The Effect of Guilt and Timing of Evidence Disclosure on Rapport in the Investigative Interview

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Abstract

Rapport plays a critical role in the investigative interview, positively influencing the amount of information elicited from the interview. In order to detect deception from suspects, the Strategic Use of Evidence and Tactical Use of Evidence technique were developed. This study investigates the effect of evidence disclosure timing (gradual vs. late) and suspect status (guilty vs. innocent) on rapport. The participants ($N = 67$) were randomly allocated to one of the four conditions. Participants read an online mock crime, tailored to their condition of either committing a heist (guilty condition) or visiting a museum for a day (innocent condition). The mock crime was followed by an online mock police interview where participants were instructed to convince the interviewer of their innocence. After the interview, the participants were asked to complete two rapport questionnaires. There was a significant positive effect found of gradual disclosure on rapport, highlighting the importance of utilising the TUE technique in the investigative interview. Rapport was significantly higher in innocent suspects compared to guilty suspects. This is likely due to the increased cost of cognitive load for guilty suspects due to having to lie during the interview, which might make the suspect less able to focus on coordination, positivity and mutual attentiveness, the elements of rapport. There were no significant interaction effects found between evidence disclosure timing and suspect status. This can be explained by the fact that participants in this experiment had to recall a large amount of information from the scenarios presented to them, this could have made the cognitive demand of the interview larger for the innocent suspects compared to real investigative interviews.

Keywords: investigative interview, rapport, evidence disclosure timing, Strategic Use of Evidence technique (SUE), Tactical Use of Evidence technique (TUE)

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Investigative interviews are the communication between a suspect, police, witness and potentially a victim with the primary goal of obtaining more information than is already known (Milne & Powell, 2010). This process plays a critical role in the investigative process to make informed decisions regarding the investigation (Weiher et al., 2023). Various interviewing styles can be used with each having an effect on the amount of information obtained from the interview (Holmberg & Madsen, 2014). Interviewing styles are typically grouped into the accusatory style and the information gathering style. In an accusatory interviewing style, the interviewer assumes the suspect is guilty which will often lead to them pressuring the suspect into a confession, which can lead to false confessions (Brimbal et al., 2020; Kassin & Gudjonsson, 2004). Therefore, the information gathering method empathises on rapport as a central aspect (Vrij et al., 2014). In the following section more information on rapport in the investigative process will be discussed.

Rapport

According to Tickle-Degnen & Rosenthal (1990), rapport consists of three elements which are mutual attentiveness, positivity and coordination. Mutual attentiveness refers to engagement in the communication from both parties. Thus, the interviewer should be interested in the suspect's story and vice versa, this conversation does not always have to be positive (Novotny et al., 2021; Tickle-Degnen & Rosenthal, 1990). Positivity entails mutual care and synchrony and not disparaging the suspect (Novotny et al., 2021; Tickle-Degnen & Rosenthal, 1990). Coordination means both suspect and interviewer responding to each other both verbally and non-verbally in a harmonious manner. As for mutual attentiveness, coordination does not

always have to be positive. Negatively loaded conversations can still have high coordination. Coordination can occur simultaneously or it can happen sequentially, in the case of turn-taking (Tickle-Degnen & Rosenthal, 1990).

Creating rapport in the interview can alleviate anxiety of the suspect which promotes an environment of open communication (Thomas et al., 2009). Open communication encourages the suspect to share their account of the story. Building rapport promotes the likelihood of eliciting a true confession and is therefore of great importance in the investigative interviewing process (Kassin & Gudjonsson, 2004). Next to that, rapport in the investigative interview leads to more sharing of valuable information (Brimbal et al., 2021; Goodman-Delahunty et al., 2014). More information is given by the suspect as rapport mitigates resistance of the suspect towards the police officer (Abbe & Brandon, 2012; Alison et al., 2013), which leads to suspects being more open towards cooperation with the police officers. Despite the fact that creating rapport promotes the likelihood of eliciting a true confession, it is not always certain this confession is true (Loftus, 1996). Therefore, several interviewing techniques were developed to detect deception.

Strategic Use of Evidence technique

One technique that has been studied is the Strategic Use of Evidence technique (SUE technique), with the aim of deception detection and improving the accuracy of distinguishing between the truth or a lie by disclosing evidence at the end of the interview (Hartwig et al., 2014). The SUE technique is built upon the fact that liars and truth tellers hold a common goal which is convincing the police officer of their innocence but reach this goal with different strategies. Suspects adopt different strategies due to the difference in the threat they face in the investigative interview. Guilty suspects are threatened by information the interviewer might have

on them. Innocent suspects are threatened by information the interviewer might not have on them that proves their innocence.

Based on the self-regulation theory, guilty suspects tend to use two different strategies to convince someone of their innocence: avoidance or escape (Hartwig et al., 2014). Avoidance can mean avoiding talking on what has happened, escape can include strategies of denial. The SUE technique can challenge these strategies by pointing out differences between the suspect's statements and available evidence by disclosing evidence at the end of the interview after the suspect gave their account of what happened. Hartwig et al. (2005) researched the difference between early and late disclosure of evidence in the interviewing process and found that observers obtained higher accuracy rates in pinpointing lies in late disclosure of evidence than early disclosure. Late disclosure led to more inconsistencies between the suspect story and the available evidence which the suspect would only hear of later in the interview. With early disclosure of evidence, the suspect will know what not to and what to say in order to not contradict the evidence that was just presented.

By using the SUE technique, the interviewer needs to ask the suspect specific questions that are about the incriminating evidence before disclosing the evidence (Granhag & Hartwig, 2009). However, withholding evidence during an interview can create tension between the suspect and the police by not being honest and transparent which the suspect might notice. Especially, if the suspect's legal representative informs them that evidence is being deliberately withheld. This tension may undermine the rapport-building process or even prevent rapport from being established altogether (Sukumar et al., 2016). Therefore, it is argued that a gradual disclosure, where the interviewer releases pieces of information on the evidence available, will eventually lead to more rapport.

Tactical Use of Evidence technique

An alternative interviewing technique is the Tactical Use of Evidence technique (TUE technique) which involves gradual disclosure of evidence. This allows the interviewer or observer to assess inconsistencies between the suspect's story and the evidence multiple times throughout the interview (Oleszkiewicz & Watson, 2021)**.** As in SUE, TUE also takes into account that guilty and innocent suspects differ. However, TUE assumes that the lack of detail guilty suspects give, reflects the interview costs guilty suspects more cognitive load due to having to lie (Hartwig et al., 2007). This suggests that suspects, particularly guilty suspects, tend to be cautious of giving statements that contradicts evidence regardless of evidence disclosure timing. Guilty suspects tend to keep the information they give simple and only give details when they know it will not incriminate them and will delay time to think of answers to questions or on how to phrase themselves. Gradual release of evidence will allow the interviewer to assess multiple times in the interview how the guilty suspect reacts to evidence with the innocent suspects being honest and consistent from the start (Oleszkiewicz & Watson, 2021).

By gradually disclosing evidence, the interviewer does not keep information from the suspect until the end of the interview which fosters honesty and transparency. In contrast, the SUE technique can generate tension between interviewer and suspect which comes from withholding evidence.

Hypotheses

Rapport is important in the investigative interview as it contributes to eliciting a true confession from the suspect (Kassin & Gudjonsson, 2004). Late disclosure can disrupt rapport by being dishonest about available evidence and deliberately withholding this evidence (Sukumar et

al., 2016). Therefore, it is hypothesized that gradual disclosure leads to higher rapport during an investigative interview compared to late disclosure of evidence. As guilty suspects do not want to give contradicting information compared to the evidence and having a higher cognitive demand due to having to lie with the innocent suspect being honest from the start (Hartwig et al., 2007; Oleszkiewicz & Watson, 2021) it is hypothesised that the effect of disclosure time on rapport is only present when the suspect is guilty, so there is no difference in rapport for innocent suspects between TUE and SUE.

Methods

Design

A 2(suspect status: guilty or innocent) x 2(evidence disclosure: gradual or late) between-subjects design was applied to study the effects of evidence disclosure time and suspect status on rapport. This was researched in an online experimental setting, with use of mock-interviews between interviewer and suspect. After finishing the mock-interview, participants filled in two questionnaires which measured their rapport.

Participants

Sixty-eight participants participated in this experiment. One participant was deleted from the data, as the participant did not finish the full Qualtrics questionnaire, which leaves a total sample size of $N = 67$. The participants had a mean age of 22.1 years ($SD = 2.47$). The sample consisted of 32 males and 35 females. The age range was from 18 to 30 years old. Sixteen participants were assigned to the innocent condition with late disclosure of evidence. Sixteen participants were assigned to the innocent condition with gradual disclosure of evidence. Sixteen

participants were assigned to the guilty condition with late disclosure of evidence and at last, seventeen participants were assigned to the guilty condition with gradual disclosure of evidence. Participants could only sign up for this study if they spoke English and were at least 18 years old. This study was approved by the Ethics Committee of the University of Twente (approval number: 240758).

A power analysis was done to determine the sample size that was needed for this study. An effect size of $f = .25$ was used considering the four conditions, a significance level of $a = .05$ and power = .80. The analysis indicated a desired sample size of approximately $N = 45$ per condition to detect a significant effect. This sample size was not reached due to time constraints.

Materials

Technical requirements

This experiment was an online study. The materials that were required for this study were a working laptop with a functioning internet connection as well as the application Microsoft Teams. It was preferred that participants owned a working camera, however this was not mandatory for the experiment.

Informed consent

Participants were required to give consent to participate in the study. The informed consent form contained the goal of the study, where it is explained that this study aims to understand the interaction between police officers and suspects. Next to that, it is explained what the participant needs to do, if there are any risks involved in the study and how the data will be stored. For the detailed informed consent, see Appendix A.

Mock crime

In this study, participants were randomly assigned to the guilty or innocent condition. If they were assigned to the innocent condition, they read a scenario about how they visited the museum for a day. During the entire study, participants stayed in the Microsoft Teams meeting and kept the Qualtrics open. The scenarios included options that the participant had to choose from to respond to their friend. Examples of answers they could choose include “Works for me”, “When will there be food?” or “Maybe I will put on some fake glasses so I don’t feel left out in having changed so much”. The answers participants chose did not have an effect on the experiment itself. The purpose of these questions was to make the scenarios more immersive. Participants in the guilty condition received a scenario on how they steal a painting from the museum. Again, in the scenario they are talking to their friend and providing answers to them. Examples of answers participants could choose are “Why do we have to wait till 9 pm? Can we not immediately go and get the painting as soon as the museum closes?”, “Are we sure we can rely on the others?”, “What about the other security guard?”. Similarly, this did not have an effect on the experiment later on. See Appendix B for parts of the scenarios.

Interview

After reading the scenarios, participants had a mock police interview. These were held in the same environment, the online meeting in the application Microsoft Teams. The interviews were held with two scripts, depending on if the participant was in the gradual or late condition. The gradual condition followed the principles of TUE by releasing evidence piece by piece to the participant. The late condition followed SUE where evidence was kept from the participant until the end of the interview. During the interview, questions were asked about the participants’ visit to the museum. Following a script ensured consistency across interviews and minimized the

influence of the questions themselves on rapport, allowing the experimental conditions to be the primary factor affecting rapport. See Appendix C for the complete interview script for both conditions.

Questionnaires

After the mock interview, participants were asked to fill in the rest of the questionnaire in Qualtrics. Two scales were used to measure rapport. The Rapport scale by Duke et al. (2018) and the Bernieri Rapport scale (adapted from Bernieri, 1991). Two measures of rapport were used to ensure a comprehensive measure of rapport as rapport may be conceptualized differently according to different scales. The questionnaire of Duke is a scale designed for researchers who explore rapport development specifically in the investigative interview. It measures the interviewer's rapport-building behaviours, the interviewee's perception if rapport has been established at all and at last, it measures how much the interviewee is willing to share information with the interviewer (Duke et al., 2018). Example questions in the rapport scale by Duke are "I think the police officer was generally honest with me" and "I think that the police officer can generally be trusted to keep their word". Answers were documented on a 5-point Likert scale with 1 indicating "strongly disagree" and 5 indicating "strongly agree". Number 3 indicated neither agree or disagree (see Appendix D for the full questionnaire of Duke). Bernieri's questionnaire is a more shallow scale which measures rapport with straightforward questions such as "the interaction seemed well-coordinated", "the interaction seemed harmonious" and "the interaction seemed positive". Therefore the scale of Bernieri asks the participant to directly evaluate the rapport established in the conversation (adapted from Bernieri et al., 1991). Similarly to the questionnaire of Duke, answers were documented on a 5-point

Likert scale with 1 indicating “strongly disagree” and 5 indicating “strongly agree”. Number 3 indicated neither agree or disagree (see Appendix E for the full questionnaire of Bernieri).

After hearing various questions from participants regarding three items in the rapport scale of Duke, these were deleted. It was not clear in these questions whether the participant was reviewing their interaction with the police officer or the interaction between the two researchers in the experiment. After reviewing, the questions could be misinterpreted. These questions were deleted after obtaining the results of the last participant and before analysing the data. The following questions were deleted: “The police officer seemed to respect each other’s knowledge.”, “The police officer seemed to have their culture in common.” and “The police officer really listened to each other.”.

After the two rapport questionnaires, participants were asked if they would come back for a follow-up interview with the police officer. They could answer this question with either “yes” or “no”. This question was not analysed in this study as it became apparent after conducting the experiments, it was not clear for several participants if this question asked if they would come back for another experiment or would come back for a follow-up police interview, were they in this situation. The participants were also asked for their age and gender and how much they could empathize with the scenarios of the guilty and innocent condition regarding their museum visit or the heist. They were also asked how motivated they were to participate in this study. At last the participants received a detailed debriefing with a clear explanation of the true purpose of the research, see Appendix F for the debriefing.

Procedure

Upon arriving at the Microsoft Teams call, participants were greeted by one researcher, who had their camera and microphone on. This researcher's role was to monitor the participant and provide instructions. The second researcher, who would later conduct the interview, kept their camera and microphone off until the interview to minimize distraction.

Participants were first asked to open the Qualtrics link that was sent to them through the application. They were instructed to read and fill out the first page which contained the informed consent. Once they had completed the form, they were asked whether they ticked all the boxes on this page. If they had, they were told to continue the Qualtrics until they got to a screen that said they had to contact the researcher to be able to proceed.

At this point, the researcher informed the participants of a mistake in the instructions of the Qualtrics. In the instructions it was explained they will listen to voice messages from the character Anna who would talk with them about either a museum heist (for the guilty condition) or a museum visit (for the innocent condition). The error was that the participants would in fact not listen to voice messages but read them instead. These written out voice messages were provided to the participant before the interview so the situation would be more immersive and so the researcher could ask questions about the scenario in the interview. After the error was explained, participants were directed to a page with instructions on how to respond to Anna's messages. They were told to read the messages and choose a response to each. Regardless of their choice, the content of the messages did not affect the narrative.

Following the instructions, participants read a scenario based on their assigned condition. Those in the guilty condition read a narrative on a museum heist, while those in the innocent

condition received a narrative on how they were visiting the museum for a day with some friends. After finishing the scenario and answering the according questions, they came to a page that stated they had to contact the researcher and await instructions to proceed. In order to be certain the participant would not continue the Qualtrics without mentioning to the researcher they arrived at this part, they were asked for a password in the Qualtrics. The password was given after the mock interview was held.

Next, the researcher asked the participant if they still consented to having their interview audio-recorded and reminded them their face will also be recorded due to Microsoft Teams settings, however will not be used in the study. When having received consent, the researcher started the recording. Before the recording started, participants were reminded that the goal of the interview was to convince the police officer (the researcher) of their innocence. At the end of the interview, participants were asked if they wanted to share more information with the police officer before closing the interview. After this the recording was stopped.

After the recording was stopped, participants were provided with the password to continue the Qualtrics questionnaire. The remaining sections of the Qualtrics included several questionnaires. The ones that are used in this study included two rapport questionnaires, how well the participants could empathize with the scenario presented before them earlier in the experiment, their demographics and a debriefing explaining the true purpose of the study.

Data Analysis

The programme R was used to analyse the data, R version 4.2.3 (2023-03-15). The following packages were installed: dplyr, tidyverse and ggplot2, haven, ggplot2, car and pwr. The data was tested for homogeneity using the Levene's test. After this, the data was tested for

normality using the Shapiro Wilk test and a Q-Q plot of the residuals was created. To test the hypotheses, two 2x2 ANOVA tables were computed to test the effect of suspect status on rapport, the disclosure timing on rapport and the interaction effect between the independent variables on both the Bernieri and Duke scale. Next to that, Pearson's correlation coefficient was computed to test for the correlation between the two rapport scales. Additional exploratory analyses were done. To test the effect of neurodiversity on rapport, point-biserial correlations were computed. To test the correlation between the participants' ability to empathize with the scenarios of the heist or museum visit and rapport, Pearson correlations were analysed.

Results

Descriptive Statistics

In this study the dependent variable Rapport and the two independent variables suspect status (guilty vs. innocent) and disclosure timing of evidence (gradual vs. late) were investigated. Participants in the gradual condition had a mean rapport score of $M = 3.79$, $SD = 0.47$, while those in the late condition reported $M = 3.67$, $SD = 0.48$.

Correlation of scales

To assess the correlation between the scale of Duke and of Bernieri, a Pearson's coefficient was computed. The goal of computing this value was to see if there is a correlation between the two questionnaires and see if the questionnaires measured a similar construct. The correlation coefficient ($r(N = 67) = .62$, $p < .001$) indicates a moderate positive relationship between the two scales. The coefficient confirms the validity between the two scales but also shows there could be different aspects of rapport that they measure.

Assumptions Checks

Before conducting the main analyses, assumptions of homogeneity of variance and normality were tested for the data of the Duke and Bernieri questionnaire. For the Duke questionnaire, Levene's test indicated no significant differences ($F = 0.308$, $p = .820$), which means that the variability in rapport scores across groups is similar. Normality was confirmed through the Shapiro-Wilk test ($W = 0.99$, $p = 0.91$). Which indicates that the residuals of the data follow a normal distribution. Therefore, no post-hoc analyses needed to be done. In Appendix G, the QQ-plot of the residuals is shown.

For the Bernieri scale, Levene's test indicated no significant differences ($F = 0.827$, $p = .494$), which means that the variability in rapport scores across groups is similar. Normality was confirmed through the Shapiro-Wilk test ($W = 0.99$, $p = 0.72$), which indicates that the residuals of the data follow a normal distribution. Therefore, no post-hoc analyses needed to be done. In Appendix H, the QQ-plot of the residuals is shown.

Main Analyses

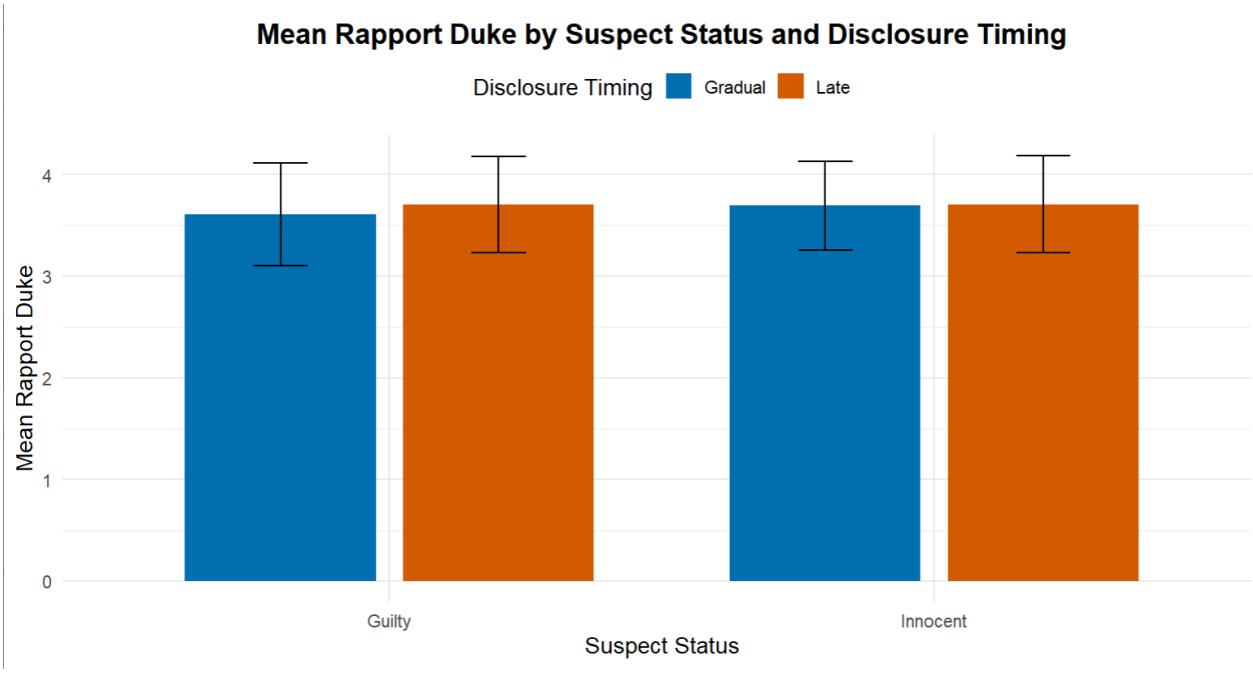
The Duke Questionnaire

A two-way ANOVA was conducted to test the effects of suspect status (guilty vs. innocent) and disclosure time (gradual vs. late) on rapport scores on the Duke scale. The main effects were neither statistically significant for suspect status, $F(1, 63) = 0.158$, $p = .693$, nor disclosure timing, $F(1, 63) = 0.254$, $p = .616$. Scores of rapport were not statistically significantly higher in the late disclosure condition ($M = 3.71$, SD = 0.47) than in the gradual disclosure condition ($M = 3.65$, $SD = 0.47$). Similarly, rapport was statistically insignificantly higher in the innocent condition ($M = 3.70$, $SD = 0.45$) than in the guilty condition ($M = 3.66$, $SD = 0.49$). The

interaction effect between suspect status and disclosure time was not significant, $F(1, 63) = 0.137$, $p = .712$. Figure 1 visualizes these findings. Results of the two way ANOVA analysis is displayed in Appendix I.

Figure 1

Effects of disclosure timing and suspect status on rapport on the Duke scale



Note. The bar chart shows the differences in Rapport between gradual and late disclosure, and the innocent and guilty condition.

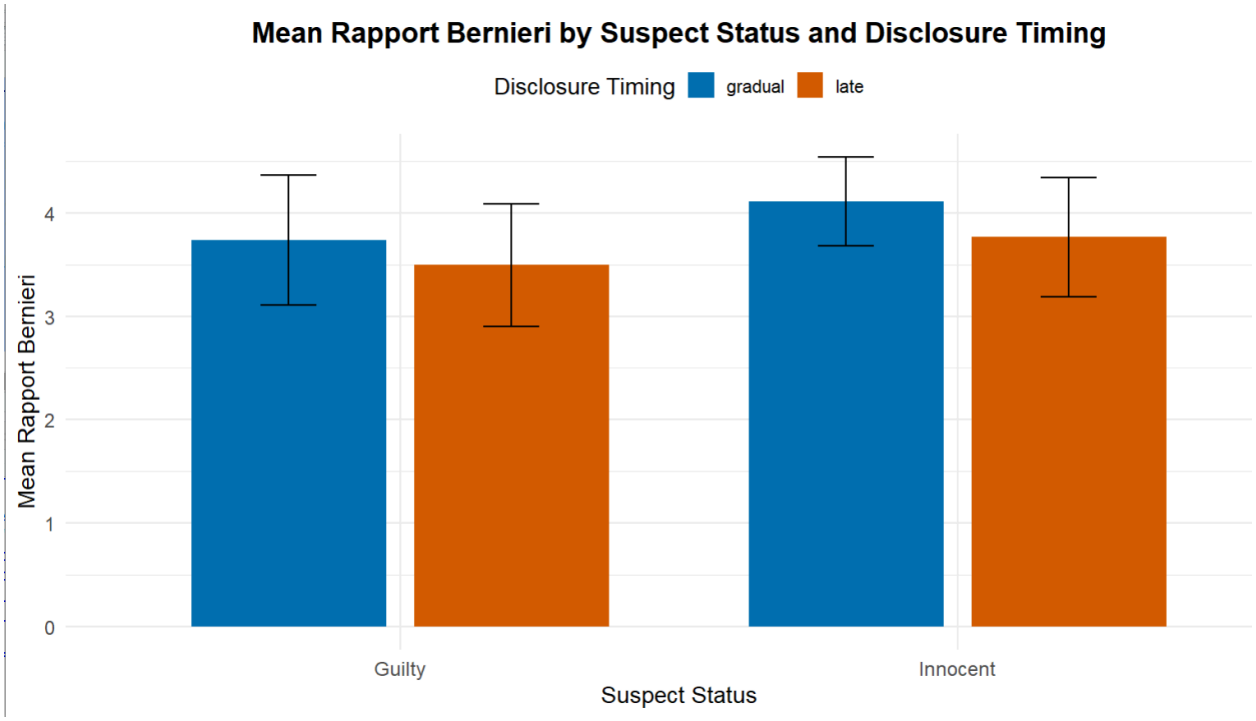
The Bernieri Questionnaire

A two-way ANOVA was conducted to test the effects of suspect status (guilty vs. innocent) and disclosure time (gradual vs. late) on rapport scores on the Bernieri scale. The main effects were both statistically significant for suspect status, $F(1, 63) = 5.493$, $p = .022$, and

disclosure timing, $F(1, 63) = 4.673$, $p = .034$. Scores of rapport were higher in the gradual disclosure condition ($M = 3.92$, $SD = 0.56$) than in the late disclosure condition ($M = 3.63$, $SD = 0.59$) and rapport was higher in the innocent condition ($M = 3.94$, $SD = 0.53$) than in the guilty condition ($M = 3.62$, $SD = 0.61$). The interaction effect between suspect status and disclosure time was not significant, $F(1, 63) = 0.127$, $p = .723$. Figure 2 displays these findings in a barchart. The results of the two-way ANOVA analysis are displayed in Appendix I.

Figure 2

Effects of disclosure timing and suspect status on rapport on the Bernieri scale



Explorative Analyses

Correlation of Neurodiversity and Rapport

As 31% of the participants were diagnosed with neurodiversity or believed that they are neurodiverse, an explorative analysis was done on a possible correlation between neurodiversity and rapport. This could contribute to future research on the effects of neurodiversity on rapport. Neurodiversity, dyslexia, autism, ADHD, and other kinds of neurodiversity were binary variables, where 1 indicates the presence of a diagnosis or self-diagnosis and 0 indicates no diagnosed or no self-diagnosis. Point-biserial correlations were computed to assess the relationship between neurodiversity and rapport, a continuous dependent variable. A significant positive correlation was found between diagnosed or self-diagnosed ADHD and rapport $r_{pb}(6) = .25$, $p = .041$. Dyspraxia and dyscalculia were tested in this study, however no participants were found that were diagnosed or thought they had this disorder.

Table 3

The correlations between neurodiversity and rapport on the Duke and Bernieri scale.

Variable	Rapport Duke	Rapport Bernieri
Neurodiversity	0.07	0.08
Dyslexia	-0.16	-0.12
Autism	-0.14	-0.06
ADHD	0.12	0.25

Other	0.04	-0.18

Correlation of Empathising with the Scenario and Rapport

Next to this, the Pearson's correlation coefficient was also computed to test for the relationship between rapport on the Bernieri and Duke scale and how much the participant could empathize with the scenario's. This was tested as an exploratory analysis as participants who could empathize better with the scenarios presented to them, might have been more engaged in the experiment which, in turn, can lead to higher rapport. The analysis revealed a positive correlation between the ability to empathize with the scenario and rapport on the Bernieri scale, however, this relationship was not significant ($r(N = 65) = .18$, $p = .151$). Similarly, the analysis revealed an insignificantly positive correlation on the Duke scale ($r(N = 65) = .10$, $p = .438$).

Discussion

Key Findings

This study aimed at researching the effect of timing of evidence disclosure on rapport and the interaction effect between suspect status and disclosure timing. It was expected that gradual disclosure would lead to higher rapport during an investigative interview than early disclosure of evidence. This hypothesis was partially supported as gradual disclosure did positively affect rapport as measured by the Bernieri scale, however no significant effect was found measuring the Duke scale. There were no significant interaction effects found between suspect status and evidence disclosure timing. Rapport was significantly higher in the innocent condition compared to the guilty condition on the Bernieri scale. There was no significant difference found here on the Duke scale.

Rapport

Differences in results between the Bernieri (adapted from Bernieri, 1991) and Duke scale (Duke et al., 2018) could be explained by the fact that these scales measure different constructs or aspects of rapport. Duke and Bernieri could have conceptualized rapport differently. Rapport consists of several constructs and is defined by Tickle-Degnen & Rosenthal (1990) as mutual attentiveness, positivity and coordination. However, several sources conceptualize rapport differently. Therefore, rapport does not have one clear definition (Weiher, 2020).

Duke's questionnaire is more focused on the interviewee's perception of the interviewer's behaviour. The questionnaire of Duke measures the interviewer's rapport-building behaviours, the interviewee's perception if rapport has been established at all and how much the interviewee is willing to share information with the interviewer (Duke et al., 2018). The scale of Bernieri asks the participant to directly evaluate the rapport established in the conversation (adapted from Bernieri et al., 1991). Therefore it could be that gradual disclosure positively affects the suspect's perception of the overall interaction with the police officer, as is captured by the Bernieri scale, which reflects broader aspects and dynamics of the conversation. However it might not significantly impact the suspect's perception of the interviewer's rapport building techniques which is the focus of the questionnaire of Duke.

Next to that, during the experiment, several participants pointed out confusion regarding the items on the Duke scale. It could be possible that participants were confused about more questions on this scale but did not mention it to the researchers. This could explain that there were no significant effects found on the scale of Duke.

The significant positive effect of gradual disclosure on rapport measured on the Bernieri scale implies the importance of using the TUE technique to enhance rapport during the investigative interview as building rapport in the investigative interview leads to more sharing of valuable information (Brimbal et al., 2021; Goodman-Delahunty et al., 2014). By adopting the TUE technique the interviewer enhances rapport.

Evidence Disclosure Timing and Suspect Status

The finding that the interaction effect between disclosure timing and suspect status was not significant was unexpected. This hypothesis was based on prior research suggesting that innocent suspects are truthful from the start of the interview regardless of disclosure timing (Oleszkiewicz & Watson, 2021). As a result, it was expected that innocent suspects' rapport would not be influenced by suspect status and therefore the positive effect of gradual disclosure on rapport would only exist for guilty suspects. However, the fact that gradual disclosure did cause higher rapport in innocent suspects could be explained by that the interview itself cost the participants high cognitive load regardless of their suspect status. TUE assumes that the lack of detail guilty suspects give, reflects the interview is more cognitively demanding for guilty suspects due to having to lie (Hartwig et al., 2007). The innocent, and guilty, participants in this experiment had to recall a large amount of information from the scenarios presented to them, this could have made the cognitive demand of the interview larger for the innocent suspects compared to real investigative interviews.

On the Bernieri scale, however, participants reported significantly higher rapport in the innocent condition, compared to the guilty condition. A high cognitive load during the interview for the guilty suspects, can impede the suspect from establishing rapport with the interviewer and

can make the suspect less able to focus on coordination, positivity and mutual attentiveness, the elements of rapport According to Tickle-Degnen & Rosenthal (1990). This could have caused a higher rapport in the innocent condition.

Explorative analyses

Neurodiversity

In the exploratory analysis on the effects of neurodiversity on rapport, it becomes apparent that ADHD and rapport are significantly positively correlated on the Bernieri scale. Autism and dyslexia, on the other hand, showed only negative insignificant correlations. One possible explanation for the positive correlation with ADHD could be the presence of a researcher diagnosed with ADHD during the experiment. Both the researchers have no other diagnoses of neurodiversity. Research suggests that when an experimenter shares similar traits with participants, specifically ADHD, participants may perceive taks as less cognitively demanding, which in turn fosters high rapport (Gidron et al., 2020). Next to that, this effect could be explained by the double-empathy problem. The double empathy problem explains that difficulties in communication can be the result of inconsistency between the perspectives of two parties (Milton, 2012). In this case, the shared neurodiverse experience of ADHD may have reduced this inconsistency which occurs between a neurotypical and neurodivergent individual. This could have enhanced rapport in participants with ADHD compared to participants with other diagnoses or neurotypicals. Although there is research done on shared neurodiversity diagnoses between experimenter and participant, methodologically we should consider the relationship between rapport and ADHD within the investigative interview, as this is still uncertain.

Empathising with the Scenario

As shown in the results, there was a small but insignificant relationship between the ability of participants to empathize with the scenario that was presented to them before the mock-interview and rapport. This positive insignificant relationship can be explained by the idea that participants who have a higher rapport with the experimenter(s) can feel more engaged with an experiment, making it more likely they could empathize with the scenario better (Horsfall et al., 2021). This does state that rapport was present before the mock interview and that participants did not only review the mock interview in the rapport questionnaire but also perceived rapport from before the interview.

Limitations

A limitation of this research is that the mock police interviews were held in an online environment. In an online environment, a suspect feels safer than in an offline face-to-face environment (Bonensteffen et al., 2022). Participants might have felt more rapport during and after the conversation due to their perceived feelings of safety (Bonensteffen et al., 2022), regardless of the disclosure timing.

Next to that, the online environment was not always stable across participants. The background of the researcher has changed among participants from a more neutral background and no noise to a room with colourful attributes on the wall. This could have affected reported rapport. When a participant sees similarities in the life of the researcher and themselves, like paintings or pictures on the wall, this could lead to higher rapport (Mirick & Wladkowski, 2019). This could have increased the reported rapport for some participants and decreased for others. This is not something that could be compared in this study as it is unknown which participants

saw similarities in the background during the study. The online environment was chosen for this study due to time constraints and reaching for a higher sample size.

Another limitation was that the sample size was too small according to the power analysis that was done. The sample size was not reached due to time constraints and having a minimal amount of weeks to complete the experiment. Due to a limited number of participants signing up through the official University of Twente SONA system, where researchers gather participants for their study, there had to be resorted to convenience sampling. One of the researchers gathered significantly more participants through this method which may have influenced the results by increasing reported rapport of participants that were familiar with the researcher.

Participants that have a build up rapport with a researcher could lead to them giving more desirable answers in the questionnaire which influences the validity of the research negatively (Horsfall et al., 2021). Desirable answers in this experiment specifically could mean that participants rated the interview higher in means of rapport, reporting a more positive conversation rather than a negative one. If it was the case that the researcher was familiar with a participant, this researcher would guide the participant through the instructions and the other researcher would conduct the mock interview to minimize the effects of familiarity on rapport. However, it could still be that the presence of this researcher during the mock interview was of positive influence on rapport. The researcher did have their camera and microphone off but was still present in the Microsoft Teams call.

Finally, several participants pointed out during the experiment they were confused about questions in the Duke questionnaire. Questions that were not clear were deleted before analysing the data. However, it could be possible that participants were confused about other questions in

this scale but did not point it out. In future research the questions should be clear and concise to ensure clarity.

Conclusion

In conclusion, this study has produced several findings contributing to research on evidence disclosure timing and rapport. Gradual disclosure has a significant positive effect on rapport measured on the Bernieri scale, implying the importance of implementing TUE in the investigative interview. Rapport was significantly higher for innocent suspects compared to guilty suspects on the Bernieri scale implying suspect status itself influences rapport, regardless of disclosure timing. Further research needs to be done on the different aspects and definitions of rapport in order to accurately measure the differences in effect of SUE and TUE. This research highlighted the complexity of rapport and its many aspects, empathising the importance of implementing gradual disclosure in the investigative interview.

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AI Statement

During the preparation of this work, I used the tools ChatGPT and Perplexity.ai. I made use of ChatGPT to check what was faulty in my RStudio script after coming across several errors. It helped me write codes when I could not figure out these codes myself. All of these codes were thoroughly checked before running in any analysis. Next to that, I used this tool to help me put my thoughts into clear words which I reviewed and edited before writing down in my report. At last, I used ChatGPT to check whether results were reported in APA style 7th edition. Perplexity.ai was used to find sources. All articles and sources used in this work were personally reviewed by myself. I take full responsibility for the final outcome.

Appendix

Appendix A

The informed consent

Purpose of the research

The aim of this research is to gain a better understanding of the interaction between police interviewers and suspects and how this affects the outcome of interviews. If you take part you will be asked to play the role of a suspect accused of a crime. Participating in this research takes up to 40-45 minutes.

What will I have to do?

You will be asked to play the role of someone visiting a museum in Berlin. You will be given a brief description that describes your activities. You will need to read this information carefully because you will be asked questions about it within the interview. After reading through the material, you will take part in a mock police interview which will take place online. During the interview, the police interviewer will ask you a series of questions. Your task will be to convince them of your innocence. After the interview, you will complete a questionnaire and the experimenter will provide a debrief which explains the study in more detail.

Who can take part in this research?

To take part you must be at least 18 years of age or older and be fluent in English.

Are there any risks associated with taking part?

There is minimal risk involved in participating in this study. However, some participants might feel stressed because you must play the role of a suspect accused of a crime within a police interview. If you are worried about how this might affect you, we ask you to consult the research team before deciding to participate. Our contact details can be found at the end of this form. There will be no danger to your physical well-being or safety, and you can end the interview at any time without having to provide an explanation.

How will my data be stored and used?

Your data will be used for the completion of two BSc theses, and the research may also be presented at academic conferences or within academic journals. Your questionnaire data will be stored only in an anonymized form. Access to the research data can therefore not be used to identify specific individuals. The interviews will be recorded in order to be able to analyze the obtained data. The recorded data will be stored on secure university servers for 10 years according to the University of Twente's data policy. All data (audio and questionnaire) will be stored on the universities' password-protected servers to ensure maximum security. The audio will only be available to the research team, unless you specify, at the end of this study, that the audio may be used for educational purposes or to present the research. The anonymized data may be made public in accordance with the principles of open science, but any publicly available data will be in a fully anonymized form (including the removal of any participant numbers) and so it will not be possible to identify any single individual from the available data.

What are my rights and how can I withdraw?

Participating in this research is entirely voluntary and you do not have to take part if you do not want to. You have the right to withdraw from participation at any time, without giving any

reasons, without any consequences. You can simply hang up the call, the researcher will not call you back. However, if you lose connection accidentally, the researcher will remain available to call back for 5 minutes. Upon your request we will immediately delete the audio of you, you need only provide us with your participant number, so we know which audio to delete. Participating in this research can be terminated at any moment. Presuming that you terminate this research, all your data will be fully deleted and omitted from the research.

Questions or remarks regarding this research can be directly emailed to the researchers (j.a.herrema@student.utwente.nl and a.geschiere@student.utwente.nl) or the project supervisor (s.j.watson@utwente.nl and l.weiher@utwente.nl).

Complaints or concerns about this research can instead be emailed to the secretary of the Behavioural Management and Social Sciences Ethics Committee of the University of Twente. (Drs. L. Kamphuis-Blikman, Tel: +31 (0) 53 489 3399, or Email: l.j.m.blikman@utwente.nl).

Please tick the boxes if you agree and consent:

Appendix B

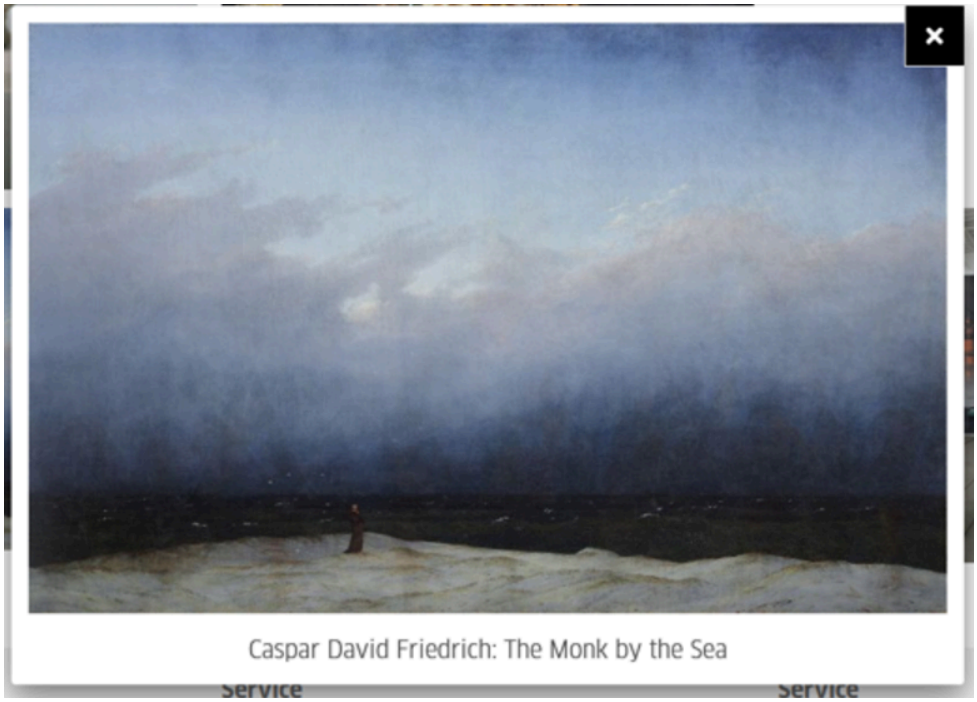
Scenarios, guilty and innocent (partly)

Guilty condition

The facts are these:

You are in debt, desperately looking for a job and need extra cash to pay your rent because your landlord is already threatening to have you evicted and you have nowhere to go if you lose your flat. Anna, who you met at some social events during your studies in computer science, approached you at a bar recently with some mutual friends and asked you whether you would like to join in a heist. She convinces you that you will only steal a painting from a museum with limited risk of being caught, and no chance of anyone being harmed, so you agree. You have already been in contact with the team numerous times via encrypted messages. The team is:

Your role in the heist is to come up with a system that can overrule the silent alarm. You finally figured it out, so the time has come to actually steal the painting. Your target is the Old National Gallery in Berlin where the plan is to steal “The Monk by the Sea” by Kaspar David Friedrich. You don’t know anything about art, but Anna assures you it is a valuable enough painting that your financial worries would be in the past as soon as her buyer confirms the painting's authenticity and pays out.



Anna:

“Whatever works best for you, but make sure to at least wear the wig I gave you to hide your hair or it’ll be too easy to follow you on the security cameras outside.

Anyhow, from Marcel we know that there will only be two security guards on duty, and he is one of them. All the intrusion detectors are on the entrances and exits. The whole museum works like a bee hive. Once we are in, we are part of the hive so the security is really light. Still, avoid looking up as there will be lots of cameras. Marcel will delete the recordings but it is still better to be safe. Now, this is important: the museum closes at 7 pm.

Right before 7, we will hide in the disabled toilet in the basement floor. Marcel broke the lock, so the toilet is currently not in use so we can hide there until 9 pm. I don’t need to tell you that you cannot bring your phone but bring a book if you get bored.”

Innocent condition

The facts are these:

You are in debt. You are desperately looking for a job and you need extra cash to pay your rent, because your landlord is already threatening to have you evicted and you have nowhere to go if you lose your flat. Anna, who you met at some social events during your studies in computer science, told you about a job in Berlin when you met her again recently at a bar with some mutual friends. You apply and got an interview. As you have some friends in Berlin, you decided to stay a day longer in Berlin to meet your old friends.

Your friends are:

You have already exchanged some messages about the trip. Anna wants to visit the Old National Gallery and is especially excited to see The Monk by the Sea" by Kaspar David Friedrich. You agree to meet your friends there after your job interview. Anna has sent you some messages to prepare you for the trip.

Anna:

"Hey, I am just wanting to go through some last minute details before we meet in Berlin. I already sent you the travel plans. We will stay at my cousin's place - I sent you the address already. We will all meet at the Old National Gallery after your job interview. It is only a couple stations from your job interview. Take the U5 line on the metro to Museumsingel. Femke told me to send you the floor plans. Possibly because Pascal always gets lost and always wants to know what the place will look like before he goes anywhere. Sally works part-time in a bar close by, so we probably all go to the museum at different times. You'll be really surprised when you see us

all again. I will be blonde now. Femke got neck tattoos and piercings, though maybe that won't surprise you knowing her. Pascal, well he grew this big beard and we all pretend it looks good." Honestly, I cannot wait to see you all again! It has been too long!"

Appendix C

Mock interview scripts

Gradual disclosure

The gradual method

Part 1 – Opening and initial free narrative

Hello, my name is NAME.

I am investigating an incident at the Natural History Museum in Berlin. A painting has been stolen and we have reason to believe you may have been involved.

Because of that, I need to ask you some questions about your recent visit there. Please answer our questions as fully as you're able to. This is your chance to give your side of the story so we don't make any wrong decisions.

1. I want to go through each piece of what happened part by part, but first can you let me know in as much detail as possible about your visit to the museum?

Topic 1 - Establishing they were at the museum

As for late, skip questions where evidence is accounted for in the initial story.

1. First can you tell me about how you travelled to the museum?

If any evidence is omitted or contradicted, challenge after these two questions

E.g.

2. “I ask you because we have train tickets in your name for the U5 metro indicating that you travelled to the Museum on the day of the theft. Can you explain for me what you were doing travelling toward the museum?”

Possible contradictions and clarifications to note for probing:

Method of travel – you have tickets showing they were on the U5 metro line to Berlin.

Your have CCTV of the suspect entering the museum alone.

Topic 2 – Expertise

1. One thing we wanted to ask you about was your background, can you tell us a bit about your education and profession?

2. Can you tell us any more about your expertise in physical security measures, like alarm systems?

If they have not yet mentioned a reason to know about or purchase tools and materials for physical security:

3. To clarify, you are saying that there is no reason why you would need access to materials for building physical security devices?

If any evidence is omitted or contradicted, challenge after three questions are asked

3. We have reason to believe you would have the capability to build a device that could prevent the museum security from working properly. Is there anything you can tell us about that?

If this remains unexplained:

4. We know you have an education in computer science, have worked building security for museums in the past, and we have financial records showing you have ordered the parts that would be needed to build a device like the one used to interrupt the alarm systems in this theft. Can you explain why you decided to not tell us about this?

Possible contradictions and clarifications to note for later probing:

Do they mention they studies computer science and security – you know about their study and employment history in security design.

Do they explain why they might have ordered parts to make physical security devices – you have financial records showing they purchased equipment needed to make a device to interrupt the museum security systems.

Topic 3 – Group membership

If they have not mentioned meeting anyone at the museum:

1. Did you meet anyone at the museum?

If they still deny meeting anyone/fail to describe them:

2. To confirm, you're saying you were alone at the museum and didn't meet anyone?/Can you tell me any more about the people you were with? (If not after latter, thanks them and move on)

If any evidence is omitted or contradicted, challenge after two questions are asked

3. We have reason to believe you were planning to meet with some others at the museum, and we also suspect these people might also be involved in the heist. Do you want to tell me any more about anyone you might have met at the museum?

If this remains unexplained:

4. We have phone records showing you were in contact with one other person about meeting them at the museum, and that you planned to meet some others there. We also believe these people have some expertise that would be needed to perform a heist. Can you tell us any more about your plans to meet people at the museum?

Possible contradictions and clarifications to note for later probing:

Claiming to be alone.

Lying about/not mentioning being in contact with the other people.

Topic 4 – Activities within the museum

Depending on if they already explained being in in the disabled toilet:

1. While you were in the museum, did you need to use the bathroom at any point? (ask to elaborate if they only say yes)

If they deny:

2. Again, just to make sure I have your story right, you're saying you did not visit the bathroom while you were there

If they indicate any bathroom other than the disabled one in the basement:

3. Again, just to make sure I have your story right, you're saying you only visited that bathroom, and no others?

Depending on if they already explained being in room 3.06 or being by "the monk by the sea"

4. Did you go to the third floor of the museum?/You mentioned going to the third floor of the museum. Can you remind us what you were doing there?

If they deny (only the bits that are appropriate, e.g. if they admit being at the third floor but deny being at the painting):

Toilet fingerprints

5. You indicated that you were never in the basement disabled persons bathroom, but we have some information indicating you were in that room. Can you help me to understand why our information conflicts with your story?

If unexplained:

6. We have your fingerprints from multiple surfaces in that bathroom. Can you help me to understand how that could have happened if you were not in that room?

CCTV of the group in the room

7. We have additional information that indicated that you were in room 3.06, by the painting that was stolen. Can you explain why our information doesn't match with what you've told us?

If unexplained:

8. We recovered some CCTV footage that someone had attempted to delete showing you in that room with a group of people that match some our other suspects. Can you explain for me why we would have that footage if you were not in that room or by the painting?

Possible contradictions and clarifications to note for later probing:

Not mentioning being in the disabled toilet – You have their fingerprints showing they were in the disabled toilet.

Not mentioning being on 3rd floor/by painting – you have CCTV they thought they had deleted showing the group together in front of the painting and being on the third floor before the heist.

Part 4 – closing

1. That's all the questions I have for now, I wanted to thank you for coming in and talking to us. Is there anything else you want to add before I close the interview?

Then we are finished for now. Please stay here with us and my colleague will be with you shortly and explain the next steps.

Appendix D

Questionnaire Duke

Below, you will find statements describing different ways a person might think or feel about the relationship between yourself and the police officer on a scale from 1 = "Strongly disagree" to 5 = "Strongly agree". Please pick the answer that best describes the way you feel.

I think the police officer was generally honest with me.

The police officer was skillful during the interaction.

The police officer performed expertly during the interaction.

I think that the police officer can generally be trusted to keep their word.

The police officer shares the same ethnicity.

The police officer was motivated to perform well during the interaction.

I feel the police officer can be trusted to keep their word to each other.

The police officer made an effort to do a good job.

The police officer acted like a professionals.

The police officer paid careful attention to my opinion.

The police officer and me got along well during the interaction.

The police officer and me worked well together as a team.

The police officer and me probably share the same culture.

The police officer wanted to do a good job during the interaction.

The police officer and me were attentive towards each other.

Communication went smoothly between the police officer and me.

The interaction partners were interested in each other's point of view.

The police officer and me seemed to feel committed to accomplishing the goals of the interaction.

Appendix E

Bernieri questionnaire

Please rate the interaction between yourself and the police officer on each of the characteristics listed below on a scale from 1 = "Strongly disagree" to 5 = "Strongly agree". Please pick the answer that best describes the way you feel.

The interaction seemed…

...well-coordinated.

...cooperative.

...harmonious.

...positive.

...friendly.

...respectful.

...attentive.

Appendix F

Debriefing

Study objective

This study is interested in how the time point of disclosure of evidence influences rapport, cognitive load, cues to deception and amount of information given by the participants.

This study hopes to answer the question of how the procedure of disclosing evidence influences you as the interviewee on aforementioned topics.

How did it work?

As a participant in this study you received the case vignette and were sequentially assigned to one of the four conditions: innocent, guilty and late disclosure of evidence or gradual disclosure of evidence. Late disclosure of evidence means that evidence is discussed at the end of the interview, while gradual disclosure of evidence means that evidence is discussed throughout the interview, point by point. After the interview, everyone received the same survey with which we want to measure if rapport, cognitive load, cues to deception and the amount of given information differ between the four conditions.

Why is this important?

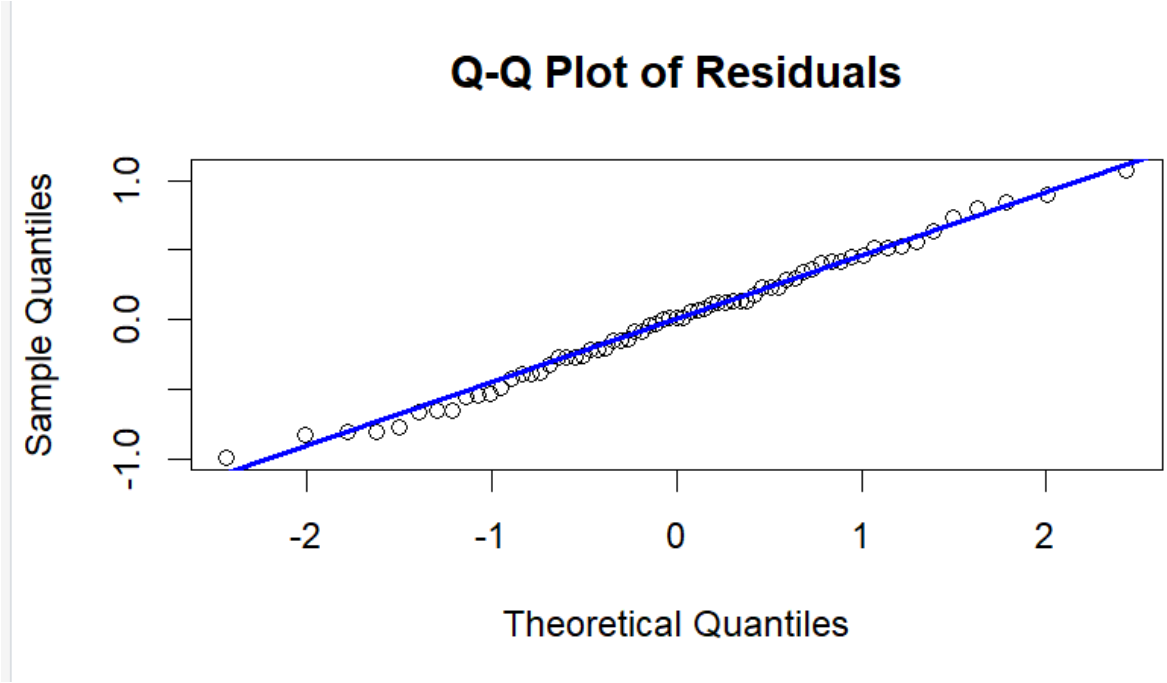
By participating in this study, you contributed your part to research with regard to forensic strategies when interviewing suspects. This research adds to the existing pool of knowledge on investigative interviewing with a focus on police interviewing techniques. The purpose of this

research is to develop a better understanding of how different techniques influence the quality of the investigative interview.

Withdrawing Policy.

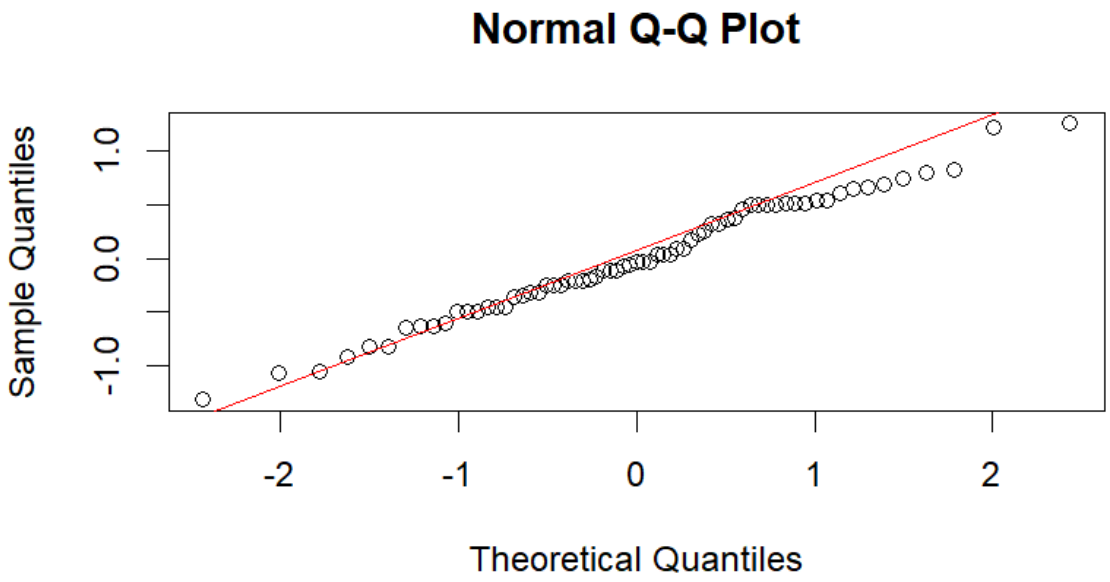
If you decide that you want to withdraw from this research, please contact us (researchers) within 10 days and quote your participation number to allow us to locate your data and withdraw it.

Appendix G



Note. The QQ plot was used to assess the normality of residuals of the Duke scale, a key assumption in the analysis of variance (ANOVA). No significant deviations from normality were observed.

Appendix H



Note. The QQ plot was used to assess the normality of residuals of the Bernieri scale, a key assumption in the analysis of variance (ANOVA). No significant deviations from normality were observed.

Appendix I

The results of the 2x2 ANOVA's and descriptive statistics

Independent variables	Dependent variables of rapport			
Suspect status	Duke		Bernieri	
	M	*SD*	*M*	*SD*
Guilty	3.66	0.49	3.62	0.61
Innocent	3.70	0.45	3.94	0.53
Scores	$F(1, 63) = 0.158$, $p = .693$		$F(1, 63) = 5.493$, $p = .022$	
Disclosure timing	Duke		Bernieri	
	M	*SD*	*M*	*SD*
Gradual	3.65	0.47	3.92	0.56
Late	3.71	0.47	3.63	0.59
Scores	$F(1, 63) = 0.254$, $p = .616$		$F(1, 63) = 4.673$, $p = .034$	