The effect of the Enhanced Cognitive Interview approach on the memory ability of patients in medical history taking

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Abstract

Medical history taking is important as it is the first step in the medical process and the base of medical treatment. Retrieving accurate and complete information from patients about their symptoms, and medication is necessary for the decisions of doctors about medication, what to prescribe, and the further progress of treatment. In cases of lacking information or false memories, there is a risk of misdiagnoses, which may result in a prolonged condition, further complications, ineffective treatment, or even death. This study intended to enhance the medical history taking by approaching the patients' memories with cues, rapport and empathy to increase the retrieval process. In an experimental interview setting, the approach of the Enhanced Cognitive Interviewing technique by Geiselman et al. (1984), which is found to enhance memory retrieval, is adjusted to the history-taking process. It is tested what influence this included approach has on the number of recalled details and duration of the interviews, compared to the standard medical history-taking approach. Additionally, rapport and empathy were measured, throughout their expected ability to enhance memory through decreasing stress. For the measurements, the Rapport Scale for Investigative Interviews, and Interrogations by Duke et al. (2018), and for empathy, Shen's (2010) State Empathy Scale (SES), were used. A between-subject experiment with two interview conditions and a sample of mainly students was conducted (N=60). No significant results were found in the enhancement of the (accurate) number of details, rapport and empathy in the ECI condition, so there could not be identified any clear advantages of the ECI over the normal rapport-building condition. Furthermore, the ECI was found to take longer which is an aspect of a decrease in efficiency.

Introduction

With an inaccurate medical history, doctors and pharmacists might make poor decisions with severe consequences regarding the further treatment of patients (Nickless & Davies, 2016). About 20% of the medical history errors, such as misinterpretation of the disease and misdescription of medicine, might have a negative impact, for example, prolonged conditions, further complications, ineffective treatment, or even death (Tam et al., 2005). Also, adverse drug reactions are a consequence of about 7% of all hospital admissions, which often might be traced back to the memory retrieving in the history taking (Pirmohammed et al., 2004).

To prevent harmful treatments based on inaccurate information, obtaining an accurate recall of the medical history of the patient is crucial in hospital settings. It is the first step of the medication reconciliation process and consists of collecting information about all prescribed and purchased medicines that were taken before the hospital admission, their allergies, and their past illnesses (Nickless, Davies, 2016). While those medical interviews were traditionally undertaken by doctors, meantime it is the task of pharmacists and suitably trained pharmacy technicians, who have specialized in that task (Nickless & Davies, 2016).

Structured Interviews

To collect full and accurate information, practitioners are trained to conduct structured interviews, which were considered to be effective in regard to time management and ensuring that the main topics and points are covered (Rogers, 2008). Structured means that there are certain specified categories and questions that get asked to make sure no topic will be forgotten by neither the pharmacist nor the patient (Grimes & Barnett, 2019). Nevertheless, the interviewer is supposed to stay flexible and should avoid medical jargon and terminology (Grimes & Barnett, 2019).

There are multiple models and guides that focus on different aspects that are important for medical history taking. One of those models was outlined by Susanne Kurtz, who emphasizes the interdependence of the sender and receiver in her model for effective communication (Kurtz et al., 1998). Further on, Grimes & Barnett, (2019) present key points for good communication, to be important, namely the identifying of patient's problems and concerns, the sharing of relevant information at an appropriate level, the involvement of the patient, the discussion of treatment options and be supportive in every manner. Next to that, there are several more applied models in pharmacy that all give different recommendations for how to conduct medical history taking, such as the Calgary-Cambridge guide, the Pendleton, the Neighbor, and the BARD model (Grimes & Barnett, 2019). Even though, the focus may be on different aspects, these models all share common features that are found to be important, namely building rapport and showing empathy with the patient (Nickless & Davies, 2016).

Rapport and Empathy

Important principles for communication do not only consist of simple listening skills but also working in a partnership, taking a holistic view, and taking in the aspects of rapport and empathy (Grimes & Barnett, 2019). First it will be explained what empathy and rapport are and afterwards their relevance will be made clear.

Empathy. Empathy in the context of healthcare is an important part of the interaction in order to receive trust, which enhances information retrieval (Brimbal et al., 2019b). means "identifying with and understanding the patient's situation and feelings while taking into account their vulnerability" (Grimes & Barnett, 2019, p. 82). Cormier and Nurius (2003) stated more generally, that empathy is “the ability to understand people from their frame of reference rather than your own”.

In general, the empathic reactions of individuals can be differentiated because of their range from a more cognitive understanding of the other person's perspective (or intellectual reaction) to a more emotional, intuitive, and affective reaction (Davis, 1983). Related to the setting of medical interviews this means that the patients will develop a feeling of safety and openness as opposed to feelings of embarrassment about personal, intimate problems (Miller, 2019).

Rapport. In medical interviews, rapport building induced by the interviewer influences the relationship between them and the patient (Memon et al., 2010). Interviews with high rapport were found to enhance the information retrieval in comparison to interviews where rapport was found to be low (Brimbal et al., 2019a).

The researchers Tickle-Degnen and Rosenthal (1990) formalized a theory whereby rapport is conceptualized as consisting of three components namely attention, positivity, and coordination. Their model not only concentrates on the affective aspect of rapport but its behavioural expressions (Tickle-Degnen & Rosenthal, 1990). The first component is the involvement with one another and listening to each other, which results in the creation of mutual attentiveness. The patients experience the situation as one of intense mutual interest in them. The second one is positivity in their interaction, through seeming friendly and caring, while the last one is coordination between the participants, which is meant to be “in sync” or in “harmony” (Tickle-Degnen & Rosenthal, 1990).

To establish rapport and empathy, next to verbal communication, also body language is assigned to great value (Mehrabian, 1971). This research supports the thesis of more than just words play an important part in communication, specifically facial expressions, followed by the tone of voice, and finally the meaning of the spoken words (Mehrabian, 1971).

As the medical history taking is the first interaction of pharmacists and clients, the first impression, which often takes place in the welcoming part is of importance for the estimation

of rapport and empathy (Grimes & Barnett, 2019). Based on this, the body language is supposed to operate openly through uncrossed legs, appropriate eye contact, slightly forward-leaning, etc. Finally, the content of the spoken, next to your tone of voice, is severe in counseling and desiring a good working alliance (Grimes & Barnett, 2019).

The effect of rapport and empathy on memory retrieval. Summarizing that about rapport and empathy, and taking into account other studies**,** a meta-analysis has shown that the use of rapport and empathy has a positive influence on interview situations regards the openness of the patients and the amount of information retrieved (Tickle-Degnen & Rosenthal, 1990). Willingly increasing both the rapport and empathy-building is found to in turn increase the feeling of safety in the patient. This was found by several researchers and psychologists and is often applied in the field of psychology to create an environment of safety for the client, especially in the therapy section (Teding van Berkhout & Malouff, 2016; Miller, 2019; Tickle-Degnen & Rosenthal, 1990; Winefield & Chur-Hansen, 2001). When individuals feel safe, the willingness to communicate openly about their problems and possible uncomfortable topics is higher, than when they might feel embarrassed. This means that the number of recalled details of the history increases, and the saturation of information gets higher (Winefield & Chur-Hansen, 2001). One further positive aspect of rapport and empathy is the stress reduction for the patient. Again, it results in an improved feeling of safety and an increased report of details and their recall accuracy (Miller, 2019). Additionally, research by Gagnon and Wagner (2016) shows, that stress decreases memory retrieval, which means that less tress results in better memory.

Based on the results of the research on rapport and empathy, a medical model evolved which approaches patient-centered care (Coulter, 2002). This style is the opposite of earlier often conducted paternalistic style, in which medical encounter were in control of the situation and interview (Grimes & Barnett, 2019). Concluding, a patient-centered care and

mutuality approach with rapport and empathy-building is the aimed for and currently most taught approach for pharmacists and means no interruption and active listening from the interviewer (Grimes & Barnett, 2019).

Memory retrieval through the Enhanced Cognitive Interview

Next to the use of rapport and empathy, another way to enhance the interview quality is improving memory retrieval. The Enhanced Cognitive Interview (ECI) technique is used for exactly such a memory retrieval, currently by the police for investigative interviews and interrogations and incorporates principles of cognitive and social psychology (Fisher et al., 2011). There are several situations, in which the concrete remembering of information is of severe importance, as for witnesses in crime scenes as well as in medical history-taking (Vrij et al., 2014; Clifford & George, 1996). The founders stated that the ECI was developed to increase the amount of information through an approach that is based on recall of the prior event and giving informational cues to the interviewee to enhance their memory (Geiselman et al., 1984; Memon et al., 2010). However, a key criticism of the ECI is that an increasingly amount of information not necessarily results in more useful facts, because false memories could get enhanced as well, therefore it is advisable to check on errors (Geiselman et al., 1984).

The memory component. The memory retrieval process and recalling process were studied by Tulving (1972), who pointed out that episodic memory receives and stores information about the temporally dated episode, events, and temporal relations between these events. A problematic fact for the accuracy of memory retrieval lies in the fact that the content and retrievability of episodic memory may get changed through the process of retrieval (Neisser & Fivush, 1994).

For the retrieval of information from the episodic memory system, a person needs to be able to put the situation in temporal relation and so establish a context. This context can get approached through cues, which can be distinguished into two types, namely internal cues, or contextual cues. The latter one is environmental, while internal cues are inside the brain and rather mean the internal states the person was in when experiencing the situation (Tulving, 1972). Because the environment during the retrieval process mostly differs from the place of encoding, there are fewer cues for memory when one is trying to recall events in a new context.

Based on this problem of fewer cues, the approach of the ECI is to engage the witness in a detailed retrieval of the original event by giving potential cues. This is done through four specific techniques to enhance the recall of the prior event, together with rapport and empathy-building (Tulving, 1983; Geiselman et al., 1984).

The first approach is context reinstatement, meaning that the physical and personal context of the interviewee that existed at the time of experiencing a situation is encouraged to be mentally reconstructed. This is done through instructions of the interviewer, for the interviewee to try to reinstate back to the experienced situation. With different cues, about feelings or senses, the interviewee´s memory is triggered. The second part of the ECI is the total report of everything, which means that the interviewee is asked to report everything including trivial details. Even though it might extend the length of interviews because more information is recalled, this is important because some clients might not know what information is of value (Geiselman et al., 1984). Two further approaches of the ECI are the instructions to recall from a variety of perspectives and temporal order. Based on Anderson & Pichert (1978), different retrieval cues may access different aspects of an experienced situation, which means that the mental reinstating of the context might help interviewees to

remember important aspects. Based on this, giving instructions to recall from a variety of perspectives, prevents the report of a unitary, static perspective and help enhance the recall.

Additionally, against the intuition to recall events chronologically, the reversed recalling forces the client to browse the memory, provoke additional memories over and above what was already recalled and was found to enhance the completeness of reports (Geiselman et al., 1986; Memon, 2006).

Furthermore, the framework of building rapport and empathy with the interviewee was added 1992 by Fisher and Geiselman, as its approach was found to be very effective, as already shown in the research for medical interviews and communication science (Miller, 2019; Tickle-Degnen & Rosenthal, 1990; Winefield & Chur-Hansen, 2001). Even though the ECI approach was used primarily in the field of investigative interviews, the benefits of reduced stress, a greater feeling of safety, and a therefore resulting more open communication through rapport and empathy building, are similar to other interview situations especially in the medical sector.

Research of questions and hypotheses. This research will determine how to increase and improve memory retrieval in medical history taking. Based on the existing literature it is expected that the use of the Enhanced Cognitive Interview in medical interviews, will yield a greater number of details, compared to both structured interviews and structured interviews using only rapport and empathy-building skills. Furthermore, it is expected that the ECI especially will yield a greater number of accurate retrieved details compared to both structured interviews and structured interviews using only rapport-building skills. Rapport and empathy are expected to be similar in both conditions the rapport condition and the ECI condition. Finally, the duration of the ECI condition is expected to be higher than the rapport condition.

Methods

Design

The study was a between-subject experiment. The independent variable in this report is the different approach of the medical interviews, which had initially three levels, but due to an insufficient number of participants, it was chosen to omit the first and just experiment with the last two. Another reason for deciding the omitting, was that the approach of the just structured interview, does not get implemented in the real medical sector and therefore would just have been a condition to control for rapport and empathy building.

1. Structured Interview (not performed)
2. Structured Interview with rapport & empathy-building
3. Enhanced Cognitive Interview

The dependent variables that were measured were the total number of recalled details and the number of accurate details. Further, dependent variables were rapport and empathy to test whether the interview style impacts the relationship between the patient and the pharmacist and the duration of the interviews.

Participants

The participants consisted of a sample of 60 individuals, which were mainly German (88.3%) students, who have been at least some months enrolled at a university (*M*age = 25.83, *SD*age = 10.30; 41.7% females, 58.3% male). They participated voluntarily and there was the option to gain course credits. The study design was approved by the ethics committee of the BMS Lab of the University of Twente (nr. 220305). A link to the survey was distributed via SONA-systems and social networks such as Instagram and WhatsApp. The criteria for

participation were the ability to speak English or German and being at least 18 years old. 40 of the 60 interviews were conducted in German, and the other 20 in English. During the analysis, no participant was removed completely but eleven participants were removed during the tests of the Rapport Scale for Investigative Interviews, and Interrogations (n = 52) and the State Empathy Scale (n = 57), due to their items having all the same values in either one or both questionnaires. (All sample descriptive can be found in Table A1, in Appendix A)

Materials

The Vignette. This document is for the participants as a preparation for the interviews, so the researchers can later ask questions and approach their memory about their medical history. The vignette is a character description of a 46-year-old person, that was sent to the hospital by their family doctor due to several symptoms. The focus is on the persons' medical history, including symptoms, medication, and feelings. A lot of characteristics and details were included and embedded within the contextual descriptions such as the impact on family, feelings, and work. This was done so there would be retrieval cues the ECI could activate in order for the person who reads it to make it as easy as possible to imagine the situation and be able to relate to it. For example, through mentioning several persons/relatives and their relation to the participant in the vignette, an information base was incorporated for the later task of recalling out of multiple perspectives and for the context reinstatement.

Additionally, the instructions to act as the person and read the story several times were written on top of the vignette, which was then sent as an E-mail (the vignette can be found in appendix B).

The Interview procedure scripts. Three different scripts were developed for the different conditions of the interviews. Each of them was a structured interview, based on the same structure, as currently recommended for pharmacists (Grimes & Barnett, 2019).

Based on Grimes and Barnett (2019), five categories were developed for the structure, to make sure the main topics of a medical history would be included in the medical interviews. The topics of the categories were: 1. Introduction & identification of the patient; 2. Encouragement for the patient to describe their main problem, and complete discussion before moving to the next point; 3. About Symptoms, Medicine, side-effects & History; 4. Asking about family diseases and lastly 5. Asking if there is anything to add and adoption of the client.

Each category consisted of several questions, whereas the formulation of the questions differed per condition and approach. A detailed description of the questions can be found in the particular condition described in the following section. Also, some freedom in non-verbal behaviour was condoned by the researchers in regard to reaction and sentence structure to allow the conversation and rapport to flow. (The script of the left-out interview condition can be found in Appendix C)

The standard interview (with rapport and empathy). In this condition, the interviewer asked 13 questions with modifications in sentences that are intended to support rapport and empathy building. In the first part of the interview, an introduction was given by the interviewer, who acts as the role of the pharmacist. It is explained that the situation is happening in the hospital and the participant will be asked about their medical history. Several sentences were included, as “please, take as much time as needed” or “it is okay if you cannot remember everything”, which should operate as decreasing the stress levels of the participants. Already in the beginning of the interview, the participant is told that the doctor and the pharmacist may give their best advice, and act in the participants best interest. Further instructions for rapport and empathy-building were given to the interviewer regarding attending to open body language and minimal encouragement such as maintaining eye

contact, slightly forward-leaning, using a relaxed tone of voice, and nodding (see appendix D).

The Enhanced Cognitive Interview. The script of this interview focused on providing memory retrieval cues. Three approaches to the ECI were added to the 13 questions, namely context reinstatement, the total report of everything the patient can recall, and recall from a variety of perspectives. Varying the temporal order of recall was omitted because it did not apply to our scenario.

For the three used approaches, questions and statements were added to the basic interview questions, especially in the introduction of the interview, where the total report of everything was made explicit through sentences like:" Everything you have to say is important, so please state anything you can remember even if it seems just partial or incomplete". Throughout the entire interview the technique of "total report of everything" was used in several sentences.

For the context reinstatement, the participant was motivated to retrieve the context of the question topic. When asking about medication, for example, the participant was asked to remember their daily routine from waking up to the end of the day and think about the medication that was taken at, which time. Additionally, some questions triggered specific cues that had been indicated in the Vignette, such as the visual representation of the medicine as pictures and the description of the taste of medicine ("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."). Lastly, the recall from a variety of perspectives was approached by asking the participants to imagine themselves from their view, of their partner or children. For example, a question here would be: "If we were to ask someone close to you, your partner, your children or a friend for example, would they report any symptoms or changes they've noticed in you?".

Next to the verbal approaches of the ECI, also the building of rapport and empathy was included via the specific rapport-building intro, body language, and minimal encouragement such as nodding, slightly forward-leaning, facial expressions, and a relaxed tone of voice. (The interview script of the ECI can be found in Appendix E).

Questionnaires.

The RS3i. The Rapport Scale for Investigative Interviews and Interrogations by Duke et al. (2018), was chosen because it demonstrated adequate or higher internal reliability (Cronbach's $\alpha > .70$) for all scales. Also, the validity was found to be satisfactory for nearly all subscales *(Cultural Similarity, Attentiveness, Connected Flow, Trust/Respect)* except for two subscales (*expertise* and *commitment to communication*), which should be "interpreted with caution" (Duke et al., 2018). Because of the interpretation difficulties and the nonetheless not fitting topics, it was chosen by the researchers to exclude those two subscales for the calculation of the rapport. About eleven times, the participants were asked to indicate their opinion on, by clicking on one of five boxes ranging from 1(*strongly disagree*) to 5 (*strongly agree*), throughout the test is originally measured with a 5-point Likert scale. Slight differences were made in the formulation of the items for better understanding and more accurate fitting. For more clarity, some items were reformulated into longer statements such as "Communication went smoothly." > "The communication went smoothly between the Interviewer and me." Further, the words "we" and "us" were changed to "The interviewer and I", so that for example "We work well as a team." > "The Interviewer and I worked well together as a team." (All adjusted items can be found in Table F1 in Appendix F)

Empathy. Empathy was measured using Shen's (2010) State Empathy Scale (SES), which is a multidimensional self-report inventory, where empathy towards another person is measured. The participants' experiences and feelings towards the interviewer are asked in

eleven items and the participants are supposed to indicate their relation to the statements on a 3-point Likert scale ranging from 1 (disagree) to 3 (agree).

There are three subscales (affective empathy, cognitive empathy, and associative empathy), which were found to have high reliability each ($\alpha > 0.7$; between 0.82 and 0.92) and both construct and discriminatory validity were found to be good in two different sets of people, namely one of college students (N=289) and the general public (N=189) (Shen, 2010).

Because the original questionnaire was developed to measure the empathy of a participant toward a person that was shown in a video before the test, the setting slightly differed from the setting in this study. Based on that, the formulation of the questions had to get slightly altered, in ways of changing the words "character" to "interviewer", and "message" to "Interview", to keep sense and tune to the interview situation. Nonetheless, the content of the questions remained the same. For example, "The character's reactions to the situation are understandable." > "The interviewer's reaction to the situation is understandable.", and "When watching the message, I was fully absorbed." > "I was fully absorbed in the interview". (All new and original items can be found in Table F2 in the Appendix F)

Procedure

After agreeing to participate, participants were sent a confirmation of the appointment together with instructions, the vignette for preparation, and a long format of the consent forms to read through. The instructions were given that the participants should read the vignette three times and the researchers would want them to seriously imagine themselves to be the described character. They were told that the interview would not be a memory test, and they should do their best to answer the in the interview given questions, without making severe efforts to remember all the provided information perfectly. This step was done to ensure that participants would not learn the information by heart and think they must pass a test, but to set the interview up as realistically as possible. The interview needed to be scheduled minimally 24

hours after the recruitment to ensure preparation time for the participants to review the study materials. Additionally, the meetings were held via Skype and or Zoom and recorded in order to be able to transcribe and analyze them.

A team of two researchers, with one playing the role of the pharmacist (Interviewer), and one the experimenter conducted the interviews to prevent the possible transfer of rapport when the interviewer is someone known to the person. Furthermore, this splitting of roles may support the illusion of a real pharmacist and only those impressions and experiences towards the interviewer, whilst the interview is relevant.

At the beginning of the appointment, the participant was welcomed and given the Qualtrics link by the first researcher (experimenter). The participants were asked to fill out the first parts of the Qualtrics questionnaire, which consisted of the demographics of the participants and the informed consent, which informed about the duration and set-up of participation, anonymity, withdrawal at any time, confidentiality, and the contact details of the researchers (Appendix G). After giving the informed consent, a page was shown that tells the participant to stop here, pause the questionnaire, and tell the experimenter that they are ready. The experimenter asked whether there are still any questions left and gave the participant the opportunity to read over the information again.

When there are no questions left, the experimenter turns off their microphone and camera, and the interviewer is added to the call, so the interview can get started. The allocation to the conditions was a sequential randomization. A list of participant numbers per category was created and the participants were assigned alternating to each category.

After the conduction of the interview, the interviewer left the call, and the researcher returned to the video call. She told the participants to complete the post-experiment questionnaires on Qualtrics and was available for possible upcoming questions.

Once they are finished with the Qualtrics, a debriefing is given in written and oral form to them explaining the purpose of the study. Afterward, they were asked if there were any questions or otherwise, they would be free to leave. There was the opportunity to receive course credits if wanted.

Data analysis

To be able to compare the information of the participants across interviews, the interviews were following a standardized script instead of being restricted in time. All the interviews were transcribed, and the number of details mentioned was counted and classified into accurate and inaccurate categories. For the to be counted details, a table was made by the researchers, summarizing all important details, which were mentioned in the vignette. It was specified that just details about the medical history were counted, based on the fact that this is the goal of a medical history-taking interview. In all interviews, both researchers collaborated to reach a more neutral consensus on when a detail should be counted. In total 52 details were included in the counting. If the participant was able to recall the detail in full detail (for example the terms for the medication, or the duration of time the symptoms lasts) the details were counted as accurate. When the recalled detail was lacking in some aspects, something new was said that was not mentioned, or the participant remembered something wrong as confusing the medicine names, the detail was counted but not as accurate.

When score reversing was necessary for the RS3i and the SES questionnaire, the data was changed.

The 25th version of SPSS was used to import and analyze all the collected data (interviews and questionnaires). A correlation analysis and an independent T-test analysis were used to see if there was a significant difference between the two groups for all dependent variables. For the first hypothesis (the use of the ECI in medical interviews, will yield a greater number

of details, compared to a structured interview with just rapport and empathy-building), the total given number of details per group were counted and compared. For the second hypothesis (the use of the ECI in medical interviews, will yield a greater number of accurate details, compared to a structured interview with just rapport and empathy-building), the number of accurate given details was compared between the groups. To account for the variables Rapport and Empathy building, two additional T-tests were run on the mean difference between the two conditions.

Results

Descriptive Statistics

Table 4 gives an overview of the descriptive statistics of all dependent variables. For every test, a normal distribution was found so independent t-tests could be made. The mean total number of details was 22.18 (*SD* = 6.16) while the mean of accurate recalled details was slightly smaller (*M* = 20.56; *SD* = 6.10). For the interpersonal questionnaires, the overall means were 4.17 (*SD* = 0.47) for the RS3i and a mean of 2.33 (*SD* = 0.38) for the SES. The interviews had a mean duration of 9 minutes 23 seconds (*SD* = 3 Minutes 31 Seconds).

Three correlations (with $p \leq .05$) between variables were found, while two of them were about the duration of the interviews. First, as the duration of the interviews took longer, the total number of recalled details increased as well, $r(59) = .47$, $p < .001$. Additionally, also the number of accurate details increased by increasing interview duration, $r(59) = .44$ $p < .001$. Lastly, as the number of total details increased, so did the accuracy, $r(60) = .94$ $p < .001$. All correlations can be found in table 4.

Table 4

Mean and Standard Deviation of different Variables in total

Scale	Total		correlations									
	Mean	SD	Total number of details		Number of accurate details		RS3i		SES		Duration	
			r	*p*	*r*	*p*	*r*	*p*	*r*	*p*	*r*	*p*
Total number of details	22.18	6.16	1									
Number of accurate details	20.56	6.10	.94	**.001**	1							
RS3i Total	4.17	0.47	-.01	.95	.03	.81	1					
SES Total	2.33	0.38	.03	.84	.03	.85	.28	.07	1			
Interview duration	9:23	3:31	.47	**.001**	.44	**.001**	.00	1.0	-.80	.56	1	

Note: All values are the original values with no participants removed. Interview duration time is measured in minutes: seconds.

RS3i= Rapport Scale for Investigative Interviews and Interrogations

SES= State Empathy Scale

Hypothesis testing

Comparing the group means of the RS3i and the SES showed that the mean of the ECI condition was higher (with M = 22.87, SD = 5.70), than the mean of the rapport condition (M = 21.50, SD = 6.63). Nonetheless this effect was not found to be significant $t(58) = -.856$, $p = .297$. All results of the independent T-test can be found in table 5.

The number of accurate details was slightly higher in the ECI condition (M = 21.70 SD = 5.1), compared to the rapport condition (M = 19.40, SD = 6.88). Again, this effect was not found to be significant (with $t(58)$ 0 -1.5, $p = .054$). Stated alternatively, 41% of details were approximately recalled in the ECI condition while in the rapport condition just 37% of details were recalled.

Looking at the interpersonal measurements, the T-test analysis showed that the mean of the RS3i was slightly higher in the ECI condition (M = 4.22, SD = 0.46), in contrast to the rapport condition (M = 4.12, SD = 0.50), but this test was found to be non-significant ($t(50) = -0.71$, $p = .770$).

Looking at the SES, the mean in the rapport condition (M = 2.40, SD = 0.34). was higher than the one in the ECI condition (M = 2.27; SD = 0.41). Again, this effect had an non-significant p-value ($t(55) = 1.24$, $p = 0.41$).

Comparing both lengths of the interviews, it was found that the Rapport and Empathy only Condition had a mean duration of 7 minutes 45 seconds (SD = 2 Min 3 Sec), while the ECI condition was about 3 minutes longer (M = 10 Min 59 Sec, SD = 3 Min 59 Sec). This difference was found to be statistically significant $t(N_{\text{Rapport-Condition}} = 30, N_{\text{ECI- Condition}} = 30 = -3.93, p < .001$.

Table 5

Mean and Standard Deviation of different Variables in both Conditions Separately and Together

Scale	Rapport		ECI	
	Mean	SD	Mean	SD
Total number of details	21.50	6.63	22.87	5.70
Total number of accurate details	19.4	6.88	21.7	5.1
RS3i Total	4.10	0.49	4.21	0.45
SES Total	2.39	0.34	2.27	0.41
Interview duration	7:45	2:03	10:59	3:59

Note: All values are the original values with no participants removed. Interview duration time is measured in minutes: seconds.

RS3i= Rapport Scale for Investigative Interviews and Interrogations

SES= State Empathy Scale

Discussion

Key results

The purpose of this study was to test whether medical history interviews could be enhanced, by increasing the number of recalled details by the participant with the help of the Enhanced Cognitive Interviewing method but with similar rapport and empathy.

H1: The first hypothesis, that people will recall more details in the ECI condition compared to the condition with just rapport and empathy, was tested and it was found that the null hypothesis cannot get rejected.

H2: Furthermore, it was tested for accuracy of details between both interview conditions. As already for the first one, the null hypothesis that there is no difference in accurate details between the interview conditions, could not get rejected, as just 4% more details were recalled in the ECI method. However, the results were just slightly not significant as a *p*-value of .054 was found. This could be considered as only weak evidence against the null hypothesis.

H3: Next to that, it was hypothesized that there will be no significant difference in rapport and empathy between both conditions. The results of the T-test analysis of the RS3i and the SES approved the expected hypothesis. Even though there was a slight difference in mean, the results for both tests were not significant, which means we cannot reject the possibility of no difference.

H4: The fourth hypothesis focused on the duration and expected the ECI to take longer than the Rapport and Empathy only Condition. Looking at the analysis, this was found to be true, with statistically significant results.

Theoretical contributions

Memory component. Looking at the outcome of the first two hypotheses, there was no clear advantage for the amount of recall in the ECI versus rapport-based interview. This means that an enhanced recalling effect of memory, by participants was not significant. However, the results for the second Hypothesis about the accuracy of details, indicate at least weak evidence for enhancement. As Tulving (1972) states that the ECI condition is based on retrieving the episodic memory through cues, it could be a problem that the participants have not experienced the story themselves but instead have only read a Vignette, containing a lot of information. It might be that the cues of the ECI were not working because there was no connected, episodic information for the participants. This was also found in another study by Neisser (1996), which showed, that experiencing an event directly was more memorable than

hearing or reading from it. To approach this phenomenon, the vignette was developed with a lot of details, about several sensual perceptions, as how the medication tastes like, and feelings. Tyng, Amin, Saad, and Malik (2017) state that the process of learning and long-term memory retention gets enhanced by emotions. Following from that, and the premise, that the participants very probably not experienced the same emotions whilst reading as if experienced in reality, one can assume it as a possible reason for the not significant outcomes.

Another reason that the participants approximately recalled less than 50% of the details may be the huge number of details in the vignette that was included, to make the story as realistic as possible. Remembering a mean of 22.18 (of 50 in total) details seems already impressive.

Rapport and Empathy. Grimes and Barnett (2019) stated that missing communication skills and especially the feeling of not being listened to decreases rapport and empathy in a relation. To prevent this, several approaches were scripted in both conditions, that were intended to build rapport, to make the participant recall more details. Looking at the results, of the RS3i and the SES, one can see that the scores were relatively high, which could be one potential reason for reaching that high mean number of details (M = 22.18). Next to that, there were no differences in instructions for rapport and empathy-building between the conditions, which could also be a possible reason for the resulting, not significant differences in the RS3i and SES scores between the conditions. Nonetheless, there was no condition without rapport and empathy building, which prevents to be able to make a statement about the effect of rapport and empathy. It is suggested, to develop further studies, both in the lab as well as doing field studies to test for the further correlation with retrieved memory.

Time. Based on Holmberg and Madsen (2014) it seems rigorous to specify a certain optimal length of interviews for rapport and empathy establishment, which left the researchers

with the argument of efficiency and to stick on the duration of medical interviews as mainly used (approx. 10 min.) (Matsushita et al., 2017). Even though the overall mean time took an average length of 9 Min. and 23 Sec, which nearly perfectly matches the desired length, comparing the Structured interview and ECI condition there is a to be considered difference. In matters of efficiency, it might be problematic that the ECI condition took about three minutes longer than the rapport condition but resulted only in a small increase in recalled details. Considering that pharmacists conduct several interviews a day, with a normal length of approximately 10 minutes, increasing the duration by about three minutes for such a small increase in details seems unreasonable (Grimes & Barnett, 2019).

Limitations

The main limitation, which could be detected in this study was the setup to make it as realistic as possible throughout the participants not experiencing real symptoms of the medical story but were given a character description with a lot of details. The ECI was yet mainly used in different set-ups such as interrogations, but its functionality was proven with similar study set-ups (Memon, et al., 2010). It seems as the ECI´s functionality through cues, works also for a memory made through a written form, and there may not be a difference of retrieval between memory of a real experienced story (with long event delay) or recently made short term-memories (from a vignette or given information) (Memon, et al., 2010; Tulving & Thomson, 1973). Apart from what concrete memory had recalled the details, it may not be important, which kind of cues were triggered whilst the interview, throughout the cues might work also with imaginations or the situation the reader has left the vignette in.

Another limitation had to be made in leaving out one interview condition. Originally it was planned to compare the means of three interview conditions, while the deleted one would have been estimated to have the biggest contrast in results to both the other conditions (rapport and ECI condition). This third interview condition was also constructed as a

structured interview, with the same structure but the interviews were intended to happen without any rapport and empathy-building from the side of the interviewer. Leaving out this condition, prevented the safety to say, whether the null results are based on the benefits of rapport and empathy building or not. One study, by Oxburgh and Ost (2011), states that interpersonal relations may even not impact the information retrieval at all, but instead a single most important tool for getting information from people may be a good questioning technique, with for example non-judgmental questions. Because of the necessity to interview at least 90 participants (30 per category each) and limited time resources, it was decided to concentrate rather on the other both conditions, throughout more importance of their outcome and the focus of the study to compare the ECI method with a real-life used method (rapport condition). Even if this was the right decision, further research is advised, comparing all three interview conditions in a setting with the necessary resources.

Additionally, the study results, especially the rapport and empathy results may be positively influenced due to the participants being mainly individuals recruited out of the researcher's personal environment and being personally related to them. This may have resulted in higher scores for the interpersonal measurements.

Next to that, the sample in this study may differ from the typical sample of medical interviews, through it being nearly only students with a mean age of 26 years and being relatively healthy. This could impact the reliability of this study.

Lastly, in the beginning, the problem of the study being an online study was evaluated by the researchers, based on contrary opinions and study results in research, on whether rapport can be established to a similar amount online as in in-person interviews (Ekberg et al., 2013; Lopez et al., 2019; Meijer et al., 2021). Against any concerns, rapport and empathy were established and scored high in both conditions, which is an important conclusion for the online health care setting in matters of options for digitalization and online interviews.

Conclusion

This study aimed for enhancing the memory in medical interviews, compared to the currently used approach, which just uses rapport and empathy building. Against expectations, no clear advantages could get identified for the ECI over the rapport-building condition.

Next to that, the ECI condition was found to take approximately three minutes longer than the rapport condition and following that is found to be not as efficient as the rapport one.

Rapport and empathy-building were not found to differ significantly throughout the conditions, which is a good prerequisite for further research and tests with the ECI method in the medical sector. Concluding, it was not able to show that the different types of interview styles had a clear effect on the number of recalled details.

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Appendix A

Table A1

The Percentages of the Demographic Data of the Participants

	Category	Percentage
Age	19	5.0%
	20	8.3%
	21	16.7%
	22	15.0%
	23	23.3%
	24	8.3%
	25	8.3%
	26	1.7%
	36	1.7%
	43	1.7%

	Category	Percentage
	49	1.7%
	56	1.7%
	57	1.7%
	59	1.7%
	65	1.7%
Gender	Male	58.3%
	Female	41.7%
	Non-binary	0.0%
	Prefer not to say	0.0%
Nationality	German	88.3%
	French	1.7%
	Egyptian	1.7%
	Dutch	1.7%
	Brazilian	1.7%
	American	1.7%
	Russian	1.7%
Highest Level of Education	Some secondary school	1.7%
	Completed secondary school	16.7%
	Vocational or similar	5.0%

	Category	Percentage
	Some months of university but no degree	43.3%
	University bachelor's degree	21.7%
	Graduate or professional degree	11.2%
Country of Residence	Germany	66.7%
	Netherlands	31.7%
	Other EU*-country	0.0%
	Other non-EU*-country	1.7%

*EU= European Union

Appendix B

Vignette

Scenario: Below you will find a short description of the character you will play when you attend the interview. You can use your 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 focused 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 couldn't get started again afterward 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 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 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 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 have to 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 C

Script for Interview Condition I: The structured Interview without Rapport (left out)

1. **Introduce & identify the patient**

a. Hi, my name is X, and I am a pharmacist at the hospital. I will now ask you some questions about your health & medications. Please answer honestly and the best 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 complete discussion before moving to the next point**

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. **Symptoms, Medicine, Family & 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. Asks about family diseases, incl. Diabetes…

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

5. Interpretation of given information

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

Appendix D

Script for Interview Condition II: 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 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. 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 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 III: 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 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. 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 or children, or a friend for example, would they report any symptoms or changes they've noticed in you?

3. The patient's 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 F1

The Items of the RS3i grouped per Subscale

Subscale/Dimension	Items
Attentiveness	The Interviewer listened to what I had to say.
	The Interviewer paid attention to my opinion/answers.
	The Interviewer was attentive to me.
	The Interviewer was interested in my point of view.
Trust/Respect	The Interviewer was honest with me.
	The Interviewer respected my knowledge.
	The Interviewer can generally be trusted to keep their word.
	I can trust the interviewer to keep their word to me.
Expertise	*The Interviewer did his/her job with skill during the interview.*
	The Interviewer performed expertly during the interview.
	The Interviewer made an effort to do a good job.
	The Interviewer acted like a professional.
Cultural similarity	*The Interviewer and I have our culture in common.*
	The Interviewer and I probably share the same ethnicity.
	The Interviewer probably shares my culture.
Connected Flow	The Interviewer and I worked well together as a team.
	Communication went smoothly between the Interviewer and me.
	Inter-viewer and I got along well during the interview.

Note. Items written in cursive were left out

Table F2

The adjusted and original Items of the SES grouped per subgroup

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

Appendix G

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 police interviewers and suspects.

Therefore, we are inviting you to read a script that describes a theft. You will be asked to imagine that you were the person that steals this item. Afterward, you take part in a mock investigative interview where your task is to try to convince the interviewer that you are not guilty of the crime. Lastly, we ask you to fill out a questionnaire for our research. This research is completely voluntary. If you do not feel comfortable proceeding with this study, you can always let us know that you would like to 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 the questionnaire. The interview takes about 10 minutes. Filling out the questionnaire can be done in approximately 10 minutes.

Confidentiality and Data Security

You will be assigned a code number that will protect your identity. All data will be kept in secured files. The only identifying information we will gather for purposes of communication is your email address, which will not be linked to the questionnaire. Over this channel, you will receive your participant number and links to the questionnaire.

The interviews will be recorded and transcribed. We will use those transcripts and the coded data to analyze them. Results of this analysis will be shared in the Bachelor theses of the researchers and may be presented in academic publications or at academic conferences. The anonymized transcripts and coded questionnaire data will be kept on the servers for the online survey software (Qualtrics) and the secured student OneDrive accounts of the researchers (GDPR compliant) for the duration of the study. After that, they will be stored on the password-protected university drive of the supervisor. Anonymous data may be made

available to the scientific community by being hosted on the open science framework (https://osf.io/), however, we reiterate that you will not in any way be personally identifiable. The raw research data will be kept for at least 10 years as required by the Netherlands Code of Conduct for Scientific Practice. The videos themselves will also be stored for auditing purposes but will not be made public without your explicit permission. We will ask you at the end of the study if you are happy for us to use your video to present this research. You are completely free to refuse this permission, and then your video will never be made public.

The researchers will have access to the coded questionnaire data with only your participant number. Furthermore, we will have access to the recordings and the transcribed interviews. Our supervisor will have access to all data and transcripts to inspect our study and store it securely.

You can also ask for rectification or erasure of your personal data from our study so long as you provide your participant number because this is the only way the researchers will be able to identify your data. If this should be the case, please let us know before the 16th of May.

This research is approved by the BMS Ethics Committee of the 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

E-mail addresses

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
- can speak English or German
- think you are not distressed by taking the place of a client in a medical interview

If you meet these criteria and would like to keep taking part in this research, you are asked to agree before the interview. By clicking below, you agree to the conditions explained above and give permission for the use of your data.

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

E-mail addresses

with your concern and your participant number.

Table 4

Codes of the accurate details based on the Vignette

Topic	Coded Details
Medication	**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 - Ones daily **Anti-depressant** - SNRIs - Brand: Fetzima - Active ingredient: Levomilnacipran - 40 mg - One pill a day

Topic	Coded Details
	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 colored lips
	Hard to concentrate
	- For the last two days
	Already off with the 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

Topic	Coded Details
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. Further, all bold codes are automatically also activated if a code that is below them is used by the interviewee.