"I do not remember this" – The impact of using Enhanced Cognitive Interviewing techniques in a pharmaceutical encounter

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Abstract

The medical history interview in a hospital is crucial for the further recovery process. A thorough and accurate medical history is one of main factors that determine future treatment. It is known that building rapport and state empathy helps to build a good relationship and increase information retrieval during this interview. One way to further enhance this process could be the Enhanced Cognitive Interviewing, well-established police interviewing style. It includes interviewing techniques designed to improve rapport building but its focus is increasing the interviewee's memory ability. This is done among other aspects by including techniques such as perspective-taking and the usage of cues. These specific techniques are currently not used in medical interviews and could thus foster a more accurate and detailed medical history.

The study was implemented as a between-subject design with two conditions (Structured interview with rapport building/ structured interview with Enhanced Cognitive Interviewing techniques). The participants (N = 60) were asked to study a provided medical history, which they were then asked questions about during an interview. This was done to investigate the difference in quantity and quality of the remembered details. They further had to fill in two post-surveys measuring rapport and state empathy. The results illustrated that the number of incorrect details was significantly lower (median difference of 1.50) and the interview duration significantly longer (mean difference of 3:14 min) when using the Enhanced Cognitive Interviewing. However, both conditions showed the same level of total number of details as well as rapport and state empathy building. These results indicate that Enhanced Cognitive Interviewing can improve the quality of the information provided by reducing the number of inaccurate details but at a trade-off of taking more time.

Keywords: memory enhancement, enhanced cognitive interviewing, rapport, state empathy, medical interview, pharmacist

Introduction

Upon intake into a hospital, patients are requested to share their personal data. Part of this information regards the patient's medical history (Cornish et al., 2005) which includes information such as past illness, currently taken medications, and recent lifestyle changes (Nickless & Davis, 2016). Gathering this information is important concerning the patient's safety. For example, an already implemented drug therapy should not be interrupted and any new medication has to be matched to both the symptoms and the previously prescribed medications. Gathering incomplete or wrong information can lead to incorrect decisions, medication-related complications, longer hospitalization, and death (Nester & Hale, 2002; Tam et al., 2005; Gortney et al., 2019). Practitioners and researchers from different medical fields believe that a patient's medical history is extremely important next to the results of both, the physical examination and laboratory tests as two in three cases can be sufficiently diagnosed based on the medical history alone (Rich et al., 1987). Hence, it is also important to acquire an accurate medical history during the intake interview.

These intake interviews were traditionally conducted by doctors (Nickless & Davis, 2016) but this has currently changed as multiple researchers have found evidence that a pharmacist gathering this information leads to fewer errors and better adjusted medical treatment (Nester & Hale, 2002; Reeder & Mutnick, 2008, Mueller et al. 2012). Hence, the consultations usually are a conversation between a pharmacist and the interviewee(s) (patient(s)). Pharmacy students are thus usually trained with the latest interviewing techniques. Present-day education does not just include interviewing styles but also strongly focusses on good relationship building such as rapport and state empathy skills (Grimes & Bernett, 2019). Both rapport and state empathy are needed in the medical interview as they ease the patients, decrease the stress levels, and make the patient feel understood and seen. This creates a space of safety which allows the patient to open up more easily (Grimes & Barnett, 2019). This is important, as the patient might be forced to share rather intimate information and the patient must feel secure enough to do so. Fisher (1995) found that a good use of rapport techniques could also foster more detail sharing and could thus improve medical history taking.

Establishing rapport is based on three main pillars. The first is mutual attentiveness which entails a close-knit focus and interest in the patient. The second is the positivity of feelings for each other. This is achieved through friendliness and concern for the patient. The last pillar is how balanced the coordination of the conversation is. To be more precise, the conversation needs the energy levels, tone, and body languages of both parties to be in synchronization (Tickle-Degnen & Rosenthal, 1990). Further traits such as attentiveness,

trustworthiness, and respectfulness are also essential (Duke et al., 2018). Next to that, state empathy is needed to establish rapport (Coan, 1984). It is an indication of how well two people can understand each other, especially on an emotional level (Shen, 2010) and can be introduced in a conversation by taking the perspective of and identifying with the patient (Grimes & Barnett, 2019).

Next to that both rapport and state empathy are further achieved in similar ways, by verbal and para-verbal (e.g., tone of voice) skills. These include listening skills, use of language and a overall non-judgmental approach. However, two-thirds of the rapport stem from non-verbal skills, such as one's body language (Mehrabian, 1971). Above that, Weiher (2020) found that having an introduction in an interview greatly determines the level of rapport building. The introduction is often the welcoming part of the interview and thus also the first interaction between patient and pharmacist that will affect the results of the entire conversation (Grimes & Barnett, 2019). A well-constructed introduction was found to increase the clarity of the patient which seems to result in more information gathering (Weiher, 2020). This was found to improve the information retrieval of the interview (Brimbal et al., 2019; Miller, 2019).

The importance of sufficient rapport and state empathy-building skills is well established. Nevertheless, evidence suggests that many pharmacists are not as sufficient with these skills as necessary (Salter et al., 2007; Greenhill et al., 2011; Latif et al., 2011). Next to that, pharmacists additionally seem to struggle to adequately take their patients' medical history (Hussain & Ibrahim, 2012; Brata et al., 2013; Ogbo et al., 2014; Sinopoulo et al., 2019). Consequently, including techniques specifically designed to improve rapport and state empahty building, and the interviewee's memory could enhance the process. One such method is called Enhanced Cognitive Interviewing (ECI), that offers the interviewer different techniques to improve the relationship and to stimulate specific memory retrieval processes in the respondents (Dando et al., 2009; Memon et al., 2010).

These techniques affect the social dynamics, and communication between the parties and the cognition of both the interviewer and patient (Fisher & Geiselman, 1992). The social dynamics and communication skills aim at enhancing rapport and state empathy among other aspects. They maximise cooperativeness and motivation to help, and allow the interviewer to show personal concern (Collins et al., 2002). Some of these techniques are already included in the communicational training a pharmacist receives such as verbal and non-verbal rapport and state empathy-building skills (Grimes, & Barnett, 2019). In contrast, the new aspects that ECI offers include the encouragement of extensive detail sharing and the active participation of the

patient. Moreover, the patient is asked to take up most of the talking time, as they have greater knowledge about their medical history.

Next to that, ECI offers different techniques that are linked to improved cognition and memory retrieval. This is important as humans already rely on a limited capacity to process information (Kahneman, 1973). Further, the patient might be sick themselves, which would limit their already available resources. To support this, Tulving and Thomas (1973) found memory retrieval to be most effective if during the recall the context of the original event can be reinstated (context reinstatement), for example by using cues (Tulving, 1972). In medical interviews, cues could for example be the colour or taste of the medication. Additional techniques are asking the patient to recall the events from different perspectives next to their own (recall from a variety of perspectives) and encouraging them to actively change the temporal order of the events (different temporal order). This was found to increase the number of accurate reported details and decrease the number of inaccurate details (Fisher & Geiselman, 1992). Lastly, one technique is to directly ask the patient to report everything they can recall (total report of everything). This is important as many interviewees initially shy away from talking about aspects or details that they only partly remember. However, these can nevertheless be directional and should therefore have to be considered as well (Fisher & Geiselman, 1992).

ECI was found in both laboratory and field research to significantly increase the given information in criminal and noncriminal investigations (Fisher et al., 2011). Research shows that it yields 25% - 50% more information from the interviewees than in the control group while keeping roughly the same accuracy rate (Griffiths & Milne, 2010; Köhnken et al., 1999). Additionally, it was already found to reduce the risk of response errors in a variety of settings (McColl, 2006), including in health-related settings regarding patients' medical history in doctor offices (Fisher & Quigley, 1992; McColl, 2006). It was initially designed to be used in any face-to-face interview unrelated to the content (Fisher et al., 2011), making it suitable for pharmacists' medical interviews.

However, even though ECI uses similar rapport and state empathy building techniques, the use of additional memory retrieval techniques as well as the more exhaustive and repetitive nature of the questions could affect the suitability. First of all, it is possible that the ECI extends the duration of the interviews. Further, therapists experienced patients getting annoyed by the therapist asking repetitive questions (Coutinho et al., 2011). This could also occur during the intake interview. Further, Grimes and Barnett (2019) state that one regular complaint of patients is having to repeat their medical history (Fisher & Geiselman, 1992). ECI interviews

are usually conducted in a way that there are multiple questions asked about one aspect of the history, which results in the interviewee having to repeat themselves. Next to that, asking about a topic multiple times could evoke a feeling of not being listened to which would impair the relationship and affect the cultivation of rapport and state empathy.

Generally, when it comes to medical-centred conversations, a vast amount of research has been conducted regarding the patient's perspective. However, less research has been aimed at the effects of the relationship between a pharmacist and a patient (Grimes, & Barnett, 2019). Further, no research was found regarding the effects of techniques such as those included in the ECI on pharmaceutical interviews. To better understand if ECI could improve medical interviews, this study investigated the quantity and quality of details a patient can remember about their medical history in different intake interview conditions. It is predicted that (H1) Structured Interviews using ECI will yield a greater number of details compared to structured interviews using only rapport-building skills. Moreover, as ECI makes use of techniques that are supposed to decrease the number of inaccurate details it is hypothesised that (H2) Structured Interviews using ECI will yield a lesser number of inaccurate details compared to structured interviews using only rapport-building skills. Further due to the extensive nature of the ECI method, it is assumed that (H3) Structured Interviews using ECI will result in lower rapport between the interviewer and the interviewee compared to structured interviews using only rapport-building skills and (H4) Structured Interviews using ECI will also result in lower state empathy of the interviewee compared to structured interviews using only rapport-building skill. Additionally, it is predicted that (H5) Structured Interviews using ECI will have a longer interview duration compared to structured interviews using only rapport-building skills. If the last three hypotheses can be accepted this would indicate lower suitability of ECI for the medical sector.

Methods

Participants

The study involved a convenience and snowball sample of 60 participants. To obtain participants, the study was distributed via Facebook, WhatsApp, Instagram, and SONA-systems. SONA-system is a website where University of Twente students can publish their studies as well as take part in research in exchange for study credits. The only criteria for participation in the study was a self-reported sufficient level of either English or German skills. In total 40 interviews were conducted in German and 20 in English. Participation was voluntary and University of Twente students had the opportunity to be compensated with one SONA

point (course credits for students). The participants' written consent was obtained before any participation. The youngest participant was 19 and the oldest 65 (M= 25.83, SD = 10.30). Further, 41.7% were male and 58.3% female and a majority of the participants (88.3%) were German. Moreover, most of the participants (43.3%) had attended at least some months of university but had not finished their degree. All additional frequencies and percentages can be found in Table A.1 in Appendix A. Further, no participant was fully removed. However, during all analyses including the RS3i and the SES, any participant was removed that had the same value throughout the entire questionnaire. In the case of the RS3i, this was a total of eight participants and three participants for the SES.

Design

The study was conducted as a between-participant design. The independent variables were the interview conditions, which were split into two levels, (I) the Rapport Interview, a structured interview including techniques that foster rapport and state empathy towards the interviewer, and (II) the ECI Interview, a structured interview with ECI techniques that include the same rapport building and state empathy-building skills as the comparison interview but in addition has memory retrieval techniques built into the questioning. Another level had been intended (a structured interview without rapport and state empathy-building techniques) but was removed during the data collection process as it was logistically not possible to find sufficient participants. The description of the design process, as well as the interview script can be found in Appendix B. The number of participants per level was (I) Rapport Interview = 30 participants and (II) ECI Interview = 30 participants. The allocation of participants was sequential to make sure that the participants were somewhat randomly distributed, and the groups were of equal size.

The dependent variables are (i) the total number of details mentioned, (ii) the total number of inaccurate details, (iii) the measured rapport, (iv) the measured state empathy, (v) the duration time. Further, before the study was conducted, it was approved by the University's ethics committee.

Materials

The Vignette

A written version of a medical history of a patient called a Vignette (Appendix C) was used. All participants received the same Vignette. It began with an instruction for the participant, explaining in more detail what the participant was supposed to do. Here the

participants were asked to read and learn the content of the following text and to embody the described character during the interview. The actual Vignette was set in today's time so current issues such as COVID-19 were included. Both the gender and name of the patient could be chosen by the participant. This was done so that the participant could easily relate to it. It did include some general facts about the patient's persona, such as age, family situation (e.g., marital status and living situation) but also the social dynamics in the family. The researchers included cues in the text that match with the techniques used in ECI. These cues include pictures of the medicine so that the participant could recall visualisations and a description of the taste of some of the medication. The feelings and problems of the patient for example regarding the medicine and the time of the day that the medication is being taken were also included. Additionally, specific situational circumstances that were for example linked to a symptom (e.g., the place were a symptom was first noticed) were mentioned and the feelings and views of the family members were expressed. Lastly, patients also need to share details that are considered embarrassing. Such details were represented in the Vignette by an anal application of the pain killers and a decline in libido.

The Interview scripts

Two different structured interview scripts were used. The basic structure of the questions in both interviews was the same. Most techniques to foster rapport and state empathy-building were also the same. To build rapport specifically, the three pills mutual attentiveness, positive feelings and balanced coordination must be taken into account. This means showing interest and concern for in the patient, being friendly, and keeping sure that one's tone, and body languages match the patient's (Tickle-Degnen & Rosenthal, 1990). Further, to introduce state empathy the interviewer should be understanding towards the patient (Grimes & Barnett, 2019). Next to that other specific skills include verbal, para-verbal, and non-verbal skills such as an open body language and facial expression, a slightly forward-leaning position, a relaxed tone of voice, and minimal encouragements, such as nodding, active listening, and not interrupting the interviewee (Grimes & Bernett, 2019). The scripts were also both designed and tested before application to last approximately 10 minutes, which is the usual duration of a medical interview (Matsushita et al., 2017). Further, all interviews were conducted via Teams and Zoom and were both audio and video recorded.

Concerning the basic structure, the interview was split into five parts each focussing on a different aspect of the patient's medical history. These five phases are based on the interview scripts designed by Grimes and Barnett (2019). The first part (*Introduction of the interviewer*

and identification of the patient) consisted of a brief introduction to the then following scenario. It was designed to set a friendly and open tone and was supposed to already promote rapport and state empathy (Weiher, 2020). More precisely, the interviewer, already in the pharmacist role, talked about their own persona and the focus of the interview. It contained reasons why the interview is of importance and made use of techniques that foster a safe and open space (e.g., "Please take as much time as needed"). The interviewer also checked the patient's identity to keep the interview as realistic as possible.

In the second phase (*Encouragement for the patient to describe their main problem and symptoms*) the patient was encouraged to describe their main problem and symptoms, as well as when they started. The third part (*The patient's own medical history*) contained questions regarding the medical history of the patient. Here the pharmacists asked about any recent changes regarding different areas of the patient's life and if any treatment or medication had been implemented before. Concerning the medication, specifics about dosages, names of the producer, or the active ingredients were checked. The interviewer also asked about any known side effects. Next part four (*The family's medical history*) focussed on diseases that occur accumulated in the patient's family. Section two, three, and four all ended by asking the participant if they can think of anything else that they would like to mention regarding the previously talked about topic. This was asked in case the question did not cover everything the patient would like to mention. Lastly, in part five (*End of conversation*) the interviewer asked if there was anything else the interviewee would like to disclose.

The first condition called the (I) Rapport Interview consisted of the basic script as well as the previously mentioned rapport and state empathy-building skills. No further techniques were applied, and the full script can be found in Appendix D. In contrast the (II) ECI Interview condition made use of the same basic script, rapport, and state empathy skills but also of additional recollection techniques. These are termed: context reinstatement, total report of everything, recall from a variety of perspectives, and different temporal order. Context reinstatement means that the initial context of the event or memory is tried to be reinstalled (Fisher & Geiselman, 1992). This can be done by encouraging the patient to remember how they felt or where they were during the event. It was used throughout the entire interview, for example when the patient had to imagine the location where they first noticed the symptoms ("Since when do you have these symptoms? It may help to think back to where you were when you first noticed something was wrong."). The Vignette contained specific cues that were purposefully triggered with these questions. One example of this is the inclusion both of pictures and a description of the medications' taste in the Vignette. In this case these cues were

then used to help the interviewee to remember details about the medicine ("If you cannot remember any details of the medicine, it might also help to describe the medicine themselves and what they look like, or even how they smell or taste.").

Total reports of everything means that the interviewee is actively encouraged to report everything they remember even if they only recall parts (Fisher & Geiselman, 1992). The interviewee was asked to try to report everything they can remember, including details that they only remember partly or that they find trivial, right at the very beginning of the interview (e.g., “Okay, please take as much time as needed. I will try not to interrupt you. Remember, everything you have to say is important, so please state anything you can remember even if it is just partial or incomplete. Maybe it helps if you try to think about yourself in the different situations."). They were further reminded about this throughout the entire interview (e.g., “Can you think of anything else you can remember about your medication? You can tell me anything that comes to your mind whether it is right or seems unimportant.”).

In contrast, both recall from different perspectives and different temporal order were used for specific questions. Recall from different perspectives means that the participant looks at their medical history from another person’s perspective (Fisher & Geiselman, 1992). Regarding the symptoms, the interviewee was asked how other family members would describe their symptoms ("If we were to ask someone close to you, your partner or children or a friend for example, would they report any symptoms or changes they've noticed in you? "). Different temporal order entails that the interviewee is animated to go through their medical history in one or multiple different temporal orders (Fisher & Geiselman, 1992). In this study, the participants were asked to go through their daily medication from dusk till dawn, for example, “I would like to ask you what medicines you take, whether your doctor has prescribed them, or you purchase them yourself. It can help to encourage patients to think about their daily routine from when they wake up to when they go to bed. Can you talk me through your daily routine and tell me when you take medications, prescribed or not, and if possible, give me the name, dose, and reason why you take the medicine?". The full script of the (II) ECI Interview condition can be found in Appendix E.

Even though, both interviews had a fixed structure and number of questions, the researchers had the freedom to adjust their non-verbal behaviour as well as rephrase the questions if necessary. This was done so the flow of the conversation could be obtained and to not damage the rapport and state empathy. Thus, the researchers allowed themselves some freedom concerning reactions and sentence structure.

The Rapport Scales for Investigative Interviews and Interrogations (the RS3i)

The RS3i is a questionnaire that measures Rapport using five subscales (Duke et al., 2018). The subscales are Attentiveness, Trust and Respect, Expertise, Cultural Similarity, and lastly Connected Flow. The questionnaire was found to have adequate to high overall internal reliability in this study ($\alpha = 0.90$). The scale was assessed using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Hence, a higher overall score represents a higher level of rapport. The participants were asked to read the different items of the questionnaire and to indicate their amount of agreement by clicking on the corresponding box.

The items were slightly adjusted by the researchers to be more understandable and to better suit the situation. Items that included a "We" were made more specific and turned into "the interviewer and I". The item "We work well as a team." Was thus adjusted to "The Interviewer and I worked well as a team.". Items were also made more specific to make them more understandable ("Communication went smoothly." > "Communication between the Interviewer and I went smoothly."). No revered items were included in the scale. All original and adjusted items of the questionnaire be found in Table F.1 in Appendix F.

The State Empathy Scale (the SES)

The SES is a multidimensional self-report inventory to measure how much state empathy someone experiences towards another person (Shen, 2010). It contains three subscales (affective empathy, cognitive empathy, and associative empathy) and showed acceptable reliability in this sample ($\alpha = 0.73$). Further, both construct and discriminatory validity were found to be good in both a sample of college students ($N = 289$) and the general public ($N = 189$) (Shen, 2010). The questionnaire uses a 3-point Likert scale ranging from 1 (disagree) to 3 (agree). Consequently, a higher score equals more state empathy. The participants were asked to read the different items of the questionnaire and to indicate their amount of agreement by clicking on the corresponding box.

The questionnaire was originally constructed to measure the state empathy the participant experiences towards a person in a previously shown video. In this study, the participant was asked about their state empathy towards an interviewer. The researchers thus had to adjust some of the items. The content of the items remained the same, but the subject of the sentence was changed to “the interviewer”. For example, the item "The character’s emotions are genuine." was changed to "The Interviewer's emotions are genuine.". No reversed items were included in the scale. Both the original and the adjusted items can be found in Table G.1 in Appendix G.

Procedure

The people that wanted to participate were able to either sign up directly via SONA-systems or the distributed links for an available interview time slot. Further, both researchers recruited friends and family members, who simply made an appointment with the researchers. The study was conducted by two researchers thus, if a participant was well known to one researcher, that particular interview was conducted by the other researcher. This was done to have more objective results concerning the rapport and state empathy measures. The participants had to sign up or make the appointment at least 24 hours in advance for them to have enough time to read through the Vignette. Once participants signed up, they received an E-Mail with instructions and the needed documents. The attached documents were a consent form (Appendix H) and the Vignette. They were asked to read the consent form as well as the Vignette. It was stated that the Vignette should be read at least three times. Additionally, they received the link for the Zoom or Teams meeting, where the interview would take place.

The meeting itself took around 20 min including the approximately 10 min interview and were all video and audio recorded. Both researchers attended the meetings, with both taking up different roles. One of them, here referred to as the researcher, interacted with the participant at the beginning and the end of the interview and was responsible for all organisational aspects. The other (the interviewer or pharmacist) conducted the actual medical interview. Once the participant joined the zoom meeting, they were greeted by the researcher and asked if the consent form had been read and understood and if any questions remained. After that, the participant received a link to a Qualtrics questionnaire, containing three parts. They were asked to fill in the first part before the interview, in which they agreed to the terms of the consent form. After finishing this part, the interviewee was asked if they had any questions about the agreement or the Vignette and was asked if they had been able to read through the Vignette at least three times. If not, they were given the opportunity to rea through it again or a later appointment was chosen.

Then the interviewee was asked to put aside any notes of the Vignette. The interviewer explained that the researchers were not concerned with the memory ability of the interviewee but with the effect the interview style would have on the interviewee’s ability to remember the details. This was done to ease the interviewee of some of the pressure and to ensure that they would not feel the need to check any previously taken notes. This did disclose part of the study design to the interviewee however, they remained unaware of the nature of the conditions as well as the condition that they had been placed in. Further, they were asked to not worry about making any mistakes and misremembering the detail but to refrain from knowingly making up

any additional information that was not provided to them. This was done to not artificially increase the number of inaccurate details. After all the formalities had been established, the researcher explained that the interview would now begin and added the interviewer to the video conference. The researcher then either left the call completely or turned off their camera and microphone. After this, the interviewer started recording the interaction.

The interviews were then conducted based on the two designed interview scripts. After the interview, the interviewer stopped the recordings, left the videoconference, and the researcher took over again. The participant was asked if they had any questions before continuing with the next part. They were then asked to fill in the other parts the Qualtrics questionnaire containing the RS3i and SES. The researcher remained with the participant in case the participant had questions. At the end of the questionnaire, the participant received a short-written debriefing, with the opportunity to ask further questions to the researcher via the Zoom call or via E-Mail. They also received their SONA-points if applicable.

Data Analysis

All the interviews were first transcribed and the number of details that were mentioned was counted and sorted into accurate or inaccurate details. Every mentioned aspect was counted as a detail if it was related to the medical history of the persona, thus aspects that would be important in real a medical encounter. For example, facts about the patient's family situation such as the number of children were not counted as a detail. This was done as it can be expected that in a real medical encounter people would be able to remember such facts. Additionally, they are usually not important for the further course of action. A detail was grouped as an accurate detail if it had been mentioned in the Vignette. Consequently, inaccurate details included all details that were either not mentioned or were included differently in the Vignette. The total number of details is the sum of the accurate and inaccurate details mentioned. In total there were 53 accurate details, which can all be found in Table I.1 in Appendix I.

Each interview was first coded by the interviewer of that interview and then checked by the researcher to have a more objective analysis. All collected data (interviews and questionnaires) was then coded and analysed using the Statistical Package for the Social Sciences (SPSS) version 25. First, a preliminary analysis of all relevant data was conducted in which the accuracy was tested by examining descriptive statistics and normality testing. Based on these results outliers were checked and lastly, correlations were calculated. Further, to determine if there was a significant difference between the two groups T-test analysis or Mann-Whitney-U-tests (in case of non-normal distribution) were conducted for all dependent

variables. The analysis per hypothesis were (H1) the total number of given details compared between the two conditions, (H2) the number of inaccurate details given compared between each group, (H3, H4) comparing the levels of rapport and state empathy between the two conditions, and lastly (H5) the comparing the time duration between the two levels.

Results

Descriptive statistics

All the means and standard deviations of the relevant variables in total (not per condition) can be found in Table 1. Additionally, during a Shapiro-Wilk test of normality, one significant result was found. The number of incorrect details showed a not normal distribution ($W(58) = 0.732$, $p = .001$) with a positive skewedness of 2.16 ($Mdn = 2.00$, $LQ = 0.00$, $UQ = 2.00$). Consequently, the variable per category was checked for outliers. Histograms and a Boxplot per conditions can be found in Appendix J in Figures J.1, J.2, and J.3. In total two participants were found to deviate significantly (deviation of more than three standard deviations) from the mean, one per condition ($z_{Rapport} = 3.48$; ECI: $z_{ECI} = 4.38$). The distribution however remained non-normal after removal. The variable will be analysed using a Mann-Whitney-U-test. Further, one outlier was found for the duration variable ($z_{ECI} = 3.57$). For all variables that showed outliers, the analyses were checked with the outliers included as well as excluded.

Moreover, one significant Pearson correlation was found with a correlation of $p \leq .05$. Table 1. shows there is a positive correlation between the duration of the interview and the total number of details, which implies that the longer an interview goes the higher the total number of details gets or vice versa.

Table 1

Mean, Standard Deviation, and Correlation of the main variables

	Mean	SD	Total num-ber of details	Number of in-accurate details	Con-dition	RS3i	SES	Dur-ation
Total number of details	22.18	6.16	*r*	1				
			p	-				

	Mean	**SD**	**Total num-ber of details**		**Number of in-accurate details**	**Con-dition**	**RS3i**	**SES**	**Dur-ation**
Number of inaccurate details	1.50	1.80	*r*	-.034	1				
			p	.072	-				
Condition	-	-	*r*	-	-	-			
			p	-	-	-			
RS3i	4.20	0.66	*r*	0.034	-0.01	-	1		
			p	.813	.854	-	-		
SES	2.35	0.39	*r*	0.03	0.08	-	0.26	1	
			p	.855	.950	-	.072	-	
Duration	9:23	3:31	*r*	**0.44**	0.04	-	0.01	0.09	1
			p	**.001**	.764	-	.996	.528	-

Note. RS3i = The Rapport Scales for Investigative Interviews and Interrogation; SES = The State Empathy Scale; Interview duration time is measured in minutes:seconds;
bold = Correlation is significant at the 0.05 level (2-tailed)

Hypothesis testing

Regarding hypothesis H2, the total number of incorrect details was higher in the (I) Rapport Interview (*Mdn* = 2.00, *LQ* = 0.00, *UQ* = 3.00) compared to the (II) ECI Interview (*Mdn* = 0.50, *LQ* = 0.00, *UQ* = 2.00) and the difference was statistically significant, $U(N_{\text{Rapport-Condition}} = 29, N_{\text{ECI- Condition}} = 29) = 291.00$, $z = -2.44$, $p = .015$. The results remained significant when the outliers were removed. Further concerning hypothesis H5, the (II) ECI interviews had on average a higher mean (*M* = 10:59, *SD* = 3:59) and thus were on average longer than the (I) Rapport interviews (*M* =7:45, *SD* = 2:03). This difference was also found to be statistically significant, $t(N_{\text{Rapport-Condition}} = 29, N_{\text{ECI- Condition}} = 29) = -4.04$, $p = .001$. The effect remained significant with the outlier removed

All other variables showed no significant mean difference. The means, standard differences, and T-tests can be found in Table 2. Regarding the direction, the mean of the total number of details (H1) was slightly higher in the (II) ECI Interview compared to the (I) Rapport Interview. Next to the planned analysis, the researcher chose to investigate how high the percentage of remembered details was. The mean of the remembered accurate details in

condition I (the Rapport Interview) was 19.40 (*SD* = 6.88), which was approximately 36.60% of all details. Further, in condition II (the ECI Interview) the mean average of accurate details was 21.70 (*SD* = 5.07). Thus, participants in group II could remember around 40.94% of the details. Further, the study showed that the mean of (H4) state empathy was slightly higher in the (I) Rapport Interviews than in (II) the ECI Interviews and that the mean of (H3) rapport building was found to be slightly higher in (II) ECI Interviews than in the control condition.

Table 2

Mean and Standard Deviation of different Variables in the Both Conditions Separately and Together

	Rapport		**ECI**		**T-test**		**Mann-Whitney-U-Test**			**df**
	Mean	**SD**	**Mean**	**SD**	***t***	***p***	***U***	***Z***	***p***	
Total number of details	21.50	6.63	22.87	5.70	-0.64	.525		-		58
Number of inaccurate details	-	-	-	-	-		291.00	-2.44	. 015	58
Interview duration	7:45	2:03	10:59	3:59	-4.04	.001		-		58
RS3i	4.10	0.49	4.22	0.46	-.071	.772				50
SES	2.36	0.34	2.25	0.42	0.41	.408				55

Note: RS3i = The Rapport Scales for Investigative Interviews and Interrogation; SES = The State Empathy Scale; Interview duration time is measured in minutes:seconds; Median per category for the number of incorrect details can be found in the text above; Table includes only the values without outliers removed.

Discussion

This study aimed to investigate the effect of rapport-based and ECI-based interviews on the quantity and quality of the remembered details, the amount of rapport and state empathy building, and the times needed to conduct the interview. Hypothesis H2 and hypothesis H5 can both be accepted as both showed a significant difference between the means. In H2 the number of inaccurate details was compared, indicating that the ECI-based interview leads to fewer recollected mistakes (median difference of 1.50). Next to that, the ECI interviews were also statistically longer in duration than the rapport-based interviews (H5, mean difference of 3:14 min). Further, it was found that an increase in the interview's time duration is correlated with an increase in the total number of mentioned details.

In contrast, no significant difference between the means of the two conditions was found regarding the total number of details remembered (H1). This entails that the ECI Interview condition did not yield a greater number of details compared to the Rapport building interview. Additionally, it was hypothesised in H3 and H4 that the ECI Interview condition would result in a lower average level of rapport and state empathy building. There was no evidence found to support these hypotheses as no significant results were found. This implies that the two conditions lead to around the same rapport and state empathy-building and that the ECI did not decrease them. Lastly, both interview conditions only manage to yield an outcome of less than 50% of the medical history-related details mentioned in the Vignette.

The same level of rapport and state empathy-building could be explained by the same use of para-verbal and non-verbal techniques, such as open body language and facial expression. As stated by Mehrabian (1971) as much as two-thirds of the rapport that is built in a conversation is due to these types of skills. Moreover, both interviews started with an introduction, that was specifically designed to initiate and increase rapport. Having such an introduction was found to be a leading factor in rapport-building (Weiher, 2020). Additionally, Duffy and Chartrand (2015) voiced that rapport building is partly impacted by the interviewer's character. This is especially true regarding the interviewer being extroverted or introverted, with an extroverted interviewer being often able to build more rapport. This could imply that the rapport level was partly influenced by the interviewers themselves. Two interviewers were involved in this study and each of them conducted half of the interviews per condition. To be more precise, each of the two interview conditions had the same exposure to the interviewer's specific character. This entails that the effect an interviewer's character could have had on the amount of information would be the same in both conditions. Consequently, the similarity in

the mentioned three aspects in both groups could explain the statistically unsignificant difference in the levels of rapport and state empathy.

Further, high levels of rapport and state empathy foster cooperation and improve the recall of information of the interviewee (Fisher, 1995). In this study, the researchers were able to attain rapport as well as state empathy in both interview conditions, represented by the high average mean scores. Multiple studies had also found that a rapport fostering introduction as included in both conditions improved the information retrieval significantly (Brimbal et al., 2019; Miller, 2019). Therefore, it is plausible that the same level of rapport and state empathy-building, as well the introduction affected the total number of details provided. This could indicate that the number of details was less influenced by the ECI memory retrieval techniques and more by the motivation to cooperate, thus leading to the statistically same number of mentioned details. This proposal could not be directly tested in this study since it was not logistically feasible to collect data for a third control group that did not include rapport-building techniques. Hence, recreating a similar study and including such a condition could foster future discussions.

Next to that, ECIs were found to be effective as they make use of the interviewee's episodic memory. The interviewer asks questions that trigger cues that are connected to the person's mental as well as emotional state. Especially the process of learning, remembering, and long-term memory retention is greatly impacted by the person's emotional state (Tyng et al., 2017). Even an extensive Vignette with multiple sensual cues could never foster this kind of connection. It can thus be assumed that the emotional connection of the participants to their medical history was less than that of a real patient. This might have hindered the ECI memory retrieval tactics to unleash their full potential. In case this is true, this would have impacted the total number of recollected details as well as the total number of incorrect details. This could explain the statistically equal number of the details that were remembered in total. The significant difference regarding the inaccurate number of details could be used to argue against this. However, past research has indicated much greater results regarding the quality of the collected data (Griffiths & Milne, 2010; Köhnken et al., 1999). Thus, this should be further investigated in a future study, which should include (a) condition(s) where the interviewees re-enact the actual daily routines of the character or to redo this type of study with actual patients. In the case of the latter, there would have to be an implementation that guarantees that the legitimate medical history of the patient can be attained to see how accurate the secured data is.

The longer average mean duration of the ECI interviews was expected by the interviewers. The researchers believed that this would be the case as the ECI interviews had a higher number of overall questions as well as more extensive questions. This is supported by Gummer and Roßmann (2014), who state that the accumulated number of questions that are being asked is one predictor of the length of an interview. Longer and more complex questions as used in the ECI condition could moreover result in an increased response burden, which also leads to the interviewee needing more time to answer (Couper & Kreuter, 2013; Lenzner et al.,2010). Next to that, it was found that the ECI interviews yielded fewer errors, which could indicate that the participants had to result to a higher use of their working memory. A higher needed usage in an interview is linked with a longer interview duration (Gummer & Roßmann, 2014). This could also be represented in the correlation between the duration of an interview and the total number of details. The interviewee was able to remember more details, which could have resulted in a higher working memory usage. This could again influence the overall interview length.

Lastly, even though the ECI Interviews did not evoke a mean number of total details exceeding what was achieved with rapport building alone, it did reduce the number of errors made. This is essential for medical practitioners as the consequences of an incomplete or faulty medical history range anywhere from minor complications to the patient's passing (Nickless & Davis, 2016). Further, in contrast with what was expected it also did not reduce the levels of rapport and state empathy. The latter would have made it less suitable for the medical setting. It did however lengthen the duration time of the interview, which decreases the appropriateness for the fast past medical sector.

Limitation

Mainly, this research is limited by being a student project, which restricts the time frame as well as the quality of participants for the sample. Regarding the latter, the sample was dominated by psychology students, which entails qualities that are not representative of the public, such as an increased interest in psychology. Further, this was a study with a rather short time frame which made it logistically impossible to create a scenario where the interviewees could genuinely experience the events of the Vignette. As explained in the Discussion this most likely had an impact on the effectiveness of the ECI since there was no possibility of making sensory connections with the cues.

Conclusion

This study aimed at investigating the suitability of ECI interviews in the medical setting in comparison to the currently trained interview style with rapport-building. Indications were found that the ECI interview was just as good or better regarding the quantity and quality of the remembered details. The ECI interviews lead to fewer mistakes which is crucial for the medical setting. Further, using ECI did not negatively impact the rapport and state empathy. This is important as they greatly impact the quality of both the relationship and the data. Thus, the medical sector could benefit from introducing ECI techniques. However, these techniques were also shown to lengthen the interview duration, which could be a hassle when put into practice.

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Appendix A:
the Frequencies and Percentages of the Demographic Data of the Participants

Table A.1

The Frequencies and Percentages of the Demographic Data of the Participants

	Category	Frequency	Percentage
Gender	Male	25	58,3%
	Female	35	41.7%
	Non-binary	0	0.0%
	Prefer not to say	0	0.0%
Nationality	German	53	88.3%
	French	1	1.7%
	Egyptian	1	1.7%
	Dutch	1	1.7%
	Brazilian	1	1.7%
	American	1	1.7%
	Russian	1	1.7%
Country of Residence	Germany	40	66.7%
	Netherlands	19	31.7%
	Other EU-country	0	0.0%
	Other NON-EU-country	1	1.7%

Note: EU-country = European country

Appendix B:
Description of the Design and the Interview Script Itself of the Removed Interview Condition Using no Rapport Building

This condition was initially included in the design to analyse how far the rapport and state empathy techniques influence the other dependent variables. The original script consists of five phases, each containing questions about the different facet of a person's medical history. A detailed description of the different phases can be found in the Materials section under "The Interview Scripts" on pages 8 trough 10. Compared to the other two interview styles used in this study, which both contained rapport building techniques, this script does not contain any rapport and state empathy-enhancing techniques. Hence, the basic structure of the questions was the same in all three interview conditions. However, the rapport and state empathy-inducing technique mentioned in "The Interview Scripts" did not apply to this script. This means that there is no rapport building introduction included in the script and the interviewer would have not made use of any non-verbal and para-verbal techniques, such as using an open and soothing tone of voice, and active listening. Further, the specific desriptions concerning the other two interview scripts are also not applicable to this interview script.

The script:

1. **Introduction of the interviewer and identification of the patient**
    a. Hi, my name is [name of interviewer], and I am a pharmacist at the hospital. I will now ask you some questions about your health & medications. Please answer honestly and to the best extent that you can.
    b. First, I need to check your identity, so could you give me your name and the city you live in?

2. **Encouragement for the patient to describe their main problem and symptoms**
    a. Can you give me a brief overview of why you are here and your symptoms?
    b. Since when do you have these symptoms?
    c. Is there anything else about your symptoms you can tell me?

3. **The patient's own medical history**
    a. Can you tell me whether there were any current changes regarding your sleep pattern, diet, drugs, or exercises?

b. Have you had treatment already, and if yes, what was it?

c. Can you tell me what medications you take, no matter whether these are prescribed by your doctor, or you purchase them yourself, and why you take them?

d. Do you remember the dosages?

e. Can you tell me about any problems you have taking these medications?

f. Can you tell me about any side effects since you taking this medication?

g. Anything else you would like to tell me about your medicines?

4. **The family's medical history**

    a. Can you tell me about any diseases that run in your family?

5. **End of conversation**

    a. Anything else that you want to tell me about your health or medicine that I have not asked about?

Appendix C:

The Vignette

Scenario: Below you will find a short description of the character you will play when you attend the interview. You can use your own name and assume the hospital is in the nearest city to where you live. Please read this information carefully before the scheduled interview because you will be asked questions about your character. We are NOT conducting a study that is focussed on your memory ability and we do not expect you to remember everything, so please do not approach this as if we are giving you a test or exam. Rather we want you to try to remember the details as best as you are able only so you can play your role accurately (which would include forgetting some details!).

Scenario during our online meeting:

You will play a 43-year-old person, that was sent to the hospital by their family doctor due to some symptoms. At the hospital, you will be asked questions about your current symptoms as well as your medical history.

You are a 43-year-old person. You and your partner (married for 18 years) have one son and two daughters.

Today, your family doctor has sent you to the hospital because your lips are slowly turning blue, and you have found it very hard to concentrate for the last three days. You first noticed this when you were at work, and you suddenly found it very difficult to do something you normally do with ease. Though your boss had asked if you were feeling okay because your work seemed to be below your usual standard as much as a week ago. You took a break and just could not get started again afterwards and so did almost nothing the rest of that day.

You are feeling extremely exhausted even when you wake up, your brain feels foggy, and you are easily irritated. Your partner and children have been quite upset that you are getting angry at them for very minor reasons for the last two days.

You are sure that it is something going on with your heart or circulation as you switched your blood thinner medication recently.

Moreover, both your father and your grandfather took blood thinners because they had heart attacks and you have been taking yours since you turned 30 due to a scare with your heart which left you staying in hospital for observation for a couple of days after experiencing severe pains in your chest, and because of your family history with heart problems.

You used the same brand of blood thinners for the last 10 years, but you just switched four weeks ago to a brand called Eliquis which uses 5 mg Apixaban. You take one every day after breakfast together with a vitamin pill. This pill contains Vitamin B6 and B12, and Vitamin D.

You noticed you developed a rash in the same week you started the new medicine, but it is not that itchy and so the rash is not really bothering you most of the time. But the rash looks unpleasant so you can't wear any shorts right now as it just looks too embarrassing.

These were the only pills you took for a long time but due to Corona, a lot has changed. All three children are still in school and during the Pandemic, they had to stay home quite often. This has been difficult for your mental health and your marriage.

To help with your mental health your doctor prescribed you a Serotonin and norepinephrine reuptake inhibitors (SNRIs) as an anti-depressant. The brand you are using is called Fetzima which uses Levomilnacipran. You take one pill every night after brushing your teeth. You only take a small dose of around 40 mg. Unfortunately, it gives you a headache in the morning and makes you sleepy.

Normally, when you have a headache, you like to go for a walk or do a meditation but with your children always at home there is just no time for it, so you use headache medicines instead.

You try to not use too much paracetamol or ibuprofen because you have a thin stomach lining which leaves you prone to getting ulcers (a stomach issue). You know that oral painkillers can make it more likely you get an ulcer and so you now must take your ibuprofen and paracetamol as suppositories through your anus. Still, with your new headaches, you need to use both ibuprofen and paracetamol together once or twice a week.

The whole situation has drained you mentally but has also put a strain on your marriage. You feel both disconnected from your body and your partner. This means that you do not really feel any urge to engage in any form of sexual activity, which your partner seems to get increasingly irritated about. To help, two weeks ago you started using an Indian superfood that your best friend recommended. It is called Ashwagandha and is supposed to help you with your hormones and increase your libido. You have been taking two pills after lunch at work as you do not want your partner to find out. But so far you do not see any results, all you know is that it tastes like eating soil.

Eliquis:

Vitamin pill:

The pills are orange

Fetzima:

Ibuprofen:

Paracetamol:

Ashwagandha:

Note: Reference of all the images can be found in the reference list.

Appendix D:

Script for Interview Condition I: The structured Interview with Rapport

1. **Introduction of the interviewer and identification of the patient**
    a. Hi, I am [name of interviewer], and I am a pharmacist at this hospital. I need to ask you some questions about your health and medications. This helps the doctor and I determine the best course of treatment for you and make sure we don't suggest a treatment that could interact badly with any of your current medications so we can make sure you get the best possible care while you are here. It is okay if you cannot remember everything but try your best. I will ask you questions, and I will not interrupt you while you answer.
    b. Okay, please take as much time as needed. Is it okay for me to start asking questions now?
    c. First, I need to check your identity, so could you give me your name and the city you live in?
2. **Encouragement for the patient to describe their main problem and symptoms**
    a. Can you give me a brief overview of why you are here and your symptoms?
    b. Since when do you have these symptoms?
    c. Great, is there anything else you can tell me about your symptoms?
3. **The patient's own medical history**
    a. Can you tell me whether there were any current changes regarding your sleep pattern, diet, or exercises?
    b. Have you had treatment already, and if yes, what was done?
    c. Can you tell me what medications you take, no matter whether these are prescribed by your doctor, or you purchase them yourself, and why you take them?
    d. Do you remember the dosages?
    e. Can you tell me about any problems you have taking these medications?
    f. Anything else you would like to tell me about your medicines?
4. **The family's medical history**
    a. Can you tell me about any diseases that run in your family?
5. **End of conversation**
    a. Okay, we are almost at the end of the interview. I only have one final question.

b. Anything else that you want to tell me about your health or medicine that I have not asked about?
c. Okay, thank you for your time [researcher can finish as they like]

Appendix E:
Script for Interview Condition II: The structured Interview with Enhanced Cognitive Interviewing.

1. **Introduction of the interviewer and identification of the patient**
    a. Hi, I am [name of researcher], and I am a pharmacist at this hospital. I need to ask you some questions about your health and medications. This helps the doctor and I determine the best course of treatment for you and make sure we do not suggest a treatment that could interact badly with any of your current medications so we can make sure you get the best possible care while you are here. It is okay if you cannot remember everything but try your best. I will ask you questions, and I will not interrupt you while you answer.
    b. Okay, please take as much time as needed. I will try not to interrupt you. Also, keep in mind everything you have to say is important, so please state anything you can remember even if it is just partial or incomplete. Maybe it helps if you try to remember yourself in different situations.
    c. Is it okay for me to start asking questions now?
    d. First, I need to check your identity, so could you give me your name and the city you live in?
2. **Encouragement for the patient to describe their main problem and symptoms**
    a. Can you give me a brief overview of why you are here and of your symptoms? Remember to try to report everything. It might help to imagine yourself as you felt when you first noticed something was wrong. So please talk me through all the different feelings and symptoms that have occurred since that moment.
    b. Since when you have had these symptoms? It may help to think back to where you were when you first noticed something was wrong.
    c. It also helps a lot of patients to change their perspectives. For example, if we were to ask someone close to you, your partner, children, or a friend for example, would they report any symptoms or changes they have noticed in you?
3. **The patient's own medical history**
    a. Can you tell me whether there were any current changes regarding your sleep pattern, diet, drugs, or exercises? Maybe you have problems falling asleep, problems motivating yourself for sports. You can also think of changes in your appetite.

b. Have you had treatment already, and if yes, what was it? Have you taken any medication or had to stay in the clinic for longer?
c. I would like to ask you what medicines you take, no matter whether your doctor has prescribed them, or you purchase them yourself. It can help to think through your daily routine from when you wake up to when going to bed. Can you talk me through your daily routine and tell me when you take medications, prescribed or not?
d. If possible, can you give me the name, dosage, number of pills, brand, and active ingredient of the medication?
    i. If you cannot remember any details of the medicine it might also help to describe the medicines themselves and what they look like, or even how they smell or taste.
e. Can you tell me about any side effects or problems you have from taking these medications? Again, it can help to try to think of anything at all that has changed in how you feel since around the time you started taking your medication, or if there are any particular times of day when side effects cause you more problems.
f. Can you think of anything else you can remember about your medication? You can tell me anything that comes to your mind whether it is right or seems unimportant.

4. The family's medical history

a. Can you tell me about any diseases that run in your family? Try to think back to any conversations you might have had with your family about their health.

5. End of conversation

a. Okay, we are almost at the end of the interview. I only have one final question.
b. Is there anything else that you want to tell me about your health or medicine that I have not asked about? Even if you think it is not important or relevant it might be very helpful for us.
c. Okay, thank you for your time [researcher can finish as they like]

Appendix F:

Table displaying the Items of the RS3i per Subscale

Table F.1

The Items of the RS3i grouped per Subscale

Subscale/ Dimension	Original Item	Adjusted Items
Attentiveness	The Interviewer really listened to what I had to say.	The Interviewer really listened to what I had to say.
	The Interviewer paid careful attention to my opinion.	The Interviewer paid attention to my opinion/answers.
	The Interviewer was attentive to me.	The Interviewer was attentive to me.
	The Interviewer was interested in my point of view.	The Interviewer was interested in my point of view.
Trust/ respect	The interviewer is honest with me.	I think the Interviewer is generally honest with me.
	The interviewer respects my knowledge.	The Interviewer respected my knowledge.
	The interviewer can generally be trusted to keep their word.	I think that the Interviewer can generally be trusted to keep their word.
	I can trust the interviewer to keep their word to me.	I can trust the interviewer to keep their word to me
Expertise	The interviewer did their job with skill.	The Interviewer did his/her job with skill during the interview.
	The interviewer performed expertly.	The Interviewer performed expertly during the interview.
	The interviewer made effort to do good job.	The Interviewer made an effort to do a good job.
	The interviewer acted like a professional.	The Interviewer acted like a professional.
Cultural similarity	We have our culture in common.	The Interviewer and I have our culture in common.

Subscale/ Dimension	Original Item	Adjusted Items
	The interviewer and I share ethnicity.	The Interviewer and I probably share the same ethnicity.
	The interviewer shares my culture.	The Interviewer probably shares my culture.
Connected Flow	We work well as a team.	The Interviewer and I worked well together as a team.
	Communication went smoothly.	Communication went smoothly between the Interviewer and me.
	The interviewer and I got along well.	The Interviewer and I got along well during the interview.

Appendix G:
The original and adjusted Items of the SES grouped per subgroup

Table G.1

The original and adjusted Items of the SES grouped per subgroup

Sub-Scale/ Dimension	Original Items	Adjusted Items
Affective Empathy	The character's emotions are genuine.	The Interviewer's emotions are genuine.
	I experience the same emotions as the character when watching this message.	I experienced the same emotions as the Interviewer.
	I was in a similar emotional state as the character when watching this message.	I was in a similar emotional state as the Interviewer.
	I can feel the character's emotions.	I could feel the Interviewer's emotions.
Cognitive Empathy	I can see the character's point of view.	I can see the Interviewer's point of view.
	I recognize the character's situation.	I recognize the Interviewer's situation.
	I can understand what the character was going through in the message.	I can understand what the Interviewer was going through.
	The character's reactions to the situation are understandable.	The Interviewer's reaction to the situation is understandable.
Associative Empathy	When watching the message, I was fully absorbed.	I was fully absorbed in the Interview.
	I can relate to what the character was going through in the message.	I can relate to what the Interviewer was going through.
	I can identify with the situation described in the message.	I can identify myself with the Interviewer's situation.

	I can identify with the character in the message.	I can identify myself with the Interviewer

Appendix H:
The consent Form sent to the Participants prior to taking Part in the Study

Informed Consent to Participate in Research
University of Twente

Study title: Medical interviews for pharmacists

Researchers: Johanna Liebetruth and Elia Smith

What is the purpose of this study?

We want to gain a better understanding of the interaction between pharmacists and patients in medical interviews.

Therefore, you are invited to read a script that describes a patient. You will be asked to imagine that you are this person with their medical history. Afterwards, you take part in a medical interview where your task is to just answer the questions of the pharmacist. Lastly, you are asked to fill out a questionnaire for our research.

Participation in this research is completely voluntary. If you do not feel comfortable proceeding with this study, you can always let us know and drop out.

Compensation: 1 Sona credit if you are a student at the University of Twente

Possible risks: You will be interviewed as though you were a client in a hospital setting. This may be stressful. If you find this too stressful you can withdraw, even in the middle of the interview, and you will not be asked to explain why.

How long will it take?

The study will take about 30 minutes in total. This includes reading the vignette, taking part in the interview, and answering two short questionnaires. The interview takes about 10 minutes. Filling out the questionnaire can be done in approximately 10 minutes.

Confidentiality and Data Security

You will be given a password to protect your identity. All data will be stored in a secure file. The only identifying information we collect for correspondence purposes is your email address, which is not associated with the questionnaire. You will receive your participant number and a link to the questionnaire through this channel.

The interview will be recorded and transcribed. We will analyse these transcripts and coded data. The results of the analysis will be published in the researcher's dissertation and, if possible, in a scientific publication or at a scientific conference. During the study, the anonymised transcribed and coded questionnaire data will be stored on the online survey software server (Qualtrics) and on the researcher's secure student OneDrive account (GDPR

compliant). They will then be stored on a university drive which is password protected by the supervisor. Anonymous data may be made available to the research community if it is hosted within the Open Research Framework (https://osf.io/); however, again we stress that you will not be identified as an individual in any way. Source data from the research will be kept for at least 10 years as required by the Dutch Code of Conduct for Scientific Activities. The videos themselves will also be kept for testing purposes but will not be published without your explicit consent. At the end of the study, you will be asked for your consent so that we can use your video to present the study. You have the right to refuse this consent, in which case the video will never be published.

Coded data from the questionnaire will be provided to the researcher, which will only contain your participant number. We will also have access to the recorded and transcribed interviews. Our supervisors will have access to all data and protocols to control our research and ensure its security.

You can also request to have your personal data corrected or deleted from our research by providing your participant number, as this is the only way the researcher can identify your data. If this is the case, please let us know by 16 May.

This study has been approved by the ethics committee of BMS University of Twente.

Questions about the research, complaints, or problems

If there are any issues or questions at any point during the study, or you would like to withdraw from your participation, please contact either

j.c.b.liebetruth@student.utwente.nl

e.m.s.smith@student.utwente.nl

or our supervisor s.j.watson@utwente.nl

If you would like to file a complaint, please contact ethicscommittee-bms@utwente.nl

Agreement to Participate

Your participation is completely voluntary, and you can withdraw at any time.

You can take part in this research if you:

- are at least 18 years old
- are able to speak English or German
- think you are not distressed by taking the place of a client in a medical interview

If you still have any questions or do not want your data to be used in this study, please email either

j.c.b.liebetruth@student.utwente.nl or

e.m.s.smith@student.utwente.nl

with your concern and your participant number.

Appendix I:

Table containing the accurate details based in the Vignette

Table I.1

Codes of the accurate details based on the Vignette

Area	Code
Medication taken by the patient	**Blood thinners** - Brand: Eliques - Active ingredient: Apixaban - 5 mg - one pill daily - New kind - Switched four weeks ago - Had taken blood thinners since 30 - Used the same blood thinners for 10 years **Vitamin pill** - Vitamin D - Vitamin B6 - Vitamin B 12 - One daily **Anti-depressant** - SNRIs - Brand: Fetzima - Active ingredient: Levomilnacipran - 40 mg - One pill a day **Painkillers** - Ibuprofen - Paracetamol - Ca. once or twice a week - Anal injection - Usually taken together **Ashwagandha** - Used for two weeks now

	- Two pills daily
Symptoms of the patient	Blue coloured lips
	Hard to concentrate
	- For the last two days
	Already off with working ability
	- Started before the other symptoms
	Exhausted
	Foggy brain
	Easily irrigated
	Disconnection from partner
Side effects from the medication	**Rash**
	- Started in the same week as the new blood thinner medication
	- On the leg
	Headaches
	- From the anti-depressant
	Sleepiness
	- From the anti-depressant
	- Especially in the morning
Other aspects of health and family situation	**Family history of heart problems**
	- Father had a heart attack
	- Grandfather had a heart attack
	- Father had to take blood thinners
	- Grandfather had to take blood thinners
	Thin stomach lining
	- Prone to ulcers

Note. Each Code is the equivalent of one point. All bold codes are automatically also activated if a code that is below them (indicated by the – sign) is used by the interviewee.

Appendix J:

Descriptive Data and Tests of Normality

Figure J.1

Histogram of the number of incorrect details in (I) the Rapport Condition

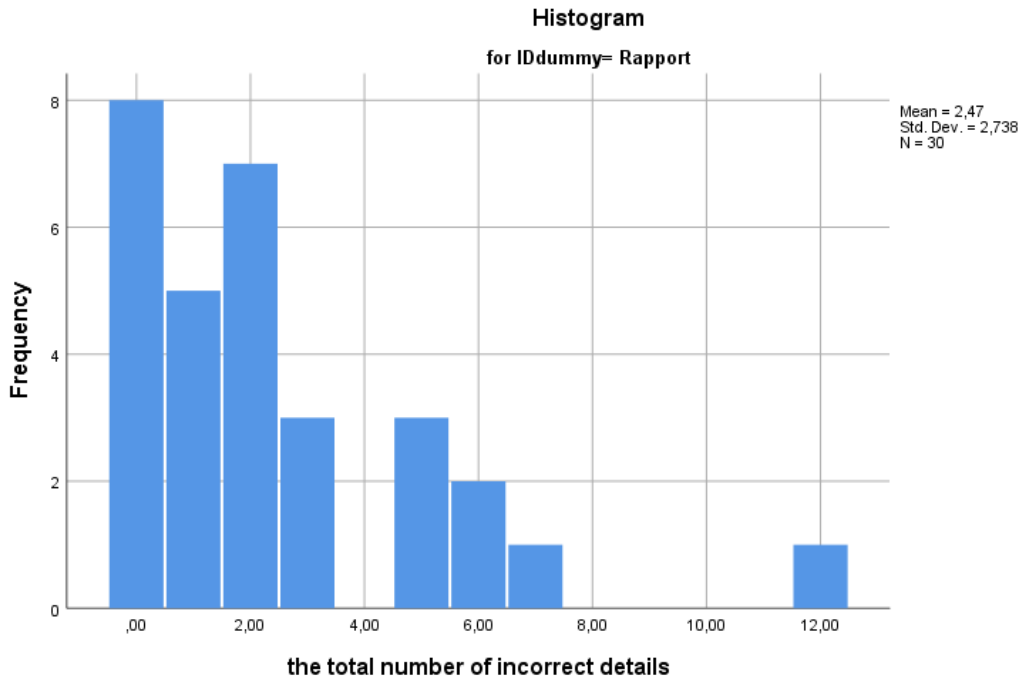

Figure J.2

Histogram of the number of incorrect details in (II) the ECI condition

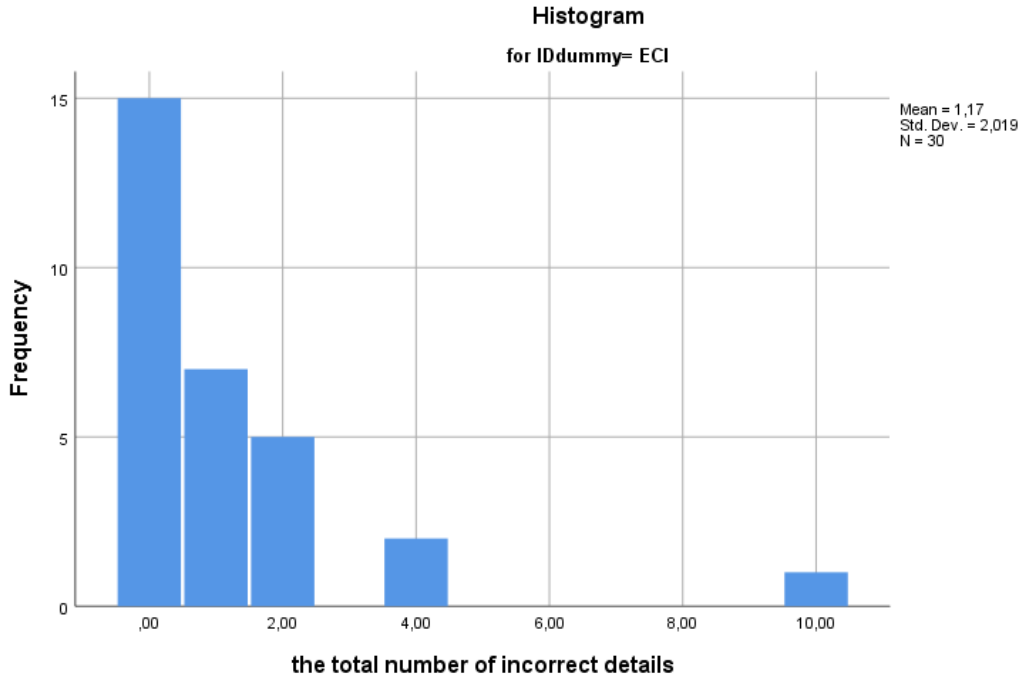

Figure J.3

Boxplot of the Number of Incorrect Details per condition