others employed a much more empathic approach (e.g., “I fully understand that this must be very hard for you”). The ability to respond in an adaptable way to different type of suspects has recently been highlighted by Oleszkiewicz et al. (2022), and would be an interesting avenue for future research.

## **Conclusions**

While previous research has found a cylinder model of communication behaviours within crisis negotiations (Taylor, 2002) and police interviews (Arnold, 2021), there is limited evidence from other intelligence gathering contexts. In the current study, it was found that a similar cylinder structure could also be observed in a sample of military investigative interviews. Moreover, looking at the overarching motivational frames, it was found that more matching by the suspect of the interviewer’s motivational frames (but not vice versa), was

related to suspect confessions. Hence, it appears that for confession interviews, suspects may increasingly start to adopt the motivational frames of the interviewer. In other words, interviewers may effectively start to control the direction of the interaction towards a suspect confession. This suggests that in addition to matching of the smallest building blocks of language (i.e., function words; Gonzales et al., 2010), interview outcomes might also play out at the level of motivational frame matching.

# Chapter 7

## **Chapter 7: Thesis discussion**

### **Overview of Findings from the PhD Thesis as a Whole**

Chapter 3 contained two experiments that aimed to provide the first experimental evidence of motivational frame matching causally leading to more positive investigative interview outcomes. While the first experiment was administered in a text-based format, the second experiment was administered in a video-based format. In all other respects, the experiments were comparable to each other. The results demonstrated that in a cooperative interview, motivational frame matching led to significantly higher willingness to cooperate and greater feelings of being understood by the interviewer. However, in a competitive interview, motivational frame matching led to significantly lower willingness to cooperate and identify with the interviewer. In other words, there was an interaction effect between motivational frame matching and orientation, on positive investigative interview outcomes. To the authors' knowledge, this is the first set of experiments to establish a causal relationship between motivational frame matching and positive investigative interview outcomes.

The previous chapter provided the first evidence of a causal relationship between motivational frame matching and positive investigative interview outcomes. However, one limitation with the two previous experiments was that participants were not actively involved in the interaction, but merely read (or watched) the interaction unfold in front of them. Hence, in order to make the experiment somewhat more realistic, the main aim of the experiment in Chapter 4 was to have participants actively involved in the investigative interview. Specifically, at each round of the interview, participants, as suspects, could respond to the interviewer in either an instrumental, relational, or identity motivational frame and depending on the condition, the interviewer would then respond back in the same motivational frame (matching condition) or a different motivational frame (non-matching condition). Again, this



took place within both cooperative and competitive orientations. Although the results did not find significant effects of motivational frame matching on any of the outcome variables (e.g., willingness to cooperate), participants did demonstrate more reciprocal motivational frame matching when interacting with a matching (compared to a non-matching) interviewer. This provided some tentative evidence that interacting with a matching interviewer led to a positive spiral of successful interpersonal sensemaking (through matching of motivational frames), at least at the beginning of the investigative interview. From a methodological perspective, it provided a blueprint for the design of a repeated measures experimental setup for measuring interpersonal sensemaking, through matching of motivational frames. This setup was then refined and used for the experiments in Chapter 5.

Since the experiment in Chapter 4 did not pan out exactly as expected (no positive effects of motivational frame matching), the main aim of the two experiments in Chapter 5 was to improve the manipulation of motivational frame matching to get a more accurate understanding of its potential positive effects. In addition, it was also investigated whether motivational frame matching would have similar beneficial effects in a more informal social situation (i.e., a pub conversation between two rival sports supporters) compared to an investigative interview. The results showed that motivational frame matching led to more positive interaction outcomes for both the investigative interview and the pub conversation. Likewise, matching of motivations led to more positive interaction outcomes in both the cooperative and competitive interviews. In terms of the round-by-round motivational frame responses, it was found that interacting with a matching interviewer or rival sports supporter led to more reciprocal frame matching by participants, and this tendency was stronger in the competitive interaction. In other words, the two experiments in this chapter provided support for motivational frame matching leading to more positive interaction outcomes, as well as more reciprocal participant matching, regardless of orientation or social context.

While Chapters 3-5 all featured experimental studies where motivational frame matching was actively manipulated by the authors, Chapter 6 contained an archival study based on authentic military investigative interview transcripts. The aim of this chapter was to explore whether a cylinder structure of communication behaviours as found in Taylor (2002), would also be observed in a sample of military investigative interviews, and to examine whether matching of motivational frames from this cylinder model was associated with more confessions. The results largely showed support for the cylinder structure of communication behaviours with instrumental, relational, and identity motivational frames displayed across avoidant, competitive, and cooperative orientations, across different levels of intensity. In terms of motivational frame matching, it was found that confession interviews saw more matching by the suspect of the interviewer's motivational frames (but not more matching by the interviewer of the suspect's motivational frames). In sum, these findings provided some support for the generalisability of the cylinder model beyond crisis negotiations to also apply within military investigative interviews. Moreover, it provided the first evidence of the importance of the directionality of motivational frame matching ("who matches who") and its relationship with suspect confessions.

### **Theoretical Reflections on the Experimental Chapters**

While the results from the experimental studies largely supported each other, there was a notable difference between the passive (Chapter 3) and active participant design (Chapters 4 & 5) for the competitive interviews. Specifically, within a competitive orientation interview, the experiments in Chapter 3 found a negative effect of motivational frame matching on interaction outcomes, while the experiments in Chapter 5 found a positive effect. There are a few possible ways to interpret these differences in findings. First, when participants were actively involved in the interview (Chapter 5), most of them tended to select the instrumental frame as their response to the interviewer/rival supporter. Moreover,

this tendency appeared to be magnified in the competitive condition. Hence, in a competitive interview/pub conversation, since most participants answered in an instrumental frame, the interviewer would consistently have replied to them in an instrumental (matching condition) or relational or identity motivational frame (non-matching condition). This, in turn, might have magnified the differences between the two experimental conditions (since there would have been mostly instrumental matching but very few relational and identity motivational frame matching responses in the competitive-matching condition) and resulted in a positive effect of matching in the competitive condition. In contrast, within the cooperative condition, participants tended to select the three motivational frames with a somewhat more equivalent frequency. Consequently, the positive effect of motivational frame matching in the cooperative condition might have been driven less by a particular negative perception of one of the three frames, but rather by the overall perceived frame matching of the interaction.

On the contrary, when participants were not actively involved in the interview (Chapter 3), the extent to which suspects and interviewers matched each other's motivational frames was completely determined by the experimental design, with interviews being either fully matched (based on the instrumental, relational, or identity motivational frames) or fully non-matched. This meant that, in the matching condition, both suspect and interviewer responses would equally often belong to the instrumental, relational, or identity motivational frames, while in the non-matching condition, each frame response from the suspect would be followed by a different frame response from the interviewer. In other words, this experimental design allowed the researchers to have complete control over how the interaction played out and produced an equal number of instrumental, relational, and identity motivational frame matching conditions, across both cooperative and competitive orientations.

An additional reason for why the results differed between these two types of experiments could be explained by how the three motivational frames were interpreted by participants. Indeed, post-hoc analyses from the experiments in Chapter 3 revealed that, within the competitive orientation, the relational and identity motivational frames were often driving the negative effect of motivational frame matching on interaction outcomes. It appeared that, within the competitive orientation interviews, relational and identity matching were perceived more negatively than instrumental matching. This is consistent with traditional negotiation advice of separating the people from the problem (Ury, 1991), as well as more theoretical distinctions between substantive and relational issues in negotiations (Ting-Toomey, 1994). Hence, within a competitive interaction, framing issues around instrumental motivations appears to have been viewed less negatively than when they were framed around relational or identity motivations. In sum, the main reasons as to why the results differed between the experiments in Chapter 3 and Chapter 5 might be due to the higher number of relational and identity competitive matching responses in Chapter 3, and that they were perceived more negatively than purely instrumental responses.

### **Theoretical Implications of the Current Research**

The research of this thesis provided the first evidence of a causal relationship between motivational frame matching and positive interaction outcomes (e.g., willingness to cooperate with the interviewer). This is important as the establishment of causal theories is valuable for the development of a cumulative psychological science (Eronen & Bringmann, 2021). Hence, by demonstrating under what conditions motivational frame matching led to more positive interaction outcomes, as well as the conditions when this was not the case, the research literature was expanded in a meaningful way.

Another contribution of the current research concerns the repeated measurement of participants' motivational frame responses. While there have been previous calls to give more

credit to the temporal aspect in forensic research (Taylor et al., 2008), the appeals have largely gone unheeded. This is unfortunate, as it could be argued that interpersonal interactions are continuously assessed and evaluated by those who are participating in them (Tawa et al., 2020), rather than just appraised at the end. By obtaining participant responses at each round of the investigative interview, it was possible to tap into this continuous appraisal and look at how it differed depending on the experimental conditions. This is a significant contribution compared with previous research on investigative interviews, which has tended to only solicit participant evaluations at the end of the interaction (e.g., Brimbal et al., 2019; Duke et al., 2018; Matsumoto & Huang, 2021).

In terms of the archival study, the fact that the current research was able to find a similar cylinder structure of communication behaviours as identified by Taylor (2002) suggests that the model might capture something more fundamental about communication in interpersonal interactions. If so, the cylinder model may be extended to other types of interpersonal interactions, where it could offer valuable understanding about the structure of communication behaviours. In addition, connecting the cylinder model with novel experimental paradigms might enable careful manipulation of variables to look at its influence on a range of situational contexts. For example, it could be interesting to use the model as a starting point for looking at international conflict negotiations and what is associated with their success, or to better understand manager-employee conversations in an organisational context.

The finding that the directionality of motivational frame matching seemed to influence the interview outcome (i.e., suspect confessions) is interesting, and to the authors' knowledge, the first time this has been demonstrated empirically. This is consistent with results on language style matching in interrogations, which found that confessions were more likely when the suspect matched the language style of the interrogator (but not vice versa;

Richardson et al., 2014). One possible explanation behind these findings that was brought up by Richardson et al. (2014) was that, in confession interviews, suspects might increasingly have started to frame the events of the crime in a similar way as to the police interviewer. If similar mechanisms are at play for motivational frame matching in military investigative interviews, suspects might increasingly have started to adopt the views and motivations of the interviewer. That different layers of communication all appear to show a similar pattern is reassuring and suggest they might be indicative of something more fundamental about the way people communicate in these types of situations.

This, in turn, indicates that, rather than looking at the overall motivational frame matching, it is essential to explore “who matches who” in these types of interactions. While the significance of the directionality of matching in interpersonal communication has long been recognised by theories such as communication accommodation theory (Giles & Ogay, 2007) and interaction alignment theory (Garrod & Pickering, 2004), there is still a paucity of studies investigating the directionality of communication accommodation, not least motivational frame matching, and how it relates to interaction success. Hence, the observation that it mattered in which direction the motivational frame matching took place, and that it was associated with subsequent interaction outcomes in investigative interviews, constitute an important contribution to the wider literature.

A potential theoretical explanation as to why successful interpersonal sensemaking led to cooperation might be because at a more fundamental level, successful interpersonal sensemaking could be hypothesised to signal that an interaction partner is sufficiently interested to bother to make sense of what the other person is communicating and the goals and motivations that underlie those ways. This, in turn, might indicate a subtle acknowledgement of the other person as being worthy of being seen and respected (Voss, 2016; Wells & Brandon, 2019). Such micro-acknowledgments might be particularly

important during the early stages of an interaction (Schilke & Huang, 2018), and constitute the first building blocks for establishing a working relationship. Based on this reasoning, one could argue that communication is fundamentally a cooperative act (Garrod & Pickering, 2004, p. 9). In other words, successful interpersonal sensemaking might be defined as a form of cooperation. Understood in this way, it becomes natural to expect successful interpersonal sensemaking to lead to more positive interaction outcomes (including the willingness to cooperate with the interviewer), since by successfully having made sense of the suspect, the interviewer has, in a way, already successfully cooperated with them. This may then lead to a positive spiral where the suspect would be more willing to cooperate with the interviewer, since the interviewer has already cooperated with them (by successfully making sense of them).

Another potential explanation behind the positive effects of motivational frame matching concern the role that it has in priming subsequent responses from an interaction partner. Specifically, Pickering and Garrod (2004) argued that lower-level language priming (e.g., syntactic) is often driving alignment in higher-level structures (e.g., semantic) between two speakers in an interaction. Based on this account, it could be theorised that motivational frames might function as a form of priming on several of these linguistic levels and provide signals to another individual what to say next in the interaction and how to frame a particular response. While interesting, since the current research did not measure matching or alignment on these linguistic levels, these accounts remain theoretical speculations at this point. At the same time, the fact that the current results were in line with Richardson et al. (2014) provide some tentative support for the above argument.

### **Practical Implications**

For an investigative interviewer, the results appear to suggest that it may be a good idea to make sense of one's counterpart by matching their motivational frames. For example,

if a suspect is sharing details about an emotionally charged experience (identity frame), it might be better to match this frame by displaying empathy or affirmation, rather than switching to an instrumental frame by pressing for details about the clothes the suspect was wearing at the time of the crime. However, while the current results found that motivational frame matching worked well in a cooperative interaction, the benefits of motivational frame matching was more complex within competitive interactions. Thus, caution is warranted when someone communicates in a competitive orientation, and it is not clear that matching their motivational frame is always the best option in those situations.

Specifically, within the competitive orientation in Chapter 3, the results indicated that motivational frame matching actually led to less positive interaction outcomes. This is an interesting finding and provides some support for coordination and matching in conflict spiralling. For example, it could be surmised that spouses in a divorce mediation may attack and challenge previous statements made by the other party as a way to win the argument (Drake & Donohue, 1996). In a similar way, an upset suspect may try to refute and counteract every word by the interviewer that suggest that the suspect is guilty. In such a situation, rather than being a sign of positivity or understanding between the suspect and interviewer, the coordination and motivational matching may suggest that the suspect is heavily invested in the conflict. In other words, motivational frame matching may not be ubiquitously positive or negative, but rather depend on the situation and how it is framed (e.g., cooperatively or competitively) by the suspect or interviewer. For an investigative interviewer about to enter the interview room, this means that matching a suspect's motivational frames could be a useful strategy when the interaction is more positively and/or cooperatively framed. However, when the interaction is more negatively and/or competitively framed, matching the suspect's motivational frames might not be equally effective, and might even be detrimental in certain situations. Thus, for an investigative interviewer, it is important to think carefully



about the orientation (cooperative vs. competitive) that the suspect is adopting and whether motivational frame matching would be beneficial or not in a particular moment of an investigative interview.

The results from the first two experiments (Chapter 3) suggested that, particularly within a competitive interaction, instrumental matching was perceived more positively than relational or identity matching. This suggests it is probably a wise strategy to avoid engaging with the suspect in a competitive orientation based on relational or identity issues. Instead, it might be better to try to steer the conversation onto more instrumental topics, in line with classical negotiation advice (Ury, 1991). Of course, this assumes that both the suspect and interviewer are communicating in a competitive orientation. Instead, in situations where the interaction partners have different orientations (e.g., competitive suspect – cooperative interviewer), it is still unclear what benefits motivational frame matching may have. Hence, caution is important when suggesting practical implications based on such situations.

Throughout the experimental studies, there was consistently a main effect of a cooperative orientation (compared to a competitive orientation), on positive interaction outcomes. Moreover, this main effect of orientation often exceeded the effect sizes of the positive influence of matching of motivational frames. This indicates that the overall orientation might work as an anchor in terms of regulating the emotional valence of the interaction as either more positive (cooperative) or negative (competitive). Such observations align well with previous evidence on the benefits of information gathering interviewing approaches versus confrontational, guilt presumptive interview methods (Snook et al., 2020). Thus, if the goal in an investigative interview is to make the suspect provide as much information as possible, it is probably more effective to engage in a cooperative, informational gathering approach, rather than a competitive, guilt presumptive approach.

There might also be some practical implications based on the findings from the authentic military investigative interview transcripts which found that matching of the interviewer's motivational frame by the suspect (but not the opposite) was associated with suspect confessions. It suggests that interviewers might facilitate the investigative interview by working towards a situation where the suspect starts to follow the interviewer's motivational frames. However, before reaching there, it could be theorised to be important to have attained a stage of frame alignment or common ground (Taylor, 2014). Only after this stage might suspects be open to follow the interviewer and start reciprocally matching them.

Moreover, the finding that motivational frame matching was associated with confessions in investigative interviews indicates that interviewers might have access to a relatively unobtrusive measure for conducting post-interview evaluations to explore the nature of the interaction and what led to its potential success. This can then serve as a basis for providing training to investigative interviewers on the benefits of motivational frame matching and how to best match a suspect's goals and motivations. Considering that motivational frame matching was included in the High Value Detainee Interrogation Group's review of the science of interrogations (HIG, 2016), as well as training programs with military investigative interviewers (Brandon et al., 2019), it might be valuable for an interviewer to evaluate how well they have managed to match the suspect's motivational frames, as well as the suspect's level of reciprocal matching, after having conducted an investigative interview.

### **Limitations**

In terms of the experimental studies, one potential weakness concerning all of them was that they were balanced on the orientation dimension. While participants could choose whether to match their interviewer's motivational frame, they were obliged to respond in the same orientation (cooperative or competitive) as their interviewer. This meant that the current

experiments did not explore what happens in situations where one interaction partner has a cooperative and the other interaction partner has a competitive orientation (i.e., unbalanced interactions). From a practical investigative interview perspective, this is naturally a very interesting and relevant question. For example, many interviewers might be dealing with resistant suspects who do not want to interact with them or who are actively trying to sabotage the investigation (i.e., avoidant or competitive suspects; Pearse & Gudjonsson, 1999). In such situations, it is valuable to know whether it is better to engage with suspects on the same orientation or whether it would be wiser to engage with them in a more cooperative orientation.

Another potential limitation is the way the three motivational frames from the cylinder model was conceptualised in the current thesis. Specifically, to make the distinction between the three motivational frames clear and unambiguous, care was taken to make the interview statements as typical and quintessential of each of the three motivational frames as possible. This may have made them ‘maximally different’ from each other, which may stand in contrast to natural human interaction, where dialogue is presumably more nuanced (Garrod & Pickering, 2004). To obtain observable effects in experimental research, it is often necessary to purify and isolate the concepts of study in order to make the experimental manipulations based on these concepts meaningful scientifically. Indeed, some scholars have referred to this as psychology’s “experimental ingenuity” (Pickering & Garrod, 2004, p. 170). To study something experimentally, it is often necessary to magnify and clarify the phenomena under study.

A further related limitation with the current set of experiments is that the manipulation of motivational frames might have been somewhat “fat-handed” (Eronen, 2020), meaning that it is possible that the manipulation not only manipulated motivational frame matching, but also other variables (e.g., length of sentence, number of words, number

of syllables etc.). This imprecision in experimental manipulations has been described as a problem in psychology more broadly and one of the reasons as to why it has been difficult for psychology to develop as a cumulative science (Eronen & Bringmann, 2021). A possible reason as to why this fat-handedness might be especially common in psychology, is that psychological theories often are not specific enough to be clearly and unambiguously operationalised (Sheel, 2022). Connecting back to the current research, a potential critique of the cylinder model could be that it is not very specific in its conceptualisation (e.g., what exactly does a statement have to look like to be classified as an instrumental statement?). In particular, while the model is understood to capture most of the communication that happens between two people during a conversation, it could be argued that interpersonal interactions are much more complex and multi-layered than simply the 3 motivations by 3 orientations that the model describes. From a theory perspective, this is unfortunate since it is difficult (some might even say impossible) to identify where one frame ends and another frame begins. With such equivocal borders between aspects of the model, it becomes difficult to experimentally manipulate motivational frame matching in a veracious way. At the same time, one could argue that all theories and models are simplifications of reality and that such simplifications are necessary to draw attention to the most interesting characteristics of a certain phenomenon (Bettis et al., 2014).

Another important limitation with the current set of studies, as well as earlier work that this PhD thesis builds on (e.g., Taylor's cylinder model, 2002), concerns the basic assumption that similar communication behaviours would tend to occur closely together in a dialogue. While this is a common assumption in previous research (Taylor, 2006), one could argue that there are situations when this might not always be the case. Indeed, advocates for the interpersonal complementarity hypothesis have argued that it is not uncommon for opposite behaviours to be displayed close to each other (Sadler & Woody, 2003). For

example, displays of dominance in interpersonal interactions are often responded to with submissive behaviours from a counterpart (Tiedens & Fragale, 2003). This does not mean that dominance and submissive displays represent the same underlying psychological motivation, but rather that they are complementary behaviours occurring close to each other in interpersonal interactions. This means that deducing the underlying psychological motivations from communication behaviours based on proximity coefficients (or correlation coefficients as Taylor, 2002, did) might have some drawbacks as there might be situations when behaviours with different underlying motivations are repeatedly occurring close to each other. If so, that could partly help to explain why, in Chapter 6, certain communication behaviours that would be expected to communicate different underlying motivations (e.g., 'Being kind' & 'Intimidation'), were located relatively close to each other on the SSA-I configuration.

Lastly, due to the Covid-19 pandemic, all experimental data for the current PhD research were collected online. Although there are several benefits with online data collection (e.g., more diverse samples, faster data collection), there are also potential negative consequences that are important to highlight. First, online participants might not be as attentive as participants doing an experiment in the lab (Newman et al., 2021). This could be due to them carrying out the experiment while doing other things such as watching television or surfing the internet. If so, that means that they are probably not going to be as careful in how they respond to the experimental stimuli, with attenuated/distorted effect sizes as a result. Second, since online participants are more diverse than student participants (Casler et al., 2013), the within-group variability within the experimental conditions is likely going to be higher. This, in turn, means that the statistical tests will be less powerful to find a significant effect, even if one exists in the population. Third, it might be argued that interpersonal sensemaking is inherently something that takes place face-to-face, and that by

studying sensemaking through online studies, the concept was somewhat attenuated. At the same time, one could argue that virtual communication is becoming ubiquitous in the modern world and that more and more information gathering interviews will take place online (Meijer et al., 2021). Hence, it is valuable to explore how sensemaking works, also in these contexts.

### **Future Research**

Based on the findings of this PhD research, there are several possible avenues for future research. In terms of the experiments where participants actively responded to the interviewer (chapter 3 & 4), it would be interesting to more explicitly instruct participants about which of the three motivational frames to focus on during the interaction. Currently, most participants tended to select the instrumental frame (especially in the competitive interaction) which meant that, during the matching condition, interviewers responded in an instrumental frame, while in the non-matching condition, interviewers answered back in either of the other two motivational frames (relational or identity). This meant that it was difficult to say whether matching based on the relational or identity motivational frames would have been associated with more positive interaction outcomes, particularly for competitive interactions, or whether they instead would have been associated with negative interaction outcomes, as suggested by the post-hoc analyses from chapter 3. Hence, a way to get more balanced distributions of participant motivational frame responses would be to explicitly tell participants to focus on a certain motivational frame.

Another aspect that warrants more research is how people from different cultural groups react and respond to the different motivational frames. For instance, some researchers have recently distinguished between dignity, face, and honour cultures (Aslani et al., 2016) as a way to broaden the traditional distinction between individualistic and collectivistic cultures (Ting-Toomey, 1994). In this framework, dignity cultures (dominant in Western Europe & North America) place a high importance on the inalterable value that each individual possess,

while face cultures (prevalent in much of East Asia) are more concerned with maintaining harmony between members of a social group, and honour cultures (common in South and Latin America) focus on defending their own and their families' honour from attacks by other people. Based on this taxonomy, it could be hypothesised that members from certain cultural groups would react particularly harshly towards some motivational frames. For example, individuals from honour cultures might respond particularly aggressively to attacks and criticisms of their character or standing in the social hierarchy. Adding a cultural lens to interpersonal sensemaking would enable more nuanced predictions about the positive (and negative) outcomes of motivational frame matching for suspects from diverse backgrounds.

Another viable area of future research concerns the question of individual differences and how this relates to the tendency to react and respond to the motivational frames. Here, it could be postulated that people high on certain personality traits (e.g., narcissism) would be particularly sensitive to attacks on their personality (Bushman & Baumeister, 1998). If so, this means that matching competitively based on the identity frame might backfire when dealing with such individuals. Similarly, highly agreeable individuals might respond more positively to displays of empathy and perspective taking by the interviewer. The fact that interviewers need to anticipate and prepare for different responses from suspects is supported by recent research arguing for the importance of adaptability in interviewers (Oleszkiewicz et al., 2022). In general, the issue of individual differences in investigative interviews has not received a lot of attention in previous research and, as such, this may be a fruitful area for future research.

## **Conclusions**

What has become clear at this point is that interpersonal sensemaking is an extremely complex process. By focusing the current line of research on the cylinder model (Taylor, 2002) and its associated motivations and orientations, it was possible to experimentally

manipulate successful interpersonal sensemaking (through matching of motivational frames) and to explore its effects on positive interaction outcomes. Throughout five experiments, within a cooperative interaction, motivational frame matching consistently led to more positive interaction outcomes. Yet, within a competitive interaction, the results were more mixed. When participants were not actively involved in the interaction, motivational frame matching within a competitive interview led to less positive interaction outcomes and this was often driven by the relational and identity motivational frame matching. On the other hand, when participants were actively responding to the interviewer at each interview round, motivational frame matching led to more positive interaction outcomes, regardless of the orientation. One potential explanation that was brought up behind these differences in results concerned the fact that most participants in the competitive condition chose to respond in the instrumental frame. In addition to the experimental studies, the current thesis included an archival study looking at communication behaviours within authentic military investigative interview transcripts. Here, it was found that the communication behaviours roughly followed a similar cylinder structure as in Taylor (2002), and that interviews containing a confession contained more motivational frame matching by the suspect of the interviewer's frames (but not more matching by the interviewer of the suspect's frames). By establishing the causal mechanisms behind motivational frame matching, as well as its generalisability to military investigative interviews, the research contributed in a small but meaningful way to the growing literature on interpersonal sensemaking in investigative interviews. The coming years will hopefully see a proliferation in the scholarship on the conversational processes in investigative interviews and how they are associated with interview outcomes.



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## Appendices

### Appendix A. Additional motivational frame analyses from chapter 3

As mentioned throughout the thesis, and as can be observed in Figure 1 below, the negative results of motivational frame matching on interview outcomes for the competitive orientations in chapter 3 were often driven by the relational and identity motivational frame matching (green & blue bars). Specifically, focusing on the competitive orientation interview, the pink bars (instrumental matching), tended to be higher than the green and blue bars (identity & relational matching), suggesting that matching based on these two motivational frames led to less positive interview outcomes than matching based on instrumental frames.

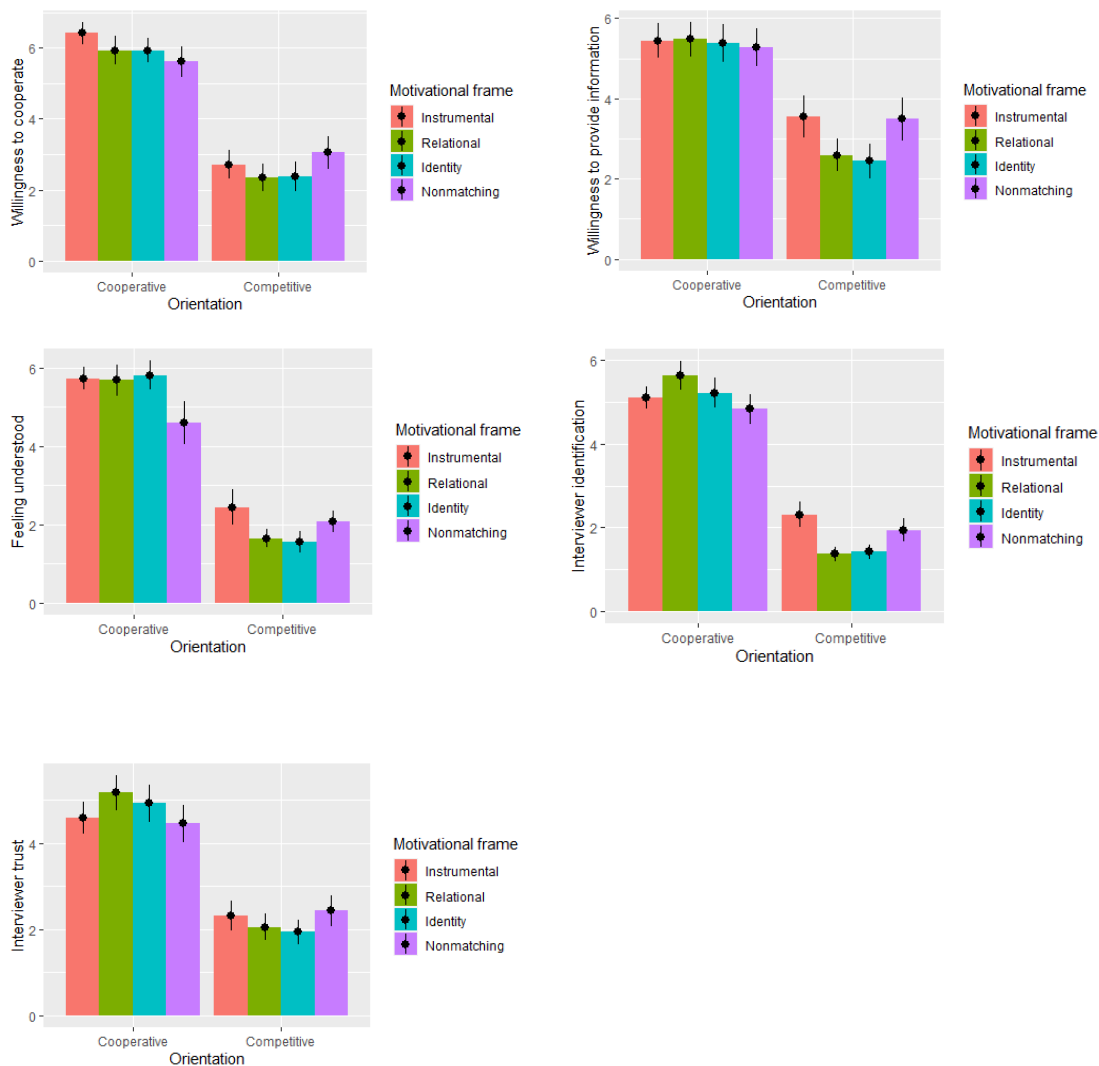


Figure 1. Interview outcomes across orientations and motivational frames for all dependent variables (experiment 1, chapter 3)

As expected, follow-up statistical analyses found that, within the competitive orientation interview, instrumental motivational frame matching led to greater willingness to provide information than both relational matching  $t(369) = 3.010, p = .0028$ , and identity matching  $t(369) = 3.468, p < .001$ . In terms of feelings of being understood, instrumental matching led to greater feelings of being understood than both relational matching  $t(369) = 3.568, p < .001$ , and identity matching  $t(369) = 4.138, p < .001$ . This was also the case for the tendency to identify with the interviewer, where instrumental matching led to a higher tendency to identify with the interviewer compared with both relational matching  $t(369) = 4.138, p < .001$ , and identity matching  $t(369) = 4.528, p < .001$ . However, there were no differences between the three motivational frames on intention to trust the interviewer as well as the willingness to cooperate with the interviewer. In sum, these additional findings suggest that, for most measures, competitive instrumental matching led to more positive interview outcomes than competitive relational and competitive identity matching.

For the second experiment in chapter 3 (the video-based experiment), although identity matching unexpectedly led to higher willingness to provide information than instrumental matching  $t(391) = -2.171, p = .0306$ , instrumental matching did lead to higher tendency to identify with the interviewer compared with both relational matching  $t(391) = 4.274, p < .001$ , and identity matching  $t(391) = 3.387, p < .001$ . All the other pairwise comparisons were nonsignificant ( $p > .05$ ). Hence, these findings provide some preliminary support for the supposition that instrumental matching led to more positive interview outcomes than relational and identity matching, also for the video-based experiment.

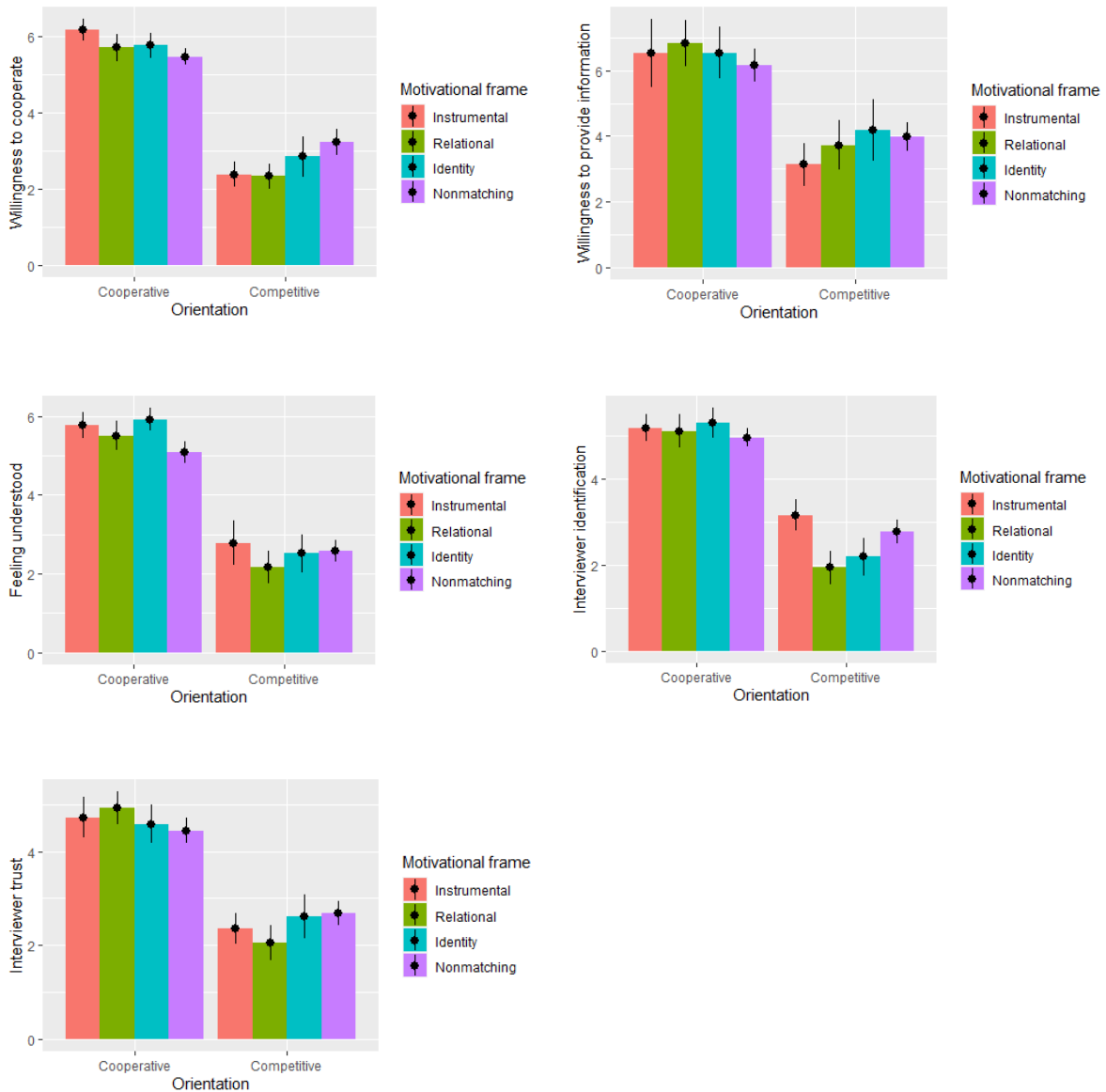


Figure 2. Interview outcomes across orientations and motivational frames for all dependent variables (experiment 2, chapter 3)

## Appendix B. Participant motivational frame distributions (experiments 1 & 2, chapter 5)

As can be observed in Figure 3 below, participants in the competitive orientation condition (labelled as non-cooperative; NC), tended to largely select the instrumental frame as their response to the interviewer (red area). In contrast, participants in the cooperative orientation condition (labelled as cooperative; CO), tended to more evenly select one of the three motivational frames (mix of red, green, and blue colours).

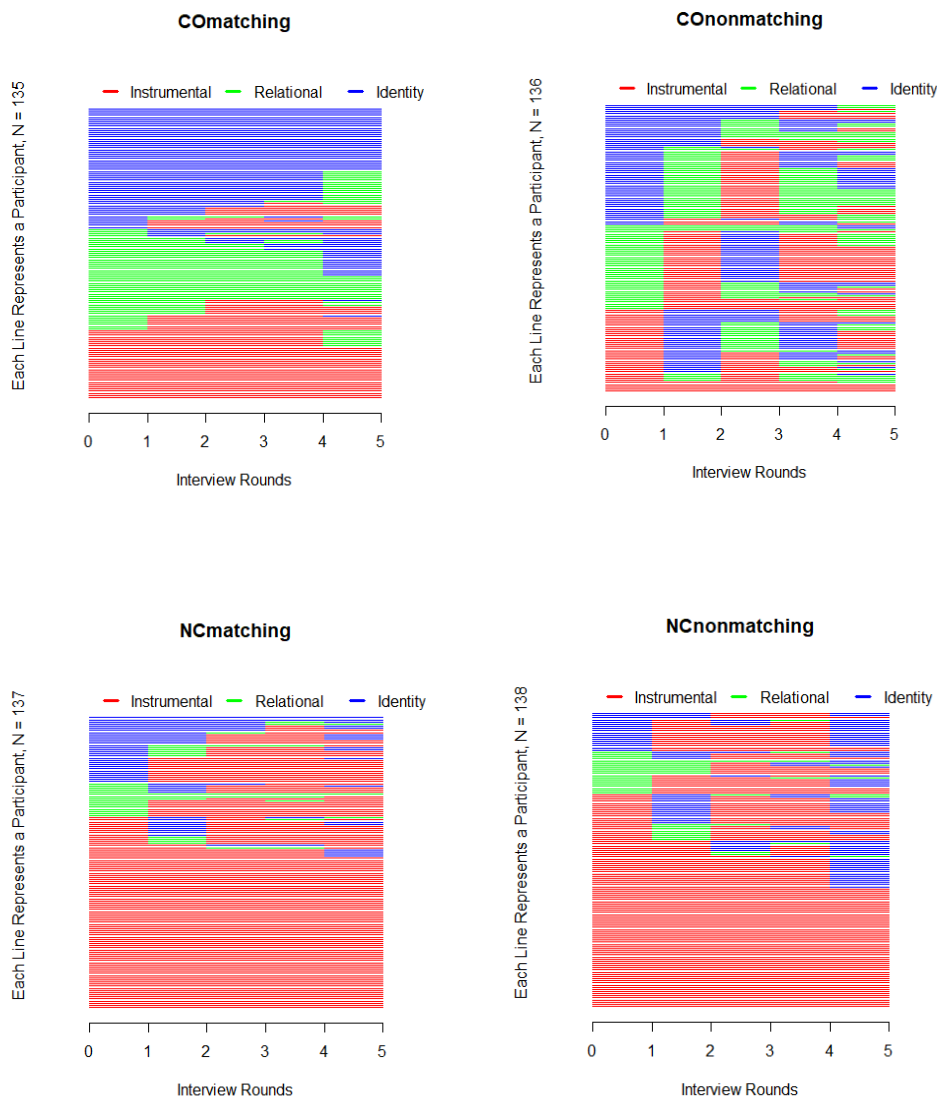


Figure 3. Participant motivational frame distributions across the four experimental conditions for each of the five interview rounds (experiment 1, chapter 5)

Note. Each line represents one participant.

Similarly to the first experiment in chapter 5, participants in the second experiment (pub conversation; Figure 4 below) also tended to overwhelmingly select the instrumental frame in the competitive orientation (labelled as non-cooperative; NC; red area), while participants in the cooperative orientation condition (labelled as cooperative; CO) tended to more evenly select the three motivational frames (mix of red, green, and blue colours).

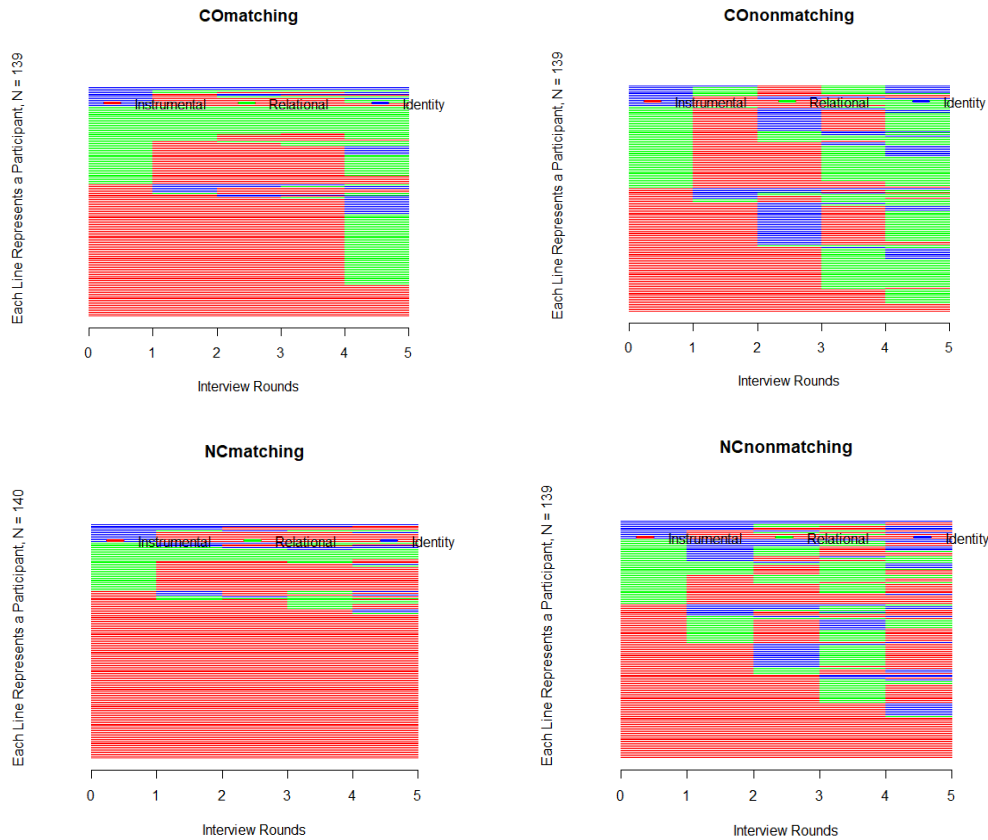


Figure 4. *Participant motivational frame distributions across the four experimental conditions for each of the five interview rounds (experiment 2, chapter 5)*  
*Note.* Each line represents one participant.

**Appendix C. Open science statement**

In order to adhere to open science practices and increase the transparency of the research, all studies within the current PhD research were pre-registered on the open science framework (Foster & Deardorff, 2017). Data and materials have been openly shared, with the exception of the authentic military interview transcripts examined in Chapter 6, which could not be shared because of their confidential nature (still, the code book that was used for coding the military investigative interview transcripts is available). In addition, the R-code used to analyse the data from the studies within the current PhD thesis has been made openly available on the open science framework. It is believed that these practices would increase the transparency and reproducibility of the current PhD research.