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Quality of peer feedback after observing the performance of a digital rectal examination on a standardised patient

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1 INTRODUCTION

In dictionaries the word “feedback” was explained as “information about the result of a performance”. [1] The concept of feedback, which means using information to make adjustments in reaching a goal, was first used by rocket engineers in the 1940s. [2] John Hattie and Helen Timperley described feedback more precisely as “information provided by an agent (e.g., teacher, peer, book, parent, self, experience) regarding aspects of one’s performance or understanding”. [3] The importance of feedback in clinical education was proved long ago and so feedback has become an essential part of learning and development in the medical curriculum. [9, 18, 20, 34] Students who received acknowledgements from teachers were more likely to maintain interest in a subject. [4] Usually information given in the form of feedback was well appreciated by students, which as a result may lead to increased motivation and satisfaction. [5] If correctly provided feedback could encourage self-reflection, raise self-awareness and support students in future learning and practice. [6] Professional coaching and feedback were needed to achieve educational goals. [7]

In a simulation with standardised patients, who were used to portraying real patients [24], students of LMU (Ludwig-Maximilian-University, Munich) were provided with the opportunity to learn in a collaborative setting. Specifically, they were to learn how to perform a digital rectal examination on a standardised patient, and how to treat a patient properly when dealing with embarrassing situations, all while being watched by peers and with the knowledge that feedback will be provided afterwards. The whole learning process was collaboration script scaffolded and could be useful for learners in that it allowed for engagement in argumentation and knowledge acquisition. [8] After the simulation the participants received feedback not only from the standardised patient but also from their peers. The subject of this study was to evaluate the quality of peer feedback. General guidelines and quality criteria for effective feedback provision were described in the following chapters.

1.0 Feedback models and feedback types

“The aim of a feedback model is to describe to learners their effective but also their ineffective behaviours, and show how to improve their ineffective behaviour”. [1] The

concept of feedback is strongly theory based. [9] Feedback meta-analyses showed considerable variability in the effectiveness of different feedback types.

Hattie and Timperley found that the most effective feedback forms contained audio-, video- or computer-assisted instructional feedback, offered cues or reinforcement to learners and contained feedback about the task. Conversely feedback on the self - like praise, punishment and extrinsic awards - proved least effective. [3]

Feedback could be divided into formative feedback, which was constructive and had the intent to modify or ideally improve a learner's skills and behaviours, and summative feedback, which had the purpose of comparing a learner's performances and assigning grades. [13] Summative feedback, based on overall behaviour and often seen as final evaluation, was used to document achievement or assess competence. [13] This study was focused on formative feedback aspects.

Another difference existed between informal and formal feedback. [6, 10] Informal feedback was feedback on the job. [9] It should be specific, focused on behaviours, provided on a day-to-day basis - for example, in a clinical setting after an intervention - and take only a few minutes. [9, 10] When occurring at the right time and place, it was highly effective, specific, non-judgmental and based on the observed behaviour and not on personality. [10] Formal feedback, which should be interactive, was given episodically in a feedback session and should be expected and well documented. [6, 10, 11] The learner should be informed of where and when the feedback session was to take place, be invited to self-assess and reflect on his or her performance, and to propose solutions for poor performance. [10]

In a study by Narciss, simple feedback was explained as knowledge of result/response, meaning that a learner was simply informed whether his or her responses were correct or incorrect. [53] Simple feedback had an informative function, and the number of errors, location in which the errors were made, and type of errors or reasons for the errors were not explained. [53] Elaborated feedback provided additional information, for example, regarding the correctness or quality of the solution. [53] Elaborated feedback could be classified as specific instructional or extra-instructional information, and was considered most efficient. [12] This study mainly focused on Narciss' interpretation of feedback to evaluate the quality of peer feedback.

Pendleton et al. described a feedback model that suggested that learners and teachers should first concentrate on the positive aspects of a performance and then discuss what could have

been done better. [15] It consisted of four steps: In step one the student analysed what went well, in step two the feedback-provider offered his agreement and accentuated positive aspects, in step three the student detected what was poor and could be made better and finally the teacher told the student what could be improved on from his or her point of view. [9] The Pendleton model mainly contained feedback about what in the learner's opinion could be improved. [9] One problem of this approach was that deficits not detected by the student might not be discussed. [9] Another way to deliver feedback was the reflective feedback conversation, which encouraged the learner to self-assess and focused mostly on what improvements should look like. [9] As a similar model, Bienstock et al. introduced a structure for feedback sessions that included the following four components: student's self-assessment, teacher's assessment, action plan and summary. [13]

An agenda-led, outcome-based feedback-model or ALOBA was described by Silverman et al. This model suggested first asking the learners what difficulties they experienced and what help they would like before considering the outcome they tried to achieve and encouraging them to find solutions for their problems. [5, 16]

One example of a structured feedback model was the "Brown and Glover" tool. It suggested that negative feedback was divided into three categories (N1-N3). [17] Category one identified the problem by determining what went wrong, category two offered the correct answer for the identified problem and category three explained why something was not done correctly. [17] A similar categorization could be used for positive feedback (P1-P3): identifying what was good (category 1), offering an explanation (category 2) and finally determining what could be done even better (category 3) [17]. Neutral feedback was feedback that was neither positive nor negative, but mostly descriptive and lacking useful advice for students to improve their abilities. [18]

In a study by Joseph Gigante et al. feedback was divided into three types: brief feedback, which may occur every day and is related to observed action or behaviour, e.g., when a teacher offered a student useful suggestions for improvement during the physical examination of a patient; formal feedback, which was provided at a specific time, e.g., after the examination of a patient, and was focused on specific skills; and finally major feedback, which was provided, e.g., at the midpoint of a clinical rotation by, e.g., a mentor. Major feedback could be described as comprehensive information provided to the learner so he or she could improve before the end of the rotation. [14, 20] Another difference between these

feedback types was that brief feedback takes little time and is very effective, whereas more time was needed to provide formal and major feedback. [14]

For giving effective feedback, learners needed to know what was expected of them. They should be informed of the teacher's intention to offer feedback, for example, to avoid surprise when offered brief feedback during a physical examination. Additionally they should be asked how they interpret their own performance, and the examiner should tell the learner what he or she did well and what could be improved on by using concrete examples based on observed behaviours. Finally plans for improvement should be discussed. [14, 20] Feedback was more effective when delivered by a mentor who was well respected by a student than given by an unknown teacher with no established relationship to the student. [20]

Another frequently used model is called the Standing Committee on Postgraduate Medical Education of England (SCOPME) model, which advised teachers to "support, counsel and inform without censuring" when giving feedback. [7] The Chicago model suggested focusing feedback on behaviour not personality and started with a problem presentation followed by a discussion and agreement. Lastly a solution was proposed, discussed and agreed upon. [7]

Hattie and Timperley established a conceptual analysis of feedback, which included "more than 100 factors influencing educational achievement". [3] They said that feedback operates at four different levels and that the level at which feedback was aimed influences its effectiveness. [3] These levels were described as feedback about a task or product, feedback about the processing of the task, feedback about self-regulation and last feedback about the self as a person. [3] Feedback on the task was most common and often referred to as corrective feedback because its purpose was to distinguish correct from incorrect answers. [3] "Feedback about the processing of the task was more specific to the process underlying tasks or relating and extending tasks" and seemed to be most effective. [3] Feedback about self-regulation "addressed the way students monitor, direct and regulate actions towards the learning goal" and included the ability to self-assess. [3] Feedback on the person could be compared to evaluation or praise and usually did not contain information about a task or process, so it was considered as rarely effective. [3] To be effective feedback must answer three questions that correspond to 'feed up', 'feed back' and 'feed forward': Where am I going? How am I going? Where to next? [3]

1.1 Self-assessment, reflection and feedback

Not only feedback but also self-assessment was of great importance for lifelong learning and improvement. [21]

Self-assessment was defined as "the involvement of students in identifying standards and/or criteria to apply to their work and making judgements about the extent to which they have met these criteria and standards" [21]. It could also be seen as "a personal evaluation of one's professional attributes and abilities against perceived norms" [22].

"Professionals are expected to understand how they perform and to use this information to plan their professional development, building on strengths and addressing weaknesses". [23] With these abilities in mind, self-assessment could be useful. For self-assessment two main skills were required: identifying self-ability in comparison to the required standards, and seeking and using feedback. [21] But reflection was also a component to promote self-assessment and could be a powerful teaching tool, although it was rarely used in medical education. [11] The concept of reflective learning could be found in texts on adult learning, self-directed learning and professional practice. [23] Reflection was essential for students or physicians to "identify gaps in their performance". [24] It consisted of three elements: "Awareness of the self and the situation, critical analysis and understanding of both self and the situation and development of new perspectives to inform future actions". [25] "Thus, reflection leads to growth of the individual – morally, personally, psychologically, emotionally, as well as cognitively- whereas feedback tends to promote technical proficiency". [11] To bring together an internal process like reflection and an external process like feedback, a discussion on experiences and self-assessment could be useful. [25] Same as feedback, self-assessment offered numerous advantages to the learner, for example, enhancement of student achievement, critical awareness, reflection on learning and increased interests. [21] However research identified that self-assessment was an unstable skill potentially influenced by multitudinous variables, such as gender, experiences and ability. [21] This instability may result in over- or underestimation. [21]

In medical education self-assessment could be interpreted as a "learning experience that can stimulate learning by identifying standards and providing suggestions for improvement". [21] This process could be optimised "by providing support, direction and constructive feedback". [21] The more students were trained to reflect and self-assess the more effective the feedback. [24]

Although feedback could promote self-assessment, inexperienced learners might be unable to identify their strengths and weaknesses, so the absence of feedback might be wrongly interpreted as approval. [14] Individuals might be unable to assess their own performances leading to the inability to "correct, direct or identify their required learning". In such cases scaffolds could be useful. [22]

"Alternative assessments to feedback can foster a false sense of competency, or conversely a feeling of inadequacy that may be inaccurate". [20] For effective feedback and self-assessment, common sense and an understanding of standards were needed. As such, students with differing perceptions of standards may be limited in their interpretation and ability to use feedback effectively. [22] Asking for self-assessment could be useful for building a relationship between student and teacher, potentially leading to more effective feedback delivery and improvement of skills. [20]

1.2 Feedback in medical education

"Feedback is the cornerstone of effective clinical teaching". [9] The structure of medical education has changed in the last 20 years, becoming more competency-based, which means that students must be able to demonstrate specific skills and behaviours during their medical curricula. [28] Reflection and feedback became basic teaching methods in clinical education. [11] "It is desirable for medical students to learn effective feedback skills early in their careers". [30]

Feedback in medical education could be defined as "specific information about the comparison between a trainee's observed performance and a standard, given with the intent to improve the trainee's performance". [30, 32, 33]

By observing students dealing with patients, attributes such as professionalism, clinical skills, physical examination skills and communication skills could be taught and assessed. [28]

Feedback was an essential part of educational assessment not only in gaining expertise in medical education [20, 34] but also in developing communication skills and data handling, which were essential for the professional career. [18]

In receiving good and constructive feedback, students could improve their clinical skills by identifying areas of change and becoming aware of positive elements that they could take

forward, something which could not be achieved by general reinforcement only. [18, 20] Without constructive feedback learners may remain uncertain and confused. [1] Many different ways to provide feedback to students had been evaluated in interventions to improve the quantity and quality of feedback. [18] Recorded audio feedback, for example, engaged students more and as a result seemed to be more effective than written feedback. [18] Another possibility for providing feedback in a more textured way could be accomplished by the use of structured feedback forms instead of a free-text method. [18]

Medical students who received acknowledgements from teachers were more likely to maintain interest in a subject. [4] If correctly provided feedback could encourage self-reflection, raise self-awareness and support students with future learning and practice. [6] When giving feedback it was important to offer the student suggestions that are appropriate to his or her level of training. A first year medical student, for example, required different bits of information than a fellow student in his or her last year. [7] Speck referred to the medical student as an "adult learner". [35] In one of his studies he mentioned that "transfer of learning for adults was not automatic and must be facilitated". [35] Coaching and other kinds of follow-up support were needed to help adult learners transfer learning into daily practice so that it is sustained". [35] Thus professional coaching and feedback were needed to achieve educational goals. [7] In 2001 the provision of effective feedback to medical students and junior doctors was recommended by the Confederation of Postgraduate Medical Education Councils "as a strategy to prevent distress". [6] Ende claimed that "the tendency of some doctors to be defensive when challenged, and to resist external review, may stem from lack of effective feedback in early training". Effective feedback created individual reference systems of what was good practice at an early point in a medical student's career. [2]

In many cases the feedback students received lacked in quality and quantity. [20] Medical Students often reported dissatisfaction with the feedback they received or state that feedback in medical education was too rare and not offered regularly [10, 32, 36]. The same students expressed "their interest in receiving feedback on their performance and consider the delivery of feedback as a major factor that could facilitate their learning" in that it allowed for reflection on performance and offered them the opportunity to meet standards. [32] A lack of feedback made students not only passive recipients of feedback but also active seekers. [33] Students sought feedback to improve their performance or to simply bolster their self-image. [33]

Feedback-seeking behaviour occurred in two forms: Individuals could directly ask for feedback or observe the behaviour of others to gain self-relevant information from the environment. [33] Fear of negative feedback might stop students from asking for it. [9] Female students and students with better grades were more eager to ask for feedback that might help them improve their abilities, though all students should be encouraged to ask for feedback. [14, 20, 32] Many reasons for students not asking for feedback had been identified, such as teachers being uncomfortable "defining expectations for their learners"; busy patient schedules and little time for direct observation; teachers being reluctant to deliver feedback or feeling more comfortable offering encouragement; and learners who might not recognize feedback. [14, 20] Many clinical teachers received little or no instruction in providing feedback and therefore consider it pointless [9] Often teachers explained their reluctance to deliver feedback, especially negative feedback, because of fear of emotional response from students, which might affect the student-teacher relationship and the teacher's popularity. Other reasons for hesitancy included the simple lacking of skill in observation and feedback. [20] Another reason for difficulties in feedback provision might be that not enough data, which were needed for effective feedback, were collected due to missing time for direct observation. [27] But teachers, who frequently gave feedback, were often rated more highly than teachers who avoided providing feedback. [13] To make sure that feedback was recognized by students, some teachers used cards with "various components of feedback on one side and the words *"This is feedback"* printed in large letters on the other side. This could be used to mark the beginning of a feedback session. [13]

Not only providing feedback but also receiving and accepting it was a skill that should be taught in medical education. [20] In different cultures feedback was not only differently given but also differently received. For example, Asian students preferred indirect and implicit feedback as opposed to self-level feedback, whereas more direct and individual and self-focused feedback was preferred in the United States. [3] Mostly students preferred balanced feedback, which included their strengths, their weaknesses and offered options for alternative behaviour. [10, 32]

1.3 Peer feedback

In clinical education doctors usually provided feedback because they were considered expert judges. [39] Because of difficulties in recruiting doctors as examiners, standardised patients, student-examiners and peers were often used to provide feedback. [39]

In a study by Reiter et al. students valued the feedback given by peers more than feedback provided by resident or faculty examiners. [40] Peer feedback was provided by equal status learners and could be seen as a form of collaborative learning. [54] It seemed to be a professional, non-threatening and non-prescriptive way to deliver feedback. [41]

Peer feedback included observers providing descriptive feedback to their peers on learning and teaching practice with the intent to improve the quality of teaching. [42] It was supposed to "support the learning process by providing an intermediate check of the performance against the criteria accompanied by feedback on strengths, weaknesses and/or tips for improvement". [54] To increase the quality of peer feedback, instructional interventions - like the use of directed questions ("*Did the assesse mention all relevant criteria?*") and sentence openers ("*I think that …*") - could be used to "promote task-focused and reflective interaction between the learners". [54]

In a study by Sullivan et al. concerning peer teaching, not only the observed but also the observers profited from peer observation. [42] Awareness and reflection on teaching styles could be promoted, teaching technics could be borrowed or learned from other teachers and teaching skills could be developed. [26, 42] Being observed by peers could lead to a more convenient atmosphere for students without the feeling of being investigated. [44]

In an academic setting students learned more effectively when they received peer feedback. [26] Peer coaching and feedback could encourage co-operative learning and increase motivation. [26] It might "enable collaborative on-the-job learning, decrease feelings of uncertainty and insecurity caused by work and promote professionalism in giving feedback". [31]

1.4 How to provide feedback in general

"The manner in which feedback is given influences its effectiveness". [26] As it was based on interpersonal communication, feedback needed to be considered carefully. [10]

“The best-intended feedback may be unhelpful if it is not descriptive or specific enough, not age-appropriate or mistaken for evaluation”. [7] There were great differences between encouragement, evaluation and feedback. [14, 20] Encouragement, like telling the student that he or she did a good job, did not help to improve the learner’s skills. [14] “Feedback and evaluation are linked but different”. [27]

Evaluation could be described as a summative and final judgment of a student’s performance, for example, taking the form of grades, and was not used to improve a student’s performance. [14, 20] Feedback was a formative tool and should enable a student to improve whereas evaluation could be used to determine how successful his or her learning was. [7, 27] Good feedback was immediate and given sensitively with the intention to “narrow the gap between perceived and evident skills competence” and improve a learner’s performance. [26, 14] It should be expected, focused, informative, specific, non-judgmental, objective and based on first hand data. [14, 20, 13] General comments should be avoided. [5] Another important aspect is clarity: a feedback-provider had to be clear about what he or she wanted to say. [5]

Not only the timing but also the focus of feedback had an influence on its effectiveness. [29] “Feedback should provide reassurance about achieved competency, guide future learning, reinforce positive actions, identify and correct areas for improvement and promote reflection.” [14] To encourage a learner by telling him or her that he or she did a good job did not explain which of the learner’s behaviours should be improved or repeated. Feedback, however, was focused on behaviours that could be modified or improved. [14, 13] It “should deal with actions, not interpretations or assumed intentions”. [2] Feedback was an interactive process: the student should be encouraged to ask for specific examples of what was done well and what needed improvement so as to gain further clarification. Further, the student should be an active participant in finding solutions for poor performance. [13] The learner should also be allowed to comment on the fairness of feedback. [6] Ideally a feedback session involved attentive listening. [6] General terms, such as telling the student that he or she did an excellent job, should be avoided because they could be confused with evaluation of the person instead of the performance. [20] Ideally, feedback should be given in a private setting and in a relaxed atmosphere. It should be done on a one-to-one basis and not in front of patients or peers so as to avoid discomfort and embarrassment and to enhance dialogue. These recommendations were made because feedback can fail in its intention if it caused a student to feel embarrassed, defensive or even angry. [2, 9, 10, 14, 20] Students should understand that the purpose of feedback-sessions was not to establish grades but to promote progress. [13] Feedback was

potentially threatening not only for feedback-receivers but also for feedback-providers because the fear existed that the relationship with the feedback-receiver would be affected, especially when giving negative feedback. [10] It was also useful to limit the quantity of feedback because not all "students are able to process large amounts of feedback at one time". [20] "Feedback involved sharing of information rather than giving advice" and let the learner decide for him or herself how to handle problems and find solutions. [1]

There was no use in giving feedback to inefficient learners, who had no prior knowledge with which to comprehend the concept of giving and receiving feedback. In such cases instructions could be more useful. [3] When feedback was directly related to a performance and thus helped a learner to "fill a gap between what is understood and what is aimed to be understood", it took on an instructional purpose. [3]

After a feedback session the learner could be asked to sum up the most important points that were discussed during the session so as to avoid misunderstandings and to make sure that the feedback was understood. [13]

There were a variety of approaches by many different authors on how feedback should be provided correctly, as already described in the chapter on feedback models. For effective feedback the acronym STOP - "**S**pecific, **T**imely, **O**bjective and based on observed behaviours and **P**lan for improvement to be discussed with learner" - was created. [14] Effective feedback was constructive, specific and non-judgmental. [30] Vickery and Lake, for example, suggested that good feedback requires clear goals and outcomes, direct observation of learners, and adequate time and skills in giving positive and negative feedback. [6] Moorhead et al. suggested that feedback should be descriptive rather than evaluative, focused on behaviour instead of on personality and shared as opposed to being provided in the form of giving advice. [1] Feedback which referred directly to the students' performance and gave them the opportunity to work out better answers for themselves instead of telling them exactly what to do, was not only highly valued but also more effective as well. Conversely nonspecific evaluative feedback was less effective and less valued. [1]

1.5 Direct observation

Direct observation of a student performing an activity was the key to formative assessment, which was the foundation for high quality feedback. [20] By observing a student directly

while conversing with patients, information about his or her performance in a real-life clinical setting could be gathered without interference, and afterwards feedback could be provided. [28] Direct observation lead to the analysis of a process, so information about the learner's performance could be generated and plans for improvement could be made. [20] "The aim of the observation is to help improve the skills of the observed, therefore quality feedback is essential". [43]

For more structured observation and specific, quick and easy documentation, observation tools could be used. Such tools, for example, include items on history taking, physical examination and communication. [28] These observation tools facilitated the provision of feedback by identifying areas in need of remediation or improvement. [28] Second-hand feedback, which could be explained as feedback that was not formulated by the person who delivered it, was less effective than direct feedback by the observer.

For this study an observation tool was used with the intention to help students in providing structured feedback; thus an increase in the quality of peer feedback was expected.

1.6 Effect of feedback

Not only positive but also negative feedback offered beneficial effects on learning. [3] In studies by Kluger et al., feedback is referred to as a 'double-edged sword'. [37, 47] Positive feedback might create positive feelings and feelings of success, whereas negative feedback, when not provided properly might lead to negative feelings and feelings of failure. [47] It was not enough to simply increase the quantity of feedback to increase its effect, it was also necessary to consider its timing, its nature and how it was received by the learner. [3] When feedback occurred together with effective instructions, its effect on learning could be multiplied. [3] Boehler et al. suggest that a combination of feedback and compliments lead to better education and more satisfaction. [36]

1.7 Simulated/standardised patients

In medical education, simulated/standardised patients, or SPs, were used "to portray patients during student teaching and testing". [24]

Standardised patients were often used in the training of healthcare professionals especially for communication skills because they were able to offer feedback to students from a patient's point of view immediately after a simulated clinical encounter. [24,45] Simulations with standardised patients were necessary to improve students' communication skills, which were not only essential for history taking but also for building up a trusting relationship with a patient. Insufficient communication skills had been identified as a source of many patient complaints. [38]

Being that they might lack the medical knowledge to judge a student's clinical performance, SPs usually did not provide feedback on medical content, but mostly feedback from the patient's point of view on communication and interpersonal skills, or the patient-physician interaction. [24, 39] After having received additional training in physical examination skills, an SP could be considered as a lay expert and could use these skills to teach students. [46] To avoid misunderstandings students could be asked by the SP to summarize feedback at the end of a feedback session. [24]

Students mostly profited from constructive, high-quality feedback. [45] To evaluate the quality of a SP's feedback an instrument called the "Quality of Simulated Patient Feedback (QSF) Form" was designed. It included 18 items and a dichotomous checklist based on basic feedback rules, recommending - for example - the sandwich technique, which suggested giving negative feedback between positive feedback messages so it might be more easily accepted. [24, 45]

1.8 Collaborative learning

Collaborative learning took place in small groups of students and encouraged them "to work together to achieve success rather than compete for a grade". [48] It provided many advantages, for example, learning in a non-threatening environment and the possibility of receiving help from peers. [48] Collaborative argumentation could be useful for learners to engage in argumentation and knowledge acquisition. [49] For successful collaborative learning however an effective interaction amongst learners was needed, which mostly did not occur when learners were left on their own. [50] "Collaboration scripts aim to foster collaborative learning by shaping the way in which learners interact with one another". [50] This could be described as "complex instructional means that aim to improve knowledge

construction of individuals". [49] Thus social and cognitive processes of collaborative learning were facilitated by "shaping the way learners interact with each other". [50] "Collaboration scripts provide collaborators with procedural guidance concerning specific discursive processes they are to engage in during a particular collaborative learning task, thereby scaffolding the acquisition of procedural knowledge about the collaboration process." [49] In collaborative learning situations "the lack of scaffolds in collaboration may result in unequal participation of learning partners, ineffective argumentation and little learning of the content at hand". [49]

In this study a collaborative learning situation was created and the participants were provided with scripts. It was presumed that the students did not know on which actions to focus while observing the simulation and that they were lacking the knowledge of useful feedback provision. Accordingly a positive effect of the scripts on the quality of feedback was expected.

2 AIMS, QUESTIONS, HYPOTHESES

This study was intended to explore the quality of feedback provided by students for their peers after observing them perform the digital rectal examination on a standardised patient. The following questions (Q) should be answered and the following hypotheses (H) investigated.

Q1: What is the influence of the observation script (with vs. without), the feedback script (with vs. without) and the interaction thereof on the number of items mentioned by the feedback provider and the feedback receiver in a peer feedback session?

H1: There is a positive influence of the observation script on the number of items mentioned in a peer feedback session, which is proven by the fact that students using the observation script mention more items than students using no scripts.

H2: There is a positive influence of the feedback script on the number of items mentioned in a peer feedback session, which is proven by the fact that students using the feedback script mention more items than students using no scripts.

H3: There is a significant interaction between both scripts.

Q2: What is the influence of the sequence (observe before examine, examine before observe) on the number of items mentioned by the feedback provider and the feedback receiver in a peer feedback session?

There is no published evidence concerning the influence of the sequence on the number of feedback items mentioned in a feedback session after the observation of a simulation with standardised patients. This influence requires further investigation, so it was not possible to formulate a hypothesis.

Q3: What is the influence of the observation script (with vs. without), the feedback script (with vs. without) and the interaction thereof on the quality (number of correctly mentioned items) of items mentioned by the feedback provider and the feedback receiver in a peer feedback session?

H1: There is a positive influence of the observation script on the quality of items mentioned in a peer feedback session, which is proven by the fact that students using the observation script mention more correct items than students using no scripts.

H2: There is a positive influence of the feedback script on the quality of items mentioned in a peer feedback session, which is proven by the fact that students using the feedback script mention more correct items than students using no scripts.

H3: There is a significant interaction between both scripts.

Q4: What is the influence of the sequence (observe before examine, examine before observe) on the quality (number of correctly mentioned items) of items mentioned by the feedback provider and the feedback receiver in a peer feedback session?

There is no published evidence concerning the influence of the sequence on the quality of feedback items mentioned in a feedback session after the observation of a simulation with SP's. This influence needs to be explored further, so it was not possible to formulate a hypothesis.

Q5: What is the influence of the observation script (with vs. without), the feedback script (with vs. without) and the interaction thereof on the depth (informative/elaborative) of feedback given by the feedback provider and the feedback receiver in a peer feedback session?

H1: There is a positive influence of the observation script on the depth of feedback mentioned in a peer feedback session, which is proven by the fact that students using the observation script provide more elaborative feedback than students using no script.

H2: There is a positive influence of the feedback script on the depth of feedback given in a peer feedback session, which is proven by the fact that students using the feedback script provide more elaborative feedback than students using no script.

H3: There is a significant interaction between both scripts.

Q6: What is the influence of the sequence (observe before examine, examine before observe) on the depth (informative/elaborative) of feedback given by the feedback provider and the feedback receiver in a peer feedback session?

There is no published evidence concerning the influence of the sequence on the depth of feedback provided in a feedback session after the observation of a simulation with standardised patients. This influence needs to be explored further, so it was not possible to formulate a hypothesis.

3 METHODS

3.0 Design and cohort

To determine the quality of feedback a retrospective study design was used. One hundred and sixty data recordings - in this case, video recordings of participants performing the digital rectal examination - and eighty feedback video recordings for comparison, were used. The following experimental factors were varied: the order (examiner-observer or observer-examiner), the use of an observation script (with or without) and the use of a feedback script (with or without). The participants were randomly assigned to one of these conditions.

One hundred and sixty students of Ludwig-Maximilians-University in Munich (LMU) who were taking part in Module 3 (surgical term) in the winter term 2008/2009 were included in the study and were the participants.

A collaboration script approach was used and divided into different phases (given in the listed order): provision of a knowledge test on the digital rectal examination; participation in a simulation called “digital rectal examination on the standardised patient”; delivery of standardised patient feedback; delivery of peer feedback; and repeat provision of the same knowledge test as in phase one. The students participated in the learning session in dyads. All participants were required to perform the digital rectal examination on a standardised patient while being observed by a peer who provided feedback after the simulation. Some participants received an observation script, a feedback script or both scripts to facilitate the observation and provision of feedback. Some participants had no script for help.

Before and after the simulation every participant had to complete a test with questions about the digital rectal examination, physician patient interaction and communication with patient. This was done to measure knowledge before the simulation as well as improvement of knowledge afterwards.

3.1 The simulation

The simulated digital rectal examination was part of the simulation week that took place in Module 3 (surgical term) and also included the simulation of breaking bad news, in which the provision of bad news to a patient was trained. For all simulations trained standardised patients were used. At the beginning of this simulation week a test to measure the participants’ knowledge about the digital rectal examination was completed by the participants. Every participant had to play the role of the examiner once which included receiving feedback and the role of the observer which included the provision of feedback. At the end of the simulation week the same knowledge test that was administered at the beginning of the week was completed by the participants to determine if their knowledge had improved. The simulated digital rectal examination itself was planned to take about twenty minutes and was divided into six parts starting with the introduction phase. This phase consisted of greeting the patient and offering him/her a seat, etc., and was followed by a history taking phase when information about the reasons for the consultation were to be gathered. It was followed by an information phase, where informed consent was sought, followed by a physical examination phase in which the abdomen was inspected and the digital rectal examination performed. In a summary phase the patient was informed of what to do next. Every phase consisted of several criteria to be performed by the participant who acted as

an examiner. The introduction phase consisted of eight items: establishing eye-contact, greeting the patient, asking the patient to come in, calling the patient by name, offering the patient a seat, telling the patient one's own name, explaining one's position, and being friendly – measured, for example, by small talk, friendly mimics or friendly gestures. The history taking phase was also divided into eight items: questions about the patient's acute problems, questions about chronic diseases, questions about current medication and allergies, amount of interruption by the doctor while the patient was talking, amount of attentive listening, amount of eye-contact with the patient, and the allowance of time by the doctor for the patient to explain his or her concerns. To define attentive listening the Active Empathetic Listening Scale was used, which contains four rules: "I assure my customers that I am listening by using verbal acknowledgements", "I assure my customers that I am receptive to their ideas", "I ask questions that show my understanding of my customers' position" and "I show my customers that I am listening by my body language". [51] The process and the necessity of a digital rectal examination, the use of easily understandable language and the ability to cope with embarrassing topics together with the importance of holding eye-contact are the five items which belong to the information phase. The ability to cope with embarrassing topics was measured by several criteria, such as explaining to the patient the advantages and risks of the digital rectal examination, telling the patient that the examination can be interrupted whenever he or she would like, and informing him or her that the examination is optional and only performed if he or she wishes. To find out what words were considered as specific medical terms so as to define the use of easy language, a questionnaire with one-hundred and ten words was created. The included words - chosen from a popular medical dictionary - were those that could potentially be used during the simulation [56]. The questionnaire was distributed to fifty-five persons, who were asked to determine which of these words they considered to be specific medical terms. Forty-five words from the list were considered as specific medical terms by thirty per cent of all asked individuals, and these words were especially treated in the following analysis of data. The examination phase included inspection, auscultation, percussion and palpation of the abdomen. In this phase the order of examination had to be heeded, and the examiner had to explain what he or she was doing, palpate liver and spleen, and test if the patient had ascites. While examining the patient the examiner was supposed to ask if the patient was experiencing any pain, and based on the answer first examine the areas of the abdomen where the patient does not express pain and then palpate in the direction of the painful area. It is important that the examiner exhibit a sensitive reaction when the patient indicates pain, such as stopping the examination when the

patient shows signs of discomfort. The digital rectal examination consists of fourteen items: inspection of the anal region, a palpation, the use of gloves for the examination, the offering of a blanket to the patient to be used to cover him or herself, the use of lubricant, informing the patient that the lubricant might be cool, asking the patient to strain when starting the rectal examination, explaining to the patient what is occurring, testing the function of the sphincter muscle, asking for pain, reacting to the patient's indication of pain, announcing the end of the examination, offering the patient a paper towel to clean him- or herself and asking the patient to dress. In the last phase of the simulation the examiner was supposed to tell the patient what steps and examinations are to follow. He or she was expected to propose a colonoscopy and to explain that a bowel cleanse precedes the colonoscopy. No medical terms without explanation should be used, proposals should be made, the patient should not be told that he or she must do something, and finally the patient should be asked if there were any questions.

After the simulation the participant who acted as examiner received feedback from the standardised patient which took about ten minutes. This time was used by the observer to prepare peer feedback, which was given directly afterwards.

3.2 Scripts

The participants were randomly provided with an observation script, a feedback script, both scripts or no script. The observation script contained a checklist with all fifty-five criteria assigned to the six different phases. It was meant to help the observer to distinguish what should be focused on. The feedback script helped the observer to pre-structure the feedback and encouraged the observer to provide elaborated feedback including suggestions for better performance. Participants not provided with scripts were given the possibility to take notes on blank sheets of paper.

3.3 Conditions

Forty-two participants first had to perform the digital rectal examination before observing one of their peers. Thirty-four participants started as observers. Thirty-three participants used the feedback script, forty participants did not use the feedback script. Twenty-six participants were provided with an observation script, forty-seven participants were assigned to the

condition “without observation script”. For data analysis a filter sorting out all video recordings with the condition “no feedback script and no observation script” was used. The participants were randomly assigned to the different conditions.

Altogether one-hundred video recordings of the simulation of the digital rectal examination and eighty feedback video recordings for comparison were included into the study.

3.4 Design

To determine the quality of feedback, the peer feedback video recordings were first considered. Two categories of feedback were explored: informative and elaborated feedback. Informative feedback in this case was defined as feedback on the process or on behaviours. When being provided informative feedback a participant was only told what items of the observation script checklist he or she carried out well and what items needed improvement. Elaborated feedback included an explanation of why something was good or bad and suggestions for improvement. First the content of feedback was analysed and then the formal analysis followed, where the structure of feedback delivery was regarded using the method of “Event Sampling”.

Event sampling includes specific empirical methods for studying individual experiences and social processes within their natural, spontaneous context and can be used to achieve reasonably detailed accounts of thoughts, feelings, and behaviours as they occur in everyday life. [52]

3.4.1 Methods for the analysis of the feedback content

To evaluate the content of feedback, the checklist with fifty-five items from the observation script was used and a coding scheme was established. The conditions for the coding scheme were “items not mentioned”, “positive announcement of informative feedback”, which meant an item of the checklist was carried out well by the examiner, “negative announcement of informative feedback”, which meant an item was forgotten or not carried out at all, and “items that were carried out wrongly by the examiner on an informative basis, for example, “You palpated the liver on the wrong place”. If the feedback provider announced an item that was in his opinion missing and the receiver denied it by announcing that he or she had performed

that action, it was also regarded in the coding scheme. For elaborated feedback a similar scale was developed. It contained positive elaborated feedback, negative elaborated feedback, actions that were not carried out well and were mentioned by the feedback provider in an elaborative fashion, as well as feedback given by the feedback-provider, which was denied by the feedback-receiver. To distinguish between informative and elaborated feedback the percentage of information given concerning one item was regarded. Zero per cent to thirty-three % meant that feedback was provided on an informative level and sixty-six % to one hundred % meant that elaborated feedback was given.

First it was noted if the feedback provider used an observation script, a feedback script, both scripts or no script. If the feedback-provider asked the feedback receiver at the beginning of the session what he or she thought went well, what could be done better the next time or, more general, how he or she felt during the examination, number "1" was used. If these questions occurred in the middle of the session, number "2" was used and if they were asked at the end of the session they were noted as number "3". If no questions were asked "0" was used.

This analysis was used to identify if the participants cared about common suggestions for feedback delivery, like asking the questions suggested in the feedback script.

3.4.2 Analysis of formal feedback

For the evaluation of formal feedback an event sampling approach was used and all feedback videos were divided into different intervals using the software program Videograph version 4.1.3.1.X3, University of Kiel 2008. Image Nr. 1 shows an example for the analysis of a feedback video recording with Videograph.

Formal feedback was evaluated to determine how feedback was provided and how much time the feedback provision took. A new interval started whenever a participant, the feedback provider or the feedback receiver, started a new action or changed the topic, for example, a new interval started when the feedback provider stopped taking and the feedback receiver began to talk, or the feedback provider stopped talking and started reading from a script, or when talking was interrupted to ask a question, or when "off topic" changed to "on topic". An interval had to take at least two seconds.

All actions of the feedback provider and the feedback receiver were coded. Active listening was not regarded as a separate action; if it took more than five seconds an exception was made.

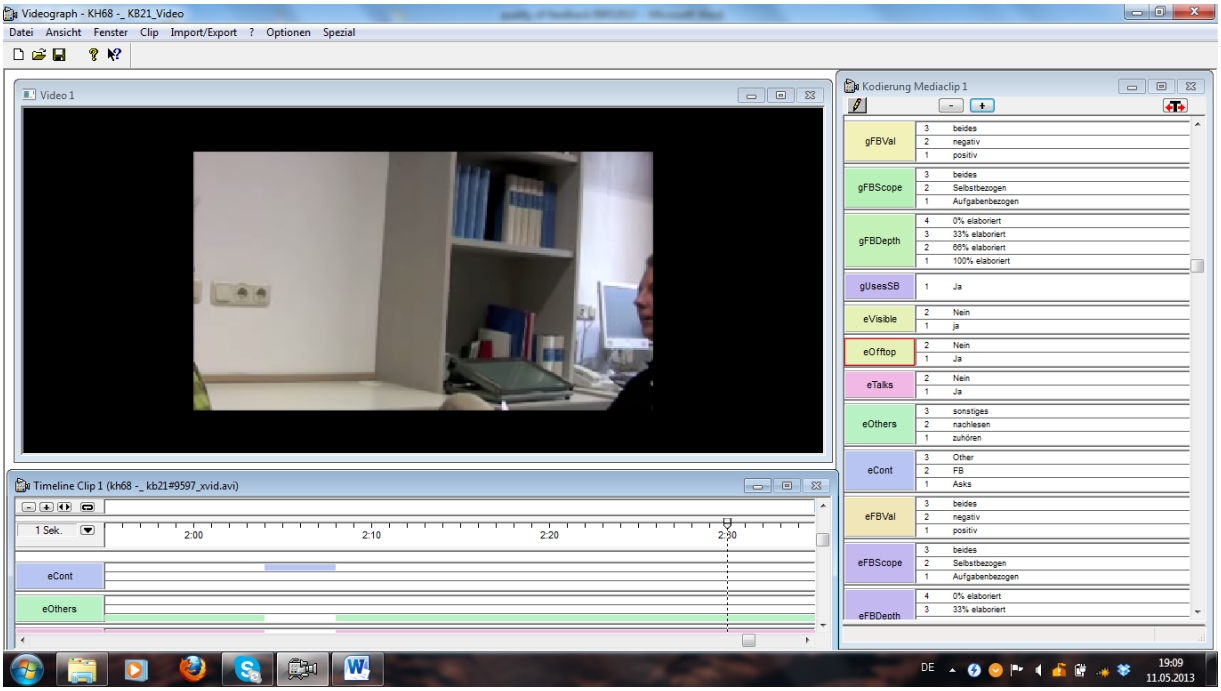

Image Nr.1 Screenshot of the coding software Videograph

Table Nr. 1 Coding scheme for the analysis of formal feedback

a) Off-topic → Yes/No

b) Visible → Yes/No

c) Talks → Yes/No

d) Others → listening/reading/other

e) Cont → Asks/Feedback/Other

f) Depth → elaborated/informative

g) Scope → Feedback concerning an action/concerning the self as person/both

h) Val → positive/negative/both

i) UsesSB → Yes/No

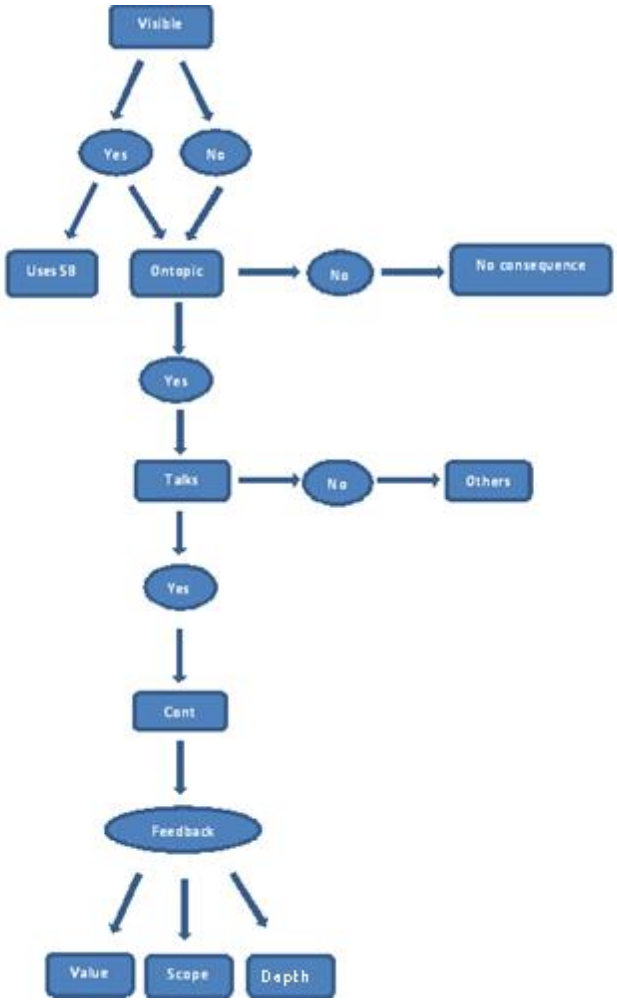

Image Nr. 2 Coding scheme for the analysis of formal feedback

3.4.2.1 Description of the coding scheme for the analysis of formal feedback

Image Nr. 2 shows the coding scheme for the analysis of formal feedback. An action was coded as "Off-topic" when it had nothing to do with the feedback session, for example, when the participants of the feedback session were taking a seat or talking about the standardised patient. No further coding was needed.

Then the variable "Visible" was regarded. This variable describes if the participants of the feedback session were visible on the video recording or not.

If the participants of the feedback session were on topic, the next variable to be considered was the variable "Talks". If a participant was not talking the variable "Others" follows; however if he or she was talking the next variable to be considered was "Cont".

The variable “Others” was only used when a participant was not talking and included three activities: reading, listening and other. “Other” was used when a participant was neither listening, nor reading. It was, for example, used when he or she was thinking.

If a participant was talking the variable “Cont” had to be considered next. It describes the content of what was being said. If questions were asked the value “Asks” had to be used. If feedback was given the value “Feedback” was selected and if neither feedback was given nor questions were asked, “Other” had to be selected. Such a case occurred, for example, if a discussion about the provided feedback was started or the participants were talking about the standardised patient, etc.

The variable “Feedback” was followed by the variable “Depth”. “Depth” was used to distinguish between informative and elaborated feedback. The distinction of the provided feedback types was dependent on the percentage of elaborated and informative feedback:

0 % informative – 100 % elaborated: This situation occurs when only elaborative feedback was given

33 % informative – 66 % elaborated: This case occurred, for example, when several items of the observation script checklist were recited and when what was done well and what needed more training was explained including details of why.

66 % informative – 33 % elaborated: This situation could be observed when items of the checklist and additional activities or behaviours, which were not listed, were offered, for example, the examiner asked the patient if he or she observed “B-symptoms”, like fever, loss of weight or night sweats.

100 % informative – 0 % elaborated: If the feedback only consisted of checklist items that had or had not been carried out it was one hundred per cent informative.

Afterwards the variable “Scope” was regarded. It distinguished feedback about the self as a person, what can be defined as compliments and criticism, and feedback about an action, for example, telling the feedback receiver what was done well or what needs improvement. In some cases both feedback types were offered in one segment; in this case the variable “Both” was used.

In the next step the variable “Val” was coded. “Val” was needed to describe the value of feedback. “Positive” was used for feedback that concerns things done well; “Negative” was

used for feedback that concerned actions that need improvement. The content of feedback did not matter in the assessment of formal feedback. “Both” was used when positive and negative feedback was provided during one and the same interval.

The variable “UsesSB” was a binary variable. This variable was coded whenever a script was used regardless of which type (observation script, feedback script, or a sheet of paper with notes taken down by the observer). The scripts were used by the feedback providers, but also by the feedback receivers when they took a glance at it to see what the observer wrote.

To determine if the relevant guidelines suggested in the feedback script had been carried out by the participants, it was necessary to analyse the formal feedback and to find out if the feedback script was used to structure the feedback.

The analysis of the feedback content was necessary to establish if all items suggested in the observation script had been carried out.

3.4.3 Analysis of the simulation video records

In a next step all simulation video recordings were analysed. To determine the quality of feedback provided in the feedback session, an analysis of the examination video recordings was necessary. All fifty-five items of the observation script were used for coding and marked with “0” if they had not been carried out and with “1” if they had been performed. The correctness of action or behaviour was irrelevant. It was noted, if an action could not have been observed, for example, because it took place outside the examination room before the patient had come in.

3.5 Statistical Analysis

All data was analysed using IBM SPSS Statistics version 19.0, IBM, 2010.

To assess the effect of the scripts (observation script, feedback script or the interaction thereof) on the number of mentioned items, the quality of feedback, which was in this case defined as number of correctly mentioned items, and the depth of feedback, which was defined as the quantity of elaborated or informative feedback, an analysis of variance (univariate general linear model) was used. An independent samples t-test was used, to

determine the influence of the order on the number of items mentioned during a feedback session, the quality of feedback and the depth of feedback.

4 RESULTS

4.1 Examination of statistical requirements

An analysis of variance (univariate general linear model) was used to assess the scripts' (observation script, feedback script or the interaction thereof) influence on the number of mentioned items, the quality of feedback - defined as "number of correctly mentioned items" - and the depth of feedback - defined as the quantity of elaborated or informative feedback. The distribution as a requirement for the analysis of variance was tested for normality by the Kolmogorov-Smirnov test. Three times of measurement were regarded. The Kolmogorov-Smirnov test resulted in $p = .046$ at time 1, $p = .060$ at time 2 and $p = .010$ at time 3, so that normal distribution was not taken for granted except for time 2. Bortz and Schuster [55] described the requirements for analysis of variance and consequences if they were violated. Interpretation of results is limited if the error variances are not homogenous in between the cells, if the cells counts are less than 10 and if the cells are not equally distributed [55]. All these items were tested for this study and showed that the error variances at time 1 ($F[3, 196] = 0.72$, $p = .975$) and time 2 ($F[3, 196] = 1.630$, $p = .184$) were distributed homogenously whereas no homogenous distribution at time 3 ($F[3, 196] = 4.519$, $p = .004$) was found. All cell counts were greater than 10 (control group N = 56, feedback script group N = 58, observation script group N = 51, feedback and observation script group N = 36). A chi-square test was used ($chi^2 = 1.788$, $p = .181$) to demonstrate the equal distribution of the cells. In most cases these requirements for analysis of variance were given, hence analysis of variance was regarded as stable.

4.2 Influence of the observation script on the number of items mentioned

A univariate general linear model was used for data analysis to measure the effect of the observation script on the number of items mentioned. Table Nr. 2 shows the means and standard errors for the conditions with or without observation script.

Table Nr. 2 Influence of the observation script on the number of items mentioned

Observation script	Mean	Standard error
Without	4,707	,702
With	7,321	,954

A significant influence of the observation script on the number of items mentioned was found (F [2,145] = 4.873, p = .029, Eta^2 = .033).

4.3 Influence of the feedback script on the number of items mentioned

A univariate general linear model was used for data analysis to measure the effect of the feedback script on the number of items mentioned. The following means and standard errors were determined for the two conditions with and without feedback script. Table Nr. 3 shows the results.

Table Nr. 3 Influence of the feedback script on the number of items mentioned

Feedback script	Mean	Standard error
Without	4,767	,785
With	7,261	,887

A significant influence of the feedback script on the number of items mentioned was found

(F [2,145] = 4.437, p = .037, Eta^2 = .030).

4.4 Influence of the observation script and the feedback script on the number of items mentioned

To assess the effect of both scripts and their interaction, a univariate linear model was used. Table Nr. 4 shows the means and standard errors for the conditions without feedback script and observation script, without feedback script but with observation script, with feedback script but without observation script, and with both scripts.

Table Nr. 4 Influence of the observation script and the feedback script on the number of items mentioned

Feedback script	Observation script	Mean	Standard error
Without	Without	3,800	,961
	With	5,733	1,241
With	Without	5,614	1,024
	With	8,909	1,449

In this case no significant interaction between both scripts was found (F [2,145] = .331, p = .566, Eta^2 = .002,).

4.5 Influence of the sequence on the number of items mentioned

The influence of the sequence on the number of items mentioned was analyzed using an independent samples t-test. Table Nr. 5 shows the means and the standard deviation for the conditions examiner before observer (E – O) and observer before examiner (O – E).

Table Nr. 5 Influence of the sequence on the number of items mentioned

	Sequence	Mean	Standard deviation
Number of Items mentioned	E – O	6,0500	7,34313
	O - E	4,8636	6,38239

E = examiner, O = observer

The independent samples t-test rejected an influence of the sequence on the number of items mentioned (t [144] = 1.030, p = .305).

4.6 Influence of the observation script on the quality (number of correctly mentioned items) of feedback

To assess the influence of the observation script on the number of correctly mentioned items a univariate general linear model was used. Table Nr. 6 shows the means and standard errors for the conditions with and without observation script.

Table Nr. 6 Influence of the observation script on the quality (number of correctly mentioned items) of feedback

Observation script	Mean	Standard error
Without	3,335	,524
With	4,762	,711

Effect of the observation script on the number of correctly mentioned items was statistically not significant (F [2,145] = 2.610, Eta^2 = .018, p = .108). However, difference of means was substantial.

4.7 Influence of the feedback script on the quality (number of correctly mentioned items) of feedback

The univariate general linear model was used to assess the effect of the feedback script on the number of correctly mentioned feedback items. In table Nr. 7 the means and standard errors for the conditions with and without feedback script were shown.

Table Nr. 7 Influence of the feedback script on the quality (number of correctly mentioned items) of feedback

Feedback script	Mean	Standard error
Without	3,257	,585
With	4,841	,661

In this case no significant influence of the feedback script on the number of correctly mentioned items was detected (F [2,145] = 3.219, p = .075, Eta^2 = .022), despite a large difference in means.

4.8 Influence of the observation script and the feedback script on the quality (number of correctly mentioned items) of feedback

To explore the effect of both scripts and the interaction thereof, a univariate general linear model was used. Shown in table Nr. 8 were the means and standard errors for the conditions without feedback and observation script, without observation script but with feedback script, without feedback script but without observation script and with both scripts.

Table Nr. 8 Influence of the observation script and the feedback script on the quality (number of correctly mentioned items) of feedback

Feedback script	Observation script	Mean	Standard error
Without	Without	2,580	,717
	With	3,933	,925
With	Without	4,091	,764
	With	5,591	1,080

Both scripts and the interaction thereof had no significant effect on the number of correctly mentioned feedback items (F [2,145] = .007, p = .934, Eta^2 = .000).

4.9 Influence of the sequence on the quality of feedback

For the analysis of the effect of the sequence on the number of correctly mentioned items, an independent samples t-test was used. Shown in table Nr. 9 were the means and the standard deviation for the conditions examiner before observer (E – O) and observer before examiner (O – E).

Table Nr. 9 Influence of the sequence on the quality (number of correctly mentioned items) of feedback

	sequence	Mean	Standard deviation
Number of correctly items mentioned	E - O	3,9125	4,04710
	O - E	3,5909	5,23002

E = examiner, O = observer

No significant influence of the sequence on the number of correctly mentioned items was detected (t [144] = .377, p = .707).

4.10 Influence of the observation script on the depth (informative/elaborative) of feedback

To explore the influence of the observation script on the depth of feedback, defined as informative vs. elaborated feedback, a univariate general linear model was used. Table Nr. 10 shows the means and standard errors for the conditions with and without observation script.

Table Nr. 10 Influence of the observation script on the depth (informative/elaborative) of feedback

Observation script	Mean	Standard error
Without	1,058	,137
With	,933	,186

No significant influence of the observation script on the number of elaborated feedback items mentioned was detected (F [2,145] = .293, Eta^2 = .002, p = .589).

4.11 Influence of the feedback script on the depth (informative/elaborative) of feedback

A univariate general linear model was used to explore the influence of the feedback script on the depth of feedback. Table Nr. 11 shows the means and standard errors for the conditions with and without feedback script.

Table Nr. 11 Influence of the feedback script on the depth (informative/elaborative) of feedback

Feedback script	Mean	Standard error
Without	,673	,153
With	1,318	,173

A significant influence of the feedback script on the depth of feedback provided in the feedback session was detected (F (2,145) = 7.818, p = .006, Eta^2 = .052).

4.12 Influence of the observation script and the feedback script on the depth (informative/elaborative) of feedback

The effect of both scripts and their interaction on the depth of feedback was assessed by using a univariate general linear model. Table Nr. 12 shows the means and standard errors for the four possible conditions.

Table Nr. 12 Influence of the observation script and the feedback script on the depth (informative/elaborative) of feedback

Feedback script	Observation script	Mean	Standard error
Without	Without	,980	,187
	With	,367	,242
With	Without	1,136	,199
	With	1,500	,282

The univariate general linear model showed a significant interaction between both scripts on the depth of feedback (F [2,145] = 4.486, p = .036, Eta^2 = .031)

4.13 Influence of the sequence on the depth (informative/elaborative) of feedback

For the analysis of the influence of the sequence on the number of elaborative feedback items mentioned, an independent samples t-test was used. The means and the standard deviation for

the conditions examiner before observer and observer before examiner were shown in table Nr. 13.

Table Nr. 13 Influence of the sequence on the depth (informative/elaborative) of feedback

	Order	Mean	Standard deviation
Number of elaborative items mentioned	E - O	3,9125	4,04710
	O - E	3,5909	5,23002

E = examiner, O = observer

The results show no significant influence of the sequence on the depth of feedback (t [144] = 1.308, p = .193).

5 DISCUSSION

5.1 Discussion of frame conditions, setting and samples

Due to the video recordings that were taken during module 3 (surgical term) in the winter term 2008/2009, the possibility for a retrospective analysis was given. One hundred and sixty video recordings taken during the simulation of the digital rectal examination and 80 feedback video recordings for comparison were included in the study.

Many studies suggested that feedback should be timely, expected, focused, informative, specific, non-judgmental, objective and based on first hand data. [13, 14, 20] For the setting of the whole learning session a collaboration script approach was used, which led to timely and expected provision of feedback directly after the session, leaving the feedback provider some time to prepare his or her feedback. During this time the participant who played the role of the examiner received feedback from the standardised patient. The peer feedback provided was based on first hand data, as one of the participants was acting as direct observer of the simulation. Direct observation could be seen as the key to formative assessment, which was essential for high quality feedback. [20] The aims of this collaborative learning situation were to teach attributes such as professionalism, clinical skills, physical examination skills and

communication skills [28] not only by performing the digital rectal examination but also by observing peers and providing feedback.

As standardised patients usually did not provide feedback on medical content, but mostly feedback from the patient's point of view on communication and interpersonal skills or the patient-physician interaction [24, 39], peers, who were mostly on the same level of training, could give feedback on clinical skills and performance as well. When delivered, peer feedback could be professional, non-threatening and non-prescriptive. [41]

Peer-feedback was provided after the simulation in a private setting in a separate room without the standardised patient. The observer, the examiner and an investigator, who was needed for the video recording, attended the session.

In many studies it was suggested that feedback should ideally be given in a relaxed atmosphere on a one-to-one basis and not in front of patients or peers so as to avoid discomfort and embarrassment, and enhance dialogue. This was because feedback can fail in its intention by making a participant feel embarrassed, defensive or even angry. [2, 9, 10, 14, 20] Although the tutor was a non-active participant in the session, the situation of feedback-provision could not be seen as ideal regarding the guidelines suggested in these studies.

5.2 Discussion of methods

For the analysis of the feedback content a list of fifty-five items developed in a former study was used. Thus a comparison of what was said and what was really performed during the simulation could be made. Additionally an analysis of formal feedback was accomplished by using the method of "Event Sampling" to analyse not only what was said but also how it was said. In this way the structure of feedback could be evaluated along with the time needed for feedback provision. These fifty-five items were part of the observation script and were used for the analysis of the simulation video recordings and the analysis of the content of feedback provided during the feedback session following the simulation. The effect of the duration of feedback provision on the quality of peer feedback was not included in this study, but might be integrated in future studies.

As only the quality of peer feedback after the observation of the simulation was regarded, the feedback of the standardised patient was not included into the study.

All participants once had to play the role of the examiner and the role of the observer. The order (examiner before observer or observer before examiner) was randomly assigned. One limitation of this study was that a participant, who first played the role of the examiner and first received feedback by one of his or her peers, later when playing the role of the observer, could have potentially provided better quality feedback because he or she had already learned from receiving feedback twice before from the standardised patient and the peer. On the other hand participants who first played the role of the observer might have performed better during the simulation because they learned from providing feedback to a peer which activities and behaviours were required for a good performance.

The knowledge-test at the beginning and the end of the simulation-week, which was used to determine the participants' knowledge on the topic of digital rectal examination, was not used to evaluate the quality of feedback in this study.

For the analysis of specific medical terms a questionnaire with one-hundred-and-ten words potentially used in the context of the simulation was created. These words were drawn from a medical dictionary [56]. The questionnaire was distributed to fifty-five persons, who were asked to determine which of these words they considered to be specific medical terms. Forty-five words from the list were considered as specific medical terms by 30 per cent of all asked individuals, and these words were especially treated in the following analysis of data. Specific medical terms, which were not on this list but used by participants, were not regarded.

In this study the quality of feedback was explored by regarding three quality criteria that were potentially components of effective feedback. It was suggested that feedback was more effective when delivered by a known and well-respected person than by someone unknown. [20] The dyads in this study were randomly assigned and the probability of a better effect of feedback in dyads of those who knew each other was not measured.

The effect of feedback also depended on the individual level of training in self-assessment and reflection [24] and on prior knowledge that allowed for comprehending of the concept of giving and receiving feedback. [3]

As encouragement was least effective for improvement of skills [14], feedback focussed on the naming of items from the checklist of the observation script and not on general comments such as "Good job!"

In this case to evaluate the quality of peer feedback only the number of mentioned items in total, the number of correctly mentioned items and the depth of feedback that distinguishes between informative and elaborated feedback had been included as feedback quality criteria. The number of correctly mentioned items could be explained as correctness of the feedback and includes items mentioned during the feedback session as performed or forgotten and those that were actually performed or forgotten during the simulation. Elaborated feedback, which was specific, instructional or extra-instructional information, was included as one quality criteria, because it was considered as most effective. [12]

We considered elaborated feedback as most effective because in our study it included an explanation of why an activity was performed well or poorly, whereas informative feedback simply informed the feedback receiver about the items that were performed or not.

Other quality criteria described in further studies were not explored. For example, Cantillon et al. suggested that it was not useful to only place focus on the positive aspects of a participant's performance because there was then little time for feedback on activities or behaviours that needed improvement. [9] Neutral feedback was also considered minimally effective because it was mostly descriptive and does not contain useful advice for improvement. [18] In this study we neither focussed on the relation of positive and negative feedback nor on the amount of neutral feedback provided but instead concentrated only on the number of items and the number of correct items mentioned. Although it was regarded as useful to limit the quantity of feedback because not all "students were able to process large amounts of feedback at one time" [20], we considered the number of mentioned items as a quality criteria for feedback. This was because most items from the checklist were of importance for good performance of the digital rectal examination and a participant should be able to grasp all the required abilities after the simulation and feedback provision so as to be able to complete the test more successfully at the end of the week.

The use of observation tools is suggested for more structured observation and specific, quick and easy documentation and may facilitate the provision of feedback. [28] To determine if the quality of peer feedback, especially the number of correctly mentioned items, increased with the use of observation-tools, some participants were provided with the observation script to structure the direct observation of their peers.

Another possibility to increase the effectiveness of feedback was to provide more structured feedback, which could be accomplished by the use of structured feedback forms instead of a

free-text method. [18] To measure if the quality of feedback increased by providing more structured feedback, the feedback script was distributed to some participants because simply encouraging a learner by telling him or her that he or she did a good job was not useful for improvement. However structured feedback that focused on behaviours and actions could be used to modify or improve a performance. [2, 13, 14]

5.3 Discussion of results

5.3.1 Effect of the observation script on the number of items mentioned in a feedback session, the number of correctly mentioned feedback items and the depth of feedback.

It was hypothesised that the observation script would have an effect on the number of items mentioned and on the number of correctly mentioned feedback items because the observation script, being an observation tool, included a list of 55 observable items and may have supported a more structured observation and feedback provision. [28] The number of mentioned items and correctly mentioned items might also increase because the dichotomous checklist (Yes/No) of the observation script allows for easy documentation of the observed activities and behaviours that could be easily recited in the feedback session afterwards. An effect on depth of feedback was assumed because the observation script included extra space to write down notes on observed behaviours or activities. These additional areas for writing might increase the provision of elaborated feedback when used by the participants.

The influence of the observation script on the number of items mentioned was confirmed in this study which could be explained by the fact that the observation script included the checklist of 55 items that could be easily used for feedback provision in the feedback session following the simulation. No effect on the number of correctly mentioned feedback items could be discovered. Probably the missing effect of the observation script might be explained by not enough time during observation for the completion of the checklist, thus some items were missed during the observation, simply forgotten or the wrong space on the checklist was marked.

The observation script also had no influence on the depth of feedback, which means that the provision of elaborated feedback did not improve because of the use of the observation script. An explanation might be that the participants simply focused on the observed items from the 55 criteria checklist and did not use the extra space – which could have been useful for the

provision of elaborated feedback - for notes. Thus mostly informative feedback was given, as was shown by the fact that the number of mentioned items increased with the use of the observation script. It may be that the completion of the observation script took too much time and left no time to think about elaborative feedback and to note extra comments.

5.3.2 Influence of the feedback script on number of feedback items mentioned, number of correctly mentioned items and depth of feedback

It was hypothesised that the feedback script would have a significant influence on the number of feedback items mentioned and the number of correctly mentioned feedback items. This was because a script containing questions to be answered for a more structured feedback provision might promote more focused observation concentrating on behaviours and activities without having to complete a checklist. As the feedback script contained guidelines for more structured feedback provision it can be seen as a structured feedback form and might be more effective than providing feedback using a free-text method. [18] Because of the questions that should be answered when completing the feedback script, participants might especially focus on specific activities or behaviours, and think about what could have been done better to increase the performance. Hence it was expected that the feedback script would have an influence on the depth of feedback.

The analysis of data confirmed the influence of the feedback script on the number of items mentioned which might be explained with a more detailed observation of the simulation. Again, no effect on the number of correctly mentioned items was found.

As expected, significant influence of the feedback script on the depth of feedback was confirmed. This might be explained by the guidelines for feedback provision that guide the observer to focus on specific behaviours that could be changed and to think of a possibility to improve. As a result, the number of elaborative items mentioned increased.

5.3.3 Influence of the observation script and feedback script and the interaction thereof on the number of items mentioned, the number of correctly mentioned items and the depth of feedback

A significant influence of the observation script, the feedback script and the interaction thereof was expected on the number of items mentioned and on the number of correctly mentioned items because the observation script, being an observation tool and offering a checklist with fifty-five items to be considered, potentially increases the number of mentioned items. Furthermore, the feedback script offered structured questions which might not only result in more structured feedback provision but also in more focused observation of the simulation.

An influence on the depth of feedback was also expected. This was due to the use of the observation script in combination with the feedback script which might promote observers to focus on all items suggested on the checklist of the observation script and additionally use the feedback guidelines of the feedback script to provide more elaborate feedback.

No significant effect of both scripts and the interaction thereof on the number of items mentioned and the number of correctly mentioned items was found. Possibly, it took much time to carefully complete both scripts during the simulation while also simultaneously focusing on the observation. A significant interaction of both scripts and the interaction thereof on the depth of feedback was found. This might be explained especially by the use of the feedback script and secondly by the use of the observation script because specific situations that occurred during the simulation might be better remembered and, with the use of the guidelines for feedback provision, more elaborated items were mentioned than without script.

5.3.4 Influence of the sequence on the number of items mentioned, the number of correctly mentioned items and the depth of feedback

We found no influence of the sequence on the number of items mentioned, the number of correctly mentioned items and the depth of feedback. A reason could be that all participants had already learned on what items to focus by answering the questions of the test on the digital rectal examination at the beginning of the simulation week. It was not explored if participants who first played the role of observer performed better when performing the

digital rectal examination on the standardised patient themselves. The quality of feedback, concerning the three quality criteria that were used for this study, did not significantly differ between the two sequences (examine before->observe and observe before->examine).

5.4 Limitations of the study

A limitation of this study was that only the effect of the scripts and the order (observer-examiner, examiner-observer) were regarded as quality criteria for peer feedback. The duration of feedback provision which might as well significantly influence the quality of the feedback was not taken into account. Peer feedback was provided while having a tutor observe the feedback session. Although the tutor was observing and not otherwise participating, participants might choose different words and phrasing for feedback compared to a situation in which feedback was delivered in the absence of an observer.

Another limitation of the study was the definition of specific medical terms. Only the 45 words - identified by using a questionnaire - were regarded as specific medical terms. All other medical terms used by participants that were not among these 45 words, were not regarded.

As feedback was more effective when delivered by a known and well-respected person [20], a further limitation of this study was that the dyads of participants were randomly assigned and the probability of better effect of feedback in dyads who knew each other was not measured.

The effect of feedback also depends on the individual level of training in self-assessment and reflection [24] and on prior knowledge to comprehend the concept of giving and receiving feedback. [3] This individual level was not considered

6 SUMMARY (English)

In the last twenty years medical education became more competency-based, including the demonstration of clinical skills in the medical curriculum. [28] By observing students dealing with patients and providing feedback afterwards, attributes such as professionalism, clinical skills, physical examination skills and communication skills were taught. [28]

Simulated/standardised patients, or SPs, who portray patients during student teaching and testing [24], were often used in clinical education.

This study was intended to explore the quality of feedback provided by medical undergraduate students (participants) after observing peer performance of the digital rectal examination on a standardised patient. The sequence (examine before->observe or observe before->examine), the use of an observation script (with or without) and the use of a feedback script (with or without) functioned as experimental factors. The hypotheses assumed an enhancing effect of the feedback script, the observation script and the interaction thereof on the number of feedback items mentioned, the depth of feedback and the quality of feedback. The effect of the order on the number of feedback items mentioned, the depth of feedback and the quality of feedback was explored as well.

A retrospective study design was chosen and 160 existing data recordings of participants performing the digital rectal examination, and 80 existing feedback video recordings for comparison were used.

The observation script contained a list of 55 items to be observed and then later included in the feedback. The feedback-script contained guidelines for structured feedback provision. All students of LMU Munich who attended the simulation week in the winter term 2008/2009, which took place in module 3 (surgical term), were randomly assigned to one of these conditions. All participants had to play the role of the examiner and the role of the observer.

The influence of the scripts and the interaction thereof was analyzed by using an analysis of variance. For the analysis of the influence of the sequence on the quality of feedback, an independent samples t-test was used.

We found significant effects of the observation script on the number of items mentioned, of the feedback script on the number of items mentioned, of the feedback script on the depth of feedback and of both scripts and the interaction thereof on the depth of feedback. The sequence had no influence on any of the three assigned quality criteria. It was concluded that the observation script had an effect on the number of items mentioned because the observation script, being an observation tool, includes a list of 55 observable items with a dichotomous checklist for more structured observation and feedback provision. [28]

The lack of the effect of the observation script on the depth of feedback might be caused by the participants focussing on the observed items from the 55 criteria checklist and not using the extra space (and their attention) for notes.

A significant influence of the observation script, the feedback script and the interaction thereof was expected on the number of items mentioned and the depth of feedback. This was because the observation script, being an observation tool and offering a checklist with 55 items to be considered, increased the number of mentioned items, and the feedback script, offering structured questions to answer, resulted in more detailed feedback provision.

Within research on the literature, no studies and no information on the influence of the sequence on the quality of feedback or s similar could be found. The analysis of data in this study showed no influence of the sequence on the assigned quality criteria. A reason therefore could be that the participants had already learned on what items to focus by answering the questions of the knowledge test on the digital rectal examination at the beginning of the simulation week.

7 SUMMARY (German)

In den letzten zwanzig Jahren hat sich das Studium der Medizin verändert und baut vermehrt auf einer kompetenzbasierten Struktur auf, wodurch auch die Demonstration von praktischen Tätigkeiten zum Erwerb klinischer Fertigkeiten immer weiter in den Vordergrund gerückt ist. [28] Durch die Beobachtung von Studenten während des Umgangs mit Patienten und anschließendem Feedback wurden Professionalität, klinische Fertigkeiten und kommunikative Fähigkeiten gefördert. [28] Immer häufiger wurden standardisierte Patienten (SPs), die vor allem Feedback über kommunikative und interpersonelle Fähigkeiten geben, oder auch Studenten zum Beobachten und für das Geben von Feedback herangezogen. [39] Der Fokus dieser Studie war es die Qualität des Feedbacks von Student für Student nach der Beobachtung der Simulation “digital-rektale Untersuchung am standardisierten Patienten“ zu ermitteln.

Die Reihenfolge des Ablaufs (Zuerst Untersucher-> dann Beobachter, zuerst Beobachter-> dann Untersucher), die Verwendung eines Beobachtungsbogens (mit/ohne) und die Verwendung eines Feedbackbogens (mit/ohne) wurden als experimentelle Faktoren

eingesetzt. Der Beobachtungsbogen enthielt eine Liste mit 55 Punkten, die bei der Simulation vom Untersucher durchgeführt und vom Beobachter beobachtet, dokumentiert und anschließend zum Feedback herangezogen werden sollten. Der Feedbackbogen enthielt Richtlinien für strukturiertes Feedback. Alle Studenten der LMU München, die im Wintersemester 2008/2009 an der Simulationswoche teilnahmen wurden randomisiert zu den verschieden Konditionen und zu Zweiergruppen zugeteilt und mussten einmal die Rolle des Untersuchers und einmal die Rolle des Beobachters spielen. Die Anzahl der genannten Feedbackitems aus der Liste des Beobachtungsbogens, die Anzahl der richtig genannten Items und die Feedbacktiefe, die sich durch die Anzahl der genannten elaborierten Items auszeichnet, wurden als Qualitätskriterien verwendet.

Hypothesen, die einen positiven Effekt des Beobachtungsbogens, des Feedbackbogens und der Interaktion der beiden Bögen auf die Qualität des Feedbacks vermuteten, wurden untersucht. Zudem sollte der Effekt der Reihenfolge (Zuerst Untersucher-> dann Beobachter, zuerst Beobachter-> dann Untersucher) ermittelt werden.

Es wurde ein retrospektives Studiendesign gewählt und 160 Videoaufzeichnungen von der Simulation sowie 80 Feedbackvideovergleiche wurden zur Datenauswertung herangezogen. Um den Einfluss der beiden Bögen und deren Interaktion auf die Qualität des Feedbacks zu ermitteln wurde eine univariate Varianzanalyse durchgeführt. Zur Analyse des Einflusses der Reihenfolge auf die Qualität des Feedbacks wurde ein T-Test herangezogen.

Es zeigte sich ein signifikanter Einfluss des Beobachtungsbogens auf die Anzahl der genannten Items, ebenso bestand ein signifikanter Einfluss des Feedbackbogens auf die Anzahl der genannten Items, ein signifikanter Einfluss des Feedbackbogens auf die Tiefe des Feedbacks und ein signifikanter Einfluss beider Bögen und deren Interaktion auf die Tiefe und somit auf die Anzahl der genannten elaborierten Feedbackitems. Die Reihenfolge hatte keinen Effekt auf die Qualität des Feedbacks.

Es wurde angenommen, dass der Effekt des Beobachtungsbogens auf die Anzahl der genannten Items auf die darin enthaltene Liste mit 55 während der Simulation zu beobachtenden Items und die dichotome Checkliste (Ja/Nein) für strukturierteres Feedback zurückzuführen ist. Der Beobachtungsbogen hatte keinen Einfluss auf die Tiefe des Feedbacks, vermutlich weil die Studenten zu sehr auf die Fertigstellung der Checkliste fokussiert waren und keine Zeit fanden sich weitere Informationen zu notieren.

Der signifikante Effekt beider Bögen und deren Interaktion auf die Anzahl der genannten Items und die Tiefe des Feedbacks erklärt sich durch die im Beobachtungsbogen enthaltene Checkliste bezogen auf die Anzahl der genannten Items und die Anleitung für strukturiertes, detaillierteres Feedback aus dem Feedbackbogens bezogen auf die Feedbacktiefe.

In der Literatur konnten keine Studien bezüglich eines zu vermutenden Effekts auf die Reihenfolge gefunden werden. Auch die Analyse der für die Studie verwendeten Daten erbrachte keinen positiven Effekt dieser auf die genannten Qualitätskriterien. Eine Ursache dafür könnte sein, dass die Studenten bereits beim Ausfüllen des Wissenstests über die digital-rektale Untersuchung zu Beginn der Simulationswoche gelernt haben, worauf bei der Simulation zu achten ist.

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9 APPENDIX

9.1 Observation script (German)

Beobachtungsbogen

Liebe Teilnehmerin, lieber Teilnehmer

bei der nun folgenden Untersuchung ist es Ihre Aufgabe, die Untersuchung zu beobachten und anschließend auf Basis Ihrer Beobachtungen dem Arzt Feedback zu geben. Dabei soll Ihnen der vorliegende Beobachtungsbogen eine Hilfestellung geben, damit Sie auf wichtige Aspekte besonders achten können. Bitte kreuzen Sie an, ob der Arzt das entsprechende Verhalten gezeigt hat. Bitte benutzen Sie die Freitextfelder, um weitere Kommentare oder Beobachtungen einzutragen.

Gehen Sie vor der Untersuchung kurz den Bogen durch, damit Sie sich während der Beobachtung leichter tun.

Bitte tragen Sie Ihren Teilnehmercode ein:

⌊_⌋_⌋_⌋_⌋

(Teilnehmercode)

Datum:

⌊_⌋_⌋.⌊_⌋_⌋.⌊_⌋_⌋_⌋_⌋

BEGRÜSSUNG		
Der Arzt hat Blickkontakt zum Patienten hergestellt	☐ Ja	☐ Nein
Der Arzt hat den Patienten mit Handschlag begrüßt	☐ Ja	☐ Nein
Der Arzt hat den Patienten herein gebeten	☐ Ja	☐ Nein
Der Arzt hat den Patienten mit Namen angesprochen	☐ Ja	☐ Nein
Der Arzt hat dem Patienten einen Sitzplatz angeboten	☐ Ja	☐ Nein
Der Arzt hat seinen Namen genannt	☐ Ja	☐ Nein
Der Arzt hat seine Position genannt	☐ Ja	☐ Nein
Der Patient wurde allgemein freundlich begrüßt	☐ Ja	☐ Nein

Kommentare und weitere Beobachtungen

ANAMNESE		
Aktuelle Beschwerden werden abgefragt	☐ Ja	☐ Nein
Chronische Erkrankungen werden abgefragt	☐ Ja	☐ Nein
Eine Medikamenten-Anamnese wird erhoben	☐ Ja	☐ Nein
Der Arzt fragt nach Allergien	☐ Ja	☐ Nein
Der Patient kann seine Beschwerden schildern ohne unterbrochen zu werden	☐ Ja	☐ Nein
Der Arzt hört aufmerksam zu	☐ Ja	☐ Nein
Der Arzt hat während des Gespräches Blickkontakt mit dem Patienten gehalten	☐ Ja	☐ Nein
Der Arzt redet pausenlos	☐ Ja	☐ Nein
Kommentare und weitere Beobachtungen		

Erklärung der Untersuchung und deren Notwendigkeit		
Der Arzt erklärt das Vorgehen der anstehenden Untersuchung	☐ Ja	☐ Nein
Der Arzt erklärt die Notwendigkeit der anstehenden Untersuchungen	☐ Ja	☐ Nein
Der Arzt verwendet eine leicht verständliche Sprache	☐ Ja	☐ Nein
Der Arzt geht angemessen mit peinlichen Themen um	☐ Ja	☐ Nein
Der Arzt hat während der Erklärung Blickkontakt mit dem Patienten gehalten	☐ Ja	☐ Nein

Kommentare und weitere Beobachtungen

Durchführung der Untersuchung des Bauches		
Der Arzt führt folgende Untersuchungen durch:		
▪ Inspektion	☐ Ja	☐ Nein
▪ Auskultation	☐ Ja	☐ Nein
▪ Perkussion	☐ Ja	☐ Nein
▪ Palpation	☐ Ja	☐ Nein
Der Arzt hat die Untersuchungen in dieser Reihenfolge durchgeführt	☐ Ja	☐ Nein
Der Arzt erklärt, was er gerade macht	☐ Ja	☐ Nein
Der Arzt erklärt, was er gerade abtastet	☐ Ja	☐ Nein
Der Arzt tastet folgende Organe ab:		
▪ Leber	☐ Ja	☐ Nein
▪ Milz	☐ Ja	☐ Nein
▪ Aszites	☐ Ja	☐ Nein
Der Arzt fragt nach Schmerzen	☐ Ja	☐ Nein
Der Arzt tastet zum Schmerz hin	☐ Ja	☐ Nein
Der Arzt reagiert sensibel auf körperliche Schmerzen	☐ Ja	☐ Nein
Kommentare und weitere Beobachtungen		

Durchführung der rektalen Untersuchung		
Der Arzt führt folgende Untersuchungen durch:		
▪ Inspektion	☐ Ja	☐ Nein
▪ Palpation	☐ Ja	☐ Nein
Der Arzt zieht Handschuhe an	☐ Ja	☐ Nein
Der Arzt bietet ein Handtuch zum Abdecken an	☐ Ja	☐ Nein
Der Arzt verwendet Gleitgel	☐ Ja	☐ Nein
Der Arzt warnt vor der Kälte des Gleitgels	☐ Ja	☐ Nein
Der Arzt lässt beim Einführen des Fingers pressen	☐ Ja	☐ Nein
Der Arzt erklärt, was er gerade macht	☐ Ja	☐ Nein
Der Arzt testet den Sphinkter	☐ Ja	☐ Nein
Der Arzt fragt nach Schmerzen	☐ Ja	☐ Nein
Der Arzt reagiert auf körperliche Schmerzen des Patienten	☐ Ja	☐ Nein
Der Arzt erklärt das Ende der Untersuchung	☐ Ja	☐ Nein
Es wird ein Tuch zum Abwischen angeboten	☐ Ja	☐ Nein
Der Patient wird aufgefordert sich wieder anzuziehen	☐ Ja	☐ Nein
Kommentare und weitere Beobachtungen		

Klären des weiteren Vorgehens		
Es werden folgende Methoden erläutert:		
▪ Hämocult	☐ Ja	☐ Nein
▪ Koloskopie	☐ Ja	☐ Nein
▪ Darmreinigung	☐ Ja	☐ Nein
▪ CT	☐ Ja	☐ Nein
Der Arzt verwendet eine leicht verständliche Sprache	☐ Ja	☐ Nein
Es werden Vorschläge, keine Anweisungen gemacht	☐ Ja	☐ Nein
Der Arzt fragt, ob der Patient noch Fragen hat	☐ Ja	☐ Nein

Kommentare und weitere Beobachtungen

9.2 Feedback script (German)

Feedbackbogen

Lieber Teilnehmer, liebe Teilnehmerin,

im Folgenden bitten wir Sie dem Arzt Feedback zu geben. Machen Sie sich dazu als erstes auf den folgenden Seiten Notizen und schreiben Sie auf, was Ihnen </in den jeweiligen Phasen> positiv bzw. negativ aufgefallen ist. </Selbstverständlich können Sie dazu Ihre Aufzeichnungen aus dem Beobachtungsbogen verwenden. >

Anschließend werden Sie dem Arzt Ihr Feedback geben. Dabei würden wir Sie bitten folgendermaßen vorzugehen:

1. Fragen Sie als erstes den Arzt, was er/ sie als positiv bzw. gut an seiner/ ihrer Durchführung fand
2. Fragen Sie anschließend, wo er/ sie noch Verbesserungsbedarf sieht
3. Teilen Sie daraufhin mit, was Sie als positiv bzw. gut empfanden
4. Teilen Sie abschließend mit, was noch verbessert werden könnte

Bitte beachten Sie dabei auch die allgemeinen Feedback-Regeln:

- Senden Sie Ich-Botschaften (Ich bin der Meinung…)
- Machen Sie konkrete und spezifische Aussagen - verallgemeinern Sie nicht
- Beziehen Sie sich lediglich auf veränderbares Verhalten - seien Sie sachlich, nicht persönlich
- Geben Sie vorwurfsfreies Feedback
- Denken Sie immer daran, wie Sie sich in der Rolle des Empfängers fühlen bzw. fühlen würden

Bitte tragen Sie Ihren Teilnehmercode ein:

⌊_⌋_⌋_⌋_⌋

(Teilnehmercode)

Datum:

⌊_⌋_⌋.⌊_⌋_⌋.⌊_⌋_⌋_⌋_⌋

Denken Sie bitte zurück an die Begrüßungsphase
Was ist Ihnen als positiv bzw. gut aufgefallen?
Was würden Sie verbessern?

Denken Sie bitte zurück an die Phase der Anamnese-Erhebung
Was ist Ihnen als positiv bzw. gut aufgefallen?
Was würden Sie verbessern?

Denken Sie bitte zurück an die Phase, in der der Arzt die Untersuchung und deren Notwendigkeit erklärt hat
Was ist Ihnen als positiv bzw. gut aufgefallen?
Was würden Sie verbessern?

Denken Sie bitte zurück an die Phase, in der der Bauch abgetastet wurde
Was ist Ihnen als positiv bzw. gut aufgefallen?
Was würden Sie verbessern?

Denken Sie bitte zurück an die Durchführung der rektalen Untersuchung
Was ist Ihnen als positiv bzw. gut aufgefallen?
Was würden Sie verbessern?

Denken Sie bitte zurück an die Phase, in der das weitere Vorgehen besprochen wurde
Was ist Ihnen als positiv bzw. gut aufgefallen?
Was würden Sie verbessern?

9.3 Knowledge-test (German)

Wissenstest

Lieber Teilnehmer, liebe Teilnehmerin,

Sie sind in der Rolle eines Arztes einer chirurgischen Klinik. Zu Ihnen kommt ein männlicher Patient mittleren Alters, der vor Kurzem festgestellt hat, dass sich Blut in seinem Stuhl befindet.

Auf den folgenden Seiten sind die einzelnen Phasen einer rektalen Untersuchung aufgeführt. Bitte tragen Sie ein, welche Schritte Sie in der jeweiligen Phase durchführen müssen und was dabei zusätzlich zu beachten ist.

Bitte tragen Sie Ihren Teilnehmercode ein:

⌊_⌋_⌋_⌋_⌋

(Teilnehmercode)

Datum:

└┴┘.└┴┘.└┴┴┴┘

Denken Sie bitte zurück an die Begrüßungsphase
Welche Schritte sind in dieser Phase wichtig?
Was müssen Sie dabei beachten?

Denken Sie bitte zurück an die Phase der Anamnese-Erhebung
Welche Schritte sind in dieser Phase wichtig?
Was müssen Sie dabei beachten?

Denken Sie bitte zurück an die Phase, in der der Arzt die Untersuchung und deren Notwendigkeit erklärt hat

Welche Schritte sind in dieser Phase wichtig?

Was müssen Sie dabei beachten?

Denken Sie bitte zurück an die Phase, in der der Bauch abgetastet wurde
Welche Schritte sind in dieser Phase wichtig?
Was müssen Sie dabei beachten?

Denken Sie bitte zurück an die Durchführung der rektalen Untersuchung
Welche Schritte sind in dieser Phase wichtig?
Was müssen Sie dabei beachten?

Denken Sie bitte zurück an die Phase, in der das weitere Vorgehen besprochen wurde
Was müssen Sie dabei beachten?
Was müssen Sie dabei beachten?

9.4 Questionnaire on specific medical terms (German)

Fragebogen zu medizinischen Fachbegriffen

Liebe Teilnehmerin, lieber Teilnehmer,
dieser Bogen wird maschinell ausgewertet. Markieren Sie eine Antwort bitte in der folgenden Weise: ○☒○ .
Wenn Sie eine Antwort korrigieren möchten, füllen Sie bitte den falsch markierten Kreis und noch etwas darüber hinaus aus, ungefähr so: ○●☒ .

Bitte geben Sie zu jedem Begriff an, ob Sie ihn für einen medizinischen Fachbegriff halten oder für einen alltäglichen Begriff. Überlegen Sie dabei auch, ob Sie sich etwas unter diesem Begriff vorstellen oder ihn gar erklären könnten.

Sind folgende Begriffe aus Ihrer Sicht medizinische Fachbegriffe?

Abführmittel	O Ja	O Nein
Abszess	O Ja	O Nein
Abwehrspannung	O Ja	O Nein
After	O Ja	O Nein
Alkohol	O Ja	O Nein
Allergie	O Ja	O Nein
Ambulant	O Ja	O Nein
Anal	O Ja	O Nein
Anus	O Ja	O Nein
Arzt	O Ja	O Nein
Aufstoßen	O Ja	O Nein
Austasten	O Ja	O Nein
Bauch	O Ja	O Nein
Beckenboden	O Ja	O Nein
Betäubung	O Ja	O Nein
Blinddarm	O Ja	O Nein
Blut	O Ja	O Nein
Blutgerinnung	O Ja	O Nein
Bluthochdruck	O Ja	O Nein
Blutung	O Ja	O Nein
Chronisch	O Ja	O Nein
Computertomographie	O Ja	O Nein
Darm	O Ja	O Nein
Darmerkrankung	O Ja	O Nein
Darmgeräusch	O Ja	O Nein
Darmkarzinom	O Ja	O Nein
Darmspiegelung	O Ja	O Nein
Darmspühlung	O Ja	O Nein

Darmreinigung	O Ja O Nein
Diabetes	O Ja O Nein
Divertikulitis	O Ja O Nein
Dickdarm	O Ja O Nein
Digitus	O Ja O Nein
Digital	O Ja O Nein
Druckgefühl	O Ja O Nein
Drüse	O Ja O Nein
Dünndarm	O Ja O Nein
Durchfall	O Ja O Nein
Einlauf	O Ja O Nein
Enddarm	O Ja O Nein
Endoskop	O Ja O Nein
Entzündung	O Ja O Nein
Erbrechen	O Ja O Nein
Erkrankung	O Ja O Nein
Fieber	O Ja O Nein
Fuß	O Ja O Nein
Gastroenterologie	O Ja O Nein
Gefäß	O Ja O Nein
Gel	O Ja O Nein
Gesäß	O Ja O Nein
Gewebe	O Ja O Nein
Gewicht	O Ja O Nein
Hämokult	O Ja O Nein
Hämorrhoiden	O Ja O Nein
Hämophilie	O Ja O Nein
Harn	O Ja O Nein
Harndrang	O Ja O Nein
Herz	O Ja O Nein
Juckreiz	O Ja O Nein
Knie	O Ja O Nein
Koloskopie	O Ja O Nein
Kontrastmittel	O Ja O Nein
Kopfschmerzen	O Ja O Nein
Leber	O Ja O Nein

Lunge	O Ja O Nein
Magen	O Ja O Nein
Magenspiegelung	O Ja O Nein
Magen-Darm-Trakt	O Ja O Nein
Medikament	O Ja O Nein
Milz	O Ja O Nein
Muskel	O Ja O Nein
Nachtschweiß	O Ja O Nein
Nahrungsmittelunverträglichkeit	O Ja O Nein
Narbe	O Ja O Nein
Narkose	O Ja O Nein
Niere	O Ja O Nein
Oberbauch	O Ja O Nein
Oral	O Ja O Nein
Organ	O Ja O Nein
Operation	O Ja O Nein
Ösophagus	O Ja O Nein
Polyp	O Ja O Nein
Prostata	O Ja O Nein
Rektal	O Ja O Nein
Rektum	O Ja O Nein
Rücken	O Ja O Nein
Röntgen	O Ja O Nein
Röntgenaufnahme	O Ja O Nein
Röntgenbild	O Ja O Nein
Scheide	O Ja O Nein
Schichtaufnahme	O Ja O Nein
Schilddrüse	O Ja O Nein
Schließmuskel	O Ja O Nein
Schmerz	O Ja O Nein
Schweiß	O Ja O Nein
Sodbrennen	O Ja O Nein
Speiseröhre	O Ja O Nein
Spühlung	O Ja O Nein
Steißbein	O Ja O Nein
Stethoskop	O Ja O Nein

Stuhl	○ Ja ○ Nein
Tumor	○ Ja ○ Nein
Ultraschall	○ Ja ○ Nein
Ulzeration	○ Ja ○ Nein
Verdauung	○ Ja ○ Nein
Vererbung	○ Ja ○ Nein
Verletzung	○ Ja ○ Nein
Verstopfung	○ Ja ○ Nein
Vorsorgeuntersuchung	○ Ja ○ Nein
Zirkumferenz	○ Ja ○ Nein

Vielen Dank!

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Eidesstattliche Erklärung

Hiermit erkläre ich, dass ich die vorliegende Arbeit eigenständig und ohne fremde Hilfe angefertigt habe. Textpassagen, die wörtlich oder dem Sinn nach auf Publikationen oder Vorträgen anderer Autoren beruhen, sind als solche kenntlich gemacht.
Die Arbeit wurde bisher keiner anderen Prüfungsbehörde vorgelegt und auch noch nicht veröffentlicht.

Hallein, am 08.03.2015

Melanie Tusak