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*How can trust be built, enabled, and used as a teaching paradigm in the context of medical education?*

presented by
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# Content

# List of Publications

I: Lerch, S. P., Pinilla, S., Nendaz, M., Klöppel, S., & Huwendiek, S. (2023). Trainee doctors' preparedness for clinical work in geriatric psychiatry: A survey on 18 preliminary entrustable professional activities. *International Journal of Geriatric Psychiatry*, *38*(6), e5954. https://doi.org/10.1002/gps.5954.

II: Pinilla, S., Lerch, S., Lüdi, R., Neubauer, F., Feller, S., Stricker, D., Berendonk, C., & Huwendiek, S. (2023). Entrustment versus performance scale in high-stakes OSCEs: Rater insights and psychometric properties. *Medical teacher*, 1-8. https://doi.org/10.1080/0142159X.2023.2187683.

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*Note: For individual author contributions see Appendices I to VI.*

# Summary

In the context of medical education, trust, as a basic human phenomenon, is highly relevant because healthcare trainees need to learn how to establish trusting relationships with their future patients, and how to effectively contribute to patient care; therefore, trusting relationships also need to be established with their supervisors and educators. Furthermore, the newest paradigms in medical education use the concept of trust to increase the quality of teaching, reduce the complexity of teaching in the clinical field instead of the classroom, and to display the supervisor-trainee relationships. The aims of this thesis are therefore to describe in what ways trust can be used as a teaching paradigm in medical education (Aim I), to summarize how trainee-supervisor trust and patient-physician trust can be built (Aim II), and to present what needs to be taught and how to enable future healthcare professionals to build trusting relationships with their patients (Aim III). Finally, Aim IV involves the integration of the obtained information from all the aims into one model. To explore how trust can be built, enabled, and used as a teaching paradigm in the context of medical education, several studies were conducted: Papers I (Lerch, Pinilla, et al., 2023) and II (Pinilla et al., 2023) contain an exploration of how trust can be used as a teaching paradigm (Aim I). Teaching includes the learning objectives, methods, and assessments. In paper I (Lerch, Pinilla, et al., 2023), learning objectives and the concept of entrustment were explored. For paper II (Pinilla et al., 2023), common rating scales and entrustment scales – meaning asking assessors how much they would trust a particular examinee with clinical work in their hospitals – were compared. The entrustment scales reduced complexity and were preferred by assessors despite the perceived subjectivity of the assessment. This subjectivity was not confirmed, however, by the considered psychometric properties. How trust can be built was investigated for both trainee-supervisor (Paper III by Lerch, Huwendiek, et al. (2023)), and patient-physician trust (Paper IV by Lerch, Hänggi, et al. (2023)). For trainee-supervisor trust, two frameworks on how it can be built already exist, revealing the thus far under-researched importance of context as a contributor to trust. These contextual factors were further explored in semi-structured interviews (Paper III by Lerch, Huwendiek, et al., 2023)), revealing the organizational structures and clinical service needs that contribute to supervising physicians trusting their trainees with clinical tasks. In paper IV (Lerch, Hänggi, et al., 2023) evidence-based precursors of patient-physician trust were integrated into a model through a critical review confirming as contributors, as indicated in basic trust research, the benevolence, integrity, and competence of the trustee. Moreover, other psychological factors, the social environment, and health education of the trustor were also revealed as relevant contributors to patient-physician trust, as well as the context and relationship. To investigate what needs to be taught and how to enable healthcare trainees to build trust with their future patients, an expert consensus study

(Paper V by Lerch, Bussmann, et al. (2023)) was conducted, and the systematically synthesized teaching ingredients and methods needed to enable trust were thereby obtained. Most importantly, longitudinal safe relationships with supervisors as role models, feedback, and supporting students to be change agents can be applied. In paper VI (Felber et al., 2023), a brief educational intervention for medical students to enhance compassion – a precursor of trust – is described. The basic principles of this intervention can be expected to inform future interventions for medical trainees that enable them to build trust with their future patients. In addition, the information on how trust can be built, enabled, and used as a teaching paradigm in medical education was integrated into a socioeconomic model, based on the finding that next to interpersonal factors, contextual factors need to be considered to build trust. The common findings of the first three aims are the importance of feedback, longitudinal relationships and sufficient supervision of trainees, and psychological safety to build and enable trust and to use it as a teaching paradigm in medical education.

In summary, the fundamental role of trust in medical education has been explored. Trust matters in current teaching paradigms in medical education, in trainee-supervisor relationships facilitating learning, and in patient-physician relationships. Therefore, trainees need to learn to build trust with future patients. The key findings include the importance of context in interpersonal trust, feedback, long-term relationships, sufficient supervision, and psychological safety when talking about trust in the context of medical education. The results of this thesis contribute valuable insights into the role of trust in shaping the education and practice of future physicians, their current educators and policy makers.

# 1 Introduction

## 1.1 The psychology of trust

In medical education, trust, as a fundamental human phenomenon, is highly relevant: Future healthcare professionals must develop the ability to build trust with their patients and with their team colleagues, especially with their clinical supervisors and within the broader healthcare system. Trust is the foundation of effective communication, collaboration, the successful transfer of knowledge, and an essential component to fostering a supportive, patient-centred learning environment. Because of the essential nature of the subject for humans, many other scientific fields outside of psychology have contributed to the study of trust. All these multiple disciplines in addition to psychology, such as philosophy (e.g. Hosmer, 1995), economics (e.g. Arrow, 1974), sociology (e.g. Barber, 1983; Luhmann, 2014), politics (e.g. Levi & Stoker, 2000), and neuroscience (e.g. Kosfeld, 2007; Krueger & Meyer-Lindenberg, 2019) provide different approaches and definitions of trust. In psychology, several researchers have defined and approached trust, all slightly differently. Erikson (1950) described the development of trust as the first of eight steps in infants' psychosocial development, emerging from how infants get their needs met. For Rotter (1980), interpersonal trust develops through social learning and is more of a personality trait called propensity to trust (Hochreich & Rotter, 1970). Rotter (1980) defined trust as a set of expectations that an individual has of another individual with the requirement that the person's actions and words are reliable. In contrast, for Deutsch (1962), trust is more situational, and the set of expectations is reflected in behaviour: trust is defined as all behaviour that enhances a person's vulnerability towards another whose behaviour is not under their control. These behaviours are chosen when the potential harm that can happen through the vulnerability is greater than the benefit of the behaviour (Deutsch, 1962). Since the 1960s and 70s, more definitions of trust in psychology have emerged, and most of the many definitions include the component of uncertainty, the willingness to take a risk, and the possibility of disappointment (Petermann, 2012). It is widely accepted that interpersonal trust is a multi-layered construct, including affective, cognitive, behavioural, and even hormonal facets (Kosfeld et al., 2005). The adaptive function of trust is to reduce complexity (Petermann, 2012). However, there is no real consensus about what trust is (Grünberg & Grünberg, 2014; Hamilton et al., 2023), but according to Dirks and de Jong (2022), the definition used by Mayer et al. (1995) is widely accepted. These authors define trust as the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer et al., 1995, p. 712). The party that trusts is referred to by the authors as the trustor, whereas the entrusted party is called the trustee. Mayer et al. (1995) have also addressed how interpersonal trust emerges. In their model, they include the personal aspects

of the trustor (propensity to trust) and characteristics of the trustee (benevolence, competence, and integrity) that enhance the trust of the trustor. Their model includes perceived risk, which refers to the trustor's assessment of potential negative consequences when trusting the other party (Mayer et al., 1995). Recent research has acknowledged the validity of the model but also highlighted the need to integrate newer results on how trust emerges into the model (Dirks & de Jong, 2022)

Trust can be distinguished from cooperation. In cooperation, two parties decide to work together towards one goal (Tomasello et al., 2012). There is not necessarily risk involved – which is the difference to trust. Although trust can lead to cooperation, it is different (Mayer et al., 1995). A further yet important distinction should also be made between psychological safety and trust. While the former refers primarily to the contextual conditions that influence the willingness to express oneself, mainly depending on the perceived safety within a group, trust is orientated towards the individual belief regarding the safety of interacting with a particular person (Edmondson et al., 2004). Of course, these two are interrelated, and actual psychological safety in an environment can potentially increase individual trust (Edmondson et al., 2004).

A further distinction in trust research needs to be made regarding the recipient of trust: Is it more generalized, thus referring to trust in a group or institution, or does it refer to a single person? One can trust people and, for example, systems, ideas, programs, political parties, societal changes, and organizations (Bierfhoff, 2002, Cook & Wall, 1980, Hill, 1981, Muir, 1987, Oswald, 2006), which is called social trust (Kasperson et al., 1992). Trust in a known person refers to interpersonal trust (Rotter, 1980). The foundation of the doctor-patient relationship mainly rests on interpersonal trust, as highlighted by Mechanic (1996). Additionally, however, social trust also plays a role in this dynamic (Mechanic, 1996; Parker & Parker, 1993), with physicians often benefiting from a presumption of trustworthiness associated with their profession (Grünberg & Grünberg, 2014). Moreover, trust in the broader healthcare system is interconnected with the trust placed in an individual's healthcare provider, as observed by Gupta et al. (2020).

In summary, psychological trust is hard to grasp as it is a multi-layered construct. However, it includes one person's vulnerability towards another due to positive expectations of the outcome, with the function of complexity reduction. It can be differentiated into a trait or situational, social and interpersonal trust. This thesis examines situational, interpersonal trust in the context of medical education and how it can be built, enabled, and used as a teaching paradigm. Different relationships in medical education require interpersonal trust.

## 1.2 The importance of trust in medical education

Recently, 50 years of trust research in health care was heralded with a synthetic review (Taylor et al., 2023). The authors categorized interpersonal trust in health care as patients' trust in physicians, physicians' trust in patients, and physicians' trust in other physicians. They further distinguished patients' and physicians' trust in organisations and systems – whereby this aspect of trust is therefore not seen as interpersonal but social trust (Taylor et al., 2023), which was not investigated in the work for this thesis. However, this also influences a person's trust in a physician (Grünberg & Grünberg, 2014; Gupta et al., 2020; Lee, 2019; Mechanic, 1996). In medical education, patients' trust in physicians' and prospective physicians' ability to build trust with their patients is essential, as well as the supervising physicians' trust in their trainees (physicians' trust in other physicians).

The patient's trust in physicians is the most researched aspect of trust in health care. It is essential, as patients' trust in physicians is linked to improved behavioural (Birkhauer et al., 2017) and health outcomes, as reported in two meta-analyses (Birkhauer et al., 2017; Kelley et al., 2014). It seems clear that trusting one's doctor is much more desirable and probably has benefits. In several investigations this has been confirmed: trust increases treatment adherence (Safran et al., 1998; Trachtenberg et al., 2005) and has the potential to decrease healthcare costs by, for example, preventing doctor hopping (Quigley et al., 2021). As already mentioned, trust is positively associated with health outcomes. These investigated health outcomes have been, for example, examined in diabetes (Alazri & Neal, 2003), cancer (Mainous et al., 2004), and HIV (Preau et al., 2004). As a patient's trust in physicians is a crucial component of successful patient care, it is therefore essential for a healthcare professional to know how to establish trust, as well as to know which additional factors – for example within the individual patient or context – contribute to a trusting relationship. Trust is a crucial component of any therapeutic alliance, which is defined as the degree of partnership between the patient and the health care professional (Anderson & Anderson, 1962).

Physicians' trust in patients is rarely investigated (Taylor et al., 2023). However, it is also essential for patients to trust the physician. Precisely because mutual trust is important, the relationship is most likely dyadic (Petrocchi et al., 2019).

The more often investigated interpersonal trust within the healthcare field has been physicians' trust in another physician. Within the context of medical education, trust in other physicians is especially important between supervising clinicians and their trainees (Taylor et al., 2023), but also between healthcare professional students (Graves et al., 2022). Supervisors' trust in their trainees most often refers to the trust in clinical activities – e.g. what supervisors entrust their trainees to do within patient care. Like patient trust for the therapeutic alliance, trust related to

supervisors and trainees is essential for the educational alliance. It is suspected that the building of educational and therapeutic alliances has parallels in the medical context (Pinilla & Huwendiek, 2022; Pinilla et al., 2021). These parallels and the fact that trust and an educational alliance are both necessary for learning experiences in the clinical workplace, which ultimately positively impact safe patient care (Bonnie et al., 2022), make it evident that supervisors' trust in trainees must also be investigated within medical education. Therefore, it is necessary to consider this relationship when investigating how trust can be built, taught, and used as a teaching paradigm in medical education.

In summary, in the context of medical education, patient-physician trust and supervisor-trainee trust are the most prominent. For both, it is essential to know how this trust can be built. First, it is necessary to understand how trainees can be enabled to build trusting relationships with their future patients. Second, it is crucial that supervisors trust trainees with clinical tasks that are safe for patients yet still enable learning for the trainee. In the following, the educational foundations for this thesis, especially medical education, are considered.

## 1.3 (Medical) educational fundamentals

Education is a vast field with considerable existing literature. This thesis presents a purposeful selection of the relevant literature. A vital piece of literature is the meta-analysis of Hattie (2009) and the literature on constructive alignment by Biggs (1996). Maslow's needs hierarchy (Maslow, 1973) and psychological safety (Edmondson, 1999) – not educational theories - are briefly explained in the context of learning. In addition, the history of medical education is presented along with its paradigms.

The probably most prominent publication, which is known far beyond the field of education itself, is Hattie's meta-analysis of what contributes to both – positive and negative – learning outcomes. For example, "Self-report grades" has the most positive effect on learning while the amount of TV consumption is negatively related to learning outcomes (Hattie, 2009, p. 298 + 299). Learning objectives, teaching methods, and assessments must be aligned with each other to teach efficiently. This is called constructive alignment (Biggs, 1996). Learning objectives that affect the cognitive, affective, and psychomotor domains can be formulated (Bloom et al., 1956). Furthermore, Maslow's concept of the hierarchy of needs, and the concept of psychological safety by Edmondson are essential in learning: Basic needs – including psychological safety – need to be addressed in order for learning to occur (Edmondson, 1999; Maslow, 1973). Medical education describes the specific science and practice of education for medical trainees. This includes undergraduate studies at university for future physicians, postgraduate training (to obtain a specialist title), and continuing education (to ensure lifelong learning) for physicians (Flores-Mateo & Argimon, 2007). To describe the entire history of medical education and all the past teaching paradigms here would be too extensive. Therefore

the starting point is 1910, when the Flexner report was published, heralding higher standards for medical education and contributing to the provision of more finances for matters of medical education across the country of the United States (Flexner, 1910). Although the impact of the Flexner report led to the improvement of many aspects of the training of physicians in the United States and Canada, some changes did disadvantage potential students from suboptimal socioeconomic backgrounds (Brown, 1979) and those of a different race (Sullivan & Suez Mittman, 2010). During the 1960s, a new shift could be observed: patients' perspectives were pushed aside and in turn, the biomedical perspectives and financial perspectives of hospitals received greater attention (Ronaghy, 2018) – problem-based medical education was born out of this (Frenk et al., 2010). Board certifications were developed across the world – another benefit that added to the quality of teaching (Ronaghy, 2018). Additionally, medical education programmes started to be more structured including having specific time frames for different aspects of teaching – such as clinical practice (Custers & Cate, 2018). Due to this movement to process- and structure oriented undergraduate and postgraduate educational programmes more specific learning objectives were developed for them. Moreover, with the progression of time these objectives turned into competencies. Consequently, competency-based medical education (CBME) was born (Carraccio et al., 2002). *"CBME is an outcomes-based approach to the design, implementation, and evaluation of education programs and to the assessment of learners across the continuum that uses competencies or observable abilities" (AAMC, 2019).* Currently, CBME is the most modern teaching paradigm used in medical education, but problem-based approaches still exist. One of the best-known competency-based frameworks is the CanMEDS framework, where a physician must even display competence within defined categories. These categories for competencies are medical expert, health advocate, professional, collaborator, scholar, manager, and communicator.

## 1.4 Aims

Interpersonal trust is essential in human development as it is the first step of a person's psychosocial development and accompanies them their whole life (Erikson, 1950). In the context of health care, it becomes crucial as it contributes to the healing process of patients, and regarding trainees and supervisors, it can enhance the learning process. Therefore, **the first aim** of the work conducted for this thesis was to explore how **trust can be used as a teaching paradigm in the context of medical education**. As teaching includes learning objectives, methods, and assessment, one original study on learning objectives and assessment is also included. Teaching methods dealing with trust are included in other aims.

As seen above, trust is essential in healthcare; therefore, **the second aim was to explore how trust can be built in the healthcare field** – regarding the work for this thesis this included

both trust between supervisors and trainees and patient-physician trust. Because Hauer et al. (2014) and Holzhausen et al. (2017) give a very detailed overview of supervisor-trainee trust, these frameworks were used to further explore the trust between supervisors and trainees in the context of postgraduate geriatric psychiatry education. Furthermore, as patients' trust in physicians is a crucial component of successful patient care, knowing how to establish trust as a healthcare professional is essential and so too is knowing what other factors – for example, related to the patient or the context – contribute to a trusting relationship. Taylor et al. (2023) have stated that a conceptualization of patient-physician trust with empirical key attributes of trust is much needed but currently lacking. Therefore, this thesis includes a critical review integrating empirical findings on patient-physician trust into a conceptualized model.

The **third aim focussed on the teaching of trust, what needs to be taught, and also how to enable healthcare professional students to establish trusting relationships with their future patients.** This aim was addressed with a nominal group technique study of international healthcare professionals and a brief description of one potential intervention to increase compassion in medical students, and ultimately their ability to build trust with their patients.

Finally, the overall question “How can trust be built, enabled, and used as a teaching paradigm in the context of medical education?” was answered based on the findings from all three parts (learning paradigm, building trust, and enabling trust) and overall conclusions were drawn based on the integration of the results related to the three aims.

# 2 Aim 1: Trust as a teaching paradigm in medical education

As shown in the introduction, over the last decades there has been an enormous paradigm shift towards competency-based medical education (CBME) (Carraccio et al., 2002). Since this shift, curricula have been CBME-oriented for many health professions and different stages (undergraduate, postgraduate, and continuing education) of training in the health professions (Meyer et al., 2019; O'Dowd et al., 2019; Sottas, 2011). Today, the understanding of CBME encompasses a way of designing curricula within medical education that define competencies as predefined outcomes for the end of any training. Moreover, trainees should be able to perform them (Albanese et al., 2010; Glasgow et al., 2017). Therefore, competencies are the ability to perform an activity successfully and efficiently (Soanes & Persall, 2005). The basic idea behind CBME was originally to ensure that the training of health professionals is societally responsive, and that the competencies map the healthcare needs of the society (Frank & Langer, 2003). However, competencies as training outcomes for the end of training are a comprehensive concept; they alone do not provide sufficient information for curriculum developers. As learning objectives are the basis of teaching (Biggs, 1996), broad competencies need to be compiled encompassing these outcomes (Carraccio et al., 2017).

While competencies reflect a very theoretical construct, the gap between theory and practice must be bridged. One way to do this is related to the emergence of entrustable professional activities (EPAs) (Ten Cate, 2005). EPAs are practical learning objectives defined as a "*unit of professional practice that a trainee can be trusted to perform without direct supervision, once sufficient competence has been demonstrated*" (Ten Cate & Taylor, 2021, p. 1109). Critical attributes of EPAs are that they are a discrete clinical activity with a clearly defined beginning and end, are essential and relevant to patient care, independently executable, have a measurable outcome, are restricted to qualified personnel only, and are observable (Ten Cate, 2005; Ten Cate & Taylor, 2021). EPAs bridge competencies and clinical practice and are a practical operationalization of competencies (Ten Cate, 2005). EPAs support competency-based curriculum development and assessment in medical education (ten Cate & Scheele, 2007).

## 2.1 Psychological trust and entrustment in medical education

As is shown above, trust involves risk, uncertainty, and the possibility of disappointment – or harm. The adaptive role of trust is to reduce complexity. The same applies to entrustment: Entrustment requires risk-taking as there is the potential risk of patient harm if a trainee is trusted to conduct a clinical task too early in their training (Touchie & ten Cate, 2016) – with the associated possibility of harm and uncertain outcomes. However, what is entrustment? Previously, in the above section, "EPAs" were considered a professional practice unit. This unit can be entrusted from one person – or group – to another person – therefore, entrustment is assigning responsibility for something meaningful to someone else (Soanes & Persall, 2005). Between supervisors and trainees, there is always the question of whether a trainee can be trusted to conduct a task – including consideration of the risk of harming the patient. Without being trusted to practice certain clinical activities, the trainee cannot learn the required competencies. An entrustment decision is to entrust a learner with a clinical activity – e.g. an EPA (Ten Cate et al., 2015). This decision can happen in a summative way – meaning it is a finite decision for a defined period based on multiple observations and in-depth consideration of multiple factors – or ad hoc – meaning the decision is made at the moment while working with another person for a one-time activity (Ten Cate et al., 2015).

Furthermore, the term entrustment supervision scale needs to be explained: As the level of vulnerability in an entrustment decision can vary, the level of supervision in entrusting a task to a trainee can also vary. The generic supervision scale was introduced to explain the level of entrustment or supervision (ten Cate & Scheele, 2007; Ten Cate et al., 2020). It is a five-level scale used to describe the levels of supervision: Level 1 refers to observation of the clinical task, whereas level 2 refers to practicing the task under direct supervision with a supervisor physically present in the room. On level 3, trainees can practice the task under

indirect supervision, meaning the supervisor is in a different room but readily available. Level 4 refers to the unsupervised practice of the clinical task, and level 5 refers to acting as a supervisor of the task (ten Cate & Scheele, 2007; Ten Cate et al., 2020).

A further distinction is needed between a retrospective scale – focusing on what the individual has done and what the supervisor needed to provide in the past – and a prospective scale – focusing on what tasks the supervisor trusts the trainee to perform in the future with the respective level of supervision. The latter reflects trust, as there is vulnerability involved. As trust in trainees increases, the level of supervision can decrease. The entrustment process, therefore, takes place along a "trust continuum" (Bajwa et al., 2022). How trust between supervisors and trainees can be formed is presented in Chapter 3, whereas here, the concept of how trust can be used as a teaching paradigm is discussed in this chapter. One option for this is the use of EPAs – defining learning objectives that are entrustable and require trust from a supervisor towards a trainee to conduct a clinical task. A task is entrustable if the clinical activity is deemed suitable for a supervisor to make an entrustment decision concerning a learner (Ten Cate, 2020) .

## 2.2 Development of entrustment-based Curricula (Paper I by Lerch, Pinilla, et al. (2023))

EPAs are a promising example of an innovative new supervision and assessment strategy based on trust (Hauer et al., 2014). As EPAs have flooded new curricula in medical education under the concept of CBME, the question is, how can new curricula be built? For this, there are six structured and predefined steps to follow when developing curricula in medical education. These steps are (1) problem identification, including general needs assessment; (2) targeted needs assessment; (3) goals and objectives, (4) educational strategies; (5) implementation; and finally, (6) evaluation and feedback (Thomas et al., 2022). Often, these steps overlap. To assess whether the concept of trust – and in this case EPAs - can be used as a teaching paradigm and, therefore, ultimately be part of a curriculum in medical education, all the mentioned steps can be followed. Educators have started implementing trust in their curricula by conducting needs assessments (Bramley & McKenna, 2021; Shorey et al., 2019). Interestingly, none of these needs assessments about the implementation of trust as a teaching paradigm in medical education has targeted the field of psychiatry (Pinilla et al., 2020). The work of this thesis aimed to explore the concept of trust as a teaching paradigm in medical education in a needs assessment study conducted for the field of geriatric psychiatry in Switzerland (Paper I by Lerch, Pinilla, et al. (2023)). Geriatric psychiatry, a subdiscipline of psychiatry, was chosen to ensure the possibility that the data collection could use a full sample size across the country. Step I of the curriculum development approaches included problem

identification and general needs assessment, which involved developing a curriculum based on outcomes rather than time. Step II included exploring learner needs, thus requiring the characteristics of the learners to be accurately captured. The best way to achieve this is by means of a survey (Bass & Chen, 2016). An exhaustive sample was desired, so all trainee doctors in geriatric psychiatry – a subspeciality of psychiatry - in Switzerland were invited to participate in a mixed-method survey.

The focus of the work was Step II, namely curriculum development, but as the steps overlapped, the study also included aspects of Steps I and III. The latter includes defining learning objectives, which in entrustment-based curricula is in the form of EPAs. A study has confirmed that learning objectives in the form of EPAs have the potential to enhance constructive alignment (Stephan et al., 2023). For the work being presented here, an established seven-step approach guideline by Artino et al. (2014) was followed when developing the survey, which is described here by Lerch, Pinilla, et al. (2023). The questions asked were used to address predefined EPAs in the field to enable the targeted learners to evaluate the relevance of the task/learning objective, explore learners' perceptions and ideas for improvement when implementing a trust-based framework, questions regarding entrustment and supervision, and safe patient care. The results indicate that trainee doctors perceived predefined EPAs as relevant and conducted them regularly in their daily work. However, they had some suggestions for additional, relevant clinical tasks. Furthermore, they highlighted the importance of regular supervision, appropriate feedback, and suitable teaching methods when using an EPA-based framework. Interaction frequency (e.g. to deliver feedback) and perceived quality of supervision were related to safe patient care.

Based on this study, which was a first step in the development of a entrustment-based curriculum for postgraduate training in geriatric psychiatry, it was concluded that in order to use the concept of trust as a teaching paradigm the following requirements should be met: learners' views and perceptions need to be included, development guidelines need to be followed if the aim is to implement a new curriculum, regular supervision should occur and feedback must be given in an appropriate way – which can be summarized as the provision of psychological safety (Lerch, Pinilla, et al., 2023). Psychological safety is important in all learning environments (Edmondson, 1999) but is especially crucial when the curriculum is based on the concept of trust.

### 2.3 Using the concept of trust as an assessment tool (Paper II by Pinilla et al. (2023))

Teaching not only encompasses objectives and didactic methods but also includes assessment of the learners. Whereas entrustable learning objectives are meant to improve assessment opportunities in the workplace (Peters et al., 2017), there are other options to

include the concept of trust in assessments of healthcare professional students. There have been initiatives to include standardised patients (SPs) in student assessments during objective structured clinical examinations (OSCEs). SPs are trained specialists – often actors – who play the role of patients in assessing the clinical skills of healthcare professional students (Barrows et al., 1993). An OSCE is a modern assessment format to assess healthcare professional students, including medical students, in their practical skills. All students are faced with the same case during the examination (objective), and for this, SPs are used. Among other things, also because of the desire to incorporate an assessment of communication skills into clinical practice (Hinding et al., 2020) rather than solely assessing them separately, the feedback of a standardised patient is also welcomed, even though it is not part of the assessment itself (Bokken et al., 2009). It has been stated that the complex interplay of patient and physician – or the standardised patient and examined medical student – is difficult for observers to rate (Whelan et al., 2005), which is why patient ratings in OSCEs are relevant. Patient ratings differ from the ratings of the examiners, who are mostly other physicians, and thus improve reliability. These patient ratings are not always the same, and some universities have started questionnaires to assess indicators of trust toward the examinee from the side of the standardized patient (Lorwald et al., 2021). These patient ratings measure different qualities and aspects of medical students' performance in clinical skills. However, they are not always feasible. Another option is to adapt the rating scales for the examiners to come closer to a real-world scenario. Much research over the years has been done to determine what kind of scales are best used in OSCEs; global rating scales are currently favourited over checklists (Hodges & McIlroy, 2003; Ilgen et al., 2015; Regehr et al., 1998). Analogous to how standardised patients are asked to rate how much they would trust the examined physician to conduct their treatment, the same can be done with examiners who are typically physicians of the tested specialty field by asking them how much they would trust this student to conduct the clinical task if the student were a trainee doctor in the examiner's workplace.

With the shift to competency-based medical education and the introduction of EPAs, using the concept of trust and entrustment as an assessment tool has become common in postgraduate medical education (ten Cate & Scheele, 2007) and should improve the reliability of workplace-based assessment (Eltayar et al., 2022). To date, there is limited evidence on whether assessing students based on how well they can be trusted to perform a clinical task could improve the assessment of OSCEs in undergraduate medical education (Eliasz et al., 2018; Holzhausen et al., 2019). The first results show that entrustment scales in assessment lead to a broader distribution of students' test results and a differentiated picture of their performance (Holzhausen et al., 2019). As little is known about the psychometric properties of entrustment scales and why test results with global rating scales differ from entrustment scales, a mixed-

method study was conducted to explore the concept of trust as an assessment tool in the undergraduate medical exam OSCE (Paper II by (Pinilla et al., 2023)). The global performance rating and entrustment scales were used and compared for psychometric properties in a standardized high-stake OSCE. A brief questionnaire was completed, and a focus group further examined raters' perceptions. The results show that raters prefer entrustment ratings as they are closer to everyday life and reduce cognitive load. However, this preference was at the cost of perceived objectivity, yet psychometric properties did not confirm this. However, using both global and entrustment scales led to better results than using only one scale (Pinilla et al., 2023). Although many further studies are needed to fully implement entrustment scales in undergraduate medical education examinations, results show that, like workplace-based assessments in postgraduate education, the concept of trust in terms of the entrustment scale can be used as an assessment tool. Not only does it reduce cognitive load and is closer to everyday life than other ratings (Pinilla et al., 2023), but it might also enhance didactic coherence, as it is better aligned with clinical objectives (Rekman et al., 2016). Therefore, trust can be used as a teaching paradigm for assessments of medical students. Further studies are needed to explore this, and additionally, feedback about assessment in practice and standardised patient ratings should be investigated as they provide a different perspective on assessing medical professionals (Duffy et al., 2004).

# 3 Aim 2: Building trust - contributors to trusting relationships

As the introduction shows, trust can be conceptualized in various ways and is a multi-layered construct. General knowledge about what promotes trust mainly refers to the model of Mayer et al. (1995), which includes as contributors to trust the benevolence, competence, and integrity of the trusted person and propensity to trust of the trustor. Within patient-physician trust, it was proposed at an early stage that patients' trust in their physicians is also influenced by the general trust of the population in the profession of the physician itself, which is in general judged to be trustworthy (Mechanic, 1996; Mechanic & Schlesinger, 1996). Mayer et al.'s (1995) model does not cover this influence of general trust on interpersonal trust. Further, it has been suggested that evidence of contributors to patient-physician trust should be summarised in an independent model (Taylor et al., 2023). Within physician-physician trust, the models of the contributors have already included acknowledgment of the influence of the context (Hauer et al., 2014; Holzhausen et al., 2017). This chapter addresses the lack of a conceptual model for patient-physician trust and explores further contextual contributors to trainee-supervisor (physician's trust in another prospective physician) trust.

## 3.1 Trainee-supervisor trust (Paper III by Lerch, Huwendiek, et al. (2023))

Trainee-supervisor trust has gained attention with the implementation of competency-based education and entrustable professional activities in medical education. However, it has always been an essential part of educational perspectives in medical education, where role modelling and trust are key ingredients of postgraduate medical training (Wallenburg et al., 2010). Surprisingly, aside from those focusing on patient-physician trust, there are some conceptual models which map trainee-supervisor trust. The first model is based on a literature review and includes aspects of trainee characteristics, supervisor characteristics, the respective task that needs to be entrusted to the trainee, the relationship, and the context as contributors to trust (Hauer et al., 2014). The second model involves the integration of medical education literature into the model of Mayer et al. (1995), thereby supplementing integrity, benevolence, competence, and propensity to trust with task characteristics and contextual factors (Holzhausen et al., 2017). It is noteworthy that the context is acknowledged in both models, as it does not play a role in the basic research on trust. The role of context might be driven by the fact that clinical service needs must be met by trainees, and these needs can differ depending on the country and educational context (Ten Cate et al., 2016). This clinical need may overshadow whether or not the supervisor trusts the trainee with patient care, and thus clinical service needs may determine the entrustment of patient care. The work for this thesis aimed to further investigate this in different settings of postgraduate education in order to gain insights into how context might shape supervisor trainee trust in the context of postgraduate medical education and how trainees cope if this is perceived as over-trust (Goel et al., 2005). To this end a qualitative interview study was conducted among trainee doctors in geriatric psychiatry in Switzerland (Paper III by Lerch, Huwendiek, et al. (2023)). The interviewees were sampled on the training side (university hospital, public hospital, private hospital), in different settings (in- and outpatient), and for German and French speakers. The interview guide was developed by a psychologist, two medical educators, and two physicians. After development it was piloted with the target group. In total, 12 interviews were conducted via Zoom. A thematic analysis approach was chosen to interpret the data. The results by Lerch, Huwendiek, et al. (2023) showed that situational cues and the institution's organization are relevant if the supervisor trusts trainees with a task. These situational and organizational influences on supervisor-trainee trust might lead to perceived over-trust in trainees (Karp et al., 2019). As perceived over-trust is often a burden, it is common for trainees to apply coping strategies to deal with it (Lerch, Huwendiek, et al., 2023).Therefore, coping styles need to be addressed in medical training as over-trust cannot be prevented all the time. Furthermore, trust can be enabled through the continuity of the relationship between the trainee and the supervisor and through the personal and professional trustworthiness of the supervisor. A psychologically safe work

environment with sufficient health care staff and trainees handling clinical service needs might enable trusting trainee-supervisor relationships. In conclusion, training sites and hospitals can enable trusting relationships between trainees and supervisors by provision of the following: optimised their organizational processes, quality assurance of supervisors, sufficient staffing, and psychological safety at the workplace.

## 3.2 Patient-physician trust (Paper IV by Lerch, Hänggi, et al. (2023))

The heart of medicine is the patient-physician relationship (Brooks, 2009). It is therefore surprising that no evidence-based overall model of the factors contributing to patient-physician trust exists. Previous research has indicated that the physician is perceived as more trustworthy in patient-physician relationships if he/she is consistent in his/her verbal and nonverbal cues, as well as thoughtful, confident, and if he/she more frequently initiates eye contact (Bochmann & Petermann, 1989). Many studies have been published since then on patients' trust in physicians. One aim of the work for this thesis was to synthesize those studies into an overall model of modifiable contributors to patient-physician trust (Paper IV by Lerch, Hänggi, et al. (2023)). To achieve this, a critical review with a systematic approach was chosen; the research questions would have been too broad for a systematic review. Critical reviews are used when the aim is to construct a model (Grant & Booth, 2009; Sutton et al., 2019). After conducting a systematic search, screening, summarizing the contributors to trust, and extracting the modifiable contributors, they were then integrated into a model. Contributors to trust within the patient-physician relationship relate to the physician, the patient, the relationship, and the context. The model can be found in Figure 1. Similar to the case of Mayer et al. (1995) model, physicians' caring (benevolence), competence and communication (competence), and professionalism (integrity) contribute to trust. This work also found that the provision of health education by the physician fosters a trusting relationship. On the patient side, the psychological factors included the patient's propensity to trust, coping style, and health locus of control. The patient's health literacy and education level were also added as contributing factors, as well as the social environment. Physician and patient-related factors and the institutional context were also added to the model (Lerch, Hänggi, et al., 2023). The latter shows the importance of including social trust in one's understanding of interpersonal trust in healthcare, as suggested by Mechanic (1996). A very prominent factor was health education, which could be influenced by the physician, patient, and context, suggesting that promoting health education is a promising intervention to increase trust (Lerch, Hänggi, et al., 2023).

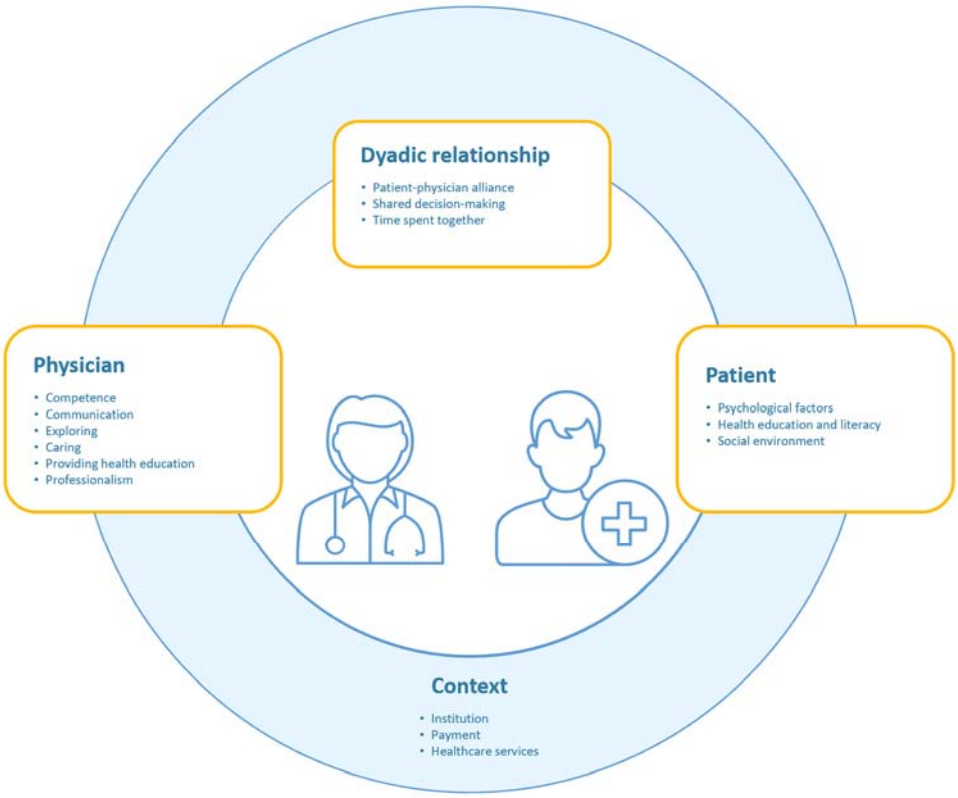


*Figure 1* (Lerch, Hänggi, et al., 2023).The model displays modifiable contributors to patient-physician trust based on a systematic literature search.

Noticeably, those contributors to trust that seem non-modifiable or insignificant (e.g., demographic variables) have been investigated the most, but promising contributors (e.g. health education) have barely been explored (Lerch, Hänggi, et al., 2023). There is a need for improvement in the quality of most studies and research designs. Moreover, not even one study that investigated patient-physician contributors to trust with dyadic methods could be found. Further research needs to adapt improved research designs to investigate trusting relationships, in line with Taylor et al. (2023). The lack of investigations into how digitalized settings influence trust and what needs to be considered in those settings constitute another research gap. A promising exploration German-wide survey on that topic with case vignettes found, that within the case-vignettes with a face-to-face setting, subjects reported higher trust in the physician than in the case-vignettes with digitalized settings (Mayer et al., 2023 ). This was also true for more severe case vignettes with potential deadly diagnosis and embarrassing topics that for example related to skin changes in the pubic region (Mayer et al., 2023). Therefore, more research is needed to identify benefits of digitalized health care settings and how to enhance trustworthiness in those settings.

The contributors identified in the review can be used to help design interventions for medical trainees to enhance trust.

# 4 Aim 3: Enabling healthcare professionals to build trusting relationships

## 4.1 Teaching trust (Paper V by Lerch, Bussmann, et al. 2023))

Examples of how to enable healthcare professionals to build trusting relationships can already be found in Lerch, Hänggi, et al. (2023) review (Paper IV). However, to date, an overview of educational methods for enabling healthcare professionals to build trusting relationships does not exist (Paper V by Lerch, Bussmann, et al. (2023)). Based on the assumption that this skill is essential not only for medical students but for all healthcare professionals, this study addressed not only those educational interventions designed to build trust for the medical profession, but also interventions for all healthcare professions.

The background to this study was that in the last decades, it has been acknowledged in many medical schools that medicine is more than pure biology, leading to the implementation of communication courses into the schools' curricula (Bachmann et al., 2022). This shift came with the introduction of CBME, where communication was made an essential competence for future physicians (Touchie & ten Cate, 2016). Many curricula have longitudinal communication programmes (Jünger et al., 2020). Although this is a very welcome development, some problems exist, primarily when communication skills are taught solely with behavioural scripts that are to be applied (de la Croix, 2022; de la Croix et al., 2022). Skillification means that complex human communication behaviour is reduced to simple skills and behavioural sets to be measured and assessed in the context of medical education (de la Croix et al., 2022). Therefore, communication skills should be taught as tools and attributes that facilitate future healthcare professionals to connect to their patients on a deeper level.

As trust is an essential component of human connection, the goal was to find out how future healthcare professionals can be enabled to build trusting relationships with their patients. The nominal group technique is a suitable way to define new competencies necessary to build trust with patients and corresponding teaching methods (Carraccio et al., 2002). For this purpose, first a symposium with experts from different healthcare professions was conducted on what to teach and how to enable healthcare professionals to build trust with their future patients. Two rounds of the nominal group technique were conducted after the information on what to teach and how to enable trust had been obtained from the invited experts and participants. The nominal group technique protocol (Allen et al., 2004; Harvey & Holmes, 2012) was strictly followed to define what should be taught and how to enable students to build trusting relationships. Key findings of Lerch, Bussmann, et al. (2023) regarding what should be taught included teaching aspects of the healthcare system, including barriers and facilitators to trust, a humanistic attitude, exploring patients' perspectives and context, and being able to deal with diversity, self-reflection, and inner attitude, providing health information adequately, knowledge

about relationships including the importance of ruptures and their repair, promoting patient agency, and professional competence. Methods to teach those aspects are (interprofessional) communication training, educational role-playing, exchange of experiences with actual patients and their relatives, supervised clinical practice, plan-analysis and motive-oriented therapeutic relationships, mindfulness training, (interprofessional) forum theatre, sequential simulations, reflection, feedback, knowledge transfer, video analysis, and language training. The methods that best match the teaching ingredients can be found in Lerch, Bussmann, et al. (2023). The methods of feedback, early supervised clinical practice, including mentoring and role models, and reflection are universal for most components of teaching trust. A significant problem with this study was that it was impossible to find out how the dissonance between classroom and clinical practice can be overcome. This mismatch is called didactic dissonance (Mardian et al., 2023). Due to this limitation of the study and the obtained results, the following recommendations for practice are made: Introduction of teaching fellowships, teaching students to be change agents, introducing early supervised practice, and ensuring continual supervision and mentor relationships (Lerch, Bussmann, et al., 2023).

## 4.2. Compassion as a contributor to trust – compassion training (Paper VI by Felber et al. (2023))

One self-developed example of a teaching session that counteracts the tendency for students to follow behavioural scripts and instead helps students understand the importance of self-compassion and compassion and develop an authentic style of interacting with patients is the “compassion training” (Paper VI by Felber et al. (2023)). Although this training programme does not explicitly address trust, compassion is crucial to patient-physician trust (Canavera, 2021; Cook et al., 2004; Thom & Campbell, 1997). The 1-day elective course for medical students in their final year is based on affective learning objectives (Kratwohl et al., 1975), in light of the skillification of relationship-building. The course includes many guided reflection sessions with teaching staff from different fields (psychology, human medicine, communication, medical education) (Felber et al., 2023). Preparatory material is given, and it is considered that students only have limited preparatory time. Furthermore, a simulation is used with different scenarios for students to experience different conditions and diseases (e.g. acne, high age, obesity, and wheelchair user). For this, age suits, fat suits, wheelchairs and moulages are used. Furthermore, self-compassion training is implemented, and students receive the opportunity to talk with SPs, thereby receiving feedback from them on how the SPs felt in their interactions. During these interactions, students are also asked to look after themselves for a couple of minutes and to practice self-compassion in difficult conversations. At the course evaluation, the students said they would highly recommend the course to others (Felber et al., 2023). They also wished for more time to be allocated to the self-compassion

aspects of the teaching. Compassion ratings were measured before and after the course and the results showed that even though compassion did not increase per se, students' answers were much more differentiated at the end. These differentiated answers show increased self-awareness. The training is now implemented as a 1-day elective at the University of Bern, however, a longitudinal curriculum for compassion and relationship-building is planned. Further studies should evaluate how this training can help enhance compassion towards patients, trust from patients, and the mindfulness and self-compassion of the trainees. Basic principles of the training (affective learning objectives, reflective practice, multiple teachers to ensure close supervision of trainees) can be used to develop other trainings that addresses trust and contributors to trust.

# 5 General Discussion

## 5.1 Summary of the results

Although the concept of psychological, interpersonal trust is hard to grasp, the importance of trust in social interactions cannot be denied. This is especially the case in healthcare and education, where vulnerability and risk – both influencing trust – are currently considered to be very important. This thesis contains an investigation of how interpersonal trust can be built, enabled, and used as a teaching paradigm in the context of medical education. For this, two studies were conducted in which the newest teaching paradigm in medical education, competency-based frameworks, and EPAs, were addressed and the studies and their results were explained in the context of trust research. A qualitative study was conducted to investigate contextual facilitators of and barriers to trainee-supervisor trust in postgraduate training, and precursors of patient-physician trust were integrated within a critical review. The expert consensus study conducted for this thesis revealed what should be taught and how to enable future health care professionals to build trust with their patients. As an example of this, to show how an educational intervention addressing medical students' compassionate care might help address the students' ability to build trusting relationships, a brief article describes a pilot class for medical students. To use the concept of trust as a teaching paradigm, it has been shown in literature that learning objectives can be formulated as discrete clinical tasks (EPAs) that trainees can be trusted with to conduct. Originally, the idea for EPAs was to map the tasks that a society trusts a physician to do (McGaghie et al., 1978; Schumacher et al., 2021), but it is now applied to what supervising physicians trust their trainees to do with the respective degree of supervision. During undergraduate medical studies and even later in postgraduate training, trainees are not completely trusted to practice completely independently (Hirsh et al., 2014). This is in line with basic research about trust, in which trust is described as a continuum (Grünberg & Grünberg, 2014). Although continued research and resulting

changes in training approaches towards competencies and EPAs have been ongoing for more than a decade (Shorey et al., 2019), questions about the optimal implementation still remain. Summarizing the insights of the first study (Paper I by Lerch, Pinilla, et al. (2023)), to implement the trust perspective into curricula, one needs to consider not only societal and institutional views but also the learners' views, and development guidelines and policies should be formed to ensure proper implementation. New training curricula cannot stand alone, however, and do not replace the importance of regular feedback and supervision, and the presence of psychological safety which is especially important when the concept of trust is the foundation of the curriculum. When the concept of trust is used as an aspect in the assessment of trainees, it has the potential to reduce the complexity of any assessment and the cognitive load of the assessors. Moreover, it adds valuable information to the assessment. However, assessors perceived feedback from entrustment scales as more subjective, although the psychometric properties of Paper II (Pinilla et al., 2023) could not confirm this. Furthermore, not only assessors can give feedback to trainees about how much they are trusted, real patients and standardized patients in exams and training situations can also do so and should be included and considered more in the future.

Trainee-supervisor trust has been investigated a lot in the past (also due to the emergence of the use of EPAs), with the conclusion that contextual factors are also precursors of trust. This is in line with basic trust research; hence it was never integrated into psychological models of trust. Summarizing the findings of the interview study conducted for this thesis, supervisors trusting their trainees with clinical tasks is co-determined by clinical service needs and the training side needs to be aware of the facilitators of contextual factors that might lead to over-trust. These include regular, and sufficient supervision by a trustworthy supervisor, providing adequate feedback. Further, educational interventions need to address trainees' coping styles when faced with over-trust. Furthermore, sufficient staffing needs to be ensured on the training side, whereby clinical service needs are the priority. Trainees described psychological safety as an important facilitator of trust (Paper III by Lerch, Huwendiek, et al. (2023)). To address patient-physician trust, the evidence was integrated into a model (Paper IV by Lerch, Hänggi, et al. (2023)). In doing so, the importance of benevolence, competence, integrity, and propensity to trust (Mayer et al., 1995) could be confirmed, however additional contributors to patient-physician trust were found, such as social support of the patient, the health education and literacy of the patient, contextual factors, and relationship factors. That additional contributions were found might also be related to the fact that this relationship is a very specific one, however various trust researchers have already pointed out that the model of Mayer et al. (1995) should be supplemented with the newest evidence of various additional contributors to trust (Dirks & de Jong, 2022).

Enabling health care professionals to build trusting relationships with future patients can be done by means of various teaching ingredients and methods. The most important factors are a longitudinal, safe relationship with supervisors, and regular feedback processes to help students engage in deeper and not only superficial reflection practices. Supervised clinical practice should start as early as possible and supervisors should have the necessary skills to enhance trainees' reflection beyond a superficial level. Further steps are teaching knowledge about the healthcare systems including contextual facilitators of and barriers to trust and empowering trainees to deal with them and be change agents, as well as teaching the trainees about health relationships including ruptures. Mindfulness practices might also be beneficial. However, the problem of classroom teaching dissonance remains; this needs to be addressed through policy (Paper V by Lerch, Bussmann, et al. (2023)).

The "Compassion Training" – despite not addressing trust directly – implements ingredients taken from the teachings for trust. This includes affective instead of solely cognitive learning objectives, relationships with supervisors that enable deep reflection, and mindfulness practices (Paper VI by Felber et al. (2023)).

## 5.2 Joint Interpretations of the results

By integrating the results of the studies presented here, it can be stated that contextual factors matter when trust is built and is to be enabled in the context of medical education. This is also true for the implementation of trust as a teaching paradigm. The psychological model of Mayer et al. (1995) is therefore unsuitable for mapping the picture of trust in the context of medical education; however, the model needs to be extended in any case due to the most recent insights gained from trust research (Dirks & de Jong, 2022) and not only the micro perspective should be considered when investigating trust (Geramanis, 2002) – this also applies to the healthcare context (Taylor et al., 2023). The conclusions of the newest research on trust in the healthcare context recommend the development of a socioecological framework to map the precursors of trust (Hamilton et al., 2023). This is in line with the results of this thesis, as the findings indicate that precursors of trust are in more layers than just personal and interpersonal – although these layers are very prominent, and most findings relate to them. Therefore, the results of all the studies in this thesis were integrated into the socioeconomic model of Bronfenbrenner (1994) as displayed in Figure 2.

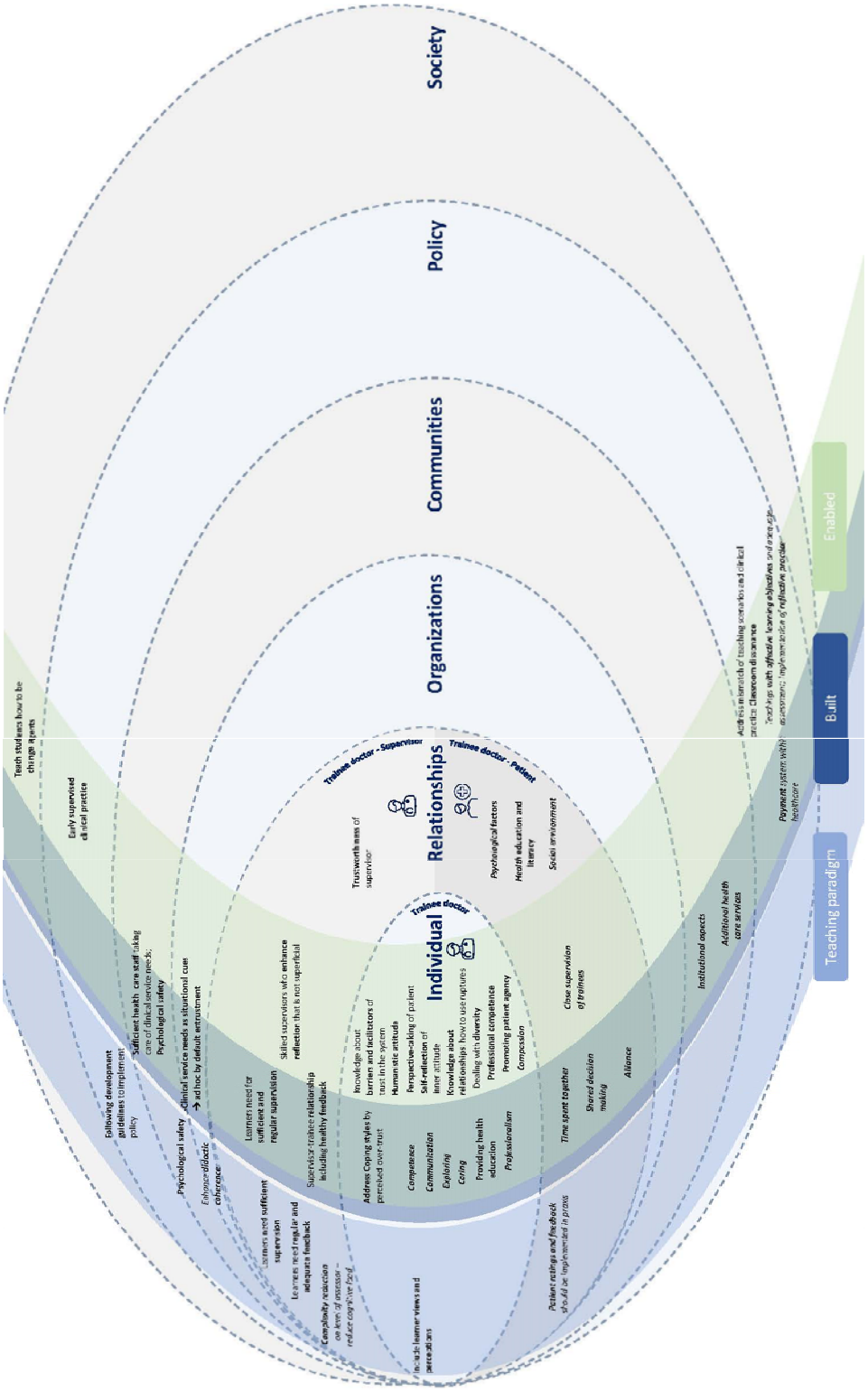


*Figure 2.* This figure shows factors relevant to the use of trust as a teaching paradigm in medical education, and how trust can be built and enabled in the context of medical education integrated into the ecological model of human development from Bronfenbrenner (1994). On the left (named “teaching paradigm”) in blue, Paper I (not italic) and II (in italic) are displayed, within the dark green (named “built”) in the middle, Paper III (not italic) and IV (in italic) are displayed, and on the right in light green (named “enabled”) Paper V (not italic) and VI (in italic) are displayed. Within the relationship section, the further results from Paper III (not italic) and IV (in italic) are displayed. The results are all derived from this dissertation; hence this model is far from complete.

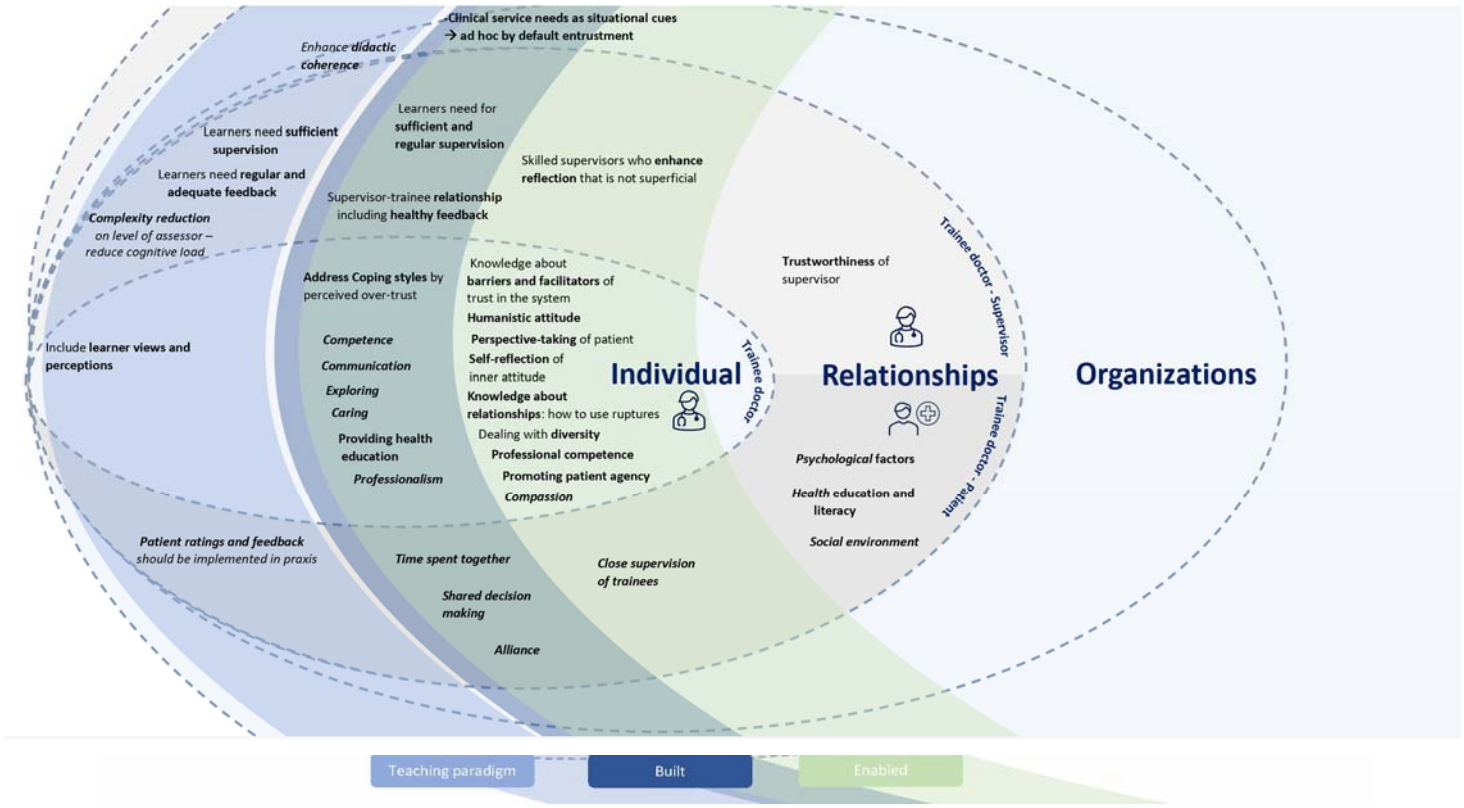


*Figure 3.* A section of figure 2 to make the contents more visible. For further notes see figure 2.

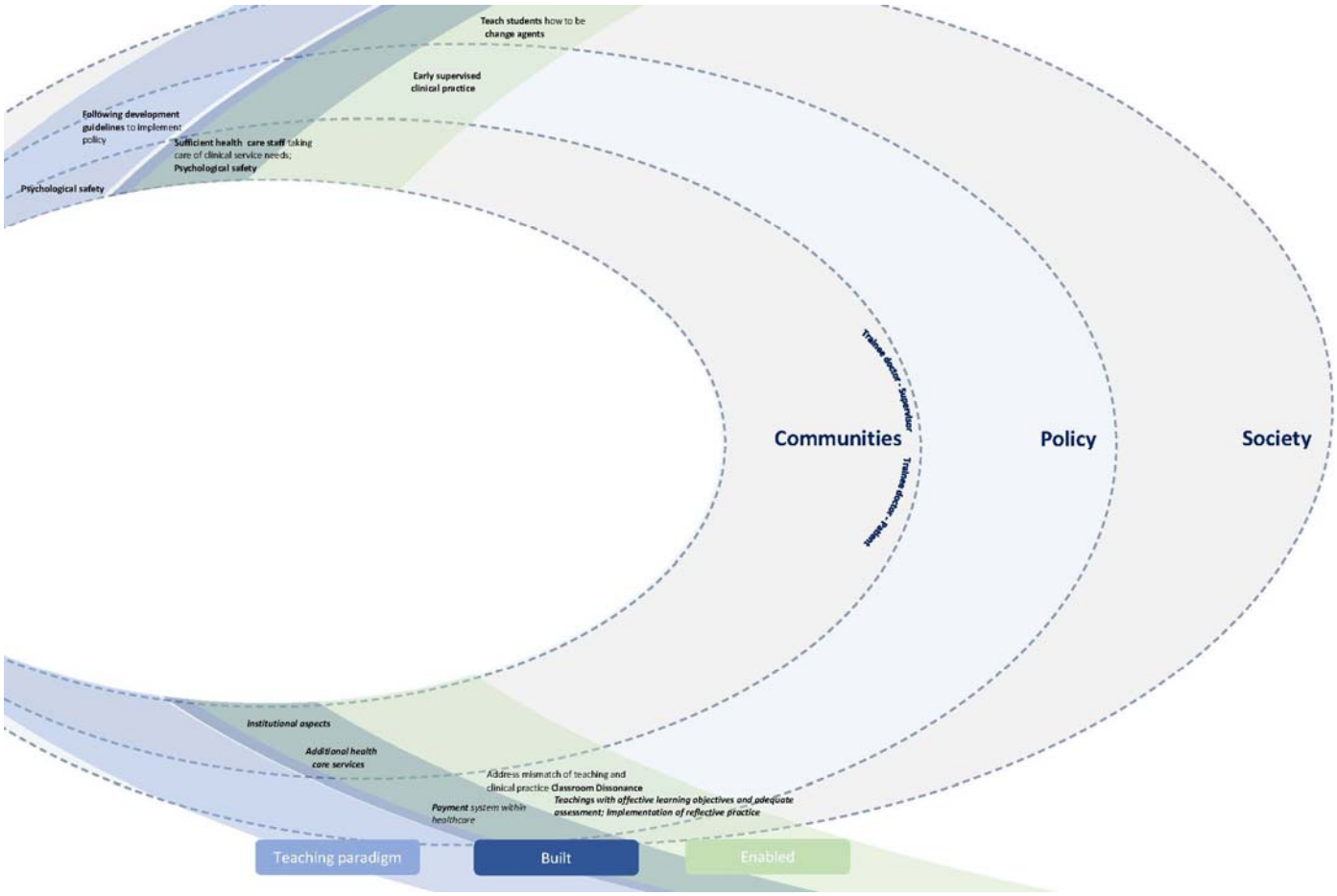


*Figure 4.* A section of figure 2 to make the contents more visible. For further notes see figure 2.

The model includes different layers of how trust can be used as a teaching paradigm, built, and enabled in the context of medical education. These layers include individual, relationship-, organizations-, communities-, policy-, and society-related aspects. In Bronfenbrenner (1994) model, these factors influence each other and are further accompanied by chronicity. As this was not investigated in this thesis, it is not illustrated in the model. However, future research might investigate and integrate the interplay between layers and chronicity of trust. The model only includes aspects that were found within this thesis and is therefore far from complete. The model displays individual facilitators of trust whereas the individual in the model is the trainee. The upper half of the model refers to supervisor-trainee trust whereas the lower half refers to patient-physician and patient-trainee trust.

To use the concept of trust as a teaching paradigm, the learner's views (individual level) need to be included (Paper I Lerch, Pinilla, et al. (2023)). Within the relationship level, sufficient and regular supervision, and regular and adequate feedback are still highly relevant when the concept of trust is used as a teaching paradigm (Paper I by Lerch, Pinilla, et al. (2023)). On the community level, psychological safety is essential (Paper I by Lerch, Pinilla, et al. (2023)). The implementation of new curricula and policies for teaching should follow development guidelines (policy level, Paper I by Lerch, Pinilla, et al. (2023)). When the concept of trust is used in assessments – here in form of entrustment scales – it has the potential to reduce the cognitive load for assessors (relationships level, Paper II by Pinilla et al. (2023)). Further, patient ratings and feedback should be implemented in practice (relationships level, Paper II by Pinilla et al. (2023)).

To foster trainee-supervisor trust in the workplace, trainees' coping styles when faced with perceived over-trust need to be addressed (individual level, Paper III by Lerch, Huwendiek, et al. (2023)). Further, sufficient, and regular supervision of a trainee with a supervisor providing healthy feedback is necessary to build trust on the relationships level (Paper III by Lerch, Huwendiek, et al. (2023)). The trustworthiness of the supervisor matters as well (Paper III by Lerch, Huwendiek, et al. (2023)). Within the organization, clinical service needs as situational cues influence trainee-supervisor trust (Paper III by Lerch, Huwendiek, et al. (2023)). On the community level psychological safety and sufficient staffing were found to be contributors to trainee-supervisor trust (Paper III by Lerch, Huwendiek, et al. (2023)). For patient-physician trust on the individual level, competence, communication, exploring, caring, providing health education, and professionalism are precursors of trust (Paper IV by Lerch, Hänggi, et al. (2023)). On the patient level, the patient's health education and literacy, psychological factors, and the patient's social environment are factors affecting whether trust can be built (Paper IV by Lerch, Hänggi, et al. (2023)). Within the patient-physician relationship, time spent together, shared decision making, and the alliance are relevant for the building of trust (Paper IV by

Lerch, Hänggi, et al. (2023)). The payment system and the availability of additional health care services within the system are contributors to patient-physician trust on the community level (Paper IV by Lerch, Hänggi, et al. (2023)). Institutional aspects (e.g. institutional climate) are relevant on the organizational level (Paper IV by Lerch, Hänggi, et al. (2023)).

To enable trust, it is necessary to address trainees' humanistic attitude, perspective-taking, self-reflection of inner attitude, knowledge about relationships, especially how to use ruptures, knowledge about barriers to and facilitators of trust in the system, dealing with diversity, and professional competence (Paper V by Lerch, Bussmann, et al. (2023)). On the relationship level, skilled supervisors who enhance trainees' reflection so that is not superficial contribute to enabling trainees to build trust with their patients. Within the policy level, early supervised clinical practice and addressing the mismatch of teaching scenarios and clinical practice (classroom dissonance) are factors that play a role in enabling trust (Paper V by Lerch, Bussmann, et al. (2023)). On the societal level, trainees can be taught to be change agents within the system to enable trust (Paper V by Lerch, Bussmann, et al. (2023)). On the individual level, trust can be enabled by training to foster compassion (Paper VI by Felber et al. (2023)). On the relationship level, close supervision of trainees is relevant for enabling trust (Paper VI by Felber et al. (2023)). Within the policy level, teaching with affective learning objectives and adequate assessment, and the implementation of reflective practice are factors which enable trust (Paper VI by Felber et al. (2023)).

Important insights can be drawn from this model: Feedback, healthy long-term relationships with the supervisor as well as sufficient supervision and psychological safety are important for both patient-physician and supervisor-trainee trust as well as for the use of trust as a teaching paradigm. This is elaborated in the next sections.

Firstly, the role of feedback is not a great surprise, as this is a thesis about the context in (medical) education. Feedback is known as one of the most prominent and important tools for teaching effectively (10$^{th}$ place) with a high effect size of 0.73 in teaching (Hattie, 2009). This is also true when trust is to be implemented as a teaching paradigm, as well as built and enabled in the context of medical education. More work is needed to further investigate how knowledge about the effective provision of feedback can be used in the context of medical education and what contextual factors need to be addressed to improve feedback culture in this context. Right behind feedback, the teacher-student relationship is listed as an effective teaching method with an effect size of 0.72 (Hattie, 2009). "Good" supervisor-trainee relationships are not only important for trainee-supervisor trust but might also enable trainees to build trusting relationships with their patients later (Hendren & Kumagai, 2019). The quality of the relationship is not solely dependent on the continuity and length of the relationship, but

it is also beneficial to implement training sessions longitudinally so that a continuous relationship can be built (Bonnie et al., 2022; Hirsh et al., 2014). However, this is not always possible in medical education (Bonnie et al., 2022; Hirsh et al., 2014). In this case, swift trust comes into play, defined as trust emerging quickly in time-limited groups through the reliance on categories (Meyerson et al., 1996). Swift trust has different precursors than trust, and this difference needs to be investigated more to be able to successfully foster trust where continuing and long relationships are not possible. Lastly, psychological safety is relevant for trust in the context of medical education. Psychological safety might relate to the organizational but also the community level. Psychological safety is a similar construct to trust, because mutual influence is involved (Vaida & Ardelean, 2019), and the conceptualization needs to be clear in future studies. Moreover, organisations and health care communities need to foster psychologically safe environments for their trainees, where there is room for improvement (Grailey et al., 2021). Evidence of how to improve psychological safety in healthcare is summarized by O'Donovan and McAuliffe (2020), and specifically for the context of medical education by McClintock et al. (2023).

## 5.3 Strengths and limitations

The strength of this work lies in the consideration of contextual factors to interpersonal trust in the context of medical education. This has been desired in basic research on trust (Dirks & de Jong, 2022) but also in the healthcare context (Taylor et al., 2023). Within this strength lies another strength, namely that the overarching results of the various studies in this dissertation have been synthesised and integrated into a single model that takes the context into account. Further research on the topic can be integrated into Bronfenbrenner (1994) model based on this work. Furthermore, in the healthcare context, trust has often been reduced to an input and predictor of other relevant variables but not as an outcome itself (Taylor et al., 2023), which was partly addressed in the work for this thesis. The diversity of methods - a different methodological approach was chosen in each publication - is another strength of this dissertation.

Even if methodological diversity is a strength, there are some weaknesses in the methodology of the studies in this dissertation: A possible limitation of this thesis is that although interpersonal trust from different trust givers and acceptors is considered, physicians trust in patients, for example, was not investigated itself or dyadically. Further studies will need to incorporate the dyadic nature of trust. Furthermore, although the importance of context in interpersonal trust is a conclusion drawn from this thesis, a specific examination of the role of contextual factors as proposed by other authors (Dirks & de Jong, 2022; Grünberg & Grünberg, 2014; Mechanic, 1996), has only occurred in one study of this thesis. Future studies need to apply study designs allowing the examination of multiple layers of trust at the same time. This

thesis could have benefited from clear conceptualizations and measurements of trust in health care; however, these do not yet exist (Dirks & de Jong, 2022; Hamilton et al., 2023). The studies in this paper were all conducted in a Central European context, mainly in Switzerland. The results can therefore only be generalised to a limited extent. Specific limitations of the single studies are discussed in the respective papers and in the sections of this thesis.

## 5.4 Implications for practice and future research

The lack of conceptualization of psychological trust is a current topic in basic research and a plea has been made for future researchers to work towards a conceptualization (Dirks & de Jong, 2022). In addition to conceptualization, models of trust in basic research need to be revisited and complemented with newest research results, which includes the complementation of contextual factors (Dirks & de Jong, 2022). A socioecological model of trust is also desired for the context of medical education (Hamilton et al., 2023). However, future studies need to involve the further investigation of precursors of trust, and the integration of knowledge into models should be an ongoing process.

Although contextual factors, and not only (inter-)personal factors, matter in trust research, there has been insufficient investigation of interpersonal factors with dyadic methods. This needs to be addressed.

Future research should address – as trust is so important – how it can be rebuilt once it has been lost. Dirks and de Jong (2022) have given an overview of this and, they suggest, for example, that one needs to know whether this break of trust was situational rather than personal (e.g. the theory of attribution by Heider (1978)). Psychotherapy research might also give interesting insights into this.

In addition, the work for this thesis only involved an investigation of trust in a face-to-face setting. As modern technology is emerging, also for the health care setting and therefore medical education, it is necessary to investigate how trusting relationships can be built and enabled within different digitalized settings and what needs to be considered there. It has been suggested that trust is enhanced through face to face settings (Dirks & de Jong, 2022), which has been also hypothesized for the medical setting (Dorsey & Topol, 2016). This was confirmed for a study using case-vignettes in a survey, were potential patients rated trust in the physician higher for face-to-face settings than in digitalized settings (Mayer et al., 2023 )

The recommendation for practice is that the established contributors to trust and the resulting potential mechanisms to enable trust need to be incorporated into teaching programmes and policies.

## 5.5 Conclusion

This thesis explored how interpersonal trust can be built, enabled, and used as a teaching paradigm in the context of medical education. Although this multi-layered concept is hard to grasp, its importance cannot be neglected. Through a series of studies, the results presented in this thesis provide insights into how trust can be built, fostered, and harnessed as a teaching paradigm. This is done through identification of contributors to trust, teaching methods that enable healthcare students to build trust, and the emphasis of the importance of CBME and EPAs. Through an integration of the results into a socioeconomic model it was possible to highlight the significance of feedback, supervisory relationships, and psychological safety. A further key finding is the significance of contextual factors in the development of trust, even when talking about interpersonal trust – hence traditional models of the contributors to trust were extended. These improved models may be used to inform the development of new teaching approaches in medical schools and to enhance trust research, thereby forcing researchers to ensure valid conceptualizations and measurements of trust.

In the context of medical education and healthcare, trust has emerged as the essential factor that connects students, educators, physicians, and patients. This work provides a solid foundation for further research and application of trust in these critical areas. Ultimately, this is expected to help improve healthcare as well as the education of future healthcare professionals. Trust is one of the cornerstones of these fields and requires continued attention and research to support its growth and increase its impact.

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# Appendix I: Paper I

**Lerch, S. P.**, Pinilla, S., Nendaz, M., Klöppel, S., & Huwendiek, S. (2023). Trainee doctors' preparedness for clinical work in geriatric psychiatry: A survey on 18 preliminary entrustable professional activities. *International Journal of Geriatric Psychiatry*, *38*(6), e5954. https://doi.org/10.1002/gps.5954.

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RESEARCH ARTICLE

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# Trainee doctors' preparedness for clinical work in geriatric psychiatry: A survey on 18 preliminary entrustable professional activities

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## Abstract

**Background:** Research concerning transitions from one rotation to another during medical specialist training is scarce. This study examined trainee doctors' perceived preparedness for core clinical activities, trainee doctors' preparedness levels, and general perceptions of medical specialist training in geriatric psychiatry.

**Method:** Swiss trainee doctors in geriatric psychiatry were surveyed about their perceived preparedness for 18 preliminary entrustable professional activities (EPAs), curricular support, and general perceptions of their medical specialist training. Closed questions were analysed using descriptive statistics, while open questions were subjected to content analysis.

**Results:** The participants comprised 48 trainee doctors (30.4% response rate) who differed in their educational experience (years of residency and specialism) and clinical subspecialisation goals. Trainee doctors felt adequately prepared for most EPAs but less prepared for some, including electroconvulsive therapy, psychotherapy, and treating older adults in the home environment or residential facilities. Despite the trainee doctors' diversity, they did not differ significantly in perceived preparedness for most EPAs. The most often offered suggestions for improving geriatric psychiatry training were intensified clinical supervision and a structured induction programme.

**Conclusion:** Trainee doctors reported that they felt sufficiently prepared for most EPAs, regardless of their backgrounds and professional goals. However, several professional activities in geriatric psychiatry warrant further training. Our findings indicate the need for a higher intensity of clinical supervision (e.g. more direct observation and specific feedback), the introduction of structured induction programmes (e.g. orientation week), and specific teachings (e.g. on neurocognitive assessment).

KEYWORDS
clinical supervision, entrustable professional activities, geriatric psychiatry, graduate medical education, perceived preparedness

### Key points

- Clinical activities in geriatric psychiatry, such as electroconvulsive therapy (ECT) and home-treatment, may require further training.
- The trainee doctors' backgrounds had no influence on their perceived preparedness for most clinical tasks in geriatric psychiatry.
- Direct observation of and high-quality feedback for trainees are necessary for effective learning in geriatric psychiatry.
- Intensified clinical supervision and structured induction were suggested to improve geriatric psychiatry specialist training.

## 1 | BACKGROUND

Trainee doctors' preparedness is particularly important for the growing field of geriatric psychiatry, as the world's population is ageing, mental health problems are proliferating, and the older population is more open to seeking help for such issues.[1] Perceived preparedness is crucial for successful clinical workplace learning. However, trainee doctors' preparedness and training needs remain poorly understood.

Geriatric psychiatry is a growing field,[2] on the one hand because the population is ageing and on the other hand because people are more willing to seek support for mental health issues. To take care of geriatric psychiatry patients, qualified personnel in geriatric psychiatry are needed.[3] An option to ensure high-quality and attractive education is a competency-based training approach based on entrustable professional activities (EPAs). Entrustable professional activities are core speciality activities entrusted to trainees once they demonstrate the ability to perform a specialised task well.[4] EPAs have recently been considered suitable for describing graduate training requirements in geriatric medicine across Europe[5] and have also attracted attention in the context of graduate psychiatry training and curriculum development. In curriculum development, constructive alignment is an important framework. Constructive alignment describes the alignment of learning objectives, teaching methods, and assessments regarding content and methods.[6] EPAs are well-suited to improve constructive alignment in clinical learning environments by focusing on the actual tasks that trainees need to master in the workplace.[7]

A systematic review of EPAs in psychiatry identified several studies focusing on graduate training in psychiatry that primarily concerned the development, assessment, and implementation of EPAs. However, no study has been performed regarding the perceived preparedness for EPAs in geriatric psychiatry.[8]

One option for studying EPAs in geriatric psychiatry is perceived preparedness. Perceived preparedness for clinical tasks (e.g. assessing decision-making capacity in geriatric psychiatric patients) is a three-dimensional construct comprising preparedness through academic teaching, domain-specific self-efficacy, and curricular support.[9]. Trainee doctors' preparedness for professional activities upon entering training helps smooth their transition.[10] By contrast, insufficient preparedness for clinical work can have negative consequences for both patients and medical staff, jeopardizing patient safety and elevating costs.[11–13] It further causes stress and anxiety for medical professionals who feel insufficiently prepared,[12,14–16] thereby negatively impacting their learning.[17] In clinical training, perceived preparedness for entering residency is influenced by three sub-ordinated factors: duration and type of education, individual characteristics,[12–14,18] and the working environment.[13]

Studies indicate that trainee doctors are generally prepared to enter clinical work, with the exception of several specific tasks such as psychopharmacologic treatment of geriatric psychiatry patients or performing handovers of a multimorbid geriatric psychiatry patient.[10,19,20] Trainee doctors who studied in the US feel better prepared for several core EPAs than those who studied elsewhere.[20] Preparedness is influenced by trainee doctors' previous experiences: trainee doctors felt more or less prepared for specific EPAs depending on which type of clerkship they had completed (e.g., family medicine, emergency medicine).[19,20] Trainee doctors who had attended boot camps as undergraduates subsequently felt more prepared for professional activities.[19] Perceived preparedness for professional activities depended on which specialization trainee doctors chose for their first rotation.[10] Similar findings apply to perceived preparedness for entering independent practice: preparedness levels differ depending on the fields in which trainee doctors chose to specialize.[21] What is not yet well understood is how well trainees in geriatric psychiatry feel prepared for their professional tasks using formulated EPAs as surrogates for the needed qualifications and competencies. Further, it is not known whether trainee doctors in Switzerland with often different background characteristics differ in their perceived preparedness, as reported for other countries and speciality fields. Furthermore, it is relevant for training centres to know how adequate training is perceived and to collect trainee-doctors' perspectives and ideas for improvement when using an EPA framework. In order to achieve learning, basic

needs such as psychological safety[22] and social needs[23] need to be fulfiled. Therefore, studying the perception of interaction with supervision and the learning climate is also important. This study's purpose was therefore to examine trainee doctors' perceptions of their preparedness for EPAs in geriatric psychiatry, to examine the resident's perceptions of their training (i.e., supervision, feedback, learning climate), and to offer recommendations for improving the clinical curriculum in geriatric psychiatry. In this sense, our results might be helpful for residency training directors, clinical educators, and trainees in geriatric psychiatry. The study was guided by the following three research questions:

1. To what extent do trainee doctors feel prepared and supported in undertaking geriatric psychiatry EPAs?
2. Do trainee doctors with different characteristics differ with respect to perceived preparedness?
3. How do trainee doctors perceive the adequacy of their supervision, feedback, and learning climate, and what are their suggestions for improvement?

## 2 | METHOD

### 2.1 | Study design

We chose a cross-sectional mixed-methods design to investigate the research questions. Cross-sectional designs allowed a broad assessment of trainee preparedness and training experiences at this particular point in time and ensured an actual snapshot of how training in geriatric psychiatry is perceived currently. Using both closed and open questions allowed for richer and detailed data, which aligns with our aim to better understand preparedness, supervision, feedback, the learning climate, and suggestions for improvement. We developed a bilingual (German/French) online questionnaire that was distributed among trainee doctors in geriatric psychiatry in Switzerland between 26 July 2021 and 21 September 2021. According to the responsible ethics committee, the study was exempted from further formal ethical approval (Req-2021-00442).

### 2.2 | Participants

Trainee doctors working in geriatric psychiatry during the survey period were invited to participate in this cross-sectional study and recruited via e-mail through their teaching hospitals' administrations.

### 2.3 | Sampling

Our aim was to receive an exhaustive sample: We invited all trainee doctors in a geriatric psychiatry rotation in Switzerland to participate to reach as many trainee doctors as possible and achieve a nationally representative sample. In order to be able to invite all trainee doctors in geriatric psychiatry training, we contacted all training sites for geriatric psychiatry in Switzerland. Out of 30 geriatric psychiatry training sites in Switzerland, 26 provided us with their trainee doctors' official e-mail addresses. This included 158 trainee doctors' contacts. The four training sites not providing contacts had eight trainee doctors in total. We sent out the invitation to all trainees repeatedly.

### 2.4 | Data collection

The trainee doctors ($n$ = 158) were invited to complete an online questionnaire, followed by two reminders. Each reminder was sent out after 2 weeks of the previous e-mail. Data collection started on July 26, 2021, and was completed on September 21, 2021. Switzerland implements a mandatory 6-month rotation in geriatric psychiatry, which is a requisite for obtaining specialism recognition in psychiatry and psychotherapy.[24] Subsequently, for a subspecialist title in geriatric psychiatry, up to 1 year of a geriatric psychiatry rotation during psychiatry specialist training can be accredited later.[25] A rotation in geriatric psychiatry is also mandatory for obtaining a subspecialist title in geriatrics. This rotation is also at least 6 months in duration and can be accredited up to 1 year. This rotation can be completed during internal medicine specialist training and can later be accredited to subspecialist training in geriatrics.[26] The rotation is voluntary for other speciality fields, such as neurology.

### 2.5 | Questionnaire

#### 2.5.1 | Identification of entrustable professional activities

We compiled a list of 18 specialism-specific EPAs in geriatric psychiatry. These EPAs were identified based on published articles and educational policy documents[27–29] and by contacting regulatory bodies.[30,31] The literature reviewed covered graduate EPAs from geriatric psychiatry,[30] basic graduate psychiatry EPAs,[27] and EPAs from geriatrics.[31] Overlapping or similar definitions and EPAs not specific to geriatric psychiatry were eliminated. Following several rounds of discussion among the research team (including medical education and geriatric psychiatry experts), 18 EPAs were selected for the survey. The selection process is described in more detail in supplement 1. We call these EPAs preliminary as these EPAs are not yet officially implemented in Switzerland.

#### 2.5.2 | Survey development

Our study was informed by the seven-step approach to survey development in educational research.[32] The survey content was informed by Kern's second step in targeted needs assessment for medical education curriculum development.[33] We defined the

following measures: perceived preparedness and curricular support, entrustment, supervision feedback, learning climate, demographic questions, and occupational self-efficacy. We included self-efficacy in the survey considering the three-dimensionality of perceived preparedness.[9] The survey included both closed and open-ended questions. For the closed options, we used a five-point Likert scale that included a "not applicable" option. The scale's allocated codes are detailed in Supplement 3. A forced choice was applied for closed questions but not for open-ended questions. Table 1 and supplement 2 details the questionnaire's measures and pilot testing. In accordance with Messick's Validity Framework,[34] we ensured content validity using the current literature on EPAs in medical education to develop the survey and asked several consultants in geriatric psychiatry for feedback (Supplement 1). The response process was investigated with members of the targeted group through think-aloud interviews and pilot testing to ensure understanding as intended (Supplement 2). Minor adaptions have been made after the think-alouds and pilots for improved clarity.

**TABLE 1** Content of the survey.

| Theme | Questions | Explanation | Research question | Analysis |
|---|---|---|---|---|
| Perceived preparedness and curricular support | Questions 1–4 | The first question included a matrix for all 18 clinical activities (EPAs) (e.g., "how well prepared did you feel by clinical training or medical studies to conduct the following clinical activity?"). | Research question 1 (quantitative) and 2 (quantitative) | Descriptive statistics (question 1) and Man-Whitney-U Test (question 2) |
| Entrustment | Questions 5–8 | Entrustment frequency was measured in a matrix for all 18 EPAs. | Research question 3 | Descriptive statistics |
| Supervision | Questions 9–13 | We asked a general question regarding how adequate residents perceived their supervision to be (from too little to too much) and how this impacted their work and patient safety. We asked which EPAs residents wished to have more or less supervision for. | Research question 3 (quantitative and qualitative) | Descriptive analysis (quantitative aspects) and summative content analysis (qualitative aspects) |
| Feedback | Questions 14–17 | We assessed feedback quality and frequency using two closed questions. We used two open-ended questions to assess how feedback could be improved and what residents perceived as valuable in the feedback they had received to date. | Research question 3 (quantitative and qualitative aspects) | Descriptive analysis (quantitative aspects) and summative content analysis (qualitative aspects) |
| Learning climate | Questions 18–20 | Residents were asked to offer a general judgement of the learning climate in their current geriatric psychiatry training and given the opportunity to provide general feedback in writing. | Research question 3 (quantitative and qualitative aspects) | Descriptive analysis (quantitative aspects) and summative content analysis (qualitative aspects) |
| Demographic questions | Questions 21–35 | We asked demographic questions to assess the diversity of residents in geriatric psychiatry, including educational, demographic, cultural, work experience, and linguistic background; their current workplace situation; and their future goals. The questions were either open-ended, single-choice, or in a matrix (to assess the residents' linguistic skills with respect to Switzerland's four national languages). | Description of sample, research question 2 (quantitative data) | Descriptive statistics and Man-Whitney-U (question 2) |
| Occupational self-efficacy | Questions 36–41 | The brief occupational-self-efficacy scale consisting of six items was used to assess the residents' occupational self-efficacy.[35] | Research question 2 (quantitative) and explorative analysis) | Descriptive statistics, Man-Whitney-U Test (question 2) and Spearman's Rho (explorative analysis) |

## 2.6 | Data analysis

Statistical analyses were performed using Statistical Package for Social Sciences 26 (SPSS, Inc., Chicago, IL). Descriptive statistics were used for all quantitative research questions. For perceived preparedness for EPAs (research question 1), we used the mean as a descriptive measure. The mean is usually accepted if data shows few outliners,[36] which was given in our sample for most EPA-perceived preparedness items. We used QQ plots and histograms to check the distribution.

Group differences were examined using the non-parametric Mann- Whitney U test (MWU). As our hypotheses for research question 2 were non-directional and we aimed to explore whether there were differences between the groups without predicting the direction, we employed the two-tailed MWU. Non-parametric data (ordinal and continuous) can be analysed using the MWU.[37]

We used Spearman's rho to conduct explorative analysis. A $p$-value of $\alpha < 0.05$ was considered significant. We analysed free texts using a summative content analysis approach.[38] To assess sampling bias, we compared respondents' demographic characteristics with data from a national residency database.[39]

# 3 | RESULTS

## 3.1 | Participants' characteristics

A total of 48 trainee doctors completed the questionnaire (response rate = 30.4%). Most respondents were female (61.9%, $n$ = 26). Thirteen (27%) trainee doctors were of Swiss nationality, and 11 countries in total were represented. Most trainee doctors had studied medicine in Switzerland (29.1%, $n$ = 14) or in the European Union (29.1%, $n$ = 14). On average, trainee doctors were 32 months into their medical specialist training, with experience ranging from 1 month to 7 years. In total, 34 (70.8%) trainee doctors planned to specialize in psychiatry and psychotherapy, followed by 9 (18.8%), who pursued specialization in internal medicine. Few (8.3%, $n$ = 4) had already specialized (neurology, internal medicine, surgery) and had begun pursuing additional board certification and/or a subspeciality in psychiatry. Most trainee doctors worked full-time (68.6%, $n$ = 33), while those in part-time employment worked at a full-time equivalent of 50%–80%. Table 2 and supplement 3 details the trainee doctors' characteristics. We compared the characteristics of the final sample to available data from a national trainee database. While we could not rule out sampling biases in terms of over- or underperforming trainee characteristics, we concluded that we had achieved sufficient respondent diversity in terms of age, previous training, and gender. In order to explore potential missed perspectives, we will conduct a follow-up interview study using a purposive sampling strategy.

Compared to the national trainee doctors database,[39] the respondents' characteristics were similar with respect to gender and employment level. In this sample, 61.9% of participants were female, compared to 60.8% female trainee doctors in the national database. Furthermore, 68.8% worked full-time, compared to 66% in 2021. The comparison can be found in supplement 4.

## 3.2 | Preparedness and curricular support for entrustable professional activities in geriatric psychiatry

The survey focused on 18 specialism-specific EPAs (Table 3). Most trainee doctors (83.3%) agreed that all listed EPAs are relevant for clinical practice in geriatric psychiatry.

Trainee doctors felt most prepared for EPA 5 (present geriatric psychiatric patients; mean on Likert scale for preparedness ($M$ = 3.96, SD = 0.884), EPA 11 (psychiatric patients presenting with typical medical problems; $M$ = 3.88, SD = 0.981), EPA 12 (discharge and arrange for follow-up treatment for geriatric psychiatric patients; $M$ = 3.75, SD = 0.934), and EPA 1 (clinical examination, initial diagnostic assessment, and acute measures on geriatric psychiatry patients; $M$ = 3.75, SD = 0.934 (Figure 1). They felt least prepared for EPA 10 (informed consent for ECT; $M$ = 2.76, SD = 1.479), and EPA 14 (assessment in home environment and facilities; $M$ = 3, SD = 1.195). Most EPAs had a mean between 3 and 4, including EPA 13 (geriatric psychiatry consults; $M$ = 3.04, SD = 1.086), EPA 15 (supervise medical students; $M$ = 3.09, SD = 0.1.178), EPA 16 (provide induction for new trainee doctors; $M$ = 3.18, SD = 1.114), EPA 9 (psychotherapeutic intervention; $M$ = 3.25, SD = 1.120), EPA 7 (neurocognitive disorders; $M$ = 3.27, SD = 1.162), EPA 18 (interdisciplinary team rapports; $M$ = 3.37, SD = 1.062), and EPA 6 (assess decision-making capacity; $M$ = 3.38, SD = 1.104), indicating a perception between 'somewhat prepared' and 'well prepared'. Most trainee doctors (31, 64.6%) felt well or very well supported at the beginning of their rotations. Supplement 5 shows the Likert scale distribution for this question. The mean occupational self-efficacy score was 3.82 (SD = 0.68).

### 3.2.1 | Answers to open-ended questions

The most frequently perceived beneficial curricular support was regular supervision (mostly weekly) by a department head, senior attending physician, or consultant (27.1%, $n$ = 13) and availability to respond immediately to questions at least over the telephone (18.8%, $n$ = 9). Some trainee doctors (16.7%, $n$ = 8) responded that a structured induction process supported by other trainee doctors (10.4%, $n$ = 5) and supervisors' provision of literature (10.4%, $n$ = 5) would be helpful. Details of responses to open questions are provided in Supplement 7.

## 3.3 | Differences between subgroups

Male trainee doctors felt better prepared for EPA 10 ($U$ = 99.000; $p$ = 0.022). No gender-based differences were observed for any other

TABLE 2 Characteristics of trainee doctors.

| Respondents' demographic data | Characteristics | N and percentage (%) |
|---|---|---|
| Gender (Male, *n* = 15; 36%) | Male | *n* = 15; 36% |
| | Female | *n* = 26; 62% |
| | 26 | 61.9 |
| | Others/No information | *n* = 7; 15% |
| Nationality | Swiss | *n* = 13; 27% |
| | European countries[a] | *n* = 18; 38% |
| | Others (outside Europe/No information) | *n* = 17; 35% |
| Mother language | Swiss main languages (German, French, Italian) | *n* = 24; 50% |
| | Others[b]/No additional information[c] | *n* = 50% |
| Place of undergraduate study | Switzerland | *n* = 14; 29% |
| Switzerland | European countries (EU) [d] | *n* = 14; 29% |
| Germany (EU) | European country (non-EU)[e] | *n* = 5; 10% |
| Italy (EU) | Others (Asia, North America, Africa[f]/No information) | *n* = 15; 29% |
| Age *M* = 33.2 Md = 31.5; min = 25; max = 58; SD = 5.7) | | |
| Years of residency *M* = 2.9; Md = 3; min = 0; max = 7; SD = 1.6) | | |
| Specialism goal | Psychiatry and psychotherapy | *n* = 34; 71% |
| | Internal medicine | *n* = 9; 19% |
| | Others[g]/No information | *n* = 5; 11% |
| Subspecialty goal | Geriatric psychiatry and psychotherapy | *n* = 13; 27% |
| | Geriatrics | *n* = 11; 23% |
| | Not aiming for specialism | *n* = 10; 21% |
| | Others/No information | *n* = 14; 29% |
| Previous work experiences | ≥3 months psychiatry (no geriatric psychiatry) | *n* = 28; 58% |
| | ≥3 months internal medicine (no geriatrics) | *n* = 25; 52% |
| | ≥3 months others[h] | *n* = 12; 25% |
| | ≥3 months geriatric psychiatry | *n* = 12; 25% |
| | ≥3 months geriatrics | *n* = 10; 21% |
| | ≥3 months neurology | *n* = 9; 20% |
| Previous work experience in geriatric psychiatry | Outpatient | *n* = 13; 27.1% |
| | Inpatient | *n* = 36; 75% |
| | Others/No information | 75.0 *n* = 5; 10% |
| Work setting | Non-university but public hospital | *n* = 20; 42% |
| | University hospital 14 | *n* = 14; 29% |
| | Others (private clinic/practice)/No information | 14.6 *n* = 12; 25% |
| Level of employment | Full-time | *n* = 33; 69% |
| | Part-time | *n* = 14; 29% |
| Total | 48 | 100.0 |

[a]German, French, Italian, Ukraine, Romania, Lithuania, Russia, Hungary, Spain.

[b]Spanish, Serbo-Croatian, Serbian, Romanian.

[c]Other than German, French, Italian, Rhaeto-Romance but not stated which other language.

[d]Germany, Italy, Romania, Latvia, Lithuania, Spain, Hungarian.

[e]Russia, Serbia, Bosnia, Ukraine.

[f]Iran, Tunisia, Mexico.

[g]Neurology, Aims for subspeciality board certification in geriatric medicine; already obtained board certification in internal medicine.

[h]Surgery, pathology, intensive care, emergency medicine, radiology, neurorehabilitation.

**TABLE 3** Specialty-specific Entrustable Professional Activities (EPAs) used for the survey.

| | |
|---|---|
| EPA 1 | Perform clinical examination, initial diagnostic assessment, and acute measures, as needed, on geriatric psychiatry patients |
| EPA 2 | Review medication and prescribe psychopharmacological medication for geriatric psychiatry patients |
| EPA 3 | Conduct geriatric assessment (e.g., internal medicine-neurology examination, nutritional status, mobility status, and fall risk) for diagnosis and treatment planning in geriatric psychiatric patients and initiate appropriate interventions |
| EPA 4 | Assess acute risk of self-harm and harm to others in geriatric psychiatric patients and arrange and carry out appropriate treatment interventions |
| EPA 5 | Present geriatric psychiatric patients (e.g. as part of a ward round) and manage their electronic health records |
| EPA 6 | Assess decision-making capacity in geriatric psychiatric patients |
| EPA 7 | Diagnose (including neurocognitive testing) and treat geriatric psychiatric patients with typical neurocognitive disorders |
| EPA 8 | Lead round-table discussions with geriatric psychiatric patients and their relatives including psychoeducational elements |
| EPA 9 | Perform psychotherapeutic brief interventions with geriatric psychiatric patients |
| EPA 10 | Obtain informed consent from geriatric psychiatric patients for non-invasive stimulation therapies (including electroconvulsive therapy (ECT)) |
| EPA 11 | Examine and treat geriatric psychiatric patients presenting with typical medical problems |
| EPA 12 | Discharge and arrange for follow-up treatment for geriatric psychiatric patients |
| EPA 13 | Conduct geriatric psychiatric consults |
| EPA 14 | Diagnose, assess, and treat geriatric psychiatric patients in the home environment or in residential facilities |
| EPA 15 | Supervise medical students |
| EPA 16 | Provide induction[a] support for new geriatric psychiatric trainee doctors |
| EPA 17 | Lead a ward round with geriatric psychiatric patients |
| EPA 18 | Lead and moderate interdisciplinary team rapports |

*Note*: EPAs 1–18 used for the survey.

[a]By induction we mean a "structured integration as new employees to the new work environment".

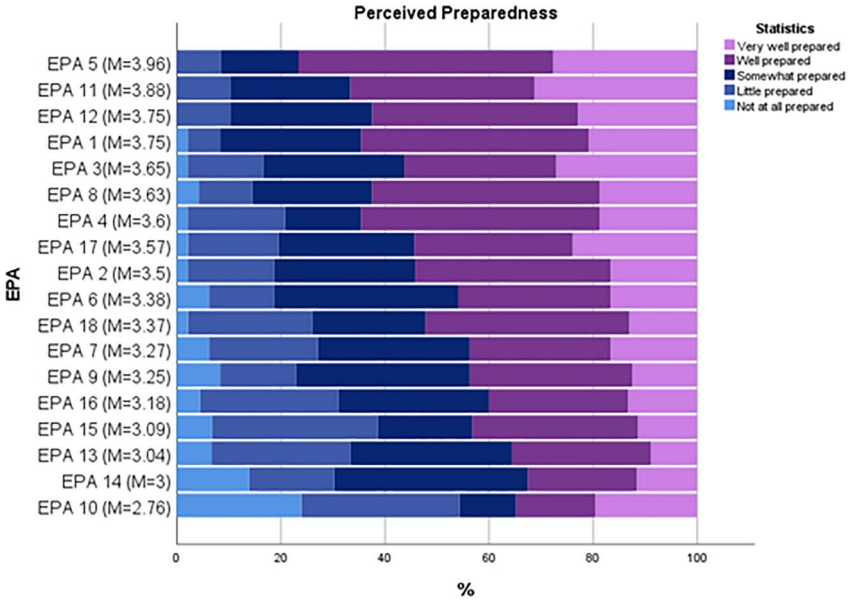


**FIGURE 1** Preparedness for each entrustable professional activitie (EPA). *Note*: The figure shows the perceived preparedness for each EPA from most to least prepared, sorted by mean (*M*). Supplement 6 shows the corresponding table.

EPA. We observed no statistical gender-based difference regarding perceptions of curricular support ($U = 176.000$; $p = 0.901$) or occupational self-efficacy ($U = 183.000$; $p = 0.911$).

Trainee doctors who studied in Switzerland or in a country where one of the main Swiss languages was spoken felt significantly better prepared for EPA 16 than trainee doctors who studied elsewhere ($U = 87.000$; $p = 0.048$). No significant differences emerged regarding other EPAs. No statistical differences emerged between trainee doctors who studied in countries that spoke one of the national Swiss languages and those in other countries for perceived curricular support ($U = 111.000$; $p = 0.314$) or occupational self-efficacy ($U = 131.000$; $p = 0.346$).

Trainee doctors obtaining board certification in psychiatry felt better prepared for EPAs 4 ($U = 109.500$; $p = 0.028$), 10 ($U = 88.500$; $p = 0.024$), and 13 ($U = 94.500$; $p = 0.045$) than trainee doctors pursuing other board certifications (e.g. in internal medicine, geriatrics, neurology). Trainee doctors whose goal was to specialize in psychiatry showed significantly higher self-efficacy ($U = 100.000$; $p = 0.021$).

Trainee doctors who had been in graduate training for three years or more also felt significantly better prepared for EPA 14 ($U = 106.000$; $p = 0.025$) than those who had been in training for less than 3 years. We identified no other experience-based differences in perceived preparedness for clinical activities or other variables.

## 3.4 | Perception of supervision, feedback, and learning climate

Most trainee doctors (52.1%, $n = 25$) stated that the amount of supervision was just right ($M = 2.52$, SD = 1.148) (Supplement 7). Where trainee doctors perceived supervision as excessive, it was mostly for EPAs 1, 2, and 15 (each 6.3%, $n = 3$), while desiring more for EPAs 6 (39.6%, $n = 19$), 2, 3, 7, 9, and 13 (each 25%, $n = 12$). In total, 22 (45.8%) stated that a lack of supervision possibly or certainly caused significant clinical errors. A total of 7 (14.6%) responded that significant errors had negative consequences for patients (a significant error here is an error that would at least not provide the best care for the patient. This would not necessarily lead to an investigation.), 11 (22.9%) said such errors potentially had negative consequences for patients.

Regarding feedback, 26 (54.2%) trainee doctors stated that the amount of feedback they received was just right ($M = 2.7$, SD = 0.749). By contrast, 16 (33.4%) said that they either had too little or far too little feedback. For 28 trainee doctors (58.3%), the quality of the feedback was helpful or very helpful, while 13 (27.1%) found the feedback to be moderately helpful ($M = 3.82$, SD = 1.093) (Supplement 7).

Regarding the learning climate, 26 (54.2%) of the trainee doctors found it to be good or very good. For 13 (27.1%), it was mediocre, and for 8 (16.7%), it was bad or very bad ($M = 3.64$, SD = 1.112) (Supplement 7).

### 3.4.1 | Answers to open-ended questions

Feedback was perceived as helpful if the communication style was constructive, benevolent, appreciative, honest, direct, and specific (20.8%, $n = 10$) and when they had sufficient time to discuss their own errors and opportunities for improvement (14.6%, $n = 7$). Trainee doctors desired feedback more often and regularly (16.7%, $n = 8$), with content tailored to specific topics, such as medical knowledge (14.6%, $n = 7$). Some trainee doctors desired a communication style that was professional, honest, direct, and specific (10.2%, $n = 5$).

Trainee doctors perceived the learning climate as educationally valuable if it included specific teaching on geriatric psychiatry. For some trainee doctors (25%, $n = 12$), interactions with their coworkers were an important learning factor. Some stated that clinical supervision (8.3%, $n = 4$) and structured induction processes (6.3%, $n = 3$) should be improved. Details regarding trainee doctors' feedback and learning climate can be found in Table 4.

## 3.5 | Explorative analysis

Learning climate correlated with perceived curricular support (Spearman's $\rho = 0.714$, $p > 0.001$), perceived quality of supervision (Spearman's $\rho = 0.687$, $p > 0.001$), perceived feedback frequency (Spearman's $\rho = 0.357$, $p = 0.015$), feedback quality (Spearman's $\rho = 0.642$, $p > 0.001$), and self-efficacy (Spearman's $\rho = 0.386$, $p = 0.007$). Reported mistakes (Spearman's $\rho = -0.325$, $p = 0.031$) and significant disadvantages correlated negatively with feedback frequency (Spearman's $\rho = -0.412$, $p = 0.033$).

# 4 | DISCUSSION

Our survey reveals that, while trainee doctors feel prepared for most EPAs in geriatric psychiatry, several specific professional activities warrant further educational attention. Despite the trainee doctors' diversity, they did not differ significantly in perceived preparedness for most EPAs. Regular feedback and supervision were perceived as key factors for effective graduate training and safe patient care. Our findings indicate the need for a higher intensity of clinical supervision, the introduction of structured induction programmes, and specific teachings.

Trainee doctors felt particularly prepared for examination and diagnosis assessment of geriatric psychiatry patients (EPA 1), ward rounds and documenting health records in geriatric psychiatry (EPA 5), examination and treatment of typical medical problems of gerontopsychiatric patients (EPA 11) and their discharge and follow-up care (EPA 12). These activities are partly taught in undergraduate medical education as general competencies or geriatric medicine competencies.[31,32] However, some clinical tasks merit increased attention in geriatric psychiatry training, such as capacity assessment

**TABLE 4** Responses to open-ended questions regarding feedback and learning climate.

| | Received and perceived as helpful | Additionally wished |
|---|---|---|
| Feedback | • Communication style ($n$ = 10, 20.8%)<br>  ○ Constructive<br>  ○ Benevolent<br>  ○ Appreciative<br>  ○ Honest but direct<br>  ○ Specific and concrete<br>• Time and discussion of own mistakes or where there is potential for improvement ($n$ = 7, 14.6%)<br>• Feedback for specific tasks (3, 6.3%)<br>• Positive reinforcement ($n$ = 3, 6.3%) | • Frequency ($n$ = 8, 16.7%)<br>  ○ More frequent and continuous<br>• Content: (7, 14.6%)<br>  ○ Specific medical knowledge and clinical tasks<br>• Communication style (5, 10.4%)<br>  ○ Professionalism<br>  ○ How it is formulated<br>  ○ Open and honest (for problems as well)<br>  ○ Detailed<br>  ○ Individual<br>• Setting (2, 4.2%)<br>  ○ Feedback should not be given "on the run"<br>  ○ Official appointments<br>• Person who gives feedback (2, 4.2%)<br>  ○ Leading and attending physicians should give feedback as well |
| Learning climate | • Clinical teaching ($n$ = 9, 18.8%)<br>  ○ Specific geriatric psychiatry teaching<br>  ○ Interdisciplinary colloquia<br>  ○ Case presentations<br>  ○ Training where active participation is required<br>• Interaction with others ($n$ = 12, 25%)<br>  ○ Collaboration with qualified and experienced supervisors<br>  ○ Discussion with supervisors (e.g., about own activities, diagnoses, comorbidities)<br>  ○ Discussion of patient cases<br>  ○ Support for concrete clinical activities<br>• Gaining experience in caring for geriatric psychiatric patients (4, 8.3%)<br>• Close supervision by superiors (e.g., attending physician, other trainee doctors) (4, 8.3%)<br>• Working environment ($n$ = 3, 6.3%)<br>  ○ Positive working environment<br>  ○ Supportive team<br>  ○ Constructive feedback<br>  ○ Direct communication | • More clinical supervision ($n$ = 4, 8.3%)<br>• Structured induction programme ($n$ = 3, 6.3%)<br>• Better opportunities to prepare for the subject (integration of adult psychiatry and internal medicine, interviewing, dealing with difficult situations, working in residential homes, psychopharmacology, capacity assessment, end-of-life treatments) ($n$ = 3, 6.3%)<br>• More subject-specific (geriatric psychiatry) continuing education ($n$ = 3, 6.3%)<br>• Progress meetings throughout the clinical rotation ($n$ = 2, 4.2%)<br>  ○ Goal setting in an initial conversation followed by progress meetings<br>  ○ Implementation of progress tests<br>• Graduate training by qualified personnel (psychiatrist with subspeciality in geriatric psychiatry) ($n$ = 2, 4.2%)<br>• Better didactic concepts ($n$ = 2, 4.2%)<br>• More treatment guidelines and policies ($n$ = 2, 2.1%)<br>• Inform and control clinical supervisors about educational obligations (2, 2.1%) |

*Note*: In brackets is the overall number of comments on this topic and percentage of overall number of comments of the topic compared to the total amount of trainee doctors filling out the survey ($n$ = 48).

(EPA 6), diagnosis and treatment of neurocognitive disorders (EPA 7), psychotherapeutic interventions for older adults (EPA 9), ECT (EPA 10), geriatric psychiatry consults (EPA 13), treating patients at home and in residential facilities (EPA 14), supervising medical students on geriatric psychiatry wards (EPA 15), providing induction for other trainee doctors in geriatric psychiatry (EPA 16), and leading interdisciplinary geriatric psychiatry team rapports (EPA 18).

EPA 6, 7, and 18 represent typical clinical activities, and it is concerning that trainee doctors felt only somewhat prepared for them. This finding corroborates other researchers' conclusion that capacity assessment warrants greater emphasis in undergraduate medical education.[40] While good curriculum development (junior doctor training) can ensure or improve constructive alignment for all EPAs,[7] the alignment of objectives, teaching methods, and assessments should especially be further investigated and improved for EPAs 6 (capacity assessment), 7 (neurocognitive disorder), and 18 (interdisciplinary team rapports). EPAs 9, 10, 13, and 14 are apparently not performed in all teaching hospitals we surveyed. Teaching hospitals with no opportunities to perform such EPAs should consider other clinical training options, such as expert clinical workshops or supplementary digital learning formats.

Other studies' findings indicate that previous educational experiences prepare medical students sufficiently for residency[9,10,20,21,41]. Our findings also support overall preparedness for medical specialist training in geriatric psychiatry but may help determine which clinical activities require further attention during medical specialist training. Surprisingly, little to no difference emerged in association with trainee doctors' different educational backgrounds and experiences. Previous studies identified differences regarding gender,[9] place of study,[19,20] and experience.[19,20] One possible explanation for this discrepancy is that, for most EPAs, our study identified no differences between more and less experienced trainee doctors. We hypothesize that the relevance of experience depends not on the duration of training but on the quality and type of experience accumulated. We are currently exploring this hypothesis through qualitative interviews.

Our results indicate a moderate correlation between feedback frequency and errors leading to significant disadvantages for patients. Other research groups found that trainee doctors require frequent, content-specific feedback that is delivered appropriately in line with general recommendations.[42,43] Feedback processes and pre-transition preparation are known to support "good" transitions from one rotation to another.[44]

The top three suggestions for improving geriatric psychiatry training were more frequent and high-quality clinical supervision, a structured induction programme, and better opportunities to prepare for geriatric psychiatry. The first finding is in line with the theories of Edmondson[22] and Maslow,[23] indicating that psychological safety needs to be ensured and basic human needs fulfiled to be able to learn. Therefore, a psychologically safe environment with a good learning climate and supervisors who can give appropriate feedback are needed. The last suggestion emphasizes the need for instructional designs that incorporate the specific context of geriatric psychiatry. This includes the different presentations of mental illness in old age, dealing with multimorbidity and polypharmacy as well as specific psychosocial challenges in old age such as stigma, cognitive dysfunction, and end-of-life questions. These findings corroborate studies of medical specialist training in other specializations[45,46] and a summary of faculty development initiatives in clinical supervision and feedback (e.g., dedicated training sessions).[47]

Our study has several strengths. A strength is, that we developed the national bilingual survey according to established guidelines. Further, we incorporated EPAs in investigating preparedness, which is timely and appropriate, as EPAs are being introduced in many graduate medical education contexts.[48]

Our study also has limitations. First, the 30.3% response rate is low. However, this is comparable to other medical education surveys.[9,41,49] This is tolerated in medical education, as survey distributed via e-mail typically have a response rate of around 30%.[50] Surveys can include non-responder bias, which we cannot exclude. However, we compared our study's respondents to a national database and identified no major deviations. The EPAs used in this survey are preliminary, which may represent an additional limitation. Currently, no EPAs are officially used for geriatric psychiatry specialist training in Switzerland. However, we adopted a systematic approach and included different perspectives to determine which EPAs to include.

## 5 | CONCLUSIONS

This study shows that trainee doctors in geriatric psychiatry feel sufficiently prepared for most clinical activities and that few to no differences exist between trainee doctors with different demographic characteristics. However, several clinical activities, such as obtaining consent for ECT, providing psychotherapy to geriatric psychiatric patients, and treating older adults at home or in residential facilities, merit further attention. Evidence-based feedback strategies and clinical supervision represent high-yield approaches to providing safe patient care and achieving the intended educational outcomes. Geriatric psychiatric trainee doctors expect more intense clinical supervision, structured induction programmes, and customized teaching activities. Future studies should also explore the experiences and needs of international medical graduates in European countries specializing in geriatric psychiatry.

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## CONFLICT OF INTEREST STATEMENT

All authors declare that they have no conflicts of interest.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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## SUPPLEMENTARY DATA

- **Supplement 1:** Selection process of the EPAs
- **Supplement 2:** Questionnaire development and data collection
- **Supplement 3:** Characteristics of trainee doctors
- **Supplement 4:** Table of the comparison of our cohort to the national cohort
- **Supplement 5:** Likert-scale responses regarding curricular support, supervision, feedback, and learning climate
- **Supplement 6:** Descriptive statistics of perceived preparedness for each EPA
- **Supplement 7:** Open-ended questions responses regarding curricular support
- **Supplement 8:** Questionnaire

## Supplement 1: Selection process

Once, overlapping or identical EPAs were merged, we discussed in online meetings, which of the remaining EPAs are relevant to geriatric psychiatry in Switzerland. In these meetings, two geriatric psychiatry physicians with medical education experience, and a medical educator were present. The group afterwards received input from the swiss society of geriatric psychiatry, and then discussed the EPAs again to finalize the set.

## Supplement 2: Questionnaire development and data collection.

The final questionnaire for the residents comprised a total of 42 questions.

**Perceived Preparedness and Curricular Support** (Questions 1–4)**:** The first question included a matrix for all 18 clinical activities (EPAs) (e.g., "How well prepared did you feel by clinical training or medical studies to conduct the following clinical activity?").

**Entrustment** (Questions 5–8): Entrustment frequency was measured in a matrix for all 18 EPAs.

**Supervision** (Questions 9–13): We asked a general question regarding how adequate residents perceived their supervision to be (from too little to too much) and how this impacted their work and patient safety. We asked which EPAs residents wished to have more or less supervision for.

**Feedback** (Questions 14–17): We assessed feedback quality and frequency using two closed questions. We used two open-ended questions to assess how feedback could be improved and what residents perceived as valuable in the feedback they had received to date.

**Learning Climate** (Questions 18–20): Residents were asked to offer a general judgement of the learning climate in their current geriatric psychiatry training and given the opportunity to provide general feedback in writing.

**Demographic Questions** (Questions 21–35): We asked demographic questions to assess the diversity of residents in geriatric psychiatry, including educational, demographic, cultural, work experience, and linguistic background; their current workplace situation; and their future goals. The questions were either open-ended, single-choice, or in a matrix (to assess the residents' linguistic skills with respect to Switzerland's four national languages).

**Occupational self-efficacy**: (Questions 36–41) The brief occupational-self-efficacy scale consisting of six items was used to assess the residents' occupational self-efficacy (4).

We used EFS Survey software to design the online questionnaire. The questions were then pretested with residents in geriatric psychiatry using the think-aloud method (5). In the pretest, three residents participated in the think-aloud, and after each question they explained how they understood the question and their approach to answering it. Along with those answers, general feedback was also obtained on the basis of which minor amendments were applied to the survey. The revised survey was piloted (n = 3), and participants reported

the time it took and potential remaining issues that had to be resolved before finalization. After the survey was finalized, it was translated into French and the translated version was pretested in the same way with two Francophone residents.

## Supplement 3: Characteristics of trainee doctors

| Respondents' demographic data | n (respondents) | Percentage (%) |
|---|---|---|
| **Gender** | | |
| Male | 15 | 35.7 |
| Female | 26 | 61.9 |
| Various | 1 | 2.1 |
| No information | 6 | 12.5 |
| **Nationality** | | |
| Swiss | 13 | 27.0 |
| German | 7 | 14.8 |
| French | 1 | 2.1 |
| Italian | 3 | 6.3 |
| Other European countries[1] | 7 | 14.6 |
| Iranian | 1 | 2.1 |
| No information | 16 | 33.3 |
| **Mother language** | | |
| German | 14 | 29.1 |
| French | 7 | 14.6 |
| Italian | 3 | 6.3 |
| Others[2] | 3 | 6.3 |
| No additional information[3] | 21 | 42.8 |
| **Place of Undergraduate Study** | | |
| Switzerland | 14 | 29.1 |
| Germany (EU) | 6 | 12.5 |
| Italy (EU) | 3 | 6.3 |
| European country (EU) [4] | 5 | 10.4 |
| European country (non-EU)[5] | 5 | 10.4 |
| Asia, North America, Africa[6] | 3 | 3.6 |
| No information | 12 | 25.0 |
| **Age** | | |
| 25–29 | 10 | 20.8 |
| 30–34 | 18 | 37.5 |
| 35–39 | 10 | 20.8 |
| 40–44 | 2 | 4.2 |
| 45–49 | 0 | 0 |
| 50–54 | 0 | 0 |
| 55–59 | 1 | 2.1 |
| No information | 7 | 14.6 |
| **Years of Residency** | | |
| < 1 | 8 | 16.7 |
| 1–1.9 | 5 | 10.4 |
| 2–2.9 | 9 | 18.8 |
| 3–3.9 | 8 | 16.7 |
| 4–4.9 | 3 | 6.3 |
| 5–5.9 | 2 | 4.2 |

| | | |
|---|---|---|
| 6–6.9 | 2 | 4.2 |
| 7–7.9 | 1 | 2.1 |
| Specialism internal medicine | 1 | 2.1 |
| No information | 9 | 18.8 |
| **Specialism goal** | | |
| Psychiatry and psychotherapy | 34 | 70.8 |
| Internal medicine | 9 | 18.8 |
| Neurology | 1 | 2.1 |
| Others[7] | 1 | 2.1 |
| No information | 3 | 6.3 |
| **Subspecialty goal** | | |
| Geriatric psychiatry and psychotherapy | 13 | 27.1 |
| Geriatrics | 11 | 22.9 |
| Consultant and liaison psychiatry | 5 | 10.4 |
| Forensic psychiatry | 1 | 2.1 |
| Addiction psychiatry | 1 | 2.1 |
| Not aiming for specialism | 10 | 20.8 |
| Others | 1 | 2.1 |
| No information | 6 | 12.5 |
| **Previous work experiences** | | |
| ≥ 3 months psychiatry (no geriatric psychiatry) | 28 | 58.3 |
| ≥ 3 months geriatric psychiatry | 12 | 25.0 |
| ≥ 3 months internal medicine (no geriatrics) | 25 | 52.1 |
| ≥ 3 months geriatrics | 10 | 20.8 |
| ≥ 3 months neurology | 9 | 18.8 |
| ≥ 3 months others[8] | 12 | 25.0 |
| **Previous work experience in geriatric psychiatry** | | |
| Outpatient | 13 | 27.1 |
| Inpatient | 36 | 75.0 |
| Day clinic | 1 | 2.1 |
| No information | 4 | 8.3 |
| **Work setting** | | |
| University hospital | 14 | 29.2 |
| Private clinic | 7 | 14.6 |
| Non-university but public hospital | 20 | 41.7 |
| Private practice with teaching capacity | 2 | 4.2 |
| No information | 5 | 10.4 |
| **Level of employment** | | |
| 50% | 2 | 4.2 |
| 60% | 5 | 10.4 |
| 70% | 1 | 2.1 |
| 80% | 6 | 16.7 |
| 100% | 33 | 68.8 |
| **Total** | **48** | **100.0** |

## Supplement 4: Table of the comparison of our cohort to the national cohort

| | Survey | National Psychiatry Cohort 2021(6) |
|---|---|---|
| Female trainees (%) | 61.9% | 60.8% |
| Full-time workers (%) | 68.8% | 66% |
| Aiming for psychiatry specialist title | 70.8% | 69.1% |
| Having a Swiss medical diploma | 29.1% | 26.2% |

## Supplement 5: Likert-scale responses regarding curricular support, supervision, feedback, and learning climate

Supplement Table 1 Likert-scale responses (curricular support, feedback and learning culture)

| **Statement** | **Likert score 1 or 2 n (%)** | **Likert score 3 n (%)** | **Likert score 4 or 5 n (%)** | **N.a., n (%)** |
|---|---|---|---|---|
| How well supported did you feel in carrying out the activities in geriatric psychiatry for which you felt inadequately prepared (e.g., through supervision, training, or further education)?[1] | 4 (8.4) | 12 (25) | 31 (64.6) | 1 (2.1) |
| Overall, how would you rate the supervision provided for the work you do?[2] | 15 (31.3) | 25 (52.1) | 4 (8.4) | 4 (8.4) |
| How did you experience the overall frequency of feedback on your work (e.g. from the clinical supervisor or from more experienced colleagues)?[2] | 16 (34) | 26 (55.3) | 5 (10.4) | 1 (2.1) |
| How helpful did you find the feedback type?[3] | 4 (8.9) | 13 (27.1) | 28 (58.4) | 3 (6.3) |
| How would you rate the overall quality of your postgraduate training in geriatric psychiatry?[4] | 8 (17) | 13 (27.1) | 26 (54.2) | 1 (2.1) |

Note: [1] Likert score 1 or 2 = Not at all and slightly supported, Likert score 3 = somewhat supported, Likert score 4 or 5 = Moderately and extremely supported ; [2] Likert score 1 or 2 = Far too little or too little, Likert score 3 = just right, Likert score 4 or 5 = too much or far too much ; [3] Likert score 1 or 2 = not at all or a little helpful, Likert score 3 = somewhat helpful, Likert score 4 or 5 = fairly or very helpful ; [4] Likert score 1 or 2 = very poor or poor, Likert score 3 = average, Likert score 4 or 5 = good or very good; N.a. = Not applicable

## Supplement 6: Descriptive statistics for perceived preparedness for each EPA

Supplement Table 2 Descriptive statistics for preparedness for each EPA

| EPAs | *N* | *M* | *Mo* | *SD* | *Min* | *Max* |
|---|---|---|---|---|---|---|
| EPA 1 | 48 | 3.75 | 4 | .934 | 1 | 5 |
| EPA 2 | 48 | 3.5 | 4 | 1.031 | 1 | 5 |
| EPA 3 | 48 | 3.65 | 4 | 1.101 | 1 | 5 |
| EPA 4 | 48 | 3.6 | 4 | 1.067 | 1 | 5 |
| EPA 5 | 47 | 3.96 | 4 | .884 | 2 | 5 |
| EPA 6 | 48 | 3.38 | 3 | 1.104 | 1 | 5 |
| EPA 7 | 48 | 3.27 | 3 | 1.162 | 1 | 5 |
| EPA 8 | 48 | 3.63 | 4 | 1.044 | 1 | 5 |
| EPA 9 | 48 | 3.25 | 3 | 1.120 | 1 | 5 |
| EPA 10 | 46 | 2.76 | 2 | 1.479 | 1 | 5 |
| EPA 11 | 48 | 3.88 | 4 | .981 | 2 | 5 |
| EPA 12 | 48 | 3.75 | 4 | .934 | 2 | 5 |
| EPA 13 | 45 | 3.04 | 3 | 1.086 | 1 | 5 |
| EPA 14 | 44 | 3 | 3 | 1.195 | 1 | 5 |
| EPA 15 | 43 | 3.09 | 3 | 1.178 | 1 | 5 |
| EPA 16 | 45 | 3.18 | 3 | 1.114 | 1 | 5 |
| EPA 17 | 46 | 3.57 | 4 | 1.109 | 1 | 5 |
| EPA 18 | 46 | 3.37 | 4 | 1.062 | 1 | 5 |

Note: Descriptive statistics for perceived preparedness for each EPA. M = mean, Mo = mode, SD = standard deviation.

## Supplement 7: Responses to open-ended questions regarding curricular support

Supplement Table 3 Responses to open-ended questions (curricular support)

| | Received | Wished to receive |
|---|---|---|
| Curricular Support | • Regular (weekly) supervision through senior physician, attending physician, or head physician (13, 27.1%)<br>• Attending physicians' and senior physicians' availability for questions (in-person and, if not possible, at least over the phone) (9, 18.8%)<br>• Participation in discussions and case reviews with attending physicians and senior physicians (8, 16.7%)<br>• Educational training and teachings (8, 16.7%)<br>• Introduction, either through structured programs or other residents (5, 10.4%)<br>• Provision of literature (5, 10.4%)<br>• Conduction of specific clinical tasks (4, 8.3%)<br>• Rounds with the attending physician (4, 8.3%)<br>• No support (3, 6.3%)<br>• Interdisciplinary colloquia (2, 4.2%)<br>• Constructive feedback on how to improve (1, 2.1%) | • Teachings specific to geriatric psychiatry topics (5, 10.4%)<br>• One-to-one support for concrete, difficult tasks (5, 10.4%)<br>• More support in general from attending physician, senior physician or other residents (5, 10.4%)<br>• Supervision in smaller settings and more regularly (5, 10.4%)<br>• Guidelines for geriatric psychiatry and diagnosis (3, 6.3%)<br>• When residents move to other rotations, old and new residents should overlap for a few weeks (3, 6.3%)<br>• More structure and administrative support (2, 4.2%)<br>• Discuss clinical cases together (2, 4.2%)<br>• Interdisciplinary exchange (e.g., with neurology) (1, 2.1%)<br>• Practical preparations during undergraduate studies (1, 2.1%)<br>• More time (1, 2.1%)<br>• Possibility of hospitation (1, 2.1%) |

Note: The table includes analysed (summative content analysis) open-ended question answers for curricular support (received and additionally wished).

## Supplement 8: Questionnaire

We conducted the survey entirely in German and French. This English translation has been produced solely for this supplement.

We shall begin with questions about different clinical activities in geriatric psychiatry and how prepared you felt for them. For this purpose, please think back* to the first four weeks of your work in geriatric psychiatry.

* If you have been working in geriatric psychiatry for less than four weeks, simply consider your experience to date.

1. To what extent did you feel prepared to perform the following activities (e.g., through your studies or previous clinical work)? Did you feel...?

| | Not at all prepared | Little prepared | Somewhat prepared | Well prepared | Very well prepared | Not applicable |
|---|---|---|---|---|---|---|
| Perform clinical examination, initial diagnostic assessment, and acute measures, as needed, on geriatric psychiatry patients | | | | | | |
| Review medication and prescribe psychopharmacological medication for geriatric psychiatric patients | | | | | | |
| Conduct geriatric assessment (e.g., internal medicine-neurology examination, nutritional status, mobility status, and fall risk) for diagnosis and treatment planning in geriatric psychiatric patients and initiate appropriate interventions | | | | | | |
| Assess acute risk of self-harm and harm to others in geriatric psychiatric patients and arrange and carry out appropriate treatment interventions | | | | | | |
| Present geriatric psychiatric patients (e.g., as part of a ward round) and manage their electronic health records | | | | | | |
| Assess decision-making capacity in geriatric psychiatric patients | | | | | | |
| Diagnose (including neurocognitive testing) and treat geriatric psychiatric patients with typical neurocognitive disorders | | | | | | |
| Lead round-table discussions with geriatric psychiatric patients and their relatives, including psychoeducational elements | | | | | | |
| Perform brief psychotherapeutic interventions with geriatric psychiatric patients | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Obtain informed consent from geriatric psychiatric patients for non-invasive stimulation therapies (including electroconvulsive therapy (ECT)) | | | | | | |
| Examine and treat geriatric psychiatric patients presenting with typical medical problems | | | | | | |
| Discharge and arrange for follow-up treatment for geriatric psychiatric patients | | | | | | |
| Conduct geriatric psychiatry consults | | | | | | |
| Diagnose, assess, and treat geriatric psychiatric patients in the home environment or in residential facilities | | | | | | |
| Supervise medical students | | | | | | |
| Provide induction support for new geriatric psychiatric residents | | | | | | |
| Lead a ward round with geriatric psychiatric patients | | | | | | |
| Lead and moderate interdisciplinary team discussions | | | | | | |

2. How well supported did you feel in carrying out the activities in geriatric psychiatry for which you felt inadequately prepared (e.g., through supervision, training, or further education)?

| Not at all supported | Slightly supported | Somewhat supported | Moderately supported | Extremely supported | Not applicable |
|---|---|---|---|---|---|

3. In what ways have you been supported during your first four weeks?

4. What kind of support would you have liked (in addition)?

Here, we ask you questions about the frequency and relevance of typical clinical activities in geriatric psychiatry. Please think about **your entire time** in geriatric psychiatry to date.

5. Have you performed the following activities during your previous work in geriatric psychiatry and if so, how often?

| | Never | Fewer than 5x per month | Between 6 and 10x per month | Between 11 and 20x per month | > 20x per month | Not applicable |
|---|---|---|---|---|---|---|
| Perform clinical examination, initial diagnostic assessment, and acute measures, as needed, on geriatric psychiatry patients | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Review medication and prescribe psychopharmacological medication for geriatric psychiatry patients | | | | | | |
| Conduct geriatric assessment (e.g., internal medicine-neurology examination, nutritional status, mobility status, and fall risk) for diagnosis and treatment planning in geriatric psychiatric patients and initiate appropriate interventions | | | | | | |
| Assess acute risk of self-harm and harm to others in geriatric psychiatry patients and arrange and carry out appropriate treatment interventions | | | | | | |
| Present geriatric psychiatry patients (e.g., as part of a ward round) and manage their electronic health records | | | | | | |
| Assess decision-making capacity in geriatric psychiatry patients | | | | | | |
| Diagnose (including neurocognitive testing) and treat geriatric psychiatry patients with typical neurocognitive disorders | | | | | | |
| Lead round-table discussions with geriatric psychiatry patients and their relatives, including psychoeducational elements | | | | | | |
| Perform brief psychotherapeutic interventions with geriatric patients | | | | | | |
| Obtain informed consent from geriatric psychiatry patients for non-invasive stimulation therapies (including electroconvulsive therapy (ECT)) | | | | | | |
| Examine and treat geriatric psychiatry patients presenting with typical medical problems | | | | | | |
| Discharge and arrange for follow-up treatment for geriatric psychiatry patients | | | | | | |
| Conduct geriatric psychiatry consults | | | | | | |
| Diagnose, assess, and treat geriatric psychiatry patients in the home environment or in residential facilities | | | | | | |
| Supervise medical students | | | | | | |
| Provide induction support for new geriatric psychiatry residents | | | | | | |
| Lead a ward round with geriatric psychiatry patients | | | | | | |
| Lead and moderate interdisciplinary team discussions | | | | | | |

6. Are there other activities in geriatric psychiatry that you find relevant that are not included in the list above?

7. Of the activities listed below, do you consider any to be less relevant to the field of geriatric psychiatry?

| |
|---|
| Perform clinical examination, initial diagnostic assessment, and acute measures, as needed, on geriatric psychiatry patients |
| Review medication and prescribe psychopharmacological medication for geriatric psychiatry patients |
| Conduct geriatric assessment (e.g., internal medicine-neurology examination, nutritional status, mobility status, and fall risk) for diagnosis and treatment planning in geriatric psychiatric patients and initiate appropriate interventions |
| Assess acute risk of self-harm and harm to others in geriatric psychiatry patients and arrange and carry out appropriate treatment interventions |
| Present geriatric psychiatry patients (e.g., as part of a ward round) and manage their electronic health records |
| Assess decision-making capacity in geriatric psychiatry patients |
| Diagnose (including neurocognitive testing) and treat geriatric psychiatry patients with typical neurocognitive disorders |
| Lead round-table discussions with geriatric psychiatry patients and their relatives, including psychoeducational elements |
| Perform brief psychotherapeutic interventions with old age patients |
| Obtain informed consent from geriatric psychiatry patients for non-invasive stimulation therapies (including electroconvulsive therapy (ECT)) |
| Examine and treat geriatric psychiatry patients presenting with typical medical problems |
| Discharge and arrange for follow-up treatment for geriatric psychiatry patients |
| Conduct geriatric psychiatry consults |
| Diagnose, assess, and treat geriatric psychiatry patients in the home environment or in residential facilities |
| Supervise medical students |
| Provide induction support for new geriatric psychiatry residents |
| Lead a ward round with geriatric psychiatry patients |
| Lead and moderate interdisciplinary team discussions |
| I consider all of the activities to be of relevance |

8. Why do you consider the activity(ies) you have chosen to be less relevant?

Below, we ask questions about how you perceived the level of independence for the typical activities of geriatric psychiatry throughout **your entire time** in geriatric psychiatry to date.

9. Were there any activities for which you would have preferred less supervision (i.e., more independence)? If so, which ones?

| |
|---|
| Perform clinical examination, initial diagnostic assessment, and acute measures, as needed, on geriatric psychiatry patients |
| Review medication and prescribe psychopharmacological medication for geriatric psychiatry patients |
| Conduct geriatric assessment (e.g., internal medicine-neurology examination, nutritional status, mobility status, and fall risk) for diagnosis and treatment planning in geriatric psychiatric patients and initiate appropriate interventions |
| Assess acute risk of self-harm and harm to others in geriatric psychiatry patients and arrange and carry out appropriate treatment interventions |
| Present geriatric psychiatry patients (e.g., as part of a ward round) and manage their electronic health records |
| Assess decision-making capacity in geriatric psychiatry patients |
| Diagnose (including neurocognitive testing) and treat geriatric psychiatry patients with typical neurocognitive disorders |
| Lead round-table discussions with geriatric psychiatry patients and their relatives, including psychoeducational elements |
| Perform brief psychotherapeutic interventions with old age patients |
| Obtain informed consent from geriatric psychiatry patients for non-invasive stimulation therapies (including electroconvulsive therapy (ECT)) |
| Examine and treat geriatric psychiatry patients presenting with typical medical problems |
| Discharge and arrange for follow-up treatment for geriatric psychiatry patients |
| Conduct geriatric psychiatry consults |
| Diagnose, assess, and treat geriatric psychiatry patients in the home environment or in residential facilities |
| Supervise medical students |
| Provide induction support for new geriatric psychiatry residents |
| Lead a ward round with geriatric psychiatry patients |
| Lead and moderate interdisciplinary team discussions |
| For no activity/ No information |

10. Were there any activities for which you would have liked more supervision (i.e., less independence)? If so, which ones?

| |
|---|
| Perform the clinical examination, initial diagnostic assessment, and acute measures, as needed, on geriatric psychiatry patients |
| Review medication and prescribe psychopharmacological medication for geriatric psychiatry patients |
| Conduct geriatric assessment (e.g., internal medicine-neurology examination, nutritional status, mobility status, and fall risk) for diagnosis and treatment planning in geriatric psychiatric patients and initiate appropriate interventions |

| |
|---|
| Assess acute risk of self-harm and harm to others in geriatric psychiatry patients and arrange and carry out appropriate treatment interventions |
| Present geriatric psychiatry patients (e.g. as part of a ward round) and manage their electronic health records |
| Assess capacity of decision-making in geriatric psychiatry patients |
| Diagnose (including neurocognitive testing) and treat geriatric psychiatry patients with typical neurocognitive disorders |
| Lead round-table discussions with geriatric psychiatry patients and their relatives including psychoeducational elements |
| Perform psychotherapeutic brief interventions with old age patients |
| Obtain informed consent from geriatric psychiatry patients for non-invasive stimulation therapies (including electroconvulsive therapy (ECT)) |
| Examine and treat geriatric psychiatry patients presenting with typical medical problems |
| Discharge and arrange for follow-up treatment for geriatric psychiatry patients |
| Conduct geriatric psychiatry consults |
| Diagnose, assess, and treat geriatric psychiatry patients in the home environment or in residential facilities |
| Supervise medical students |
| Provide induction support for new geriatric psychiatry residents |
| Lead a ward round with geriatric psychiatry patients |
| Lead and moderate interdisciplinary team discussions |
| For no activity/ No information |

11. Overall, how would you rate the supervision provided for the work you do?

| Far too little | Too little | Just right | Too much | Far too much | Not applicable |
|---|---|---|---|---|---|

12. In your experience, has insufficient supervision during work time led to a significant error?

- ☐ Yes
- ☐ No
- ☐ Maybe
- ☐ Not applicable

13. Did this error result in a disadvantage for the patient?

- ☐ Yes
- ☐ No
- ☐ Maybe
- ☐ Not applicable

Below, we ask you several further questions about feedback (**e.g., from your clinical supervisor or from more experienced colleagues**). These questions also relate to **your entire time** in geriatric psychiatry.

14. How did you experience the overall frequency of feedback on your work (e.g. from the clinical supervisor or from more experienced colleagues)?

| Far too little | Too little | Just right | Too much | Far too much | Not applicable |
|---|---|---|---|---|---|

15. How helpful did you find the feedback type?

| Not at all helpful | Little helpful | Somewhat helpful | Fairly helpful | Very helpful | Not applicable |
|---|---|---|---|---|---|

16. What did you find particularly helpful about the feedback?

17. What could be improved about the feedback?

Here, we ask general questions about your perception of the **quality** of your postgraduate training in geriatric psychiatry.

18. How would you rate the overall quality of your postgraduate training in geriatric psychiatry?

| Very poor | Poor | Average | Good | Very Good | Not applicable |
|---|---|---|---|---|---|

19. What in your postgraduate training did you experience as particularly supportive for your learning?

20. What do you think should be improved most urgently in geriatric psychiatry training?

Here, we ask several further **questions about your personal characteristics.**

21. What is your gender?

- ☐ Male
- ☐ Female
- ☐ Other
- ☐ Not applicable

22. Which is your nationality(ies)?

23. Please indicate which of Switzerland's national languages you speak and at what level.

| | Not at all | Basic user | Independent user | Proficient user | Native language | Not applicable |
|---|---|---|---|---|---|---|
| German | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| French | | | | | | |
| Italian | | | | | | |
| Rhaeto-Romance | | | | | | |

24. How old are you (in years)?

25. What is your native language?

26. In what country did you study medicine?

27. For how many months did you work as a resident before you began your rotation in geriatric psychiatry?

28. Which specialist title are you aiming for?
- □ Psychiatry and psychotherapy
- □ General internal medicine
- □ Neurology
- □ Other
- □ Not applicable

29. Are you also aiming for a focal title? If so, which one?
- □ Geriatrics
- □ Geriatric psychiatry and psychotherapy
- □ Consultant and liaison psychiatry
- □ Forensic psychiatry and psychotherapy
- □ Psychiatry and psychotherapy of addictive disorders
- □ I am not aiming for a focal title
- □ Other
- □ Not applicable

30. Do you already have a specialist title? If yes, which one?

31. Please indicate your previous field(s) of work in which you have worked for longer than three months during your period of further education.
- □ Psychiatry and psychotherapy (incl. specialties, excl. geriatric psychiatry)
- □ Geriatric psychiatry and psychotherapy
- □ Internal medicine (incl. disciplines such as cardiology but excl. specialisation in geriatrics)
- □ Geriatrics
- □ Neurology
- □ Others
- □ Not applicable

There follow several further **questions about your employment.**

32. In what setting of geriatric psychiatry have you worked so far?

- Outpatient
- Inpatient
- Day-care clinic
- Not applicable

33. In which institutional setting do you currently work?

- University hospital
- Private hospital
- Public hospital (not university)
- Practice
- Other

34. What is your current employment level? (e.g. 100%)

35. Do you work in an integrated general psychiatric unit with geriatric psychiatric patients or in a unit with a specialisation in geriatric psychiatry and psychotherapy?

- Integrated general psychiatric department (can be credited for compulsory rotation in geriatric psychiatry but not exclusively geriatric psychiatric patients are treated)
- Geriatric psychiatry department (department with a focus on geriatric psychiatry and psychotherapy in which you only treat geriatric psychiatric patients)
- Not sure
- Not applicable

There follow several further questions about your **general approach to work-related difficulties**.

36. I can remain calm when facing difficulties in my job because I can rely on my abilities.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree | Not applicable |
|---|---|---|---|---|---|

37. When I am confronted with a problem in my job, I can usually find several solutions.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree | Not applicable |
|---|---|---|---|---|---|

38. Whatever comes my way in my job, I can usually handle it.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree | Not applicable |
|---|---|---|---|---|---|

39. My past experiences in my job have prepared me well for my occupational future.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree | Not applicable |
|---|---|---|---|---|---|

40. I meet the goals that I set for myself in my job.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree | Not applicable |
|---|---|---|---|---|---|

41. I feel prepared for most of the demands in my job.

| Strongly Disagree | Disagree | Undecided | Agree | Strongly Agree | Not applicable |
|---|---|---|---|---|---|

42. Do you have any feedback on the questionnaire or other comments?

Thank you very much for completing the questionnaire.
We wish you all the best in your postgraduate training.

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## Appendix II: Paper II

Pinilla, S., **Lerch, S.**, Lüdi, R., Neubauer, F., Feller, S., Stricker, D., Berendonk, C., & Huwendiek, S. (2023). Entrustment versus performance scale in high-stakes OSCEs: Rater insights and psychometric properties. *Medical teacher*, 1-8. https://doi.org/10.1080/0142159X.2023.2187683.

**Lerch's contribution according to the contributor roles taxonomy (CRediT) author statement (Allen et al., 2019):** Conceptualization, data curation, formal analysis, investigation, methodology, writing – review and editing.

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# Entrustment versus performance scale in high-stakes OSCEs: Rater insights and psychometric properties

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**ABSTRACT**

**Background:** Although entrustment scales are increasingly applied in workplace-based assessments, their role in OSCEs remains unclear. We investigated raters' perceptions using an entrustment scale and psychometric analyses.

**Method:** A mixed-methods design was used. OSCE raters' ($n = 162$) perceptions were explored *via* questionnaire and four focus groups ($n = 14$). Psychometric OSCE properties were analyzed statistically.

**Results:** Raters ($n = 53$, response rate = 41%) considered the entrustment scale comprehensible (89%) and applicable (60%). A total of 43% preferred the entrustment scale, 21% preferred the global performance scale, and 36% were undecided. Raters' written comments indicated that while they appreciated the authenticity of entrustment levels, they considered them subjective. The focus groups highlighted three main themes: (1) recollections of the clinical workplace as a cognitive reference triggered by entrustment scales; (2) factors influencing entrustment decisions; and (3) cognitive load is reduced at the perceived cost of objectivity. Psychometric analyses ($n = 480$ students) revealed improvements in some OSCE metrics when entrustment and global performance scales were combined.

**Conclusion:** Entrustment scales are beneficial for high-stakes OSCEs and have greater clinical relevance from the raters' perspective. Our findings support the use of entrustment and global performance scales in combination.

**KEYWORDS**
Entrustment scale; objective structured clinical examination; undergraduate medical education

## Introduction

Objective structured clinical examinations (OSCEs) have been the gold standard in high-stakes clinical competence assessments in health education since their inception (Harden et al. 1975; Patrício et al. 2013). In combination with knowledge tests, OSCEs are used in national licensing assessment designs for undergraduate medical students (Guttormsen et al. 2013; Berendonk et al. 2015; Huwendiek et al. 2020). Amid the shift toward programmatic assessment frameworks and the systematic introduction of entrustable professional activities (EPAs), educators must integrate an increasing array of assessment formats and scales (CarlLee et al. 2019; Heeneman et al. 2021; Torre et al. 2021). A more recent assessment construct used in workplace-based EPA assessments centers on entrustability and supervision levels (ten Cate et al. 2020, 2021). Although entrustment scales are increasingly employed in workplace-based assessments, their utility in the context of OSCEs remains underexplored. Therefore, raters' perspectives on the use of entrustment scales in OSCEs and their psychometric properties warrant further exploration.

While OSCEs operate according to an established structure with respect to standardized clinical cases and time per case, other elements of the OSCE format may vary. For example, educators may choose which rating scale is used for evaluation (Newble 2004; Boursicot et al. 2019). The advantages and disadvantages of checklists compared to global rating scales have been studied extensively (Regehr et al. 1998; Hodges and McIlroy 2003; Ilgen et al. 2015). Global rating scales appear more appropriate for advanced students performing complex patient interaction tasks and have been shown to have higher inter-item and inter-station reliability than checklists (Ilgen et al. 2015). Rating scales based on entrustment levels should thus be considered for OSCEs that use stations with

### Practice points

- Entrustment scales in OSCEs are perceived as mental triggers of the clinical supervision context.
- Raters prefer assessing trainees using entrustment levels rather than performance ratings; however, both had perceived benefits.
- OSCEs' psychometric properties showed improvements when an entrustment scale was added.
- The use of entrustment and performance scales in combination appears beneficial.

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complex patient interactions and are conducted near graduation.

The use of the 'entrustment' construct for rating scales is appealing for two key reasons. The first is entrustment decisions' proximity to actual workplace-based teaching scenarios (Hauer et al. 2014, 2015; Rekman et al. 2016; Holzhausen et al. 2017; ten Cate et al. 2020). Second, the question of whether a trainee can be trusted with clinical activities immediately resonates with clinical raters because it is an implicit and sometimes explicit cognitive process that reflects the extent to which trainees are or are not involved in clinical care (Weller et al. 2014; Pinilla et al. 2021). The psychometric properties of entrustment scales and raters' perceptions of them in OSCEs remain unclear. An exploratory study using an entrustment scale demonstrated entrustment's meaningful contribution to OSCEs (Holzhausen et al. 2019).

We explored raters' perceptions using an entrustment scale in addition to a global performance rating scale in standardized high-stakes OSCEs *via* questionnaire and focus groups. We further investigated its impact on OSCEs' psychometric properties. The findings may be relevant for future OSCE development, including entrustment scales and their integration into assessment programs used for summative entrustment decisions.

## Methods

### Ethics

The ethics committee of the canton of Bern reviewed the research design and exempted the study from additional ethical approval. Confidentiality and anonymity regarding electronic data were maintained throughout the study. Any potentially identifying information was omitted, and names were pseudonymized before analysis. Students and raters were informed that an entrustment scale would be used for research purposes. All direct quotes were translated from German to English.

We employed a mixed-methods design, integrating qualitative and quantitative data within a pragmatic paradigm (Maudsley 2011; Lavelle et al. 2013). Analysis of the closed questions on the raters' questionnaire was descriptive, and directed content analysis was used for the free text answers (Hsieh and Shannon 2005). For the analysis of the focus groups, we used a thematic analysis approach (Braun and Clarke 2006). Thematic analysis is a pragmatic qualitative analysis approach involving the search for themes across a data set. Thematic analysis is theoretically flexible and can be adapted to the specific context of a given study. OSCE rating scales were analyzed quantitatively, following Pell et al.'s (2010) use of the determination coefficient, the intergrade discrimination, and the discrimination index as well as between-group variation. The study's purpose was exploratory, with an overall approach informed by theories of entrustment and programmatic assessment (Hauer et al. 2015; Holzhausen et al. 2017; Heeneman et al. 2021). Units of analysis included OSCE raters' meaning-making statements, Likert-item scale evaluation ratings, students' performances, and prospective entrustment ratings.

### OSCE setting

The fifth-year OSCE included nine stations per day (total of five OSCE days for both cohorts included in this study), with cases from internal medicine, gynecology (did not include physical examination), orthopedics, surgery, dermatology, ophthalmology, endocrinology, psychiatry, and pediatrics. The examination context and setting of OSCEs at our institution have been described in a previous publication (Krings et al. 2021). Time per OSCE station was 13 min per candidate. Raters ($n = 162$) were either experienced raters or were prepared through specific rater training. We sampled two student cohorts (total $n = 480$, $n$ (cohort 2020) $= 235$, $n$ (cohort 2021) $= 245$). Owing to the COVID-19 pandemic, the two independent student cohorts underwent OSCEs in spring 2021 (academic year 2020/21). All examinations were conducted in German.

### Assessment scales used for study

Each student was evaluated using case-specific checklist items, a global performance scale, and an entrustment scale. The case-specific checklist items covered history taking, physical examination, and suggested medical management. The global performance scale comprises three levels (good, sufficient, insufficient). The five-level entrustment scale was developed based on published recommendations and think-aloud interviews with two experts (active clinical supervisors and simultaneously experienced OSCE raters) and adapted to our context (Chen et al. 2016; Rekman et al. 2016; ten Cate et al. 2020).

The entrustment statements were as follows: I would allow this student to do this activity 'only together with me' (Level 1), '… only with full verification' (Level 2), '… with partial verification' (Level 3), '… with minimal verification' (Level 4), '… without any further verification' (Level 5).

### Survey regarding entrustment scale

After each OSCE, raters of the two student cohorts were invited to complete an evaluation questionnaire regarding their experiences with the entrustment scale. The Likert items were analyzed quantitatively. The narrative evaluation answers were analyzed with directed content analysis as described elsewhere (Hsieh and Shannon 2005). The analysis of the narrative comments was also informed by the thematic map from the thematic analysis of the focus groups (see below). Additionally, and reciprocally, the results of the content analysis were used to support the interpretation of the focus group transcripts.

### Focus groups

We conducted four focus groups (total participants $n = 14$) with OSCE raters using a video conference system (Zoom Video Communications, Version: 5.9.1, [software], San Jose, zoom.us). We used a convenience sampling method. Participants were recruited through an email list of the school's officially registered raters. They were informed in writing about the study on the first day of the OSCEs. Participation was voluntary and not reimbursed. All

Table 1. Characteristics of focus group participants.

| Total number of focus group participants | $n = 14$ |
|---|---|
| Gender | Female: 57% ($n = 8$) |
| | Male: 43% ($n = 6$) |
| Clinical specialties represented | Orthopedics ($n = 1$), |
| | Craniofacial surgery ($n = 1$) |
| | Dermatology ($n = 1$) |
| | Ophthalmology ($n = 1$) |
| | Gynecology ($n = 3$) |
| | Endocrinology ($n = 1$) |
| | Psychiatry ($n = 1$) |
| | Pediatrics ($n = 5$) |
| Academic position | Resident ($n = 1$) |
| | Attending ($n = 10$) |
| | Senior attending ($n = 1$) |
| | Head of department ($n = 1$) |
| | Specialist in outpatient clinic ($n = 1$) |
| Previous experience as OSCE raters | 1–2 Times ($n = 9$) |
| | 3–4 Times ($n = 3$) |
| | More than 4 times ($n = 2$) |

participants were active clinicians with OSCE experience involved in teaching activities (Table 1).

Focus group interviews were held in German with three to four participants per group between March and April 2021. Each group was moderated by one researcher following a semi-structured questioning route while research assistants took notes. Supplement 1 presents the questioning route. The main questions asked were also posted in the Zoom chat during the focus group interviews. Each focus group lasted between 45 and 60 min. The interviews were video-recorded and transcribed verbatim. All transcripts were fully coded and analyzed. After familiarization with the data, we generated initial codes, searched for themes, reviewed themes by developing a 'thematic map' that included the main themes and subthemes. We finalized names and definitions of these themes during iterative discussions and reflections (Braun and Clarke 2006). The software MAXQDA (MAXQDA 2020, [software], Berlin, VERBI Software, 2019, maxqda.com) was used to support the qualitative analysis.

### Statistical analysis of psychometric properties

SPSS (version 28; IBM Corp, Armonk, NY) was used to quantitatively analyze the impact of the entrustment scale's introduction on OSCE stations' psychometrics. OSCE metrics were calculated at the station level, including Cronbach's alpha, the determination coefficient, the intergrade discrimination, the discrimination index, and the between-group variation (Pell et al. 2010). Generalizability coefficients were computed using the G-string IV (Brennan 2001; G_String 2019).

OSCE metrics based on checklist items were calculated separately for three conditions (original analysis with global performance scale but without EPA entrustment levels; EPA entrustment levels instead of the global performance scale; EPA entrustment levels in addition to the global performance scale). Data were collected from two academic student cohorts and each OSCE station. A total of 45 OSCE stations that included entrustment scale items were used for analysis, with each station analyzed three times for the three conditions.

To examine the entrustment scale's impact on the OSCE metrics, a 2-factorial ANOVA was performed for each measurement as a dependent variable (Cronbach's alpha, the determination coefficient, the intergrade discrimination, and the discrimination index—the between-group variation), while the condition (three levels) was defined as the repeated-measures factor and the year (two levels) was defined as the grouping factor. Degrees of freedom were adjusted according to Huynh and Feldt (Huynh and Feldt 1976). Bonferroni adjustment was used for multiple comparisons of the main effect condition. McNemar's chi-squared test was performed to determine the entrustment scale's effect on the pass/fail decision at the individual level. For each cohort, three two-way contingency tables were calculated for each condition to assess how the frequency of hypothetical pass/fail decisions varied across individuals based on the psychometric analysis applied.

### Reflexivity

We aimed to assemble a diverse research team, including persons with clinical (SP, CB, SH, FN), medical (SP, FN, SF, CB, SH), and psychological (DS, SF, RL, SL) backgrounds. Several researchers had experience as OSCE raters and in supervising medical students in the clinical workplace.

As participation in the qualitative analysis was voluntary, with no further obligations or associated benefits, we assumed that no explicit incentives or critical power imbalances affected participants' willingness to share their perspectives.

## Results

Ratings from 480 undergraduate medical students and 162 OSCE raters were analyzed.

### Raters' evaluation of entrustment scale

Figure 1 presents the results of the raters' scale evaluations. Of the 128 respondents, 41% ($n = 53$) provided answers concerning the two scales. In terms of comprehensibility, 88.5% ($n = 46$) of raters found the entrustment scale easy or rather easy to understand, while 11.5% ($n = 6$) were neutral. Sixty percent ($n = 31$) found decision-making easy/very easy, and 19% ($n = 10$) found it rather/very difficult. A total of 43% ($n = 23$) preferred the entrustment scale, 21% ($n = 11$) preferred the global performance scale, and 36% ($n = 19$) were undecided.

A total of 23% ($n = 30$) raters provided narrative comments. Most comments addressed aspects relating to implementation (90%). Fewer comments concerned 'activation of the clinical context as reference' (23%), 'making an entrustment decision in the examination context' (10%), 'transferring an examination observation to the clinical context' (10%), and 'affordances of an entrustment scale' (10%). The entrustment scale was considered helpful in obtaining an adequate overall assessment. Both scales were perceived as having specific advantages and disadvantages. Some raters highlighted the activation of the clinical context as a reference and the relevance for daily clinical supervision as well as motivation to involve oneself in clinical supervision. Raters also perceived benefits in terms of considering the delegation of clinical tasks to medical students. However, they also mentioned direct supervision as the highest possible level of entrustment in

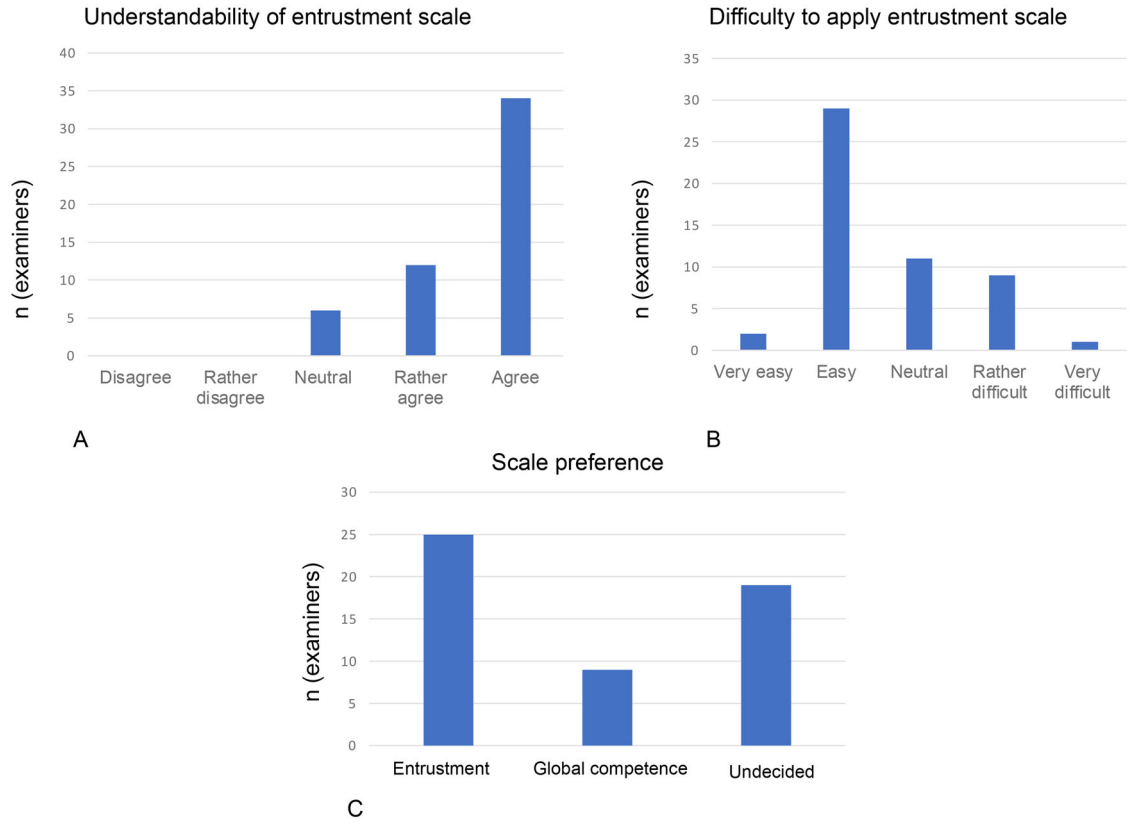



**Figure 1.** Raters' evaluation of entrustment scale.

some workplaces (e.g. gynecology, surgery), thus limiting the utility of an entrustment scale beyond that level (e.g. 'indirect supervision'). They also emphasized the scale's potential as a tool for improving workplace-based learning by supporting more thoughtful delegation of clinical tasks.

### *Focus groups*

A total of 14 raters participated in four focus group discussions (Table 1). We identified three main themes (Table 2). The entrustment scale triggered raters' recollections of the clinical workplace as a cognitive reference (Theme 1). Raters felt more personally addressed as clinical supervisors. Theme 2 concerned relevant personal and contextual factors for entrustment decisions in OSCEs. Use of an entrustment scale was perceived as more holistic, with a lighter cognitive load but also more subjective (Theme 3).

### *Theme 1: Entrustment scale as cognitive trigger for clinical context*

Using an entrustment scale, raters were reminded of their everyday clinical supervision and felt more personally involved. One examiner deliberated whether they would hand over the responsibility to the candidate in the daily clinical routine and confer greater responsibility on the student:

> When I [emphasized] am now in the supervisory role in clinical everyday life, what do I trust the student to do now, after what I have seen. This [i.e., decision-making] is so close to my way of thinking and my clinical everyday life that I am convinced that it is an added value [to the examination]. (…) So, it does reflect my clinical reality more directly.
>
> *Participant A, focus group 1*

> So, I also think that using the entrustment scale I was a little bit [emphasized] stricter (…) because it affected me personally (…) since it's about whether would I allow [the student to do] something.
>
> *Participant A, focus group 2*

The entrustment scale was also considered helpful in identifying candidates' support needs:

> What can she or he do clinically, or where can we expand? So maybe someone is excellent in history taking but there is a lack of physical examination skills and so on. So, for that I found [the entrustment levels] helpful, in the sense of training people
>
> *Participant C, focus group 4*

Participants were prompted to consider whether they would trust a candidate to manage the OSCE case in real clinical practice and how much supervision they would need.

### *Theme 2: Factors influencing entrustment decisions in OSCEs*

Focus group participants regarded entrustment decisions in examination situations as depending on several factors, including the raters' and candidates' characteristics and situational aspects. Potential clinical consequences for patients and clinical departments' specific teaching traditions were described as relevant for entrustment decisions. For example, the raters' own supervision experience was described as relevant to entrustment decisions:

> Young supervisors are more likely to want to directly observe the trainees (…) then experienced clinicians, that's something that (…) I can say from my own experience
>
> *Participant C, focus group 1*

**Table 2.** Main themes and subthemes of focus group analysis.

| Main themes | Subthemes | Explanation |
|---|---|---|
| *Theme 1*: Entrustment scale as a cognitive trigger for clinical context | Personal involvement as clinical supervisor | Thinking in terms of clinical supervision and levels of entrustment activates participants' roles as clinical supervisors. |
| | Activates context of clinical supervision | Entrustment decisions reflect participants' everyday lives when supervising trainees. |
| | Helpful to identify the needed level of supervision | The entrustment scale was perceived as helpful for identifying the required level of support for future trainees. |
| *Theme 2*: Factors influencing entrustment decisions in OSCEs | Raters' characteristics | Examiners' characteristics were considered to influence entrustment decisions in the OSCE. These included professional experience, intuition, and emotional involvement in judging trainees. |
| | Candidates' characteristics | Candidates' characteristics, such as professionalism, self-management, and social skills, were identified as influencing factors. |
| | Examination situation | The simulated examination situation, such as limited time for observation, was mentioned as a non-specific influencing factor for an entrustment decision. |
| | Potential clinical consequences for patients | Aspects such as the reversibility of a treatment decision and the potential consequences for a patient were perceived as important for an entrustment decision. |
| | Situational aspects | Unusual circumstances, such as mandatory surgical masks due to the COVID-19 pandemic were perceived as potentially disruptive to trainees' workflow. |
| | Specialty-specific entrustment decisions in clinical settings | Entrustment decisions in OSCEs depended on raters' specialties. In some specialties, students were routinely entrusted at the observation level only, as this is the case in the respective clinical environment for beginners in this specialty. |
| *Theme 3*: Reducing cognitive load at the perceived cost of objectivity | Lower cognitive load when contemplating entrustment levels | Use of an entrustment scale in the OSCE was experienced as less cognitively demanding than the global performance scale. |
| | Perceived improvement of discrimination between student performances | Some raters perceived discriminating between high- and low-performing students to be easier with the entrustment scale. |
| | Balancing subjectivity and objectivity | Raters regarded the entrustment scale as less objective than traditional global ratings of performance. |

The focus group participants mentioned a range of relevant factors relating to candidates' characteristics. These included the perceived communicative and emotional competence, the interviewing strategy in history taking, the process of establishing the diagnosis, the structure of the examination, the proposed management, the treatment recommendation, and the medical knowledge. Raters were unsure how to weigh communication and emotional skills for decision-making regarding the required supervision level.

The examination situation was perceived as a rather artificial context and made entrustment decisions more difficult. The limited observation time was also challenging. Participants perceived decisions regarding supervision level as considerably easier after two days of observation in the clinical workplace than after 10 min in an OSCE situation. Entrustment levels were also perceived as more subjective, and their utility for scoring high-stakes examinations was considered questionable.

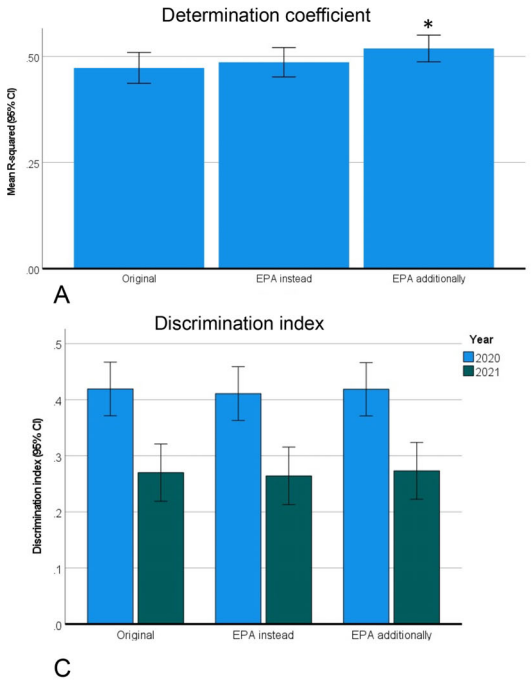
Focus group participants considered the extent to which candidates' clinical decisions might be reversed or might have irreversible consequences regarding the decision about the required supervision level. Furthermore, some raters found the use of surgical masks during examinations as part of COVID-19 hygiene measures challenging because nonverbal communication was more difficult to observe or because physical examination of the head area was not permitted.

Participants from surgical specialties described how they first directly observe medical students in everyday clinical practice as the default supervision level and then decide how far they can trust trainees to let them manage cases more independently. In specialties such as gynecology or orthopedic surgery, students were generally entrusted only at the direct supervision level, while those in diabetes outpatient clinics were entrusted up to the indirect supervision level.

> In my specialty, gynecology, I chose only from the first three [levels of supervision] because I simply would not let a student (…) do a gynecological exam on their own.
>
> *Participant B, focus group 2*

### *Theme 3: Reducing cognitive load at the perceived cost of objectivity*

Participants perceived a lower cognitive load using an entrustment scale compared to performance rating scales. They expressed feeling less need to think about whether single checklist items were observed, but felt that holistic entrustment decisions were easier to make:




Generalizabilty coeffcients

| Cohort | Original | EPA instead | EPA additionally |
|---|---|---|---|
| 2020 | 0.755 | 0.748 | 0.755 |
| 2021 | 0.587 | 0.588 | 0.594 |

D

**Figure 2.** OSCE's psychometric properties.

> When I have too many items to rate [...], I cannot focus on the performance anymore, and at some point, it becomes difficult to follow the clinical interview [...], I like it better to have a scale that I feel comfortable with, and I still can rate a students' performance
>
> *Participant C, focus group 1*

By contrast, competency scales were perceived as more difficult, both emotionally and conceptually:

> Calling someone less competent is a bigger emotional step for me than telling them, I just don't trust that completely yet, and I will recheck selectively or even more.
>
> *Participant A, focus group 1*

The entrustment scale was considered intuitive, facilitating easier decisions regarding rating in examinations, including discriminating between high- and low-performing students. By contrast, the global performance scale was regarded as less dependent on raters' characteristics and consequently as more objective. Those who preferred a combination of the scales emphasized two aspects: the perceived objectivity of the global performance scale's knowledge-specific aspects and the clinical relevance of the more subjective entrustment scale. Frustration or boredom was not mentioned for any of the scales.

### *Psychometric properties of an entrustment scale in OSCE*

The OSCE's psychometric properties are presented in Figure 2 across three different conditions and two student cohorts. Adding an entrustment scale to global performance ratings showed small but statistically significant improvements in terms of determination coefficient ($F$[1, 1.772] = 27.971, partial eta squared = 0.394). Replacing the global performance scale with an entrustment scale yielded small but significant improvements in terms of intergrade discrimination (partial eta squared = 0.449, $F$[1, 1.457] = 35.017). No differences between the conditions were observed for Cronbach's alpha or the between-group variation.

The addition of an entrustment scale did not significantly affect discrimination or the proportion of students passing or failing the OSCE (lowest p-value of six McNemar tests was 0.375). Combining an entrustment scale with the global performance scale was slightly better than the other conditions in terms of generalizability within one cohort (Figure 2(D)).

## Discussion

In this study, we explored raters' perceptions of an entrustment scale in high-stakes OSCEs *via* a questionnaire and focus groups. We further analyzed the entrustment scale's potential psychometric effects on the overall discrimination and generalizability of candidates' OSCE performances.

Raters preferred the entrustment scale and perceived it as better reflecting their actual clinical supervision decisions. While the proximity to clinical supervision situations was meaningful to raters, the perceived subjectivity of entrustment ratings prompted doubt about their use for high-stakes OSCE assessment. Psychometric analyses of the OSCE test performance revealed optimal effects when entrustment scales were combined with global rating scales.

High-stakes OSCEs offer opportunities for applying holistic forms of judgment (Rotthoff et al. 2021). OSCEs are traditionally based on checklists and global performance ratings that assess candidates at a more granular level. This might make it difficult for raters and students to translate the assessment outcome into clinical supervision and learning in workplaces where entrustment scales are increasingly used. Consequently, the use of an entrustment scale in OSCEs may offer a means of bridging the 'assessment worlds' of OSCEs and workplace-based assessment.

Raters' cognitive load is an important aspect of OSCE design (Bearman et al. 2021; Malau-Aduli et al. 2021; Yeates

et al. 2022). Raters found translating observations to abstract scales of global performance more demanding than determining appropriate supervision levels. The entrustment scale may help raters adopt 'clinical' approaches to thinking when observing trainees and making judgments, particularly regarding borderline performances. This will also provide meaningful assessment data for learning portfolios and summative entrustment decisions.

Integrating information from different formats is key in programmatic assessment (Heeneman et al. 2021; Torre et al. 2021). Use of the same language for assessment data (i.e. entrustment levels) has the potential to support both high-stakes decisions of clinical competence committees (Acai et al. 2021) and formative performance feedback for students (Valentine et al. 2021).

Our findings suggest that using entrustment scales in high-stakes OSCEs is feasible in undergraduate medical education. Data from studies on OSCEs in graduate medical education yielded similar conclusions (Halman et al. 2020).

Surprisingly, although the raters regarded assessment using entrustment scales as stricter, we observed no significant increase in OSCE failure. However, a previous study found that the use of entrustment levels led to higher percentages of students failing to meet the passing criteria (Holzhausen et al. 2019). This may be the result of setting the passing criteria at different entrustment levels. Future studies could investigate the effects across institutions with a focus on weaker students for whom remediation and high-quality feedback are crucial.

### *Strengths and limitations*

Among this study's strengths is its use of mixed methods to explore raters' perspectives on high-stakes OSCEs. We were able to include a large sample of OSCE raters and explore their perspectives in greater detail through focus groups. To our knowledge, this is the first study to specifically explore raters' perspectives on entrustment scales in high-stakes OSCEs in combination with psychometric indices.

Our study also has several limitations. While we were able to analyze data from two large student cohorts, these were all collected at one academic center. Each cohort had different exposure to Covid measures, potentially affecting cohort learning outcomes and statistical measures like the discrimination indices and the G-coefficients. OSCE formats and structures (e.g. regarding case mix, duration, and number of stations) may differ in other contexts. The use of entrustment scales in OSCEs warrants further exploration in different educational contexts and phases. Future studies should also explore potential forms of biases (e.g. prior knowledge of the learner, general assumptions about gender differences, use of rating rubrics etc.) that could influence entrustment decisions.

## Conclusion

Entrustment scales can be beneficially applied in high-stakes OSCEs. For clinical supervisors, they reflect clinical supervision experiences. Our results support the combination of entrustment and competency scales for facilitating assessments of (sub-)competences, and providing meaningful holistic assessment data for summative entrustment decisions. To substantiate these findings, further studies are required in other institutions and educational contexts.

## Disclosure statement

On behalf of all authors, the corresponding author states that there is no conflict of interest.

## Glossary

**Entrustment:** The action of entrusting or the fact of being entrusted. Translated to clinical training, the object of care may be the patient in a general sense, and the task is a professional activity that usually involves this patient.

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## Appendix III: Paper III

**Lerch, S. P**., Huwendiek, S., Nendaz, M., Klöppel, S., & Pinilla S. (in review). Perceptions of Ad Hoc Entrustment, the Need for Supervision and Coping Strategies in Clinical Residents: A Qualitative Study. *Academic Medicine.*

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# Perceptions of Ad Hoc Entrustment, the Need for Supervision and Coping Strategies in Clinical Residents: A Qualitative Study

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# Abstract

## Purpose

Negotiating the balance between clinical residents' roles as healthcare workers and learners is a struggle in postgraduate medical education, and while ad hoc entrustment has been studied in this context, little is known about residents' perceptions of ad hoc over- and under-entrustment, the need for supervision, and their coping strategies. Therefore, this study explored residents' perspectives concerning these topics.

## Method

The authors conducted semi-structured, in-depth interviews with twelve purposively sampled residents from different training sites and settings. The interviews were conducted between January and March 2022. Researchers used thematic analysis to explore and interpret the data within a constructivist research paradigm.

## Results

The authors identified four overarching themes: ad hoc and default entrustment in the workplace, perceptions of supervision, applied coping strategies to over- and under-entrustment, and suggestions for improvement. Over-entrustment was perceived as driven by situational demands where residents often felt 'left alone' in the clinical workplace. Perceived optimal supervision included adequate availability of supervisors and explicit clinical decision-making in a psychologically safe environment. Perceptions of suboptimal supervision were related to delayed feedback, insufficient time for supervision, ambivalent communication style, and opaque clinical decision-making. Residents applied problem-, appraisal-, and emotion-focused coping strategies.

Their suggestions for improvement included curricular content specifications, more staffing, and quality supervision.

**Conclusions**

Within postgraduate training, addressing the organizational and contextual factors of entrustment and resident supervision is essential. Analyzing and adjusting these factors is a prerequisite for successfully implementing competency-based residency programs and promoting the well-being of residents.

Many healthcare systems depend on healthcare staff in training [1]. This creates tension for clinical residents who are expected to work as fully functioning healthcare providers and as learners with diverse educational needs [2]. This dual role can negatively influence residents' well-being and increase the risk of burnout [3]. A conflict between the needs of the institution and learner can potentially affect the general supervisory culture of residents and ad hoc entrustment decisions in the workplace [4]. However, in contrast to growing research on supervisors' perspectives of ad hoc entrustment, less is known about the perspective of residents.

Ad hoc entrustment decisions involve a supervisor assigning a clinical task to their resident [5]. Task assignments come with a corresponding level of supervision (e.g., direct vs. indirect) [6, 7]. Hauer et al. provided an overview of factors influencing supervisors' ad hoc entrustment decisions in the clinical workplace (propensity to trust, residents' competence and attitude, the supervisor-resident relationship, task complexity, and workplace context) [8]. The ability of residents to demonstrate their skills in the workplace [9, 10], along with factors such as resources and staffing [11, 12], resident workload [13–15], and workplace culture [16, 17], are recognized as contextual influencers of ad hoc entrustment decisions. While the immediate clinical context has been a topic of research, the broader organizational aspects that may influence entrustment decisions remain under-explored [4].

If clinical need determines ad hoc entrustment, it could lead to over- or under-entrustment in competency-based medical education [8, 18]. Under-entrustment suggests that residents are not trusted enough with specific tasks [18], leading to the 'seniorization' of clinical activities that systematically deprive residents of learning opportunities. In contrast, systematic over-entrustment occurs when residents are trusted too much, which could lead to patient safety issues or resident burn-out [18, 19]. Although the coping styles of physicians to manage stress and the

implications for physician well-being have been studied [20–24], little is known about the coping strategies of clinical residents for perceived ad hoc over- or under-entrustment and inadequate supervision. Therefore, we aimed to explore residents' perceptions of supervision, ad hoc entrustment, and their coping strategies in the context of their need for supervision. We addressed the following research questions:

1) What are the perceptions of residents in different clinical teaching settings in terms of supervision and ad hoc entrustment?

2) How do residents manage their needs (including unmet needs) for the supervision of clinical tasks?

3) What are residents' suggestions for improvement?

# Method

We conducted a qualitative study using semi-structured, in-depth interviews within a constructivist research paradigm and used thematic analysis [25, 26] to explore and interpret the data. We followed a six-step framework, including data familiarization, generating initial codes, searching for and reviewing themes, defining and naming themes, and producing the report [25, 27].

**Setting**

All study participants were in their graduate medical educational phase during the interviews and were involved in geriatric psychiatry rotations.

**Participants, sampling, and recruitment**

We chose a purposive sampling approach and aimed for maximum variation [28] across different training sites (outpatient vs. inpatient, academic teaching hospitals, private vs. public sectors, and different language areas) in Switzerland. We chose four training sites to recruit residents. For each language region (German/French) one university hospital and one public teaching hospital were chosen. Once university and public hospitals were identified, we contacted the residency program directors for the contact information of their current residents in geriatric psychiatry. After obtaining permission from the residents through the residency program directors, we received the residents' email contact information. We invited residents who provided written, informed consent and appointment options. We originally planned to recruit sixteen residents (four in each training site). However, data saturation was reached after twelve interviews, and recruitment was stopped. We conducted the first interview on January 7, 2022, and the last on March 28, 2022.

**Data collection**

Before the interviews, a semi-structured interview guide was developed based on the supervision and entrustment literature [8, 12, 29] and a previous online survey [30]. The interview guide was translated into French and back-translated into German to ensure the accuracy of the translation. The translated interview guide is available in Supplement 1. The interview guide was piloted with two participants and adapted based on their input. We conducted and recorded interviews via Zoom Video Communications Inc. (Version 5.7.14) [31] and used MAXQDA (Version 22.3) [32] to transcribe and code the interviews. We gathered demographic details of each participant at the beginning of each interview—before video recording began. This data included age, sex, place of medical school graduation, goals of residents' specialty and subspecialty titles, setting (either in or outpatient), years of work experience post medical school, and employment level.

## Data analysis

Data analysis followed the six-step approach of Braun and Clark [27]. The first step included data transcribing and familiarization. SL transcribed the German recordings, and a research assistant (TR) transcribed the French recordings. Both familiarized themselves with the transcripts of both languages. In the second step, SL and TR generated initial codes for all of the transcripts and, after coding two transcripts, the codes were compared to ensure congruent understanding of the initial coding. Codes were generated from trunk to trunk. They then finalized the codes and discussed them at the end of the process. This process was regularly discussed with SP and SH, who were updated about the initial codes. The third step was to search for themes. Both SL and TR searched for themes, identifying frequent codes and their connections to one another. SL regularly discussed the themes and progress with SP and SH, and, with their input, the first subthemes were identified at this stage of analysis [25]. In the fourth step, all transcripts were reviewed, and initial codes were grouped into themes and subthemes. The use of thematic maps supported this process [27]. The fifth step defined and named the themes, including selecting representative quotes. Finally, the report was produced, and all authors revised the final manuscript.

## Researcher characteristics and reflexivity

To enhance trustworthiness and credibility, multiple members of the team (with different backgrounds and language skills) were involved in the process of data collection and analysis. The backgrounds of the researchers included psychology (SL), different fields of clinical medicine (MN, SK, SH, and SP), and medical education (SL, SH, MN, SK, and SP). To mitigate potential power imbalances, the interviews were conducted by a psychologist not involved in

clinical supervision and assessment. All interviews were voluntary and explicitly unconnected to any workplace-based assessment.

### Ethical considerations

Informed consent was given twice by the interviewees. This occurred before the interviews when written, informed consent was provided and again at the beginning of interviews, when residents gave oral, informed consent. Data was anonymized before analysis.

## Results

We identified four main themes and ten subthemes in our analysis. The main themes related to ad hoc and default entrustment in the workplace, perceptions of supervision, applied coping strategies to over- and under-entrustment, and their suggestions for improvement. An overview of these themes can be found in Table 1 and in more detail in Supplements 2 and 3. Demographic characteristics of the interviewees are provided in Supplement 4.

### Main theme: Default and ad hoc entrustment in the workplace

Residents perceived entrustment decisions in the workplace as a default, often covert process, and as an explicit, ad hoc delegation of clinical tasks, e.g., during ward rounds.

#### Subtheme: Organizational aspects of default entrustment decisions

The delegation of some clinical tasks to residents was embedded in organizational processes that implicitly involved entrustment decisions. Residents were informed about this type of entrustment decision through appointments via the hospital's clinical care IT system or through e-mails from administrative and other healthcare staff.

> "I am notified of [the clinical task] via the Orbis program [clinical management software]. Both the medical superiors and the medical administrative staff can enter clinical appointments [for residents] there. So that's one way or (…), to send an e-mail telling [the residents] what [they] can, should or must do...."

(Interview C, Pos. 36)

Some entrustment decisions were made by default at the beginning of a rotation. Residents were expected to know what their tasks were and had the responsibility for these tasks throughout their rotation without any assessment or explicit entrustment decisions:

> "Everyone knows what they must do. The director and the head of the clinic explained to me at the beginning how things work. When there is an admission, clinical interviews are to be done or problems to be discussed, I do it spontaneously without anyone having to tell me."

(Interview I, Pos. 22)

**Subtheme: Ad hoc entrustment during ward rounds**

Ad hoc entrustment of clinical activities to residents was a core element of ward rounds. Tasks were spontaneously entrusted to residents once they were discussed during a patient visit. This kind of ad hoc entrustment decision was integrated into the daily flow of ward rounds without making entrustment reasoning of the supervisor explicit to the trainee:

> "It's often during the visit, where a nurse explains what happened to the patient, and then I react according to the diagnosis. When the head of the clinic is present and something doesn't come to me spontaneously, he may also say "this patient should be monitored, this test should be done, etc."
>
> (Interview F, Pos. 16)

**Subtheme: Factors influencing levels of supervision**

The level of supervision was influenced by several factors, including social norms for self-entrustment, context-related factors, and entrustment-based discussions. The social norms of the teaching hospital guided the residents in their self-entrusted levels. They observed the standards and then adapted their degree of autonomy when assuming clinical tasks.

> "At first, I thought I was going to make more decisions, so I made treatment adjustments. But gradually I observed that my colleague was not doing it herself and preferred to discuss the changes with the attending physician (…). So, I started to do the same, I was not doing things by myself anymore. I was more independent before because I came from the outpatient department where I was less frequently supervised. So, at the beginning, I was more into action before talking. Now [the attendings] make the final decision. I ask the question and wait for the answer."
>
> (Interview I, Pos. 10)

Ad hoc self-entrustment also depended on a case's complexity and the resident's confidence.

> "Every morning there is a colloquium with the assistant doctors and nurses, during which the assistant doctor has his share of freedom and independence. But it depends on how he

feels. If he feels comfortable, he can make decisions, and if he has doubts, the attending is there to guide, confirm, and support the decisions."

(Interview G, Pos. 37)

Supervisors also co-constructed ad hoc entrustment decisions with residents. They made their decisions through unstructured entrustment-based discussions:

"I have the feeling that the input also comes from the attending, (…) for example lumbar puncture, [the attending asks e.g.] 'Do you want to do that? Yes? How often have you done it? What do you know about it?' Then first the theoretical knowledge is repeated, then the procedure is discussed, prepared, carried out under supervision, and then even feedback [is given] and the filling out of the forms, probably. So, everything is very structured."

(Interview D, Pos. 16)

**Main theme: Perceptions of supervision**

**Subtheme: Perceptions of optimal supervision**

For residents, optimal supervision entailed sufficient time, frequency and availability of the supervision, supervisors referring to scientific evidence in their reasoning, trustworthiness, and a psychologically safe learning environment. One resident described how understaffing and time pressures shaped supervision:

"It would be to find time in the week where we sit down and go through the patients and the main issues. Then we ask ourselves at what point in the therapy are we and whether

> we need to adjust the medication or not, whether the problem has been resolved, etc. That's what we don't really have here because we're often alone and we ask a specific question, or we have visits where all the other assistants are there. You don't have time to ask all the questions and you must hurry up to be able to talk (...)"
>
> (Interview F, Pos. 12)

The way supervisors made clinical decisions mattered to the residents. They perceived supervision as optimal if the supervisor made clinical decisions explicit and based on evidence. For residents, it was important that they could trust their supervisors' decisions:

> "I would say [optimal supervision] is when the [supervisor] makes me feel that I can trust them with [their] decisions (…) that they make decisions that are based on evidence (…). They also need to have the time to discuss [these decisions] with me."
>
> (Interview I, Pos. 16)

For residents to perceive supervision as optimal, the context also mattered and involved aspects of a safe psychological environment:

> "It is supervision (...) where the supervisee feels comfortable bringing forward all issues (…) when the [resident] does not feel unfairly criticized or judged."
>
> (Interview K, Pos. 12)

**Subtheme: Perceptions of suboptimal supervision**

Residents described suboptimal supervision as lacking appropriate feedback timing, having little or non-existent time in general, using an ambivalent communication style, and clinical decision-

making by the supervisor that is not explicit. Residents elaborated, saying that feedback for a potential teaching moment sometimes arrived significantly delayed:

> "So, supervision is less effective if it comes with a big time delay to the teaching moment (…) for example (…) if I get my feedback on a report or clinical activity two months later (…) the learning effect is not very big."

(Interview D, Pos. 26)

Lack of supervision time for residents meant that only urgent and necessary topics could be discussed in meetings due to understaffing:

> "Well, one issue is the staffing of the senior physicians. That's a pretty hot topic with us right now. And there have always been times, and moments when there is simply no senior physician because it was not possible to find an adequate candidate to replace them for some reason. And then senior doctors from other wards or from somewhere else come to help out. And then [supervision] is not [really] possible because they often have to do their own work (…), their own ward work, and they often don't have so much time. Then there is (…) only time for the most necessary things and that is not helpful (…). I can ask [a few] questions in a short time, which are clarified, but some things [are not discussed]. So, for some patients, there is not so much time."

(Interview E, Pos. 20)

Extreme cases of suboptimal supervision were described as no supervision or residents not feeling supervised at all:

> "But the supervision is very very bad at the moment (…). So there is no supervision."

(Interview B, Pos. 12)

In terms of supervisors' communication styles, residents struggled with ambivalent or unclear communication:

> "It's that when you're assessing a situation, you have ideas in your head, but after supervision, you can't see things clearly. You are not able to make a decision you are comfortable with."

(Interview J, Pos. 16)

Residents perceived supervision as suboptimal if they were unable to understand the clinical decision-making of their supervisors. It was important for them to understand why a supervisor was accepting management recommendations or making clinical decisions, and they perceived it as suboptimal if such explanations were not explicit:

> "For me, what is not very useful on a daily basis is when there is a problem with a patient who is difficult to manage. I don't know the medication and the possibilities, so I ask what can be done, and then I'm told I can give such and such a medication without telling me in what context the medication helps or not, or what the other possibilities are. When it's not helpful is when I'm just told 'do this' without explaining the reason for the choice."

(Interview F, Pos. 14)

**Subtheme: The clinical team as a supervision substitute**

Residents sought out different sources for clinical supervision, including attending physicians, peer residents, psychologists, and nurses.

**Subtheme: Applied coping strategies**

If residents encountered situations where they felt over-entrusted with clinical tasks, they described different ways of coping with their unmet need for supervision. Specifically, they mentioned instrumental coping strategies, including planning differently, reaching out to other attending physicians, or discussing cases with different health professionals:

> "I think I'm lucky because I have a colleague with whom we talk a lot about clinical cases. She is a psychologist and finished her studies this summer. I [also] have [peer residents] who are much more experienced than I am, and I sometimes use them as 'attendings.' If I have medical questions and my attending physician is not available, I [ask them]. There is also the nursing staff I often talk to, to whom I say, 'I don't know what else to do to help this patient.' As they have more experience, they have ideas and suggest things."

(Interview F, Pos. 26)

If residents perceived supervision as insufficient, they also applied emotional-coping techniques, such as emotionally withdrawing from the situation:

> "But of course, it upsets you inside and it also [blocks your mind] and you think about the cases, and you're horrified about what's going on... And yes, just how I deal with it. To a certain extent I [just deal with it] and to a certain extent I also withdraw from it."

(Interview B, Pos. 40)

For appraisal-focused coping, residents either changed their attitude such that they would consider their problem as not urgent or assumed that it was not their problem at all:

> "Yes, so it is a balancing act of feeling responsible for the patients and showing my commitment on the one hand and at the same time saying (…) that's not my problem. So, I can easily distance myself from that [responsibility]."

(Interview B, Pos. 40).

**Main theme: Perceived opportunities for improvement**

**Subtheme: Curriculum and supervision**

In their recommendations for improvement, residents mentioned aspects of the curriculum and supervision (e.g., an explicit curriculum that determines which aspects of the specialty are taught first), supportive supervision, and making board certification mandatory for becoming a supervisor. Residents saw potential in better structuring a residency rotation and introducing an explicit curriculum that defines learning goals, the teaching of clinical skills, and when these skills are taught:

> "My idea is that (…) skills are taught one after the other, not, for example, three skills at the same time (…) For example: From my point of view, it makes sense to first concentrate only on seeing outpatients. Once you have done that, you can move on to the next area. For example, emergency care, [then] psychotherapeutic care, [and then] home treatment (…) not [all] at the same time, as is the case for me."

(Interview C, Pos. 64)

Another way to improve the rotation was described as planned, supportive supervision and better qualifications for attending physicians. However, residents also described time conflicts between patient care and supervision:

"So I think the supervision and support from attending physicians [could be improved] (…) but at the same time you want to have enough time for patients (…). I haven't had a single routine week so far (…) I am constantly running from left to right (…) sometimes you are alone in charge of 25 patients (…) so what I am currently missing most is collaboration and support."

(Interview B, Pos. 76)

"The prerequisite for [good] supervision is simply that there are attending physicians who have a specialist qualification (…) there are so many attending physicians who do not have [this] competence (…). That slows down my everyday life incredibly."

(Interview B, Pos. 24)

**Subtheme: Teaching content**

Residents suggested improvements to the teaching content of workplace-based curricula. Specifically, they mentioned that didactic content should refer to the (sub) specialty, for example, neurocognitive disorders and common medical and neurological conditions in geriatric psychiatry rotations:

"The cognitive aspects are also very important, [but] I don't know how much of it is compulsory. The theoretical neurocognitive part in imaging, assessments, and diagnostics is also very important."

(Interview G, Pos. 40)

**Subthme: Context factors**

Residents mentioned increasing attending physician staffing to enhance the quality of their learning process:

> "So, actually, I would start with the number of the attending physicians (…) my impression is that things go smoothly when the ratio of attendings to residents is good (…) and then, of course, I would need more time to discuss patients (…) to more deeply discuss (…) differential diagnosis, medication (…) often this just gets lost in the everyday life (…). Patient care must always be provided (…), we do what is necessary [for patients], (…) but often it would be good to (…) learn more or to have opportunities to benefit from the knowledge of the attending physicians."

(Interview E, Pos. 61)

# Discussion

We found that, in addition to supervisors' ad hoc entrustment decisions, organizational default delegation mechanisms shaped clinical supervision across postgraduate, clinical-teaching settings. Ad hoc entrustment was primarily driven by situational patient care needs rather than entrustment-based discussions or trainees' need for supervision. Ideal supervision depended on its availability and frequency, the perceived trustworthiness of the supervisor, explicit clinical decision-making, and a psychologically safe environment. In contrast, delayed feedback, insufficient time for supervision, an ambivalent communication style, and opaque clinical decision-making were perceived as suboptimal. Three main coping styles of residents with perceived over-entrustment were identified: 1) problem-focused, 2) emotion-focused, and 3) appraisal-focused strategies [33]. These strategies entailed planning clinical activities differently, approaching other attending physicians or health care professionals, withdrawing from the

situation, and reassessing the urgency of the situation. Suggestions for workplace-based curricular improvement were related to specifically tailored teaching content and supervision and clinical teaching for staff.

While previous research has shown that context (including patient care needs) plays a role in entrustment decisions [4, 8, 12], our results indicate that staffing and clinical care needs play a dominant role in ad hoc entrustment decisions in the workplace [8, 12, 34]. Ad hoc entrustment in postgraduate training may primarily depend on organizational-context factors. Using entrustable professional activities (EPAs) in the workplace, where supervision levels cannot be realistically adjusted to individual learner needs, might undermine their successful implementation. Therefore, purposeful use of workplace-based assessments, such as entrustment-based discussions, might help to mitigate clinical care needs and trainees' perceived need for supervision [35].

Even if workplace-based assessments are used purposefully and formatively, this might not solve the problem of understaffing and over-entrustment. Residents in our study identified these aspects as central to improving their training. Their desire for the increased presence and availability of attending physicians for supervision aligns with other research suggesting adequate staffing fosters trust in the workplace [11]. Sufficient staffing is essential to prevent perceived over-entrustment. However, the perceptions of residents also suggest that having attending physicians present might be insufficient. The residents' recommendations emphasized the qualifications of attendings in terms of specialization, supervision, and coaching skills, as well as the quality of the workplace-based curriculum. This is aligned with research showing that high-quality supervision and learner-centered curriculum designs are beneficial for establishing functional educational alliances between residents and supervisors [36–38].

Our results indicate that high-quality supervision is characterized by sufficient time and frequency, perceived trustworthiness of the supervisor, making clinical decisions explicit, and a psychologically safe environment. These results align with previous studies that have found time and frequency of supervision and a safe workplace environment [16, 17, 39] are important enablers of trust and meaningful entrustment decisions.

In contrast, factors that threaten the quality of supervision include delayed feedback, insufficient time, and an ambivalent communication style. Reciprocal relationships, timing, communication style, and supervisors' competence have been found to help establish trust between supervisors and residents [36, 37, 40–42]. To cope with inadequate supervision, residents applied different coping strategies (problem-, emotion-, and appraisal-focused coping) [33, 43]. Previous research has found that emotion-focused coping (e.g., emotional withdrawal) among physicians is less adaptive than problem-focused coping (asking another colleague for support) to maintain physician well-being [20, 21]. Accepting and explicitly acknowledging that ideal staffing and supervision are unrealistic might open new perspectives on how to coach residents. If staffing cannot be improved, clinical educators should help residents use the most effective coping strategies to maintain their well-being, thrive as learners, and provide safe patient care.

Further research is necessary to better understand how contextual factors drive entrustment decisions across disciplines and educational systems and how limited (staff) resources in health care can be allocated most effectively. Residents must be supported to actively engage with ad hoc entrustment decisions and use healthy coping styles to manage perceived over- and under-entrustment. Teaching adaptive coping strategies has been suggested in undergraduate medical education [44]. Our findings support this idea, and context-specific coaching in postgraduate

training should be provided [45]. Coaching strategies should include organizational aspects to ensure residents can use problem-focused coping strategies.

## Limitations

One possible limitation of this study was not including residents in our research group. However, we piloted the interview guide with current residents to ensure the content and questions were clear and meaningful to them. Second, we investigated the workplace context of one country and within one specialty (geriatric psychiatry). Thus, generalizability from a post-positive perspective might be limited. However, we believe that it was not the specialty that influenced our findings as much as the labor-market context, the health educational system (general structure of residency), and how residents entered professional life (level of supervision after graduating from medical school). Further studies are needed to explore our findings in different contexts and specialties to inform local adaptations of competency-based medical education.

## Conclusion

Entrustment is not confined to dyadic interactions between residents and supervisors. Rather, it is integrated into the workplace through structural and curriculum-related factors. These implicit and default entrustment decisions can lead to residents perceiving themselves as 'left alone in the workplace.' Default entrustment decisions need to be explored and explicitly addressed to prevent over-entrustment, meet residents' need for supervision, and effectively coach residents to maintain their wellbeing.

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## Ethical Approval

The Ethics Committee of the Bern Canton exempted this study from ethical review after receiving a declaration of responsibility (Req-2021-00442).

## Disclaimers

None.

## Previous Presentations

None.

## Data

None.

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**Table 1. Main themes and subthemes from interview data of Swiss clinical residents in geriatric psychiatry in 2021**

| Main themes | Subthemes | Description |
|---|---|---|
| Default and ad hoc entrustment in the workplace | Organizational aspects of default entrustment | How organizational aspects of the workplace influence entrustment decisions. This can be through the organizational on-boarding process that includes clinical tasks which are, by default, entrusted to residents from the beginning (e.g., admitting an inpatient with indirect supervision). An entrustment decision might also be communicated through the electronic clinical task planer (IT environment) as a pending task for a new resident (e.g., seeing a patient in the memory clinic). |
| | Ad hoc entrustment during ward rounds | How tasks are entrusted spontaneously during ward rounds. |
| | Factors influencing levels of supervision | This subtheme describes clinical workplace aspects that influence levels of supervision. These include local social norms for self-entrustment, situational cues such as perceived complexity of the situation, and entrustment-based discussions between the resident and attending following ad hoc entrustment decisions. |
| | | |

| | | |
|---|---|---|
| Perceptions of supervision | Perceptions of optimal supervision | The circumstances under which residents consider supervision to be optimal includes when the supervisor has sufficient time and availability, an adequate frequency of explicit supervision, perceived trustworthiness, and making clinical decisions explicit. Supervision should be embedded in a psychologically safe environment. |
| | Perceptions of suboptimal supervision | Residents perceive supervision as suboptimal when the timing of feedback is inadequate (i.e., delayed), if there is not sufficient time for supervision (or no supervision at all), if the supervisor has an ambivalent communication style, and if clinical decision making comes from management recommendations (or is not made explicit) and is, therefore, not understandable. |
| | The clinical team as supervision substitute | This subtheme describes the different sources residents use for substituting clinical supervision. These include other attending physicians, senior residents, psychologists, and nurses. |
| | | |
| Applied coping strategies | Coping strategies to deal with perceived over- or under-entrustment | Residents described three coping strategies to overcome perceived over-entrustment or an unavailable supervisor: 1) problem-focused (e.g., planning their clinical work schedule differently, calling another supervising physician, or discussing cases with different health professionals), 2) |

| | | |
|---|---|---|
| | | emotion-focused (e.g., distancing themselves from the source of stress), and 3) appraisal-focused (e.g., altering goals and values). In cases of under-entrustment, residents described 'educational regression', i.e., acting as though they are at an earlier stage of training. |
| | | |
| Perceived opportunities for improvement | Curriculum and supervision | Within curricular- and supervision-related factors to improve training, residents wanted a clear curriculum detailing how learning goals and teaching clinical skills during rotations build on one another, supervisors who can coach and have sufficient qualifications (i.e., at least board certification and preferably sub specialization of supervisors). |
| | Teaching content | Residents wanted high-quality teaching on specific clinical knowledge and skills relevant to the workplace (e.g., neurocognitive disorders for geriatric psychiatry rotations). |
| | Context factors | This subtheme describes how the rotation could be improved if there were sufficient attending physicians as supervisors. |

# Perceptions of Ad Hoc Entrustment, the Need for Supervision and Coping Strategies in Clinical Residents: A Qualitative Study

## Content



## Supplement 1: English Interview Guide

This is the translated interview guide in English. Please note that we did not use this translated English guide for the interviews and this guide is solely for the manuscript.

Thank you for participating in this interview. Thank you for your time and willingness to share your thoughts and experiences with us. Our goal is to understand, from your perspective as a resident physician, how you perceive your rotation in geriatric psychiatry, particularly with regard to geriatric psychiatric clinical activities, supervision, feedback, and workplace-based assessment. The purpose of this study is to better understand the resident's perspective and not to collect information about specific physicians, patients, or residency sites. Please do not use team member or patient names or identifying information. I would like to have this interview recorded and transcribed. Your name and any identifying information will be removed from the transcript and will not be used in the analysis. In publications, the results of many interviews will be combined and it will not be possible to draw conclusions about individual interviewees. Are you okay with me recording the interview?

Clarify open questions from interviewees

**Introductory questions:**

- Tell me a little more about where (specialties, outpatient/inpatient, etc.) you have worked as a resident and what your professional goals are (what specialty, what specialties).

- Was there anything that you spontaneously found particularly surprising, interesting, or challenging about your work in geriatric psychiatry?

**Main questions**

Previous knowledge and clinical activities

- Can you use your prior knowledge and clinical skills well in your geriatric psychiatry rotation? If so, what is particularly helpful and why?

- Please describe how you plan to use your clinical activities on a day-to-day basis.

Supervision and Entrustment

- Please describe what clinical supervision looks like on a day-to-day basis.

- How are clinical supervision needs determined?

- Do you have a role in determining these? Can you explain with an example?

- To what extent do you receive support from your supervisor for activities that tend to be difficult for you? What does this support look like?

- How would you describe particularly helpful supervision? Do you have any examples of this?

- How would you describe less helpful supervision? Do you have any examples? Is there anything about it that is particularly challenging/relevant in the context of geriatric psychiatry practice? Why?

- Can you describe if, how, and by whom clinical tasks are delegated/transferred to them? Do you experience anything as particularly challenging or difficult in this process?

- Have there been situations where inadequate supervision has negatively impacted patient safety or optimal patient care? Can you describe such a situation?

- How do you deal with difficult activities where you need more supervision?

Feedback and assessment

- In what form do you receive feedback on your clinical activities? From whom?

- Is their learning progress and performance formally reviewed? If so, how often and by what methods is their learning progress and performance reviewed? How do you perceive these reviews?

- How do you experience the role of workplace-based assessments (e.g. Mini-CEX)?

Learning objectives according to continuing education regulations

- What role do the learning objectives in the continuing education regulations play in your workplace learning?

- Do your supervisors reference the continuing education objectives in the continuing education regulations? If yes, how?

Additional questions to be answered based on a previous questionnaire

- What do you understand by a "geriatric assessment"? How is this relevant to your geriatric psychiatry practice?

- What contextual factors (e.g., language, unfamiliar surroundings, lack of social environment) have a particular impact on your work? Why?

**Concluding question(s)/ summary and review.**

- What should supervision ideally look like so that they have optimal continuing education? How that optimal patient safety?

- What should be changed most urgently and in what ways in geriatric psychiatry continuing education to optimize it? Why?

- Do you have any other comments?

Thank you very much for the interview.

## Supplement 2: Codebook with Sub-subthemes

| Main themes | Subthemes | Sub-subthemes | Description |
|---|---|---|---|
| Default and ad hoc entrustment in the workplace | Organizational aspects of ad hoc entrustment | Implicit entrustment decisions | This theme describes how organizational aspects of the workplace (including the IT-system) contain implicit entrustment decisions. |
| | | Default entrustment | This theme describes how tasks and responsibilities are "entrusted" from the beginning of training and that it is implicitly clear what the expectations are for new residents. |
| | | Delegation | This theme describes that clinical tasks are delegated to residents in geriatric psychiatry. |
| | Ad hoc entrustment during ward rounds | | This theme describes how tasks are being entrusted spontaneously during ward rounds. |
| | Factors influencing levels of supervision | Social norms for self-entrustment levels | This theme describes how residents adapt to the standards of the institution when it comes to self-entrustment levels. |
| | | Context-dependent self-entrustment | This theme describes how residents evaluate the clinical case complexity for ad hoc self-entrustment |
| | | Entrustment-based discussion | This theme describes how supervisors base their ad hoc entrustment decision on ad hoc explorations of required supervision |
| | | | |
| Perceptions of supervision | Perceptions of optimal supervision | Sufficient time, frequency and availability | This theme describes how residents describe supervision as optimal if it is available, if there is enough time for it and if the timing in general is right. |

| | | | |
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| | | Supervisor-resident Ratio | This theme describes that residents perceive supervision as optimal if there is an adequate supervisor-resident ratio. |
| | | Supervisors make evidence-based and trustworthy clinical decisions | This theme describes how residents perceive an optimal supervisor in geriatric psychiatry as someone who makes trustworthy and evidence-based clinical decisions |
| | | Safe psychological environment | This theme describes that an optimal supervision is embedded in a psychologically safe environment. |
| | | Opportunity for Peer-Learning | This theme describes that optimal supervision includes the opportunity of learning from other residents. |
| | Perceptions of suboptimal supervision | Timing of feedback | This theme describes that ~~a~~ delayed feedback after direct supervision is perceived as suboptimal. |
| | | Not enough time for supervision | This theme describes that supervision is perceived as suboptimal if there is not enough time for it. |
| | | Lacking supervision | This theme describes instances of residents feeling unsupervised. |
| | | Ambivalent communication style | This theme describes how residents struggle with ambivalent or unclear communication in the context of clinical supervision |
| | | Clinical reasoning is not made explicit | This theme describes how residents perceive supervision as suboptimal if the clinical reasoning behind management recommendations or clinical decision making is not made explicit |
| | | Lack of professionalism | This theme describes that supervision is perceived as suboptimal when the supervisor behaves unprofessionally. |
| | The clinical team as supervision substitute | Attending physician as supervisor | This theme describes attending physicians as direct or on-demand supervisors |
| | | Residents as supervisors | This theme describes residents as peer supervisors. |
| | | Psychologist as supervisors | This theme describes psychologists as supervisors. |

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|---|---|---|---|
| | | Other clinical staff | This theme describes other clinical professionals taking a supervisory role for specific tasks and questions. |
| | | | |
| Applied Coping Strategies | Coping strategies to deal with perceived over- or under-entrustment | Instrumental coping (problem focused) | This theme describes how residents use different practical strategies to overcome an unavailable supervisor such as planning differently, calling another supervising physician, or discussing cases with different health professionals. |
| | | Emotional coping | This theme describes the emotional techniques residents use to cope with insufficient supervision. |
| | | Appraisal focused coping | This theme describes the appraisal focused techniques residents use to cope with unavailable supervision. |
| | | | |
| Perceived opportunities for improvement | Curriculum and supervision | Explicit curriculum that determines which aspects of geriatric psychiatry are taught first. | This theme describes how residents wish to have a clear curriculum in terms of how learning goals and teachings of clinical skills of the rotation build on each other. |
| | | Supportive supervision | This theme describes that the rotation could be improved if there is sufficient supervision and supervisors give enough support. |
| | | Board-certification of physician supervisors | This theme describes that residents wish to have supervisors with sufficient qualification (i.e. at least board certification and preferably subspecialication in geriatric psychiatry). |
| | Teaching content | Geriatric psychiatry | This theme describes how residents wish to have high-quality teachings on general geriatric psychiatry topics. |
| | | Neurocognitive disorders | This theme describes that neurocognitive disorders should be specifically taught in a geriatric psychiatry rotation. |
| | | Common medical and | This theme describes that the teaching of common medical and neurological conditions should be integrated in geriatric psychiatry rotation. |

| | | | |
|---|---|---|---|
| | | neurological conditions | |
| | Context factors | Staffing | This theme describes how the rotation could be improved if there were sufficient attending physicians as supervisors. |
| | | | |

## Supplement 3: Full Codebook with multiple quotes

| Main themes | Subthemes | Subsubthemes | Description | Examples (translated from German and French) |
|---|---|---|---|---|
| Default and ad hoc entrustment in the workplace | Organizational aspects of ad hoc entrustment | Implicit entrustment decisions | This theme describes how organizational aspects of the workplace (including the IT-system) contain implicit entrustment decisions. | “I am notified of [the clinical task] via the Orbis program [clinical management software]. Both the medical superiors and the medical administrative staff can enter clinical appointments [for residents] there. So that's one way or (…), to send an e-mail telling [the residents] what [they] can, should or must do....” (Interview C, Pos. 36)<br><br>"On the one hand, the patients are in my calendar and then I know what it's about. In the calendar I see whether it is a memory case or a psychotherapy case. It's colour-coded. Or whether it's an outpatient, outreach care case. Exactly, whether I have to go there. And the patients are triaged beforehand by the senior physician to whom they come. If there were any queries, I could go to the senior physician. From there, this is done on the one hand via the calendar or also through consultation with the senior physician." (Interview 1, Pos. 32)<br><br>“That's something I find out. Typically, I am given a name and then I look in the outpatient department to see what information is available about the patient. Then I look in the Orbis |

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| | | | | computer programme to see what has already been noted down. In the process, I actually find out what it is, and most of the time it's quite simple. Dementia is one thing. And then I do some general psychiatry in geriatric psychiatry. It's more about the follow-up care of patients who have depression or a disease from the xxx group. So I get my information electronically and the additional information, what exactly the work order is, I find out from the documents that I then read from the patient." (Interview C, Pos. 38) |
| | | Default entrustment | This theme describes how tasks and responsibilities are "entrusted" from the beginning of training and that it is implicitly clear what the expectations are for new residents. | "Everyone knows what they must do. The director and the head of the clinic explained to me at the beginning how things work. When there is an admission, clinical interviews are to be done or problems to be discussed, I do it spontaneously without anyone having to tell me. (Interview I, Pos 22)<br><br>"I think that at the beginning of the engagement for the post there is an exposition of the terms of reference where the basics are already laid out. Every employee knows his or her role. As soon as a patient is announced or hospitalised, everyone knows their role. There is an overlapping of roles because we work with limited resources. If an assistant is on holiday, the head doctor takes over the work of the assistant doctor, and vice versa. I think it is through routine that things are defined." (Interview K, Pos. 18)<br><br>"So there are simply clear tasks that you have as a case manager. We have residents and psychologists who look after patients independently as case managers, and it's pretty clearly defined what all falls into it. So it's admission interviews and treatment planning, writing all the letters, contacts with relatives, with authorities, discussing medication |

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| | | | | with the senior physician. These are somehow very clear, very clear things that arise from the situation and what is needed. So there is actually no extra delegation. Sometimes the senior physician says, yes, you need another mini mental test or you need this or that. I would not consider that as delegation, but rather that I am made aware of what else is needed for me as the case manager." (Interview E, Pos. 29<br><br>"In general, as the assistant doctor is on the front line, he is supposed to do everything. (...) It's more the assistant doctor who has to do everything and when he feels overwhelmed or when there are things that are too complicated, he will seek help and delegate. I don't think it's other people who delegate the work to the assistant doctor." (Interview G, Pos. 20)<br><br>"I know what I have to do, because there's a checklist for entries. It says what you have to do and what you have to look at. This was very useful to start with. Then, once that's done, I call the clinic manager and explain the situation. Often patients arrive on Thursday or Friday afternoon, so we look to make sure the weekend goes well." (Interview F, Pos. 72)<br><br>"We're two assistants and each has a fixed number of patients. At the start of the contract, the clinic manager explained to me exactly what I had to do. As time went by, there were things I had to learn." (Interview J, Pos. 73)<br><br>"What I really enjoy here, I like to work independently and I'm allowed to do that here." (Interview D, Pos. 95)<br><br>"Yes, it was almost entirely necessary, because when you start as a senior physician, you are assigned the role from the outset that you have to |

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| | | | | assess and decide for an area that you actually don't know at all, for which you have no special clinical experience. Especially in the memory clinic. I found that difficult at the beginning. To be in this role right from the start." (Interview E, Pos. 38) |
| | | Delegation | This theme describes that clinical tasks are delegated to residents in geriatric psychiatry. | "For example, if there are particular things to do, the head of the clinic or the manager can tell me." (Interview I, Pos. 22)<br><br>"I think that at the beginning of the job there is an outline of the specifications where the basics are already laid out. Every employee knows his or her role. As soon as a patient is announced or hospitalised, everyone knows their role. There is an overlapping of roles because we work with limited resources. If an assistant is on holiday, the head doctor takes over the work of the assistant doctor, and vice versa. I think it's through routine that things are defined." (Interview K, Pos. 18)<br><br>"In general, as the assistant doctor is on the front line, he is supposed to do everything. (...) It's more like the assistant doctor has to do everything and when he feels overwhelmed or when things are too complicated, he will seek help and delegate. I don't think it's other people who delegate work to the assistant doctor." (Interview G, Pos. 20)<br><br>"When I arrived, I took over the active patient file from my predecessor. And when we receive new requests, it's the nurses who distribute the situations according to everyone's availability, because everyone has an exchange of diaries. This makes things much easier. I set when I have certain things and we work it out. I block when I'm on call." (Interview H, Pos. 66) |

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| | | | | “So my first experience was in the +++ on the acute ward and (ehm) yes, the problem was actually that I was the only resident for 20 patients there. The senior physicians, that were 2, shared the position, they helped very well. But it was simply a lot at the beginning because in geriatric psychiatry there is a lot of somatic and psychiatric work.” (Interview 1, Pos. 13)<br><br>“I simply came to a ward where I was the only assistant physician, there was no assistant, there were two psychologists who did a very good job. But the ward was a chaos. From there I am very biased because my beginning.” (Interview B, Pos. 8)<br><br>“So on the one hand clearly from the senior physician, then from the colleagues. Be it because someone is absent or sick or needs support. So colleagues means assistant physicians. And then also partly from the nursing, from the nursing specialists if there are tasks that they do not want to or cannot take over themselves.” (Interview D, Pos. 129)<br><br>(…) So it is also not really a delegation but there are always expert opinions for the KESB. And of course it's often the case that no one really has time (laughs) and then someone has to do it and you're asked and it's voluntary but it's a bit like yes, we need the expert opinion now and who will write it now, please. I could also say no, but (laughs). That's not so easy to do. (Interview E, Pos. 138) |
| | Ad hoc entrustment during ward rounds | | This theme describes how tasks are being entrusted spontaneously during ward rounds. | “It's often during the visit, where a nurse explains what happened to the patient, and then I react according to the diagnosis. When the head of the clinic is present and something doesn't come to me spontaneously, he may also say "this patient should be |

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| | | | | monitored, this test should be done, etc." (Interview F, Pos. 16) |
| | Factors influencing levels of supervision | Social norms for self-entrustment levels | This theme describes how residents adapt to the standards of the institution when it comes to self-entrustment levels. | "At first, I thought I was going to make more decisions, so I made treatment adjustments. But gradually I observed that my colleague was not doing it herself and preferred to discuss the changes with the attending physician (…) So, I started to do the same, I was not doing things by myself anymore. I was more independent before because I come from the outpatient department where I was less frequently supervised. So, at the beginning I was more into action before talking. Now [the attendings] make the final decision, I ask the question and wait for the answer." (Interview I, Pos. 10)<br><br>(…) So it is also not really a delegation but there are always expert opinions for the KESB. And of course it's often the case that no one really has time (laughs) and then someone has to do it and you're asked and it's voluntary but it's a bit like yes, we need the expert opinion now and who will write it now, please. I could also say no, but (laughs). That's not so easy to do. (Interview E, Pos. 138) |
| | | Context-dependent self-entrustment | This theme describes how residents evaluate the clinical case complexity for ad hoc self-entrustment | "Every morning there is a colloquium with the assistant doctors and nurses, during which the assistant doctor has his share of freedom and independence. But it depends on how he feels. If he feels comfortable, he can make decisions, and if he has doubts, the attending is there in the second line to guide, confirm and support the decisions." (Interview G, Pos. 37)<br><br>"Yes, of course. I give my opinion. If it's a simple decision, I can take it, but if it's more complex situations we will work as a team and decide together. |

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| | | | | But I remain active." (interview J, Pos. 10)<br><br>"There are two things. First, where do you do what. Consults or patient admissions. That also changed in the first few days. And the other thing was the procedures, for example, documenting what was done. Almost impenetrable. And looking back, that was a lost cause." (Interview C, Pos. 16)<br><br>"This means that I have to decide at night how I would most likely do it. And probably also as the senior physician would do it. And I am then punished the next morning when there is feedback, so to speak, for why I would not have called him at night to reassure myself. And these are things where I have the impression that supervision hinders the work. Supervision gets in the way of supervision." (Interview C, Pos. 223)<br><br>"Now, for example, quite specifically on the first day I could already prescribe compression stockings against leg edema because simply no one had noticed it, until now." (Interview D, Pos. 19) |
| | | Entrustment-based discussion | This theme describes how supervisors base their ad hoc entrustment decision on ad hoc explorations of required supervision | "And here I'm already doing that, but I have the feeling that the input also comes from the senior physician, look at this clinical activity, for example lumbar puncture, do you want to do that? Yes? How often have you done it? What do you know about it? Then first the theoretical knowledge is repeated, then the procedure is discussed, prepared, carried out under supervision and then even a feedback. And the filling out of the forms, probably. So everything is very structured." (Interview D, Pos. 16)<br><br>"Every morning there's a colloquium with the assistant doctors and nurses, during which the assistant doctor has |

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| | | | | his share of freedom and independence. But it all depends on how he feels. If he feels comfortable, he can make decisions, and if he has doubts, the clinic manager is there in the second line to guide, confirm and support decisions." (Interview G, Pos. 37)<br><br>"Yes, it's an exchange with someone who has more knowledge, but who listens to what we have to say. He integrates this into the decision-making process." (Interview H, Pos. 31) |
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| Perceptions of supervision | Perceptions of optimal supervision | Sufficient time, frequency and availability | This theme describes how residents describe supervision as optimal if it is available, if there is enough time for it and if the timing in general is right. | "It would be to find a time in the week where we sit down and go through the patients and the main issues. Then we ask ourselves at what point in the therapy we are and whether we need to adjust the medication or not, whether the problem has been resolved, etc. That's what we don't really have here because we're often alone and we ask a specific question, or we have visits where all the other assistants are there. You don't have time to ask all the questions and you must hurry up to be able to talk(...)" (Interview F, Pos. 12)<br><br>"Quality supervision is something that is regular, once a week, and you take the time. It's not just 15 minutes, it takes 45 or 60 minutes to really get to know all the patients. Whether it's for concrete questions or to reflect more broadly from a theoretical point of view on diagnoses and management." (interview G, Pos. 14)<br><br>"That's the first one, which is availability." (Interview C, Pos. 30)<br><br>"But in my clinical work in psychogeriatrics, I've always been told not to hesitate to call, and there's never an emergency. We can always |

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| | | | | say that we need to think things over and discuss them in colloquiums." (Interview H, Pos. 41)<br><br>"It's the exchange, having the time to discuss situations, the clinical complexity that can reason within us, to have an active listening, not where we say two sentences and the situation is already decided when we needed to add something. To have an hour's exchange at the end of which we say we've learned something we didn't know before." (Interview H, Pos. 47)<br><br>"It's supervision whose duration and frequency are appropriate to the needs of the supervisee, and where the supervisee feels comfortable bringing all issues to the table. Where the person does not feel criticized or judged." (Interview K, Pos. 47)<br><br>"And then it would probably be instructive if you also, if you more often. So either to present the xxx of patients and and to justify the diagnosis and yes. Just also to focus on the diagnostics or the diagnosis. Or to make therapeutic suggestions and to somehow doctor that. Or to have the conversation with the patient that you have yourself and the senior physician watches and gives you feedback. So already more time with individual patients, and to analyze them and how it should ensure a training center I think. And that is at the moment not at all or little the case. Instead, one tries to somehow keep the biggest problems afloat." (Interview B, Pos. 115)<br><br>"I personally, so personally I always find it helpful when I get a feedback immediately after the activity and then afterwards also with short time latency like a repetition can make. Or |

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| | | | | a positive example may still see, for example." (Interview D, Pos. 111)<br><br>"Regular supervision, that it runs in some form more structured, that you don't have to run after it, maybe." (Video K, Pos. 267) |
| | | Supervisor-resident Ratio | This theme describes that residents perceive supervision as optimal if there is an adequate supervisor-resident ratio. | "I find the 1:1 for outpatient cases very helpful, because there is then someone who accompanies and knows the patient, and the group supervision for all other issues. So I think you can't get better care as an assistant physician." (Interview 1, Pos. 111) |
| | | Supervisors make evidence-based and trustworthy clinical decisions | This theme describes how residents perceive an optimal supervisor in geriatric psychiatry as someone who makes trustworthy and evidence-based clinical decisions | "I would say [optimal supervision] is when the [supervisor] makes me feel that I can trust them with [their] decisions (…) hat they make decisions that are based on evidence so they can assess the competence of [a trainee]. They also need to have the time to discuss with me." (Interview I, Pos. 16)<br><br>"It's being listened to and being able to exchange views with the supervisor, to get explanations and his or her point of view. It's an enriching exchange; I bring my knowledge to complete, I can express myself without holding back, be active and the supervisor analyzes and completes me in a constructive way." (Interview J, Pos. 48) |
| | | Safe psychological environment | This theme describes that an optimal supervision is embedded in a psychologically safe environment. | "It is supervision (...) where the supervisee feels comfortable bringing forward all issues (…) when the \|resident] does not feel hardened or judged." (Interview K, Pos. 12)<br><br>"It is supervision that is tailored in duration and frequency to the needs of the supervisee, and where the supervisee feels comfortable bringing forward all issues. What the person does not feel hardened or judged." (Interview K, Pos. 12) |

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| | | | | "It's being listened to and being able to exchange views with the supervisor, to get explanations and his or her point of view. It's an enriching exchange; I bring my knowledge to complete, I can express myself without holding back, be active and the supervisor analyzes and completes me in a constructive way." (Interview J, Pos. 48)<br><br>"It's supervision whose duration and frequency are appropriate to the needs of the supervisee, and where the supervisee feels comfortable bringing all issues to the table. Where the person does not feel criticized or judged." (Interview K, Pos. 47)<br><br>"This means that I have to decide at night how I would most likely do it. And probably also as the senior physician would do it. And I am then punished the next morning when there is feedback, so to speak, for why I would not have called him at night to reassure myself. And these are things where I have the impression that supervision hinders the work. Supervision gets in the way of supervision." (Interview C, Pos. 223) |
| | | Opportunity for Peer-Learning | This theme describes that optimal supervision includes the opportunity of learning from other residents. | "Or otherwise in the second supervision (…) if something was difficult in the service you can also discuss it there with the others - there are still other assistant doctors together, that is a group supervision. And that is also very helpful when you hear about the other experiences of the residents who have similar questions, exactly." (Interview 1, Pos. 101) |
| | Perceptions of suboptimal supervision | Timing of feedback | This theme describes that ~~a~~ delayed feedback after direct supervision is perceived as suboptimal. | "So, supervision is less helpful if it comes with a big time delay to the teaching moment (…) for example (…) if I get my feedback on a report or clinical activity two months later (…) the learning effect is not very big." |

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| | | | | (Interview D, Pos. 26)<br><br>“But I think it is extremely difficult when things are discussed only after a great delay” (Interview C, Pos. 34)<br><br>“This means that I have to decide at night how I would most likely do it. And probably also as the senior physician would do it. And I am then punished the next morning when there is feedback, so to speak, for why I would not have called him at night to reassure myself. And these are things where I have the impression that supervision hinders the work. Supervision gets in the way of supervision.” (Interview C, Pos. 223) |
| | | Not enough time for supervision | This theme describes that supervision is perceived as suboptimal if there is not enough time for it. | “Well, one issue is the staffing of the senior physicians. That's a pretty hot topic with us right now. And there have always been times and there are moments when there is simply no senior physician because it was not possible to find an adequate candidate to replace them for some reason. And then senior doctors from other wards or from somewhere else come to help out. And then [supervision] is not [really] possible because they often have to do their own work (…) their own ward work and they often don't have so much time. Then there is (…) only time for the most necessary things and that is not helpful (…) I can ask [few] questions in a short time, that are clarified, but some things [are not discussed]. So, for some patients there is not so much time.” (Interview E, Pos. 20)<br><br>“Even if supervision would be helpful, it is often not possible in terms of time.” (Interview 1, Pos. 22)<br><br>“Supervision that is done irregularly, quickly and only for emergencies, and we wouldn't be able to think more |

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| | | | | broadly about care and theory." (Interview G, Pos. 57)<br><br>"And there were always times and there are moments where simply no senior physician is really there because it was not possible to find an adequate successor or for any other reason. And then senior physicians from other wards or from somewhere else come to help out. And then it is not so possible because they often have to do their own work, their own ward work and they often don't have so much time. Then there is often only time for the most necessary things and that is not helpful. So if I can ask questions in a short time, that is clarified, but some things fall out. So for some patients there is not so much time." (Interview E, Pos. 71) |
| | | Lacking supervision | This theme describes instances of residents feeling unsupervised. | "But the supervision is very very bad at the moment (…) So there is no supervision." (Interview B, Pos. 12)<br><br>"So where I need support is the emergency room. And there were 3-4 situations where I clearly said that this patient had to be seen by a senior physician, and unfortunately that did not happen." (Interview C, Pos. 87) |
| | | Ambivalent communication style | This theme describes how residents struggle with ambivalent or unclear communication in the context of clinical supervision | "It's that when you're assessing a situation, you have ideas in your head, but after supervision you can't see things clearly. You are not able to make a decision you are comfortable with." (Interview J, Pos. 16)<br><br>"This is extremely difficult when work instructions are not only described in detail and repeated, but may also change. That is not at all helpful." (Interview C, Pos. 34)<br><br>"For this I can give an example. The supervisor starts talking about something else during the supervision and does not know the medication (names of the drugs, doses, etc.) so |

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| | | | | we cannot rely on his word and we have to ask someone else." (Interview I, Pos. 18) |
| | | Clinical decision making is not made explicit | This theme describes how residents perceive supervision as suboptimal if the clinical reasoning behind management recommendations or clinical decision making is not made explicit | "For me, what is not very useful on a daily basis is when there is a problem with a patient who is difficult to manage. I don't know the medication and the possibilities, so I ask what can be done, and then I'm told I can give such and such a medication without telling me in what context the medication helps or not or what the other possibilities are. When it's not helpful is when I'm just told "do this" without explaining the reason for the choice." (Interview F, Pos. 14) |
| | | Lack of professionalism | This theme describes that supervision is perceived as suboptimal when the supervisor behaves unprofessionally. | "Typically, it is not very helpful when interruptions or remarks are made that are not professional. For example, jokes are made or inquiries are made and suddenly the person describing this switches to a completely different topic." (Interview C, Pos. 155)<br><br>"It is a group that is also open to our residents. I have to say that I criticize this, I find it unfavourable. On the one hand, because the young doctors bring in things that simply don't have a specialist or focus level. And the other problem is also that we are the supervisors for our young colleagues and the supervision serves to talk about your mistakes and doubts and what you messed up. I find it unfavorable to have to do that in front of the colleagues that you supervise yourself, so to speak." (Interview K, Pos. 143) |
| | The clinical team as supervision substitute | Attending physician as supervisor | This theme describes attending physicians as direct or on-demand supervisors | "I could ask my senior doctors directly, they were very present. But there wasn't really any supervision, just answering questions. Exactly." (Interview 1, Pos. 8)<br><br>"I have other colleagues who are much more experienced than I am, |

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| | | | | and I sometimes use them as clinic managers. If I have somatic questions and my clinic manager isn't available, I take the liberty of asking them." (Interview F, Pos. 105)<br><br>"There's a clinic manager who supervises day-to-day matters. Then, once a week, we have a project colloquium with the whole team. The assistant physician is there to supervise all the cases. He is also available one hour a week for more medical questions. This allows us to have both a medical and a global vision of patient care." (Interview G, Pos. 25)<br><br>"So my contact person is the head physician here. I can discuss cases there, and you can see each other between the door and the corner for a very brief consultation. The colleague is very busy. He's not exactly waiting for me to come and discuss something with him. That makes it a bit difficult. My immediate boss has also offered that he can have time for this supervision, but yes, he has even less time, I almost never see him. I have almost no contact with him because of the part-time work and other factors. I have never actually noticed any supervision in that sense." (Interview K, Pos. 63)<br><br>"I have a colleague who has been a senior physician for a long time, and I can ask her, of course." (Interview K, Pos. 116) |
| | | Residents as supervisors | This theme describes residents as peer supervisors. | "What is special here is that there is also a second ward assistant doctor who has more experience than I do in a specific field. He is not my direct superior, but it is still very practical, especially in the sense of supervision, for feedback, for questions, agreements, very valuable." (Interview D, Pos. 16) |

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| | | | | "So then I turn first and foremost to colleagues. So to other residents, there are also more experienced ones who have been there longer." (Interview E, Pos. 84) |
| | | Psychologist as supervisors | This theme describes psychologists as supervisors. | "I have already said that I also have supervision with the head psychologist where I really discuss my outpatient therapeutic cases and I find it helpful that she accompanies me in the cases." (Interview 1, Pos. 18)<br><br>"I think I'm lucky, because I have a work colleague with whom we talk a lot about the cases. She's a psychologist and finished her studies this summer." (Interview F, Pos. 104)<br><br>"So now here in this position it is very good because (ehm) I can go (ehm) on Monday for 2 hours in supervision and I (ehm) also have the possibility that I can make with the leading psychologist here from the location of the geriatric psychiatry as still private, so 1:1 supervision and I have never had that in my training that is really very good." (Interview 1, Pos. 39) |
| | | Other clinical staff | This theme describes other clinical professionals taking a supervisory role for specific tasks and questions. | "Then there's the nursing staff, with whom I often have a chat, to whom I say "I don't know what more I can do to help this person". As they have more experience, they have ideas and suggest things." (Interview F, Pos. 108)<br><br>"Sometimes I go to the nurses because they have experience too. Otherwise, there's never been a situation like that." (Interview I, Pos. 107) |
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| Applied Coping Strategies | Coping strategies to deal with perceived over- or under-entrustment | Instrumental coping (problem focused) | This theme describes how residents use different practical strategies to overcome an unavailable supervisor such as planning differently, calling another supervising physician, or discussing cases with | "I think I'm lucky because I have a colleague with whom we talk a lot about clinical cases. She is a psychologist and finished her studies this summer. I [also] have [peer residents] who are much more experienced than I am, and I sometimes use them as 'attendings'. If |

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| | | | different health professionals. | I have medical questions and my attending physician is not available, I [ask them]. There is also the nursing staff I often talk to, to whom I say, 'I don't know what else to do to help this patient. As they have more experience, they have ideas and suggest things." (Interview F, Pos. 26)<br><br>"Well, I can also call, I can see who is there in the calendar. And if there's a chance between appointments, I try not to disturb one of his appointments, but if it's really urgent, I might call during an appointment and disturb him." (Interview 1, Pos. 16)<br><br>"And then I just had to phone around like other senior doctors, so I just phoned around until I had answered my question and that just takes longer." (Interview 1, Pos. 34)<br><br>"…and if all else fails and no one is available, then you just have to call the chief physician. But the fact that there is never no contact person at all is almost impossible in a clinic." (Interview 1, Pos. 38)<br><br>"I think I asked twice and three times. And so, the first time was more of a low-threshold, short description. The second time was a very clear description of why it was important and also the factual, legal things and the things concerning my training. The third and fourth time, it was a brief reminder. But that developed further, it's not as it is. And in the end I had to make do with the fact that the person with the background didn't come. I will have a meeting next week to discuss it again: That it would have been very important to have the person, the background person, in the emergency room so that he or she can see, assess and also decide on the patient." (Interview C, Pos. 24) |

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| | | | | “Or you do, and that's what you do if someone can come to harm directly, otherwise not. And if not, you try to solve the problem yourself as best you can. I always find it valuable to write down a few points myself afterwards and then discuss it with the supervisor the next day or at any time during the week in concrete terms and say "I didn't feel well at that moment because.” (Interview D, Pos. 44)<br><br>“Sometimes the time is a bit difficult because the senior doctors' diaries are full, but I can plan it like this when I see an outpatient and I know that I have a question for the senior doctor, then at the next appointment I can plan the senior doctor to come for the last 10 minutes and that works very well.” (Interview 1, Pos. 10)<br><br>“The idea is to find other people to call or contact. If the direct supervisor isn't available in psychiatry, we might look in other departments, such as geriatrics or palliative care. These are the people who can provide answers or suggestions for complex care of the elderly, and are not specifically concerned with psychiatry.” (Interview G, Pos. 92)<br><br>“It's not my habit to wait if the person who's supposed to be supervising me isn't available. I look elsewhere for information, whether it's from colleagues or acquaintances with a certain amount of experience. If this supervision is needed to make a decision that my position doesn't allow me to make on my own, and the person who should be supervising me isn't available, I'd allow myself to go over that person's head and ask the next level up for advice.” (Interview K, Pos. 85)<br><br>“And there are also several senior physicians (ehm) and if, for example, (eh) a consultant is on duty - that is |

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| | | | | also a possibility that I then simply call the senior physician because he can do that because he has no fixed appointments on the day and he can then rather pick up the phone in between." (Interview 1, Pos. 86)<br><br>"There were no case manager, I took over this patient, among others, who was rotting away, if you like, and had a very unclear neuropsychiatric condition. Neither the senior physician nor anyone else could give me a professional description of what this patient had, what was going on. That's when I tried to do some research on my own and actually pushed that the patient needed a neurological consult. But I was completely new on the job. And then that went halfway across the stage." (Interview B, Pos. 199)<br><br>"First and foremost, I would turn to my colleagues on the ward, and if that is not enough, to colleagues from other wards or other departments. Or I would just try to research myself, to get further. Or just wait, so if it can wait then wait until the senior physician then has time." (Interview E, Pos. 85)<br><br>"And if it comes up, you can also look up important information on the Internet or look it up in a book." (Interview K, Pos. 110) |
| | | Emotional coping | This theme describes the emotional techniques residents use to cope with insufficient supervision. | "Yes, so it is a balancing act of feeling responsible for the patients and showing my commitment on the one hand and at the same time saying that (…) that's not my problem. So, I can easily distance myself from that [responsiblity]." (Interview B, Pos. 40)<br><br>"And I was quite frustrated and I thought that it can't be that she is just there on our ward and somehow she is dissatisfied and I am somehow helpless. Then I turned to a colleague from the other ward, a deputy senior |

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| | | | | physician, and she said, that doesn't have to stress you out, that it's normal that they often stay for weeks. But it still stressed me out, because I was still new and I didn't know much about what to do myself." (Interview E, Pos. 105) |
| | | Appraisal focused coping | This theme describes the appraisal focused techniques residents use to cope with unavailable supervision. | "Yes, so it is a balancing act of feeling responsible for the patients and showing my commitment on the one hand and at the same time saying that (…) that's not my problem. So, I can easily distance myself from that [responsiblity]." (Interview B, Pos. 40)<br><br>"So it may not always be possible for me to answer the question immediately, but that is not necessary in the outpatient sector. And with a little planning effort, it works well. And in most cases, the questions are answered within 1-2 days, which is quite sufficient." (Interview 1, Pos. 10)<br><br>"And so far, apart from one or two situations, there have been no things that need to be discussed immediately." (Interview C, Pos. 34)<br><br>"I try to prioritise; is it urgent or not? If it's not urgent, and I can solve some of it myself, I do it. But so far I've managed to get by." (Interview J, Pos. 26)<br><br>"As I'm still at the beginning and don't have a lot of practical knowledge yet, I find that it sometimes lacks a bit of "teaching". But it's also linked to the fact that the supervisor is now alone, whereas before there were two of them." (Interview F, Pos. 40)<br><br>"There have been a few situations like that, but I think it's also my responsibility to consider certain things... I can't rely completely on the supervisors, so the fault is shared." (Interview I, Pos. 96) |

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| | | | | “I'm not completely lost now but despite everything you get in there somehow.” (Interview B, Pos. 74)<br><br>“I had the impression that I had hardly received any supervision. I was thrown in at the deep end a bit and there wasn't that much feedback during the presentations either. I think that has something to do with the fact that I got along quite well right from the start as far as the work here in geriatric psychiatry is concerned.” (Interview C, Pos. 39)<br><br>“I have made the experience that in these situations you have the choice between two options. Either you set off the alarm and then someone has to come. Or you do it if someone can come to harm immediately, otherwise you don't do it. And if not, you try to solve the problem yourself as best you can. I always find it valuable to write down a few points myself afterwards and then discuss it with the supervisor the next day or at any time during the week in concrete terms and say "I didn't feel well at that moment because". (Interview D, Pos. 176) |
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| Perceived opportunities for improvement | Curriculum and supervision | Explicit curriculum that determines which aspects of geriatric psychiatry are taught first. | This theme describes how residents wish to have a clear curriculum in terms of how learning goals and teachings of clinical skills of the rotation build on each other. | “My idea is that a lot of good skills are taught one after the other, not, for example, three skills at the same time (…) For example: From my point of view, it makes sense to first concentrate only on seeing outpatients. Once you have done that, you can move on to the next area. For example, emergency care [then] psychotherapeutic care [and then] home care. And I think that it is more favorable that this is done one after the other, not at [all] the same time, as is the case for me.” (Interview C, Pos. 64)<br><br>“Personally, I think it would be better if everyone could start in the inpatient |

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| | | | | area first. Because there you simply have much more intensive patient contact and can see the course of events before your eyes and learn how to deal with medications and also get to know nursing aspects before you then work in the outpatient area and on a consultative basis in the homes. Ideally, I think that would be more favourable in that order. Yes, otherwise, before you start I think it's good if you already know something about it." (Interview K, Pos. 57) |
| | | Supportive supervision | This theme describes that the rotation could be improved if there is sufficient supervision and supervisors give enough support. | "Supervision is very useful when we have networks and feedback from leaders. They are constructive. For example in the outpatient department we had networks, with a different age range and different difficulties. Sometimes here I feel I need more help and support." (Interview J, Pos. 34)<br><br>"So I think the supervision and support from attending physicians [could be improved] (…) but at the same time you want to have enough time for patients (…) I haven't had a single routine week so far (…) I am constantly running from left to right (…) sometimes you are alone in charge of 25 patients (…) so what I am currently missing most is collaboration and support." (Interview B, Pos. 76)<br><br>"The prerequisite for [good] supervision is simply that there are senior physicians who have a specialist qualification. I find it an impertinence, if I may say so, that (…) there are so many attending physicians, who do not have [this] competence (…) That slows down my everyday life incredibly."(Interview B, Pos. 24) |
| | | Board-certification of | This theme describes that residents wish to have supervisors with sufficient | "The prerequisite for [good] supervision is simply that there are senior physicians who have a specialist |

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| | | physician supervisors | qualification (i.e. at least board certification and preferably subspecialication in geriatric psychiatry). | qualification. I find it an impertinence, if I may say so, that (…) there are so many attending physicians, who do not have [this] competence (…) That slows down my everyday life incredibly."(Interview B, Pos. 24)<br><br>"What I miss the most is that we don't have a psychiatrist. The chief doctor is a psychiatrist, but he is absent at the moment." (Interview F, Pos. 40)<br><br>"And I think it is very important that this is included or that it would be a certain requirement for a specialist in geriatric psychiatry. That there really is somatic or at least geriatric knowledge. Patients with hyponatremia and all that remains unsatisfactory if that is not solved and if that is. I think that's a very important point that it's not just an old person, but the person really brings many problems that are part of the overall problem. I think that is important. So regarding supervision I have to have someone who fulfills all these competences." (Interview B, Pos. 179)<br><br>"I've noticed that psychiatric medication is very specific. My clinic manager, who's an internist, knows a thing or two about it, but sometimes he puts too many different neuroleptics on at the same time. Sometimes we go too fast and sedate the person too much." (Interview F, Pos. 153)<br><br>"I receive a lot of somatic teaching, but the psychiatric side is forgotten." (Interview F, Pos. 159) |
| | Teaching content | Geriatric psychiatry | This theme describes how residents wish to have high-quality teachings on general geriatric psychiatry topics. | "I think the people who supervise need to realise that there are aspects of psychogeriatrics that we are not aware of when we come from another subspecialisation. So this has to be emphasised when a physician-assistant comes from outside and has |

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| | | | | never done psychogeriatrics. But I think it's subjective. As you go along, you understand them quickly, but at the beginning we are not very aware of them. There are things specific to the psychiatry of the elderly that we cannot imagine when we have never worked with the elderly. So they have to insist on it at the beginning, until we are sure that we are clear with." (Interview I, Pos. 50)<br><br>"I think there's a need to acquire knowledge about the specifics of caring for the elderly". (Interview K, Pos. 59)<br><br>"Elderly psychiatry has a very low profile." (Interview K, Pos. 167) |
| | | Neurocognitive disorders | This theme describes that neurocognitive disorders should be specifically taught in a geriatric psychiatry rotation. | "The cognitive aspects are also very important [but] I don't know how much of it is compulsory. The theoretical neurocognitive part in imaging, assessments and diagnostics is also very important." (Interview G, Pos. 40)<br><br>"For example, if I notice that a clinical course needs explanation, if I can't exactly determine whether it's more of a delirium or a dementia, or if I have questions about medication. Because there, too, I don't have that much experience, with the anti-dementia drugs, for example, I have never prescribed them before. So of course now I ask how do I sneak them, do I sneak them out, can you combine them, how do you do that. Things like that, which are really practical, which you can't read out so well in that sense." (Interview K, Pos. 95) |
| | | Common medical and neurological conditions | This theme describes that the teaching of common medical and neurological conditions should be integrated in geriatric psychiatry rotation. | "I think we could also achieve a lot for the interdisciplinary aspect here in geriatric psychiatry if these other aspects, the non-psychiatric aspects, the somatic aspects were also |

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| | | | | introduced in a structured way." (Interview D, Pos. 66)<br><br>"In geriatrics, we need more somatic courses. Personally, I like it when you have courses in general medicine." (Interview K, Pos. 171) |
| | Context factors | Staffing | This theme describes how the rotation could be improved if there were sufficient attending physicians as supervisors. | "So actually I would start with the number of the attending physicians (…) my impression is that things go smoothly when the ratio of attendings to residents is good (…) and then of course I would need more time to discuss patients (…) to more deeply discuss (…) differential diagnosis, medication (…) often this just gets lost in the everyday life (…) the patient care must always be provided (…) We do what is necessary [for patients] (…) but often it would be good to (…) learn more or to have opportunities to benefit from the knowledge of the attending physicians." (Interview E, Pos. 61)<br><br>"This situation is desolate at the moment, we are de facto without a senior physician. Before, I had a senior physician who is not a specialist. That means that the chief is currently there, so to speak, as a senior physician, which I appreciate. But of course he is not very available. That means mostly, while the senior physician then sees the patient once and that's it. And in this respect I am very frustrated because I have a right to training and would like to discuss patients more." (Interview B, Pos. 67)<br><br>"(…) I think in Switzerland there is also a real shortage, especially in psychiatry. That means I haven't had a week so far where you can go about your daily routine in an orderly fashion, but you're always running from left to right. Sometimes you are responsible for 25 patients on your own. Then there is another day where |

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| | | | | you are well occupied. It's just very, very restless. There should be a bit of calm." (Interview B, Pos. 361)<br><br>"So I really have the impression that if it fits, that if the senior physician is there and if the job key is good, then it works. And if the personnel situation is tight or simply no one can be found throughout Switzerland to fill this position, then it is really precarious. So that would be the first point I would address." (Interview E, Pos. 266) |
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## Supplement 4: Description of Interviewees

Of our interviewees, nine were female (75%). Participants were on average 35 years old (SD 8 years, min: 27 years, max: 51 years) and mainly worked in the outpatient setting (n = 8, 66.7%). Most graduated from a Medical School in Switzerland (n =5, 41.7%) and countries in which the main language was either German or French (n=5, 41.7%). The last two received their medical diploma from eastern Europe (n=2, 16.7%). Most residents worked full time (n=7, 58.3%) and the rest between 70-90% (n=5, 41.7%). Most residents envisioned a specialist title in psychiatry (n=8, 66.7%), two in general internal medicine (n=2, 16.7%), one in neurology (n=1; 8.3%), and one already had a specialist title aiming for a subspeciality (n=1, 8.3%). Of our participants, 3 were sure to pursue a subspeciality in geriatric psychiatry (25%), 2 were thinking about pursuing a subspeciality in geriatric psychiatry but weren't fully decided yet (16.7%), one decided to pursue a subspeciality in geriatrics (8.3%), 4 where ambivalent (33.3%), 1 envisioned a degree in addiction psychiatry (8.3%), and 1 was not applicable (neurology, 8.3%). On average, the residents had 6 years of working experience (standard deviation: 6 years, min: 0.5 years, max. 22 years).

## Appendix IV: Paper IV

**Lerch, S. P.,** Hänggi, R., Bussmann, Y., Lörwald, A. (in review). A model of contributors to a trusting patient-physician relationship: a critical review using a systematic search strategy. *BMC Primary Care.*

**Lerch's contribution according to the contributor roles taxonomy (CRediT) author statement (Allen et al., 2019):** Conceptualization, data curation, formal analysis, investigation, methodology, project administration, visualization, supervision, writing - original draft.

# A model of contributors to a trusting patient-physician relationship: a critical review using a systematic search strategy

**Running title:** contributors to trusting patient-physician relationships

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**Key words:** Patient trust; patient-physician relationship; communication; health education; theory of trust.

## ABSTRACT

### Background

The lack of trust between patients and physicians has a variety of negative consequences. There are several theories concerning how interpersonal trust is built, and different studies have investigated trust between patients and physicians that have identified single factors as contributors to trust. However, all contributors to a trusting patient-physician relationship and understanding where to begin promoting one remain unclear. This review synthesizes current knowledge regarding patient-physician trust and integrates contributors to trust into a model.

### Methods

We conducted a systematic search using the databases: MEDLINE (Ovid), Embase (Ovid), PsycINFO (Ovid), and Eric (Ovid) and ran simultaneous searches for a combination of the phrases: patient-physician relationship (or synonyms) and trust or psychological safety. There were 625 abstracts identified and screened using pre-defined criteria that later underwent full-text article screening. We identified contributors to trust in the eligible articles and critically assessed whether they were modifiable.

### Results

Forty-five articles were included in the review. Patient-centered factors that contributed modifiable promoters of trust included psychological factors, levels of health education and literacy, and the social environment. Physician-centered factors that added to a trusting patient-physician relationship included competence, communication, interest in the patient, caring, the provisioning of health education, and professionalism. Patient-physician alliance, time spent together, and shared decision-making contributed to trusting relationships between patients and physicians as well. External contributors included institutional factors, how payments are made, and additional healthcare services.

## Discussion

Our model summarized all modifiable contributors to a trusting patient-physician relationship. We found that providing sufficient time during patient-physician encounters, ensuring continuity of care, and fostering health education are promising starting points for improving trust between patients and physicians. Future research should evaluate the effectiveness of interventions that address multiple modifiable contributors to a trusting patient-physician relationship.

## INTRODUCTION

The lack of trust between patients and physicians can have a number of negative consequences. Economically, a lack of trust has adverse financial effects on healthcare systems [1]. For instance, if a patient lacks trust in their physician, the physician is more likely to be sued [1, 2]. Alternatively, a physician may be more likely to incur complaints when there are no trusting relationships with patients [2]. Clinically, trust is a cornerstone for successful treatment. Without it, patients may fail to adhere to treatments [3, 4], which may harm their health. One meta-analysis confirmed that trust was positively associated with improved health outcomes [5], while low trust in physicians negatively affected various patient outcomes [6-12].

In medicine, trust can be understood as social or interpersonal trust [13, 14]. Social trust refers to individuals' trust in institutions or systems, such as the healthcare system or physicians in general, while interpersonal trust refers to the trust between two individuals [14, 15]. Social trust is believed to affect interpersonal trust in medical settings [13, 14]. There are many theories of trust from different disciplines [16-19]. However, the most prominent interpersonal trust theory in psychology (and applied in medical settings) is from Mayer et al [20]. Their theory of interpersonal trust suggests that benevolence, integrity, ability, a propensity to trust, and perceived risk are components of a trust relationship [20]. When applied to the patient-physician relationship, the physician's ability, integrity, and benevolence act as contributors. At the same time, the patient's propensity to trust–their willingness to trust others–and the perceived risk they are taking when trusting the physician are also important factors. However, the reality is likely more complex, and there are probably more contributors to a trusting patient-physician relationship than the theory proposes. While different evidence-based studies have investigated the patient-physician trust relationship, to our knowledge, there is no synthesis of all the evidence-based contributors to the relationship. In 2000, there was a call for an empirical conceptualization of trust. Rather than single theories being used to explain interpersonal

patient-physician trust or studies investigating isolated contributors of trust, the idea was to synthesize empirical evidence concerning how patient-physician trust can evolve into a model [15]. A recent review on trust in the medical field has renewed the need for such an empirical conceptualization of patient-physician trust [21]. Therefore, this study aims to summarize the empirical evidence, identify the contributors to a trusting patient-physician relationship, and integrate them into a model. This model can then be used to identify potential approaches and leverage points to improving patient-physician trust. The two main research questions were:

1. Which factors contribute to a trusting patient-physician relationship?
2. Which of these factors can act as potential leverage points to improve the patient-physician relationship?

In addition, we critically assessed contributors in terms of how they are already implemented in healthcare systems and medical education.

## METHODS

As the research question was too broad for a systematic or scoping review, a critical review with a systematic search approach was used to answer the first research question. A critical review focuses on empirical research [22] and aims to evaluate what is known about a specific topic and integrate it into a framework [22, 23]. Critical reviews can use a systematic search strategy to integrate the strengths of systematic and critical reviews [23], including all relevant literature, and avoid biases.

### Search Strategy

We searched the databases MEDLINE (Ovid), Embase (Ovid), PsycINFO (Ovid), and ERIC (Ovid) for a combination of terms referring to the patient-physician relationship (or synonyms) and trust or psychological safety. Database searches were run simultaneously as multi-file

searches in Ovid. For the results, Ovid's de-duplicator was used. No study or clinical trial registries or online resources were searched. No experts were contacted, nor was a citation search conducted.

The reproducible search for all databases was as follows:

Embase (1974 to January 13, 2022), ERIC (1965 to May 2021), Ovid MEDLINE(R) ALL (1946 to January 13, 2022), APA PsycInfo (1806 to January Week 1, 2022).

1 (patient* adj2 physician* adj2 (relation* or alliance or rapport)).ti, ab.

2 (trust* or psychological safety).ti, ab.

3 1 and 2

4 remove duplicates from 3

We did not use any language, time period, study design, or other restrictions for the searches. No search filters were used. The comprehensive literature search was run on January 13, 2022 and 630 articles were retrieved.

An information specialist assisted in framing the research questions and provided information concerning the different types of reviews. Once a first draft of the search strategy was developed, there were multiple feedback rounds with the information specialist until the search strategy was finalized.

**Screening Process**

Fifty-three records were retrieved from Ovid MEDLINER ALL, 509 from Embase, 1 from ERIC, and 67 from APA PsycInfo. In total, 630 records were found. As OVID's de-duplication process did not identify all duplicates, any that were remaining were removed by SPL using

EndNote's duplicate identification strategy and a manual approach. After de-duplication, a total of 613 articles remained. These were screened in two rounds. The first round was screened according to title and abstract. In the second round, 116 articles were evaluated for inclusion based on the full texts. SPL and RH did the screening, and AL decided when there were disagreements between SPL and RH. A study selection flowchart is shown in Fig. 1.

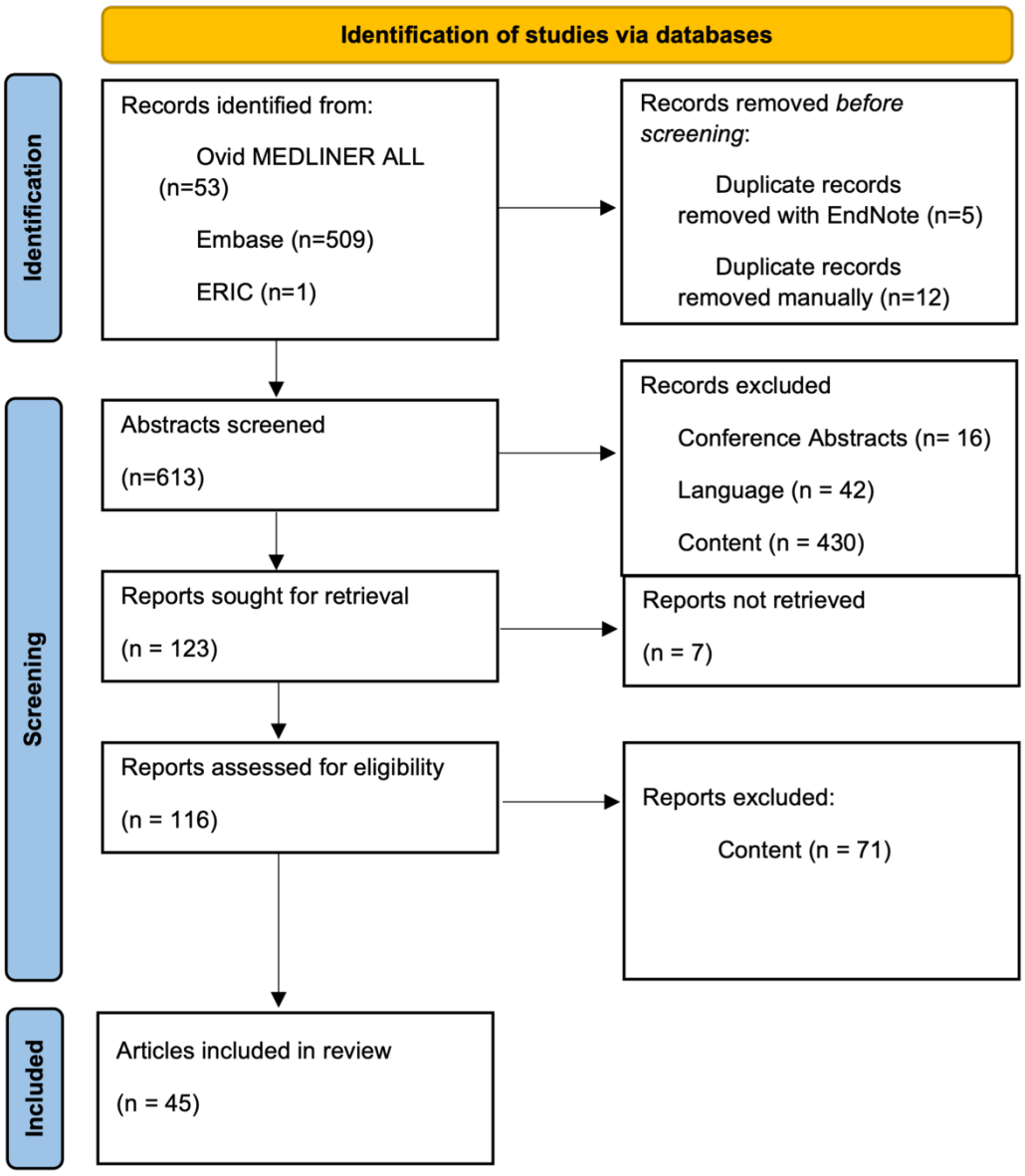


**Fig. 1** PRISMA study flowchart

We included studies that reported factors contributing to a trusting relationship between patients and physicians and excluded those that only reported contributing factors between patients and

health professionals other than physicians (or no contributors). We also included studies that explicitly measured trust between a patient and physician either quantitatively or qualitatively and excluded those with no measure of patient trust in physicians (e.g., only generalized patient trust or trust in other health professionals). We included quantitative, qualitative, and mixed methods papers and excluded dissertations and conference abstracts. Studies in English and German were included.

### Data Synthesis and Categorization

As the main focus of this review was to integrate contributors to a trusting patient-physician relationship into an overall model, we first extracted contributors mentioned in the studies. Extracted information included the setting, patients, physicians, how trust was operationalized, and which factors had a positive, negative, or no effect on the relationship. Contributors were then categorized into patient-related, physician-related, context-related, or patient- and physician-related factors. Study sizes and methods of measurement were highlighted. The factors were then synthesized, and the modifiable ones were extracted and displayed in a model.

## RESULTS

Forty-five heterogeneous studies reported factors contributing to a trusting patient-physician relationship. An overview of those studies, including the respective contributors to trust for each study, can be found in Appendix 1.

### Patient-Related Factors

A number of patient-related contributors to a trusting relationship were investigated, with mixed results. These included demographic characteristics (gender, marital status, age, ethnicity, birthplace, and country of residence), health condition, health education and literacy, socioeconomic status, religious beliefs, social environment, and psychological factors. Another

potential contributor was the patient's health condition–including disease progression and health status–with a tendency for better mental and physical health status to have a positive effect on the relationship (although this result was mixed). In several studies, a good general health condition and better self-reported health status were associated with increased trust towards the physician [24-28]. However, other studies found no correlation between self-reported health status and trust. In contrast, low-risk adults without chronic illnesses have shown higher trust in their physicians when compared to adults with risk factors such as diabetes or high lipid levels [29-33]. Disease progression, including relapses and lack of improvement of a medical condition, was negatively associated with trust [34, 35], whereas a shorter duration of illness increased trust towards the physician [25]. However, two studies found no connection between trust, disease duration [36], and healing [32]. Patient health education and literacy levels were found to be a promoter of a trusting patient-physician relationship, with higher health education [37] and literacy [38] contributing to trust and low health literacy [39] hindering it. Patient socioeconomic status, including occupation, employment, educational level, income, and the presence or type of health insurance, were all potential contributors, with having a high (household) income, health insurance, a high educational level, and being employment positively related to trust; although, these findings were ambiguous. Religious belief was also associated with trust in the physician [27]. The social environment, including social support and the care experiences of family members, further contributed to a trusting patient-physician relationship. In particular, poor social support negatively influenced trust [39] as well as dissatisfaction with the care of family members [40, 41]. The health locus of control was also associated with trust. This describes how a person views control of their health. An internal health locus of control suggests that the person sees oneself as controlling their health, whereas an external health locus means that the person sees external factors influencing their health.

A number of patient psychological factors, such as the propensity to trust, coping mechanisms, the health locus of control, attachment style, and general trust in caregivers were found to contribute to a trusting patient-physician relationship. Individuals who see powerful others as their health locus of control (i.e., believing other people, such as health professionals, can control their health) show higher trust in physicians [42]. Poor coping styles hindered trust [39], while the willingness to reframe situations (a healthy coping style) added to a trusting patient-physician relationship [40]. For the most part, general trust in doctors, caregivers, the healthcare system, or online health communities was associated with higher trust [43-45]. However, for the propensity to trust, the findings were ambiguous. One study found that a patient's propensity to trust predicted trust in their physician [46], although other studies did not find this connection [27, 32]. Table 1 summarizes all of the evidence concerning patient-related factors.

**Table 1 Overview of Patient-Related Contributors to a Trusting Relationship**

| Tested contributor to a trusting patient-physician relationship | Evidence of a positive effect on a trusting patient-physician relationship | Evidence of a negative effect on a trusting patient-physician relationship | No effect on a trusting patient-physician relationship |
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| **Demographic Characteristics** | | | |
| Sex | Being female (Bonds et al., 2004; small sample size, other statistical method) [31] (Hillen et al., 2011; small sample size, qualitative analysis) [47] Being male (Gopichandran et al., 2015; large sample size, other statistical method) [48] | Being male (Wang et al., 2018; very large sample size, other statistical method) [49]<br>Being female (Benjamins, 2006; large sample size, other statistical method) [27] | Sex (Aloba et al., 2014; Bachinger et al., 2009; Marcinowicz et al., 2017; small sample size, correlation) [29, 30, 36] (Baidya et al., 2014; Fiscella et al., 2004; Hamelin et al., 2012; Zhao et al., 2016; small sample size, other statistical method) [24, 50-52] (Dong et al., 2014; medium sample size, correlation) [53] (Gupta et al., 2014, large sample size, other statistical method) [54] (Kao et al., 1998; medium sample size, other statistical method) [55] |
| Marital status | -- | -- | Marital status (Aloba et al., 2014; small sample size, correlation) [36] (Bonds et al., 2004; Zhao et al., 2016; small sample size, other statistical method) [31, 52] (Gupta et al., 2014, large sample size, other statistical method) [54] |
| Age | Older age (Bachinger et al., 2009; Marcinowicz et al., 2017; small sample size, correlation) [29, 30] (Benjamins, 2006; Blanch-Hartigan et al., 2019; O'Malley et al., 2002; Oguro et al., 2021; large sample size, other statistical method) [26, 27, 41, 56] (Bonds et al., 2004; Fiscella et al., 2004; Zhao et al., 2012; small sample size, other statistical method) [24, 31, 52] (Hillen et al., 2011; Cook et al., 2004; small sample size, qualitative analysis) [37, 47] (Dong et al., 2014; medium sample size, correlation) [53] (Mainous et al. 2001; large sample size, correlation) [57] | -- | Age (Gopichandran et al., 2015; Gupta et al., 2014; large sample size, other statistical method) [54, 58] (Hamelin et al., 2012; small sample size, other statistical method) [51] (Kao et al., 1998; medium sample size, other statistical method) [55] |

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| Culture/Race/ Ethnicity | Members of other races (not black or white) (Benjamins, 2006; large sample size, other statistical method) [27]<br><br>Cultural differences (Cook et al., 2004; small sample size, qualitative analysis) [37]<br><br>Bedouins had large trust compared to Jews (Kushnir et al., 2008; small sample size, other statistical method) [59]<br><br>White individuals (Rawaf, 2007; large sample size, other statistical method) [60] | Afro-American (Hillen et al., 2011; small sample size, qualitative analysis) [47] | Race (Gupta et al., 2014; large sample size, other statistical method) [54] (Kao et al., 1998; medium sample size, other statistical method) [44] |
| Birthplace | -- | -- | Birthplace (Dong et al., 2014; medium sample size, correlation) [53] |
| Country/Place of residence | -- | -- | Country of residence (Mainous et al., 2001; large sample size, correlation) [57]<br><br>Place of residence (Marcinowicz et al., 2017; small sample size, correlation) [30]<br><br>Urban vs. rural residency (Wang et al., 2018; very large sample size, other statistical method [49] (Zhao et al., 2016; small sample size, other statistical method) [52] |
| Health condition (low risk) | Low risk adults (compared to adults with diabetes or large lipid levels) (Becker & Roblin, 2008; very large sample size, other statistical method) [33] | -- | Type of psychiatric diagnosis (Aloba et al., 2014; small sample size, correlation) [36] |
| Disease progression | Duration of illness (shorter) (Kowalski et al., 2009; very large sample size, other statistical method) [25] | Cancer relapse (Mack & Kang, 2020; small sample size, other statistical method) [34]<br><br>Lack of improvement of condition (Yang et al., 2021; medium sample size, other statistical method) [35]<br><br>Experiences of adverse events such as unexpected diagnoses and procedures (Shoemaker & Smith, 2019; medium sample | Duration of illness (Aloba et al., 2014; small sample size, correlation) [36]<br><br>Duration of the healing process (Kao et al., 1998; medium sample size, other statistical method) [55] |

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|---|---|---|---|
| | | size, other statistical method) [61] | |
| Mental health status | Healthy mental status (Fiscella et al., 2004; small sample size, other statistical method) [24] | Somatization (Fiscella et al., 2004; small sample size, other statistical method) [24] | -- |
| Good general health condition | (Fiscella et al., 2004; small sample size, other statistical method) [24]; (Kowalski et al., 2009; very large sample size, other statistical method) [25]; (O'Malley et al., 2002, large sample size, other statistical method) [26] | -- | -- |
| Illness history | Previous number of hospital admissions (Aloba et al., 2014; small sample size, correlation) [36] | Previous visits to the hospital (Wang et al., 2018; very large sample size, other statistical method) [49] | Place of last checkup (Baidya et al., 2014; small sample size, other statistical method) [50] |
| Self-reported health status | Better self-rated health (Benjamins, 2006; large sample size, other statistical method) [27] (Nelms et al., 2014; small sample size, other statistical method) [28] | -- | Self-reported physical health status (Bachinger et al., 2009; Marcinowicz et al., 2017; small sample size, correlation) [29, 30] (Bonds et al., 2004; small sample size, other statistical method) [31] (Kao et al., 1998; medium sample size, other statistical method) [55]<br><br>Self-reported mental health status (Bachinger et al., 2009; small sample size, correlation) [29] |
| Health education and literacy | High level of health education (Cook et al., 2004; small sample size, qualitative analysis) [37]<br><br>Patient being informed (Dehghan et al., 2018; medium sample size, other statistical method) [38] | Low health literacy (Gupta et al., 2014; large sample size, other statistical method) [54] | -- |
| **Socioeconomic status** | | | |
| Occupation/ Employment level | Employed (Rawaf et al., 2007; large sample size, other statistical method) [60] | -- | Type of occupation (Baidya et al., 2014; small sample size, other statistical method) [50] (Wang et al., 2018; very large sample size, other statistical method) [49]<br><br>Employment status (Gopichandran et al., 2015; Gupta et al., 2014; large sample size, other statistical method) [48, 54] |

| | | | |
|---|---|---|---|
| Income | High income (Benjamins, 2006; large sample size, other statistical method) [27] (Zhao et al., 2016; small sample size, other statistical method) [52] | -- | Income (Gupta et al., 2014; small sample size, other statistical method) [54] (Bonds et al., 2004; Hamelin et al., 2012; small sample size, other statistical method) [31, 51] |
| Household income | Presence of household income (Benjamins, 2006; large sample size, other statistical method) [27] | -- | -- |
| Geographic or financial access | -- | -- | (O'Malley & Forrest, 2002; large sample size, other statistical method) [26] |
| Health insurance | Presence of health insurance (Benjamins, 2006; large sample size, other statistical method) [27] | -- | Type of insurance (Dong et al., 2014; medium sample size, correlation) [53]<br><br>Basic medical insurance for urban employees & commercial medical insurance (Wang et al., 2018; very large sample size, other statistical method) [49] |
| Educational level | High level of education (Dong et al., 2014; medium sample size, correlation) [53] (Rawaf et al., 2007; large sample size, other statistical method) [60] (Zhao et al., 2016; small sample size, other statistical method) [52] (Cook et al., 2004; small sample size, qualitative analysis) [37] | -- | Educational level (Bachinger et al., 2009; Marcinowicz et al., 2017; small sample size, correlation) [29], [30] (Baidya et al., 2014; Hamelin et al., 2012; small sample size, other statistical methods) [50, 51] (Gupta et al., 2014; Oguro et al., 2021; large sample size, other statistical method) [41, 54] |
| Religious beliefs | Attending religious services and religious affiliation (mainline Protestant, Catholic and Jewish) (Benjamins, 2006; large sample size, other statistical method [27] | Religious affiliation (other than mainline Protestant, Catholic, or Jewish) (Benjamins, 2006; large sample size, other statistical method) [27] | Strength of religious affiliation (Benjamins, 2006; large sample size, other statistical method [27] |
| **Social environment** | | | |
| Social support | -- | Poor social support (Gupta et al., 2014; large sample size, other statistical method) [54] | -- |
| Experience of care received by family members | -- | Experiencing the treatment of family members and interactions with physicians in a negative way (Canavera, 2021; | -- |

| | | | |
|---|---|---|---|
| | | small sample size, qualitative analysis) [40]<br><br>Dissatisfaction with family members' care (Oguro et al., 2021; large sample size, other statistical method) [41] | |
| Family members health locus of control | Family members, powerful others, and internal health locus of control (Brincks et al., 2010; small sample size, other statistical method) [42] | Family members, chance health locus of control (Brincks et al., 2010; small sample size, other statistical method) [42] | -- |
| **Psychological Factors** | -- | Overall dissatisfaction with current life status and a higher emphasis on personal health (Wang et al., 2018; very large sample size, other statistical method) [49] | -- |
| Health locus of control | Powerful others (healthcare providers) health locus of control (Brincks et al., 2010; small sample size, other statistical method [42] | -- | -- |
| Attachment style | | Insecure attachment style (Holwerda et al., 2013; small sample size, other statistical method) [62] | -- |
| Coping | Willingness to reframe situations (Canavera, 2021; small sample size, qualitative analysis) [40] | Poor coping skills (Gupta et al., 2014; large sample size, other statistical method) [54, 63] | -- |
| Propensity to trust | Patient's overall trust (Wu et al., 2021; very large sample size, other statistical method) [46] | -- | General trust in people (Benjamins, 2006; large sample size, other statistical method) [27] (Kao et al., 1998; medium sample size, other statistical method) [55] |
| Trust in caregivers and the healthcare system | General trust in doctors, institutions and nurses (Bonds et al., 2004; small sample size, other statistical method) [31]<br><br>Trust in managed care organizations (Kao et al., 1998; medium sample size, other statistical method [55]<br><br>Interpersonal trust in peer-to-peer online health communities and the information that is | Dissatisfaction with a hospital's general condition (Yang et al., 2021; medium sample size, other statistical method) [35] | How the admittance process is perceived (Kowalski et al., 2009; very large sample size, other statistical method) [25] |

| | | | |
|---|---|---|---|
| | provided and exchanged there (Audrain-Pontevia & Menvielle, 2018; large sample size, other statistical method) [45] | | |

**Table 1 Overview of Patient Contributors to a Trusting Patient-Physician Relationship**
* 1-250 = small sample size; 251-500 = medium sample size; 501-2000 = large sample size; > 2000 = very large sample size; other statistical method: method other than qualitative or correlation analysis such as regression analysis

## Physician-Related Factors

Demographic characteristics, competence, communication, curiosity/exploring, caring, the provisioning of health education, reputation, professionalism, and availability were investigated as potential contributors to a trusting patient-physician relationship. Demographic characteristics of the physician, such as age and gender, did not contribute to a trusting relationship, although these findings were ambiguous. Physician competency, including the perceived competence of the physician by the patient [37, 40, 47, 51, 64-66], the physician being up-to-date in their specialization [67], and having more years of experience [67], helped to build a trusting relationship with patients. Communication skills, including general communication skills [25, 34, 40, 48, 66, 68, 69], compassion, listening to the patient [37, 40, 48], as well as nonverbal behavior such as good eye contact, providing undivided attention, open body language, and smiling [37, 40, 48, 69] also enhanced the trust relationship as did patient-centered [59, 70, 71], comprehensive care [26]. The physician exploring a patient's disease and problems [65], illness experiences [24], and the context of the patient [40, 64] promoted a trusting relationship along with caring behavior [48, 66, 71] such as empathy [46, 72] and compassion [37, 40, 65]. Provisioning health education to the patient was a contributor to a trusting relationship [34, 37, 60, 64, 65]; however, one study did not find any association [67]. We did identify physician reputation [67] and the reputation of their medical specialty [24, 30, 35] as contributing to a trusting relationship. Moreover, different aspects of professionalism

215 [67, 69], such as honesty [47, 51, 65] and availability [37], contributed to a trusting patient-
216 physician relationship, while being disrespectful, arrogant, or cynical were negatively
217 associated with trust [37, 69, 71]. These results are summarized in Table 2.

**Table 2 Overview of Physician-Related Contributors to a Trusting Relationship**

| Tested contributor to a trusting patient-physician relationship | Evidence of a positive effect on a trusting patient-physician relationship | Evidence of a negative effect on a trusting patient-physician relationship | No effect on a trusting patient-physician relationship |
|---|---|---|---|
| **Demographic Characteristics** | | | |
| Sex | Being female (Bonds et al., 2004; small sample size, other statistical method) [1] | -- | Sex (Baidya et al., 2014; small sample size, other statistical method) [2] (Blanch-Hartigan et al., 2019; large sample size, other statistical method) [3]; (Shaya et al., 2019; small sample size, qualitative analysis) [4] |
| Age | -- | -- | Physician age (Baidya et al., 2014; Fiscella et al., 2004; small sample size, other statistical method) [2, 5] (Weng et al., 2008; large sample size, other statistical method) [6] |
| **Competence/Experience** | | | |
| Perceived competence by the patient | High competency perceived by the patient (Berry et al., 2008; large sample size, other statistical method) [7] (Canavera, 2021; Cook et al., 2004; Hillen et al., 2011; Thom & Campbell, 1997; Wolfson & Lynch, 2021 small sample size, quantitative analysis) [8-12] (Hamelin et al., 2012; small sample size, other statistical method) [13] | -- | -- |
| Being up-to-date | The physician being up-to-date (Shaya et al., 2019; small sample size, qualitative analysis) [4] | -- | -- |
| Years of residency/experience | More years of experience (Shaya et al., 2019; small sample size, qualitative analysis [4] | -- | Years of residency training (Bonds et al., 2004; small sample size, other statistical method) [1] |
| Making major mistakes | -- | Physician making a major mistake (Shaya et al., 2019; small sample size, qualitative analysis) [4] | -- |
| **Communication** | | | |
| Communication skills | Clear explanations (Gopichandran et al., 2015, large sample size, other statistical method) [14] Communicating clearly and competently (Canavera, 2021; Thom | Giving information in an insensitive manner (El Malla et al., 2013; medium sample size, other statistical method) [18] | Verbal uncertainty of the physician (Blanch-Hartigan et al., 2019; large sample size, other statistical method) [3] |

| | | | |
|---|---|---|---|
| | & Campbell, 1997; Wolfson & Lynch, 2021; Hendren & Kumagi, 2019 small sample size, qualitative analysis) [8, 11, 12, 15]<br>Physician facilitating communication (Kowalski et al., 2009; very large sample size, other statistical method) [16]<br>High-quality communication (Mack & Kang, 2020; small sample, other statistical method) [17] | | |
| Listening | Compassionate and attentive listening (Canavera, 2021; Cook et al., 2004; small sample size, quantitative analysis) [8, 9]<br>Listens patiently (Gopichandran et al., 2015, large sample size, other statistical method) [14] | -- | -- |
| Nonverbal behavior | Nonverbal behavior such as good eye contact, undivided attention, open body language and smiling (Canavera, 2021; Cook et al., 2004; Hendren & Kumagi, 2021; small sample size, quantitative analysis) [8, 9, 15] (Gopichandran et al., 2015, large sample size, other statistical method [14] | Negative nonverbal behavior of high uncertainty (Blanch-Hartigan et al., 2019; large sample size, other statistical method) [3]<br>No eye contact & sending nonverbal messages (Canavera, 2021; Cook et al., 2004; small sample size, qualitative analysis) [8, 9] | -- |
| Patient-centered care | Patient-centered behavior (Hillen et al., 2011; small sample size, qualitative analysis) [10] (Kushnir et al., 2008; small sample size, correlation) [19] (Malla et al., 2013; medium sample size, other statistical method) [18]<br>Comprehensive care (0'Malley & Forest, 2020; large sample size, other statistical method) [20] | -- | -- |
| **Exploration (understanding the patient's context and experiences)** | Physician understanding the patient's context and experiences and thoroughly evaluating patient problems (Thom | -- | Personal involvement (knows the family situation, knows the name of patient, treats the patient like family (Gopichandran et al., 2015, |

| | | | |
|---|---|---|---|
| | & Campbell, 1997; small sample size, qualitative analysis) [11]<br>Physician wanting to know the patient (Berry et al., 2008; large sample size, other statistical method) [7], Canavera, 2021; small sample size, quantitative analysis) [8]<br>Exploring patient experience of disease and illness (Fiscella et al., 2004; small sample size, other statistical method) [5] | | large sample size, other statistical method [14] |
| **Empathy/Compassion/ Caring** | Compassion (Canavera, 2021; Cook et al., 2004; Thom & Campbell, 1997; small sample size, qualitative analysis) [8, 9, 11]<br>Empathy (Wu et al., 2021; very large sample size, other statistical method) [21]; (Weng, 2008, large sample size, other statistical method) [6];<br>Caring/Comfort (Gopichandran et al., 2015, large sample size, other statistical method [14] (Wolfson & Lynch, 2021; small sample size, other statistical method) [12] (El Malla et al., 2013; medium sample size, other statistical method) [18] | -- | -- |
| **Providing Health Education** | Providing and explaining information (Cook et al., 2004; small sample size, quantitative analysis) [9] (Mack & Kang, 2020; small sample size, other statistical method) [17]<br>Experiences with provider (more information/exchange about hypertension and its management) (Rawaf & Kressin, 2007; large sample size, other statistical method) [22]<br>Autonomy support (Berry et al., 2008; large sample size, other statistical method) [7]<br>Physician offering all options for medical | Physician's failure to provide adequate and clear explanations (Cook et al., 2004; small sample size, quantitative analysis) [9] | Educating patients (Shaya et al., 2019; small sample size, qualitative analysis) [4] |

| | | | |
|---|---|---|---|
| | treatment (Thom & Campbell, 1997; small sample size, qualitative analysis [11] | | |
| **Reputation** | | | |
| Reputation of the physician | Good reputation of the physician; Physician being recommended by a family member or being a family member themselves, physician being featured in the media (Shaya et al., 2019; small sample size, qualitative analysis) [4] | -- | -- |
| Reputation of medical specialty | Family practice (Fiscella et al., 2004; small sample size, other statistical method) [5], (Marcinowicz et al., 2017, small sample size, correlation) [23]<br>Trust in emergency physicians and cardiologists was higher (compared to pediatricians) (Yang et al., 2021; medium sample size, other statistical method) [24] | Trust in pediatricians was lower (compared to emergency physicians and cardiologists) [24]<br>Practice Background (Baidya et al., 2014 [50]; small sample size, other statistical method) | -- |
| **Professionalism** | Physician's attire and hygiene (professional attire) (Shaya et al., 2019; small sample size, qualitative analysis) [4] | Negligence (Hendren & Kumagi, 2019 small sample size, qualitative analysis) [15] | -- |
| Disrespectful, arrogant or cynical attitude | -- | Disrespectful and arrogant attitude (El Malla et al., 2013; medium sample size, other statistical method) [18], (Hendren & Kumagi, 2019 small sample size, qualitative analysis) [15]<br>Lack of concern (Hendren & Kumagi, 2019; small sample size, qualitative analysis) [15]<br>Physicians' failure to make patients feel respected (Cook et al., 2004; small sample size, quantitative analysis) [9] | Cynicism (Kao et al., 1998; medium sample size, other statistical method) [25] |
| Honesty | Physician telling the truth about the medical condition of the patient (Hamelin et al., 2012; | -- | -- |

| | | | |
|---|---|---|---|
| | small sample size, other statistical method) [13] Honesty (Hillen et al., 2011; Thom & Campbell, 1997; small sample size, qualitative analysis) [10, 11] | | |
| **Availability** | Physician being available (Cook et al., 2004; small sample size, quantitative analysis) [9], (Kowalski et al., 2009; very large sample size, other statistical method) [16] | Physician not being available (Cook et al., 2004; small sample size, quantitative analysis) [9] | |

* 1-250 = small sample size; 251-500 = medium sample size; 501-2000 = large sample size; > 2000 = very large sample size; other statistical method: method other than qualitative or correlation analysis such as regression analysis

## Physician- and Patient-Related Factors

Contributors related to the physician and patient were concordance, time spent together, the patient-physician alliance, and shared decision-making. In relation to concordance, both gender and race concordance were tested as promoters of trust; however, only gender concordance was identified as a contributor to trust [31, 37]. Time spent together included time spent in a single session, the overall time spent together, and the continuity of care. Most results indicated that more time spent together in a single session [24, 67, 69] with the physician giving the patient enough time to explain the reason for the visit [73] promoted trust, whereas physicians appearing rushed was a barrier to a trusting relationship [40]. If the duration of the relationship with the doctor was long term [24, 32, 73], the patient had higher rates of follow-up visits [51] and more physician visits in general [33, 53]. Nevertheless, those findings were mixed, and not all studies found an association between the duration of a relationship with the doctor [36, 41] and the number of team visits [43, 44]. However, continuity of care [47] and continuity with one physician added to a trusting relationship [26]. Within the patient-physician alliance, alliances in shared decision-making [61] and having a good rapport [67] were found to enhance trust while a patient's perceptions of a physician's distrust was a barrier [37]. Finding common

238 ground [24] and shared identity [48] were tested but did not show any association with trust. In
239 contrast, shared decision-making contributed to a trusting relationship that promoted trust in
240 most studies [37, 38, 40]. These findings are summarized in Table 3.

**Table 3 Contributors Within the Patient-Physician Contributors to a Trusting Relationship**

| Tested contributor to a trusting patient-physician relationship | Evidence of a positive effect on a trusting patient-physician relationship | Evidence of a negative effect on a trusting patient-physician relationship | No effect on a trusting patient-physician relationship |
|---|---|---|---|
| **Concordance** | Gender concordance (Bonds et al., 2004; small sample size, other statistical method) [1]; (Cook et al., 2004, small sample size, qualitative analysis) [2] | -- | Race concordance (Bonds et al., 2004; small sample size, other statistical method) [1] |
| **Time spent together** | | | |
| Time spent together in a single session | More time spent with the physician (in a single session) (Fiscella et al., 2004; small sample size, other statistical method) [3]; (Shaya et al., 2019; small sample size, qualitative analysis) [4]<br>Time (Hendren et al., 2019; small sample size, qualitative analysis) [5]<br>Length of time with one's regular physician (longer = more trust) and the importance of seeing one's regular physician every time (Mainous et al., 2001; large sample size, correlation) [6]<br>Physician giving the patient enough time to explain the reason for the visit (Hamelin et al., 2012; small sample size, other statistical method) [7] | physician appears rushed (Canavera et al., 2021; small sample size, qualitative analysis) [8] | Time spent with the physician (in a single session) (Baidya et al., 2014; small sample size, other statistical method) [9] |
| Overall time spent together | Duration of the relationship with the physician (longer = more trust) (Fiscella et al., 2004; small sample size, other statistical method) [3]; (Kao et al., 1998; medium sample size, other statistical method) [10]; (Parchman et al., 2004; very large sample size, other statistical method) [11]<br>High rates of patient follow-up visits (Weng et al., 2008; large sample size, other statistical method) [12]<br>Amount of (team) visits (more = more trust) (Becker et al., 2008; very large sample size, other statistical method) [13]; | -- | Duration of relationship with the physician (Aloba et al., 2014; small sample size, correlation) [15]; (Oguro et al., 2021; large sample size, other statistical method) [16];<br>Amount of (team) visits; (Bonds et al., 2004; small sample size, other statistical method) [1]; (Kao et al., 1998; medium sample size, other statistical method) [10] |

| | | | |
|---|---|---|---|
| | (Dong et al., 2014; medium sample size; correlation) [14] | | |
| Continuity of care | Previous care by a resident while hospitalized (Bonds et al., 2014; small sample size, qualitative analysis) [1]<br>Continuity of care (Hillen et al., 2011; small sample size, qualitative analysis) [17]; (Mainous et al., 2001; large sample size, correlation) [6]<br>Continuity with one physician (O'Malley et al., 2002; large sample size, other statistical method) [18] | -- | -- |
| **Patient-physician alliance** | Patient-physician alliance in decision making (Shoemaker et al., 2019; medium sample size, other statistical method) [19]<br>Good rapport (Shaya et al., 2019; small sample size, qualitative analysis) [4] | Patients' perception of physician distrust (Cook et al., 2004; small sample size; qualitative analysis) [2] | Finding common ground (Fiscella et al., 2004; small sample size, other statistical method) [3]<br>Shared identity (Gopichandran et al., 2015; large sample size, other statistical method) [20] |
| **Shared decision making** | Shared decision making (Canavera et al., 2021; small sample size, qualitative analysis) [8]<br>Patient participation in the decision-making process (Cook et al., 2004; small sample size, qualitative analysis) [2]; (Dehghan et al., 2018; medium sample size, other statistical method) [21] | | Patient participation in the decision-making process (Kao et al., 1998; medium sample size, other statistical method) [10] |

* 1-250 = small sample size; 251-500 = medium sample size; 501-2000 = large sample size; > 2000 = very large sample size; other statistical method: method other than qualitative or correlation analysis such as regression analysis

## Context-Related Factors

Context-related factors such as practice/institution, physician payments, and additional healthcare services were investigated as potential contributors to trusting relationships. Most aspects of the practice or the institution were found to contribute to a trusting relationship, with easy accessibility [26] to the practice and a good reputation [67] promoting trust, while institutional betrayal [61] hindered it. The atmosphere of the practice also mattered. A good

practice or organizational climate added to a trusting relationship [31], whereas perceived chaos hampered it [25]. Patients having enough physician choice also added to a trusting relationship [44], while managed care settings contributed to mistrust [37]. Inpatient settings enhanced trust compared to outpatient settings [59]. Regarding payments, situations where patients do not know how the physician is paid or the physician is paid by the number of office visits rather than a fixed salary [26] contributed to a trusting relationship. In contrast, public disclosure of payments was negatively associated with trust [74]. Additional health services such as addiction consultations [75], preventive services [73], and the coordination of specialty care [26] also contributed to patient-physician trust. These findings are summarized in Table 4.

**Table 4 Overview of Context-Related Contributors to a Trusting Patient-Physician Relationship**

| Tested contributor to a trusting patient-physician relationship | Evidence of a positive effect on a trusting patient-physician relationship | Evidence of a negative effect on a trusting patient-physician relationship | No effect on a trusting patient-physician relationship |
|---|---|---|---|
| **Practice/Institution** | Inpatient setting (compared to outpatient) (Wang et al., 2018; very large sample size, other statistical method) [1] | Departments (medical, surgical, pediatrics, gynecology and obstetrics) (Wang et al., 2018; very large sample size, other statistical method) [1] | Practice type (Baidya et al., 2014; small sample size, other statistical method) [2];<br>New rural cooperative medical system (Wang et al., 2018; very large sample size, other statistical method) [1] |
| Accessibility | Organizational accessibility of the practice (O'Malley et al., 2002; large sample size, other statistical method) [3] | -- | -- |
| Reputation | Good reputation of the practice (Shaya et al., 2019; small sample size, qualitative analysis) [4] | -- | -- |
| Institutional betrayal | -- | Institutional betrayal (Shoemaker et al., 2019; medium sample size, other statistical method) [5] | -- |
| Practice/ organizational climate | Good practice climate (Becker et al., 2006; very large sample size, other statistical method) [6] | perceived chaos (Kowalski et al., 2009; very large sample size, other statistical method) [7] | -- |
| Choice of physician | Having enough choice of physicians (Kao et al., 2008; medium sample size, other statistical method) [8] | Managed care settings (Cook et al., 2004; small sample size, qualitative analysis) [9] | -- |
| **Payment** | Physician is paid by the number of office visits (rather than a fixed salary) (Kao et al., 1998; very large sample size, other statistical method) [10]<br>Patients not knowing how the physician is paid (Kao et al., 1998; very large sample size, other statistical method) [10] | public disclosure of payments (regardless of whether respondents knew their physicians had received payments) (Kanter et al., 2019; very large sample size, other statistical method) [11] | -- |
| **Healthcare Services** | Addiction consultation services for patients (King et al., 2021; medium sample size, other statistical method) [12]<br>Preventative service delivery (Parchman et al., 2004; very large sample size, other statistical method) [13]<br>Coordination of specialty care services (O'Malley et | -- | -- |

| | | | |
|---|---|---|---|
| | al., 2004; large sample size, other statistical method) [3] | | |

* 1-250 = small sample size; 251-500 = medium sample size; 501-2000 = large sample size; > 2000 = very large sample size; other statistical method: method other than qualitative or correlation analysis such as regression analysis

## Potential Leverage Points to Improve a Trusting Relationship

We integrated the modifiable contributors to a trusting patient-physician relationship from each conceptual group into a model and identified potential leverage points for improving the relationship (Fig. 2).

### patient-centered leverage points

Within patient-centered factors, health education and literacy, the social environment, and psychological factors were modifiable. A patient who is better educated about health and can understand and use this education for themselves (health literacy) and may form better trusting relationships with their physicians; thus, interventions should focus on improving health education and literacy. Moreover, patient psychological factors such as coping styles and health locus of control are other potential leverage points to increase trust within the relationship. The social environment, specifically receiving sufficient social support, was a further modifiable contributor to trust, indicating that targeted interventions should aim to improve patients' social support systems.

### physician-centered leverage points

We identified physicians' competence, communication skills, exploring, caring, provisioning of health education, and professionalism as modifiable contributors to a trusting patient-physician relationship. For competence, being up-to-date in the specialization and being perceived as competent are leverage points that could increase trust. Communication skills,

283 including verbal and nonverbal behavior, exploring patient health, and professionalism, can
284 also be learned and, hence, modifiable. Caring, including empathy and compassion, is a skill
285 that can be increased through interventions and used to increase trust. In addition, physicians
286 can be taught how to provide health education, and specific material can be provided to them
287 for health education, which is another potential leverage point.

288 **patient and physician-centered leverage points**

289 We identified shared decision-making, the patient-physician alliance, and time spent together
290 as contributors that can be modified. Although time spent together and continuity of care is
291 context dependent, awareness can be raised among physicians and specific training can help
292 the physician allow patients to explain the reason for their visit. Alliances and shared decision-
293 making are skills taught during medical school and, therefore, potential interventions already
294 exist.

295 **context-dependent leverage points**

296 The healthcare system, provisioning of additional healthcare services, transparency regarding
297 physician payment, and characteristics of the practice or institution (e.g., keeping a good
298 institutional climate and having mechanisms to prevent institutional betrayal) are modifiable
299 contributors; however, these strongly depend on the specific country. Furthermore, only a few
300 studies investigated contributors within this conceptual group to a trusting relationship.
301 Therefore, the list of context-dependent contributors may be limited.

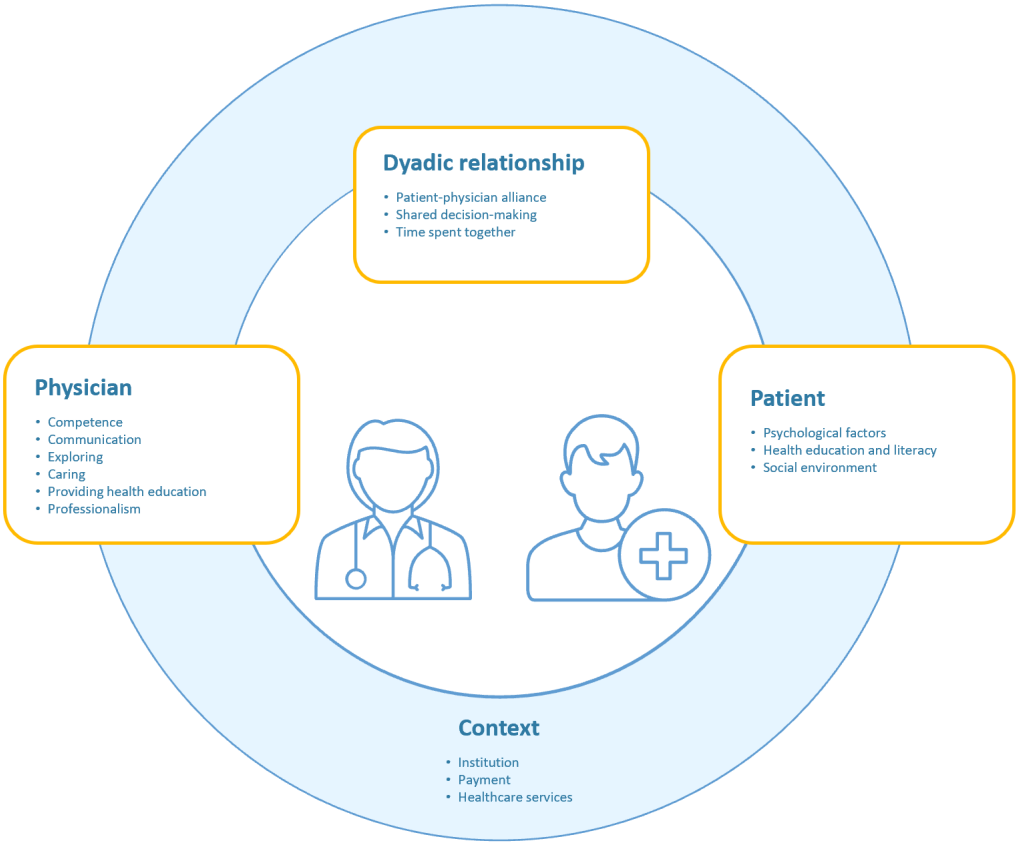


**Fig. 2** Model of contributors to a trusting patient-physician relationship

## DISCUSSION

We conducted a critical review with a systematic search strategy to identify evidence-based contributors to a trusting patient-physician relationship and integrated the modifiable contributors into a model. Our results confirm the existing theory of interpersonal trust [20], and, in line with this theory, we found that the physician's caring (benevolence), competence and communication (ability), and professionalism (integrity) were contributors to a trusting patient-physician relationship. In addition, the physician's exploring and provisioning of health education also contributed to a trusting relationship. We confirmed the importance of a patient's propensity to trust as a psychological contributor and were able to add more psychological factors, including coping style and health locus of control. We further added the patient's level of health education, literacy, and social environment as contributing factors and confirmed that

as the risk a patient must take concerning their health decreases, the easier it is for them to trust the physician. Our model further adds physician- and patient-related factors and the institutional context. The latter indicates the importance of including social trust in understanding interpersonal trust in medicine, as suggested by Mechanic [14]. One highly prominent factor was health education, which can be addressed by the physician, patient, and the context, which suggests that fostering health education is a promising intervention to increase trust.

### Patients

Patient psychological factors such as coping styles and health locus of control are modifiable contributors to a trusting relationship. Previous studies have shown that coping styles can be improved for chronically ill patients [76], while other interventions can address a patient's health locus of control and improve their social support systems. Previous studies on patients with different diseases have shown that social support interventions are effective [77-79]. Health education could be addressed by providing self-help groups that exchange ideas about diseases [80], providing educational tools and teaching materials, and through e-learning [81]. However, these interventions are system-related as the healthcare system must offer those interventions.

### Medical Education

Most physician-centered modifiable contributors to a trusting relationship fall under the scope of medical education. Competence is acquired and addressed through university education, graduate school, and continuing education. Communication skills are taught in medical education courses, and professionalism is addressed as one of the CanMED's roles [82]. Exploration is an important skill that is already part of the communication curriculum [83] and is based on the common-sense model of illness [84]. Physicians providing health education can be taught [85]. However, it is a skill that medical students find hard to achieve [86]. Further

intervention possibilities could address a physician's ability to express compassion and empathy. A recent review summarized educational methods used to address medical student empathy [87], with simulation training shown to be an effective tool [88].

### Patient- and Physician-Related Factors

As with physician-related contributors to trust, patient- and physician-related promoters of trust could be addressed through medical education. Building an alliance with patients and learning about shared decision-making are skills taught in medical school [89]. The physician can also be made aware that spending sufficient time with a patient is relevant to building trust; however, the ability to modify this contributor is dependent on the respective healthcare and billing system.

### Context-Dependent Contributors

We found that a transparent billing system and institution-related contributors such as reputation, medical-practice atmosphere, accessibility, and additional healthcare services contributed to a trusting patient-physician relationship. A recent discussion concerning making health care more accessible can be found reading Gupta et al. [90].

One healthcare system that addresses many of these factors is Canada's patient-centered model, 'the patient's medical home.' Under this model, patients can choose a physician they feel comfortable with. This physician will continuously manage the patient's health care over their lifespan. Each physician is surrounded by a team that considers the patient's situation and may provide additional healthcare services when needed. This model ensures that each patient receives comprehensive and accessible care that provides sufficient time with the physician and guarantees continuity of care [91, 92]. Over the long term, patient medical homes have led to better care, decreased costs, and higher satisfaction for providers and patients [91, 92].

## Strengths and Limitations

The strength of this critical review lies in the systematic search approach, with papers that only operationalized or specifically described trust included.

While our search was not limited to patients trusting their physicians, most papers focused on this and excluded physicians' trust in their patients. Dyadic analyses of patient-physician trust are scarce. However, Petrocchi et al. (2019) have begun investigating patient-physician trust as a dyad [93]. Some papers only reported correlations of trust with unmodifiable, less relevant, but easy-to-gather factors, such as sex or age. Thus, more contributors to trust may have yet to be investigated.

## Implications for Future Research

Interestingly, many non-modifiable or insignificant contributors, such as physician or patient demographics, were investigated in almost every study we reviewed. However, the most promising contributors, such as health education, were barely explored. Future research should investigate modifiable and promising contributors to a trusting relationship that have, as yet, been scarcely researched, including patient psychological factors and additional healthcare services. Additionally, factors that have not been investigated should be addressed including digitized healthcare settings and how telemedicine, chatbots, and video consultations affect patients' trust in physicians. Further research should also focus on measuring how successful physician interventions are, as previous research and interventions have not increased patient trust [94, 95]. Finally, future interventions should consider multiple contributors to trust, as they are all related. For such interventions, the outcomes for each contributor should be evaluated first, with trust as a secondary outcome.

## Implications for Practice

Our critical review has demonstrated that there are more contributors to a trusting patient-physician relationship than the theory of interpersonal trust proposes, and the context in which the patient-physician relationship takes place is highly relevant. One way to increase a trusting patient-physician relationship is to implement healthcare systems organized similarly to the Canadian 'patients' medical homes' model. Changing the healthcare system is also an effective tool to simultaneously address multiple contributors to trust.

At the level of the institution, enhancing trust should focus on health education, which can be addressed through the implementation of self-help and support groups, providing high-quality health educational material, and training healthcare professionals.

At the physician level, we recommend taking as much time as possible for each patient to explore their perspective and current situation, organize (as much as possible) continuity of care, and ensure patient health education.

## CONCLUSION

Our model summarizes all known modifiable contributors to a trusting patient-physician relationship. Providing sufficient time during patient-physician encounters, ensuring continuity of care, and fostering health education are promising leverage points for improving trust between patients and physicians. Future research should evaluate the effectiveness of interventions that address multiple modifiable contributors to a trusting patient-physician relationship.

## DECLARATIONS

### Ethics approval and consent to participate

Not applicable

### Consent for publication

Not applicable

## Availability of data and materials

The data (of review search) of the current review are available from the corresponding author on reasonable request.

## Competing interests

The authors declare that they have no competing interests.


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## Authors contributions

S. L. conzeptualization, methodology, formal Analysis, writing original draft, visualization, supervision

R. H. formal Analysis, visualization

Y. B. formal Analysis, visualization

A.L. conzeptualization, methodology, formal Analysis, writing review & editing, visualization, supervision

**All authors reviewed the manuscript**


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## Appendix 1

**Overview of all papers included in the review**

| First author/ Year/Country | Setting and context | Patients | Physicians | Study design (including statistics, data collection and analysis) | Trust operational-ization | Positive contributor to a trusting patient-physician relationship | Negative contributor to a trusting patient-physician relationship | Tested factors with no contribution to a trusting patient-physician relationship |
|---|---|---|---|---|---|---|---|---|
| Aloba/2014/ Nigeria (1) | A single psychiatric outpatient clinic in Nigeria | Patients were treated in the psychiatric outpatient clinic for at least a year and had no chronic medical illnesses. A diagnosis of a psychiatric condition was present in all patients | Physicians were consulting psychiatrists | A cross-sectional survey among 223 participants was conducted to validate trust in a physician scale in a Nigerian psychiatric outpatient clinic. A principal factor analysis with Varimax rotation and correlations were used | Trust was measured using the Trust in Physician Scale | -Previous numbers of admissions | -- | -Sex of the patient<br>-Marital status<br>-Diagnostic groups<br>-Duration of relationship with the doctor<br>-Duration of illness |
| Audrain-Pontevia/2018/ France (2) | Peer-to-peer online health communities (OHC's) in France | The surveyed users of OHC's were between 18–67 (⌀ 30). Of these participants, 23% had a chronic disease such as diabetes, | Individuals' own physicians were not described | A cross-sectional survey was conducted to measure attitude, satisfaction, trust towards the physician, and interpersonal trust among 512 OHC users in France. | Trust in the participants' own physician was measured in three dimensions and was adapted from Dooney & Cannon (3). | -Users interpersonal trust in OHC's and the information that was provided and exchanged on the platform | -- | -- |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | asthma or Crohn's disease | | Data was analyzed using a structural analysis. | For all questions, a seven-point Likert scale was used, ranging from strongly disagree to strongly agree | | | |
| Bachinger/2009/ the Netherlands (4) | Outpatients in an internal medicine clinic of an academic medical center (AMC) in the Netherlands | Participants were between 19 and 88 (⌀ 50) and had visited an internal medicine physician for various reasons | Internal medicine physicians who worked at an AMC | A cross sectional survey was conducted among 201 participants to validate the Dutch version of the Wake Forest Physician Trust Scale (WF-D) | Trust in physicians was measured using a Dutch version of the WF-D. | -Age (the older the patient, the more they trusted their physician) | -- | -Sex<br>-Educational level<br>-Self-reported physical health status<br>-Self-reported mental health status |
| Baidya/2014/ India (5) | Individuals who had visited a physician at least once in the past five years in Tamil Nadu, a state in southern India | Individuals over 40 years (⌀ 53) who had visited a physician within the last 5 years | Individuals' own physicians were not described | A cross-sectional household survey was conducted to measure trust, sociodemographic variables, self-reported health status, basis of choice of physician, time spent with the physician, and physician variables among 112 participants. Data was analyzed using the Fisher exact test and simple linear regression | An adaptation of the Trust in Physician Scale was used to measure trust | | -- | -Sex<br>-Educational level<br>-Occupation<br>-Place of last health check up<br>-Physician's practice background<br>-Physician's sex<br>-Physician's age<br>-Physician's practice type<br>-Time spent with the physician |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Becker/2008/ USA (6) | Multiple primary care teams from one health management organization (HMO) in Atlanta, GA, USA | Members of an HMO in Atlanta that had visited primary care teams and had at least one of the following conditions: diabetes, elevated lipids (but no history of advanced coronary artery disease), and low-risk adults with no major morbidities | Primary care physicians who worked at the HMO | A cross-sectional survey with 2,224 participants was conducted to measure health status, practice climate, trust in physicians, patient-activation measures, health behavior, psychosocial circumstances, and sociodemographic variables | Trust in primary care physicians was measured with a scale ranging from 0 (no trust) to 100 (greatest trust) for several questions | -Medical condition (trust was higher for patients with diabetes and elevated lipids than for low-risk adults)<br>-Practice climate<br>-Amount of team visits (trust was higher for more visits) | -- | -- |
| Benjamins/2006 /USA (7) | A sample from the general social survey (GSS) from 1998 among American citizens | Respondents to the GSS were not described. On average, the respondents reported 'good' health | Individuals' own physicians were not described | The data of 1,274 participants was analyzed in regard to contributors to trust and whether religious beliefs and behavior influenced trust in physicians | Personal trust in one's physician was measured with seven questions on a five-point Likert scale ranging from strongly disagree to strongly agree and a don't know option | -Age<br>-Sex<br>-Race<br>-Self-rated health<br>-Income<br>-Health insurance<br>-Presence of household income<br>-Religious service attendance (frequent and infrequent compared to never)<br>-Religious affiliation (Catholic, Jewish, mainline Protestant) | -Religious affiliation (Other) | -General trust in people<br>-Strength of the religious affiliation |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Berry/2008/ USA (8) | Four family practice waiting rooms in clinics in Texas, USA | Patients were visitors of one of the four family practices | Physicians were family practitioners who were currently working at large group practices that hosted different specialties. The practices were affiliated with universities and/ or medical schools | The data of 869 patients was analyzed in a cross-sectional survey. Measures included knowledge of the patient, competency of physicians (as measured by the patient), and autonomy support. Data was analyzed with a 3-stage least squares procedure | Trust in physicians was measured with the Primary Care Assessment Survey (3) | -Knowledge of the patient<br>-Competency<br>-Autonomy support | -- | -- |
| Blanch-Hartigan/2019/ the Netherlands (9) | An experimental design, with videos representing a Dutch oncology setting | Former cancer patients | Physicians in the videos were oncologists | An experimental 2x2x2 design. A medical consultation was simulated, the physician was either male or female, showed high or low nonverbal uncertainty, and high or low verbal uncertainty. There were 505 participants randomly assigned to watch one of the videos. Afterwards, trust in the oncologists from the videos was measured. The data was analyzed using | Participants filled out a Trust in the Oncologist Scale | -Age of patients (older patients had higher trust) | -Nonverbal behavior of high uncertainty in the physician | -Verbal uncertainty of the physician<br>-Sex of the physician |

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| | | | | structural equation modeling | | | | |
| Bonds/2004/ USA (10) | An internal medicine primary care clinic at an academic medical center in the USA | Patients who visited their primary care physician | Primary care resident physicians (physicians in training) | A cross-sectional survey (mostly by telephone) was conducted among 217 patients, which measured patient demographics, patient health and well-being, patient-physician relationship characteristics, a global doctor trust scale, and physician characteristics. To identify trust predictors, trust was converted into a dichotomous variable (high and low). Logistic regressions were conducted | The Wake Forest Physician Trust Scale was used to measure trust | -Sex (female)<br>-Education (more than a high school degree)<br>-Age<br>- Sex of the resident (female)<br>-Previous care by the resident while hospitalized<br>-Sex concordance between resident and patient<br>-Trust in general with doctors at institutions<br>-Trust in general with nurses at institutions | -- | -Marital status<br>-Income<br>-Patient health<br>-Year of residency training<br>-Prior visits to the physician<br>-Race concordance between resident and patient |

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| Brincks/2010/ USA (11) | Clients at drug treatment and HIV centers in southern Florida, USA | All patients were females with a diagnosis of HIV. The women were at least 18 years old and met the DSM-IV criteria for substance use within the last year. Cocaine was the primary or secondary drug of abuse | Individuals' own physicians were not described | This study was a secondary analysis of the baseline data from a randomized controlled trial. The sample included 117 women. The multidimensional (internal, chance, powerful others) health locus of control (HLOC) questionnaire was filled out by the participants, with 581 significant others included in the study (and who also filled out the questionnaire). The data was analyzed using the multilevel modelling technique | Trust in physicians was measured using the Trust in Physician Scale. | -Individual's powerful others (healthcare providers) HLOC<br>-Family members' powerful others HLOC<br>-Family members' internal HLOC | -Family members' chance HLOC | -- |
| Canavera/2021/ USA (12) | Narrative essay covering different settings, the first in an inpatient oncology setting, the second in an ICU. Both settings were in the United States | A pediatric psychologist who experienced severe complications after tumor removal | Trust in different settings was described, one physician was a surgeon, one a resident in surgery | The author (n=1) wrote a narrative essay about her own experiences with physicians and the effect this had on her trust in physicians | No measures, but a narrative of what influenced the writer's trust in physicians | -Shared decision making<br>-Competency of the physician<br>-Compassionate listening by the physician<br>-Communication skills<br>-Physician wanting to get to know the patient to build rapport<br>-Good eye contact | -Nonverbal messages by the physician<br>-No eye contact<br>-physician appearing rushed<br>-No time or opportunities for questions<br>-Experiencing the treatment of family members and interactions | -- |

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| | | | | | | -Undivided attention (not looking into phones or computers)<br>-Compassion and respect for patients<br>-Patient willingness to reframe situations | with physicians in a negative way | |
| Cook/2004/ USA (13) | Two different family practice clinics in California, USA | Patients who visited the family practice clinics | Physicians from different specialties participated. Most physicians were specialized in family medicine. Other specialties were: cardiology, dermatology, hematology, internal medicine, neurology, ophthalmology, pediatrics, psychiatry, and radiology | Semi-structured focus groups and individual interviews with patients (36) and physicians (21). Focus groups informed the individual interviews | Qualitative analysis of the transcribed focus groups and interviews using NVivo | -Physician caring and empathy<br>-Eye contact<br>-Body language<br>-Attentive or active listening<br>-Providing and explaining information<br>-Patient participation in the decision-making process<br>-Perceived competence of the physician<br>-Physician availability<br>—<br>-Sex concordance<br>-Age<br>-Culture, race, and ethnicity<br>-Education and occupation<br>-Health education of the patient | -Physicians' trust<br>-Hindering nonverbal behavior<br>-Physician unavailability<br>-Perception of physicians as being rushed or hurried<br>-Physicians' failure to provide adequate explanations<br>-Physicians' failure to make patients feel respected<br>-Patients' perceptions of physician distrust<br>—<br>-Managed-care settings | -- |

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| Dehghan/2017/ Iran (14) | All participants were radio and chemotherapy patients from a single hospital in Iran | Breast cancer patients who were under chemotherapy or radiotherapy (stage 1–3, not end stage) treatment. They received at least three treatment sessions | Individuals' own physicians were not described | Cross-sectional descriptive study with two questionnaires among 411 patients. One questionnaire measured the patient-physician relationship and the other the health-related quality of life. To evaluate the questionnaire's validity, exploratory factor analysis was conducted | Trust in physicians was measured using the Patient-Physician Relationship questionnaire | -Patient information<br>-Patient decision making | -- | -- |
| Dong/2014/ China (15) | Outpatient clinics at three Shanghai (China) general hospitals | Randomly selected outpatients that were treated ≥2 times per year by the same physician between November 2008 & December 2008<br>Patients had to be 18 or older | Individuals' own physicians were not described | There were 352 patients randomly approached while waiting to see a physician and asked to fill out a translated version of the Wake Forest Physician Trust Scale. Data was analyzed using spearman's correlations | Trust in the physician was measured with the C-WFPTS (Chinese version of the Wake Forest Physician Trust Scale) | -Educational level<br>-Increasing age of the patient<br>- More physician visits | -- | -Sex<br>-Birthplace of the patient<br>-Type of insurance |
| El Malla/2012/ Egypt (16) | Children's Cancer Hospital (CCH) in Cairo, Egypt. The CCH was a free-of-charge hospital founded by donations | All parents of children newly diagnosed with cancer and admitted to receive the first chemotherapy cycle | Individuals' own physicians were not described | Two study-specific questionnaires were developed on the basis of in-depth-interviews. Questionnaires were filled out by 304 parents at two different time | Trust was measured with single items in the questionnaire at the second time point | -Caring disposition of the physician<br>-Conversational style of the physician (kind and thoughtful)<br>- Intellectual and emotional needs of the parents were met | -Disrespectful and arrogant attitude<br>-Giving information in an insensitive manner | |

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| | | | | points: at the start of the first chemotherapy cycle and before the third chemotherapy cycle. For the outcome 'trust in the physician', the percentage of parents in each category of the independent variable was calculated. Then, the relative risk (RR) was calculated, including 95% CIs. | | | | |
| Fiscella/2004/ USA (17) | The study was conducted in managed-care organizations with primary care physicians in the United States | Two standardized patients (SP's) visited the physician unannounced. Fifty regular patients of the physicians filled out a survey | One hundred community-based primary-care physicians who were members of a local managed-care organization | SP's visited the physicians. This visit was recorded and physician behavior was assessed afterwards. The SP's and regular patients of the physicians filled out a survey to measure trust. Data was analyzed using multilevel modelling | Physician trust was measured using the 8-item Primary Care Assessment Survey trust subscale | -Patient age<br>-Health condition of the patient<br>-Good mental status of the patient<br>-Physician age<br>-Longer physician-patient relationship<br>-Family practice specialty<br>-Length of the visit<br>-Exploring patient experience of disease and illness | -Somatization of the patient | -Sex<br>-Finding common ground<br>-Physician understanding the patient's social context |

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| Gopichandran/ 2015/India (18) | Rural and urban settings in Tamil Nadu, south India | Adults living in four districts of Tamil Nadu were chosen through a multistage sampling method | The participants answered questions about their primary care physicians. There was a variety of physicians:<br>- government doctors<br>-private practitioners<br>- unqualified and unregistered practitioners | A cross-sectional household survey was conducted using a structured questionnaire and was filled out by 625 participants. The questionnaire included questions concerning factors influencing trust in physicians. The data was analyzed using structure equation modelling | A questionnaire specific for this study was conducted to measure trust. A structural equation model was constructed with the dimensions of trust and four factors influencing trust | -Sex of the patient (women were less trusting than men)<br>-Physician's behavior (clear explanations, listening patiently, smiling)<br>-Communication skills of the physician<br>-Comfort with the physician | -- | -Shared identity<br>-Age of the patient<br>-Occupation of the patient<br>-Place of residence of the patient (urban/rural)<br>-Personal involvement (knows the family situation, knows the name of patient, treats the patient like family) |
| Gupta/2014/ USA (19) | Cardiology department in an academic tertiary care university hospital in the United States | Patients who were hospitalized with acute coronary syndrome or heart failure | -- | A cross-sectional survey was distributed among 1,232 patients. The survey included multiple scales such as ENRICHD Social Support Inventory Functional Health Literacy in Adults. Data was analyzed using multivariate analysis | Wake Forest Physician Trust Scale | -- | -Poor social support<br>-Poor Coping skills<br>-Low health literacy | -Race<br>-Marital status<br>-Income<br>-Age<br>-Sex<br>-Years of education<br>-Employment status |
| Hamelin/2012/ Canada (20) | A tertiary teaching hospital in Canada that involved residents, undergraduates, and graduate | Patients were visitors of hand clinics and potentially needed hand surgery | Physicians were academic hand plastic surgeons. There were surgeons, residents, and undergraduate | In this prospective clinical study, a questionnaire was distributed among 122 patients. Professionalism, physical | The second survey (after the consultation) included statements in regard to trust | -Physician speaking in a way the patient could understand (verbal communication skills) | -- | -Sex<br>-Age<br>-Education<br>-Income |

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| | medical students. Patients were recruited during weekly hand clinics | | medical students involved | environment, and verbal and nonverbal communication skills were assessed. After filling out the survey, the patients had a consultation with their physician. After the consultation, they filled out another survey, including an assessment of the quality of the relationship. Data was analyzed using Chi-squared tests | in the physician | -Perceived technical skills of the physician by the patient<br>-Physician telling the truth about the medical condition of the patient<br>-Physician answering all questions<br>-Physician offering all options for medical treatment (including non-surgical options)<br>-Physician giving the patient enough time to explain the reason for the visit | | |
| Hendren/2019/ Canada (21) | An invited commentary on trust in health care, especially in the context of competency-based medicine | Not applicable | Not applicable | Invited commentary | Described how trust can be built and which factors are important for building trust in a patient-physician relationship and in a teacher-student-relationship | -Nonverbal communication<br>-Verbal communication<br>-Time (more trust if there was more time with the physician) | -Physician's arrogance<br>-Physician's negligence<br>-Physician's lack of concern | -- |

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| Hillen/2011/the Netherlands (22) | The review included studies with oncology patients | Cancer Patients | Oncologists | Empirical literature published in peer-reviewed journals between October 1988 and October 2008 was searched to conceptualize oncology patients' trust in their physicians | The review included studies that conceptualized trust either quantitatively or qualitatively | -Age (the older the more trust)<br>-Sex (woman had more trust)<br>-Educational level<br>-Physician's perceived technical competence<br>-Honesty<br>-Patient-centered behavior<br>-Patient-centered communication<br>-Continuity of care | -Ethnicity (African Americans) | -- |
| Holwerda/2013/ the Netherlands (23) | Three academic hospitals in the Netherlands | Cancer patients diagnosed with breast cancer, gastrointestinal cancer, cervical cancer or prostatic cancer within the last three months. They had an expected survival rate of at least one year | -- | A psychologist interviewed 130 patients to assess attachment style. In total, patients gave two interviews and filled out five surveys within a year. A mediation model based on a bootstrapping method was used to examine whether trust was mediated between attachment and satisfaction or attachment and distress | Short version of the Wake Forest Physician Trust Scale | -- | -Insecure attachment style of patients | -- |

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| Kanter/2019/ USA (24) | This study was conducted to compare different states in the United States and how the health care payment system works i.e., if the information is publicly accessible or not | Adults in the United States that were 18 or older and chosen from a representative sample | Individuals' own physicians were not described, but the participants had to name the physician they saw most frequently in the last twelve months | There were 2,180 respondents to a 2-wave survey. The first survey was distributed before payments were made public, the second survey was distributed 2 years later | The 5-item validated Wake Forest measure of Trust in one's own physician | -- | -Public disclosure of payments (regardless of whether respondents knew their physicians had received payments) | -- |
| Kao/1998a/USA (25) | The study was conducted in Atlanta (United States) in a national managed-care organization | Individuals 18 or older who made at least one visit to a primary care office during the period between January 1994 and June 1995 | Primary care physicians who had at least 40 eligible plan members in their practices.<br>- 15 salaried<br>-15 fee-for-service | A cross-sectional survey was conducted and filled out by 292 patients. Questions covered whether physician choice, length of the patient-physician relationship, and the perceived physician payment method predicted patients' trust in their physicians. Data was analyzed using linear regression models | A 16-item scale was used to assess patients' trust in their physician (unpublished) | -Having enough choice of physicians<br>-Longer patient-physician relationships<br>-Trust in a managed-care organization | -- | -Having a choice of health plan<br>-Cynicism<br>-Belief in the goodness of people<br>-Length of treatment plan enrollment (in years)<br>-Number of primary care office visits<br>-Age<br>-Sex<br>-Race<br>-Self-perceived health status |
| Kao/1998b/ USA (26) | Patients from three different states in the United States with the same insurance were interviewed | Individuals 18 or older who had a primary care physician visit in 1995 and were enrolled in managed care or indemnity plans of a large, | Primary care physicians based on their payment method | Cross-sectional telephone interview survey among 2,086 patients. They were asked about their physician's payment and patient-centered | A 10-item scale was developed to measure trust based on an existing trust-scale | -Physician paid by the number of office visits (instead of a fixed salary)<br>-Patients not knowing how the physician is paid | -- | -- |

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| | | national health insurer | | care. T-tests were used to compare patient trust by actual and perceived method of physician payment | | | | |
| King/2021/ USA (27) | Hospital-based addiction medicine consultation service with comprehensive care including physicians and social workers who offered support after hospital discharge to patients identified with substance use disorder during their hospitalization | Patients with substance use disorder seen and referred to an addiction consulting service during hospitalization | Addiction medicine physicians and advance practice providers | Two surveys were filled out by 328 patients, the first while hospitalized and the second 30–90 days after hospitalization. The questionnaire included demographic questions, and questions about substance use and patient experience. Trust trajectories were modeled using discrete mixture modeling | Wake Forest Provider Trust Scale | -Patients receiving addiction consulting services | -- | -- |
| Kowalski/2009/ Germany (28) | All 49 breast centers in the German state of North Rhine-Westphalia | Patients who had undergone inpatient surgery for newly diagnosed breast cancer between February 1 and July 31, 2006 and had at least one malignancy as well as at least one postoperative | Individuals' own physicians were oncologists | A cross-sectional study using a standardized postal questionnaire was filled out by 3,131 patients. The survey included the Cologne Patient Questionnaire for Breast Cancer, and questions regarding the physician's communication behavior, | Trust in Physician Short Form Scale with three items | -Perceived physician accessibility<br>-Physician's communication behavior<br>-Cancer stage<br>-Type of treatment | -Poor organizational climate (perceived organizational chaos) | -Perceived admittance processing |

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| | | histology. Only female patients were included | | organizational climate, and demographic characteristics. Data was analyzed using multiple linear regression | | | | |
| Kushnir/2008/ Israel (29) | Regional child development center in Israel among Israeli parents, Jews and Bedouins | Children 6 months to 6 years of age, underwent rehabilitation therapy (due to disability diagnosis) at the center at least once a month and whose parents were given instructions for home therapy and were followed by the hospital for at least six months | Five Jewish, Arab-speaking pediatricians with substantial experience working within the Bedouin culture | One hundred and ninety-three parents filled out a questionnaire. The measures included the parents' educational levels, and number of children in the family. In addition, there were included measures of parents' evaluations of the pediatricians' interpersonal communication style. Data was analyzed using hierarchical multivariate regression | Trust in the center's pediatricians was measured by three survey items (e.g., I trust the physician) that were previously used and piloted | -Communication styles of interest and collaboration<br>-Ethnicity (Bedouins had higher trust than Jews) | -- | -- |
| Mack/2020/ USA (30) | Two different pediatric cancer hospitals in different states in the United States | One parent per family; the child had to be <18 years, and 1–6 weeks out from a diagnosis of cancer at initial contact | Primary oncologists of children with cancer | One hundred and sixty-six parents of children with cancer were surveyed multiple times (first time 1–6 week after diagnosis). Questions concerned demographics, | A single item from the Trust in Physician Scale | -High quality physician communication<br>-Parents receiving high quality information | -Relapse | -- |

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| | | | | physician's communication and sensitivity, the role parents played and wished to play in treatment, and treatment success. Bivariable and multivariable logistic regression was used to analyzed the data | | | | |
| Mainous/2001/ USA & UK (31) | Several ambulatory practices in the United States and United Kingdom | Patients that had visited an ambulatory practice | General practitioners and family medicine physicians | A cross-sectional survey was filled out by 1,068 patients measuring continuity and source of care, and the importance of the continuity of care. Data was analyzed using spearman's correlation | Trust in Physician Scale | -Continuity of care<br>-Length of time with one's regular physician<br>-The importance of seeing one's regular physician each time<br>-Age (older = higher trust) | -- | -Country of residence |
| Marcinowicz/ 2017/Poland (32) | Two primary care surgeries in primary health care units in north-east Poland | Outpatients of primary care surgeries | Half of the patients came to see family doctors, the others came to see a trainee | Cross-sectional study using the 'trust in physician scale' (TIPS). The study was survey-based<br><br>Ninety-nine patients filled out a cross-sectional survey before their consultation | Trust in Physician Scale | -Family doctor (compared to a trainee)<br>- Age (younger = higher the trust) | -- | -Sex<br>-Education<br>-Place of residence<br>-Self-assessment of health and declared chronic disease |

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| Nelms/2014/ USA (33) | Primary care clinics in the Appalachian region of Ohio, United States. This region has a high poverty rate. Eight primary care clinics (private and university based) were involved | Patients who were current smokers. The participants were currently enrolled in a tobacco-dependence treatment program on quitting attempts and use of smoking cessation pharmaco-therapy (Medicaid) | Individuals' own physicians were not described | Cross-sectional study of 229 smokers who filled out a baseline survey and were interviewed a week later. The questionnaire included demographic information, health, health care provider-related, and smoking-related variables | Trust in Physician Scale | -Better self-reported health | -- | -- |
| O'Malley/2002/ USA (34) | The study was conducted among targeted households based on a population-based sample in the United States | Participants were female, over 40 years old, residing in Washington, D.C., and living in a census tract where at least 30% of the households had an income <200% of the 1999 poverty guidelines for a family of four | Individuals' own physicians were not described | A telephone survey was conducted with 1,205 individuals. They were asked about continuity of care, accessibility, and comprehensive service delivery. Data was analyzed using the Chi-squared test. | Trust was measured with a single item asked by phone (altogether, how much do you trust your doctor? On a scale from 0 to 10, whereas 0 means not at all and 10 means completely) | -Continuity with a single clinician<br>-Organizational accessibility of the practice<br>-Comprehensive care<br>-Coordination of specialty care services<br>-Age (the older the more trust)<br>-Health (the healthier the more trust)<br>-Insurance status | -More formal education | -Geographic or financial access |

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| Oguro/2021/ Japan (35) | An out-sourced company recruited a desired number of patients with non-communicable diseases through an online-tool in Japan | Japanese individuals aged 20 years or older with non-communicable diseases such as cardiac disease, diabetes, cancer, depression, and rheumatic disease | -- | A cross-sectional online survey was filled out by 661 patients. Measurements were for general levels of interpersonal trust and satisfaction. Data was analyzed using explanatory factor analysis. | Japanese version of the Abbreviated Wake Forest Physician Trust Scale | - Age (older = higher trust) | -Dissatisfaction with a family member's medical care<br>-Graduate school education (lower trust than those with junior high school education) | -Duration of the relationship with the physician |
| Parchman/2004/ USA (36) | A longitudinal survey sample of a Medicare population | Participants were 65 and older | Individuals' own physician were not described | Data from 10,323 participants was analyzed. Questions concerned the length of the relationship with a physician, communication, and the delivery of preventive services. Data was analyzed using path analysis and regression analysis | Unclear | -Preventive service delivery<br>-Length of the physician-patient relationship (communication, accumulated knowledge of the patient by the physician) | -- | -- |
| Rawaf/2007/ USA (37) | Three urban tertiary medical centers and their primary care departments in the United States | White and African-American patients diagnosed with hypertension | Primary care physicians | In a cross-sectional survey among 793 patients, sociodemographic questions, prior experiences with providers, and blood pressure control questions were asked | An 11-item scale adapted from a validated Trust in Physician Scale | -Race (white individuals)<br>-Employed<br>-Higher level of education<br>-Experiences with the provider (more information/ exchange about hypertension and its management) | -- | -- |

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| Shaya/2019/ Lebanon (38) | Twenty-seven individuals from different governorates and residential areas (urban, suburban and rural) in Lebanon. The study was conducted in the context of the Lebanese health care system | The Lebanese public (not only patients) could participate in the study (convenience and maximum variation sampling methods) | Not applicable | Exploratory qualitative design with semi-structured interviews | The interview data was analyzed with a grounded theory methodology that resulted in a framework describing factors influencing trust in physicians | -Country of physician training (North America/Western Europe)<br>-Institution of practice (reputable)<br>-Years of experience (more)<br>-Being experienced vs. being up-to-date (up-to-date)<br>-Physician's attire and hygiene (professional attire)<br>-Physician being competent<br>-Good rapport<br>-Encounter time (longer)<br>-Not money oriented<br>-Physician being recommended by a family member<br>-Physician being a family member<br>-Physician being featured in media<br>-Good reputation of the physician | -Country of physician training (eastern Europe)<br>-Institution of practice (non-reputable)<br>-Physician's attire and hygiene (unprofessional attire)<br>-Physician being incompetent<br>-Making major mistakes (e.g., leading to death)<br>-Poor rapport<br>-Encounter time (shorter)<br>-Free consultation/ medication (suspicious about intention)<br>-Money oriented<br>-Poor reputation of the physician | -Physician's sex<br>-Not making mistakes (small ones)<br>-Educating patients<br>-Consultation fees |

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| Shoemaker/ 2019/USA (39) | Most recent childbirth (if there was more than one) | Participants were 314 women over the age of 18, living in the United States, who had given birth to at least one child | Individuals' own physicians were not described | An online survey with four validated sub-surveys was distributed. Next to trust, patient-level collaboration, adverse events, and institutional betrayal was measured. Data was analyzed with correlation analysis and mediation models | Trust in Physicians and Medical Institutions Scale | -Patient-physician alliance in decision-making | -Experiences of adverse events<br>-Unexpected diagnoses<br>-Unexpected procedures<br>-Institutional betrayal | -- |
| Thom/1997/ USA (40) | Three diverse settings in the San Francisco Bay Area (United States). Setting one was a university-based family practice. Setting two was a sample of English-speaking Hispanic women who had visited a family practice residency clinic in San Jose within the last six months. The third setting consisted of participants who were recruited in a publicly supported medical | The 29 participants were highly diverse (recruitment in different settings) and between 23 and 72 years old | Individuals' own physicians were not described | Four semi-structured focus groups with 4 to 11 members were conducted, audio-recorded, transcribed, and coded. Data was analyzed using the techniques of grounded theory | The working definition of trust was "the patient's confidence that the physician will do what is best for the patient." | -Thoroughly evaluating problems<br>-Understanding the patient's individual experience<br>-Expressing care<br>-Providing appropriate and effective treatment<br>-Communicating clearly and completely<br>-Building a partnership/sharing power<br>-Demonstrating honesty/respect for the patient<br>-Predisposing factors<br>-Structural/staffing | -- | -- |

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| | clinic in a lower income area | | | | | | | |
| Wang/2018/ China (41) | Twelve leading public hospitals (in terms of patient volume) in China from different areas and provinces | There were 5,714 inpatient and outpatients | Individuals' own physicians were not described | A survey was distributed in the hospitals. Variables included: age, sex, ethnicity, marital status, educational level, occupation, local/nonlocal residence, urban/rural residence, insurance type, personal monthly income, religious beliefs, family economic status, whether the respondent was a first-time visitor to the hospital, overall satisfaction with life, perceived importance of personal health, general level of optimism/ pessimism, and inpatient or | Chinese version of Wake Forest Physician Trust Scale. | -Inpatient setting (compared to outpatient)<br>- Family economic status | -Sex (men)<br>-Previous visits to the hospital<br>-Departments (medical, surgical, pediatrics, gynecology, and obstetrics)<br>-Age<br>-Education<br>-Personal monthly income<br>-Overall satisfaction with current life status<br>-Degree of emphasis on personal health | -Occupation of the patient<br>-Household registration (urban vs. rural)<br>-Basic medical insurance for urban employees<br>-New rural cooperative medical system<br>-Commercial medical insurance |

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| | | | | outpatient status. Data was analyzed with one-way ANOVAs and mixed-effects regression models | | | | |
| Weng/2008/ Taiwan (42) | One hospital in Taiwan | There were 983 patients that had visited a hospital in Taiwan | Thirty-nine physicians of the 983 patients. Their specialty was either surgery or internal medicine | Nurse practitioners conducted structured interviews with patients to measure trust, the patient-physician relationship, and satisfaction with the physician. Physicians were also asked about the patient-physician relationship. Three nursing directors were used as an external source to assess the emotional intelligence of physicians. Path analysis was used to analyze the data | Trust in the Medical Profession Scale | -Physician's emotional intelligence<br>-Higher rates of patient follow-up visits | -- | -Age of the physician |
| Wolfson/2021/ USA (43) | This commentary was written as part of the Building Trust initiative of the American Board of Internal Medicine Foundation | Not applicable | Not applicable | Participants of the trust practices network (a branch of the Building Trust initiative) offered examples of how they have built trust. These contributions led to | -- | -Competency<br>-Caring (compassion, empathy, and concern for the patient's welfare)<br>-Communication (respect and | -- | -- |

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| | | | | four potential factors that increased trust in healthcare | | understanding for the patient)<br>-Comfort | | |
| Wu/2021/China (44) | Hospitals (103) in different areas of China (developed and undeveloped regions) | There were 2,256 mandarin speaking patients. The mean age was 43.2 years (SD = 15.9), ranging from 18 to 95 years | Individuals' own physicians were not described | A cross-sectional survey was distributed to patients. Measures included demographic characteristics, the Consultation and Relational Empathy Scale, and the Chinese version of the Patient-Doctor Relationship Questionnaire. The data was analyzed using Pearson's correlation and Hayes mediation analysis | The Chinese version of the Wake Forest Physician Trust Scale | -Physician's empathy<br>-Patient's overall trust (propensity to trust) | -- | -- |
| Yang/2021/ China (45) | The study was conducted in a single tertiary hospital in suburban China within four departments (Emergency Medicine, Pediatrics, Cardiology, and Orthopedics) | Patients in outpatient clinics of emergency medicine, pediatrics, cardiology, and orthopedic surgery. In pediatrics, parents were surveyed if the patient was | Different physician specialties such as emergency medicine, cardiology, pediatrics, and orthopedics | A cross-sectional survey that included measures about demographics, educational level, socioeconomic status, insurance type, and questions regarding patients' perceptions of care. The survey was filled out by 436 patients who had | Chinese version of the Wake Forest Physician Trust Scale | -Trust in emergency physicians and cardiologists was higher | -Lack of improvement in condition<br>-Trust in pediatricians was lower<br>-Dissatisfaction with the hospital in general | -- |

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| | | under than 18 years of age | | previously seen their physician. Data was analyzed using correlations and ANOVA's | | | | |
| Zhao/2016/ China (46) | Two tertiary, public hospitals in China | Outpatients that had visited and were registered /admitted to one of the hospitals | Individuals' own physicians were not described | A cross-sectional survey was filled out by 100 patients and included questions about demographics and insurance. Data was analyzed using a binominal logistic regression | Trust was measured using a 10-item Likert scale | -Age of patients (older = higher trust)<br>-Annual income of patients (higher income = higher trust)<br>-Education level of patients (higher education = higher trust)<br>-Type of health insurance coverage (coverage = higher trust) | -- | -Sex<br>-Marital status<br>-Household registration |


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## Appendix V: Paper V

**Lerch, S. P**., Bussmann Y., de la Croix, A., Huwendiek, S., Macdonald, M., Mauer, D., Metry, B., Schlegel, S., Schnabel, K., Wagner, L., Walther, J., Watzek, D., & Lörwald, A. (in review). Teaching Trust: Educational ingredients that stimulate trustful patient relationships. *Frontiers in Medicine.*

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# Teaching Trust: Educational ingredients that stimulate trustful patient relationships

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## Author contribution statement

SL and AL contributed to conception and design of the study. SL, YB and AL coordinated the study. AC, MM, BM, CS, LW and DW presented at the symposium as part of the study. AC, SH, MM, DM; BM, CS, KS, LW, JW and DW supported data collection as part of the nominal group technique. SL wrote the first draft of the manuscript. YB, BM, AC and AL wrote sections of the manuscript. AL edited the first draft of the manuscript. All authors contributed to the manuscript revision, read, and approved the submitted version.

## Keywords

Trust, Health care professional education, relationships, Rapport, Communication, psychological safety



## Abstract

Word count: 343

Background: Establishing trusting relationships with patients is key for all health care professionals. While the importance of trust in health care professional and patient relationships is stated in the learning objectives of all curricula, building these relationships is more difficult to teach and assess than other competencies. Therefore, our aim was to provide an overview of potential teaching methods to establish trustful provider-patient relationships and assist curriculum directors and teachers to meet this important, essential competence.Methods: Three research questions were explored: 1) What should be taught to enable future health care professionals to build trusting relationships with their patients?; 2) How can it be taught?; and 3) How can identified competencies be matched with teaching methods?'. We conducted a two-day symposium that included ten different health care professionals who presented how trustful patient relationships are taught in their fields. Following the symposium, the presentations were summarized, and ideas were further developed through group discussions using the nominal group technique.We constructed a matrix that combined the content and methods that could be used to teach students how to build trusting relationships. Students should be taught about "aspects of the health care system/context", a "humanistic attitude", "patient perspectives and context", "self-reflection and inner attitude", "providing information", "knowledge about relationships", "dealing with diversity", "promoting patient agency", and "professional competence". Methods included "(interprofessional) communication trainings", "role playing", the "exchange of experiences with real patients and their relatives", "supervised clinical practice", "plan analysis and motive-oriented relationship", "mindfulness training", "(interprofessional) Forum Theater", "sequential simulations", "reflection", "feedback", "knowledge transfer", "video analysis", and "language training".Using our matrix, curriculum directors and teachers can gain an overview of how to teach students to build trustful relationships and ensure that this crucial element of health care is adequately implemented in their curricula. One major challenge is bridging the gap between classroom teaching and clinical practice. To integrate these, we recommend students begin supervised clinical practice early and work with supervisors or mentors who direct them for longer periods of time. Future research should elaborate on the effectiveness of the different teaching methods identified here.

## Contribution to the field

In recent decades, there has been a growing recognition of the heightened significance and focus placed on the communication skills of healthcare professionals. As a result, curricula have been developed to specifically address these skills, with the aim of equipping future healthcare practitioners with the ability to establish therapeutic alliances and foster trusting relationships with their patients. However, it is important to emphasize that the establishment of trust itself constitutes a crucial competency that extends well beyond mere communication skills. Thus, it warrants dedicated attention in educational programs. The purpose of this paper is to lay the foundation for teaching trust to students in healthcare professional programs and to underscore the importance of this key competency that surpasses the boundaries of effective communication, thereby encouraging further recognition and exploration.

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# Teaching Trust: Educational ingredients that stimulate trustful patient relationships

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## Abstract

**Background:** Establishing trusting relationships with patients is key for all health care professionals. While the importance of trust in health care professional and patient relationships is stated in the learning objectives of all curricula, building these relationships is more difficult to teach and assess than other competencies. Therefore, our aim was to provide an overview of potential teaching methods to establish trustful provider-patient relationships and assist curriculum directors and teachers to meet this important, essential competence.

**Methods:** Three research questions were explored: 1) What should be taught to enable future health care professionals to build trusting relationships with their patients?; 2) How can it be taught?; and 3) How can identified competencies be matched with teaching methods?'. We conducted a two-day symposium that included ten different health care professionals who presented how trustful patient relationships are taught in their fields. Following the symposium, the presentations were summarized, and ideas were further developed through group discussions using the nominal group technique.

**Results:** We constructed a matrix that combined the content and methods that could be used to teach students how to build trusting relationships. Students should be taught about "aspects of the health care system/context", a "humanistic attitude", "patient perspectives and context", "self-reflection and inner attitude", "providing information", "knowledge about relationships", "dealing with diversity", "promoting patient agency", and "professional competence". Methods included "(interprofessional) communication trainings", "role playing", the "exchange of experiences with real patients and their relatives", "supervised clinical practice", "plan analysis and motive-oriented relationship", "mindfulness training", "(interprofessional) Forum Theater", "sequential simulations", "reflection", "feedback", "knowledge transfer", "video analysis", and "language training".

**Conclusion:** Using our matrix, curriculum directors and teachers can gain an overview of how to teach students to build trustful relationships and ensure that this crucial element of health care is adequately implemented in their curricula. One major challenge is bridging the gap between classroom teaching and clinical practice. To integrate these, we recommend students begin supervised clinical practice early and work with supervisors or mentors who direct them for longer periods of time. Future research should elaborate on the effectiveness of the different teaching methods identified here.

## Background

Establishing trusting relationships with patients is key to all health care professionals (1, 2). While the importance of trust in health care professional-patient relationships is clearly stated in the general learning objectives of all curricula (3-12), building trusting relationships is more difficult to teach and assess in comparison to, for example, biomedical knowledge. Therefore, our aim is to provide an overview of possible teaching methods to establish trustful provider-patient relationships and help curriculum directors and teachers meet this important and essential competence.

Trust in psychology is defined as one party's readiness to expose themselves to the actions of another party, anticipating the latter's performance of a specific action crucial to the trustor and without the trustor's possibility to control or monitor the actions (13-18).

Patient-health care provider trust is the foundation for a positive health care experience for patients (19, 20). Trust enables patients to be comfortable in disclosing sensitive personal information about their health status, lifestyle, and other issues that may affect their health. Patients who trust their health care providers are more likely to follow their advice and adhere to treatment plans (21, 22), which leads

to improved health outcomes (23-29). Moreover, trust is essential for effective communication between patients and health care providers. Patients who trust their health care providers are more likely to engage in open and honest communication, which is necessary for building an accurate understanding of the patient's health status, identifying concerns, and developing a treatment plan that addresses the patient's needs. Effective communication based on trust can also help health care providers understand the patient's perspective, which is critical when providing patient-centered care (30, 31).

Patient-health care provider trust is also essential from an ethical perspective. Patients entrust their health care providers with sensitive personal information and their health and well-being, and they expect to be treated with respect, dignity, and professionalism (32). Health care providers have a duty to respect their patients' autonomy and to work in their best interests, which requires the establishment of a trusting relationship.

There are many theories on how interpersonal trust evolves. The most common theory of Mayer et al., 1995 claims that trust emerges as a result of the benevolence, ability, and integrity of the trustee as perceived by the trustor, the trustor's propensity to trust and the perceived risk (13). This model focuses on trustor and trustee as separate individuals and neglects the dyadic relationship and context factors (14). Newer research on trust also acknowledges temporal dynamics in trustful relationships. Trust is not constant but changes over time (14). The same accounts for trust research specifically conducted within health care (16). Keeping the complexity of interpersonal trust in mind, in our study, we focus on the trustee, namely the health care professional. A recent review by Taylor et al. (2023) has shown, that healthcare professional as trustee is still an understudied factor on how trust between health care professional and patient emerges (15). Therefore, based on the theoretical influencing factors we now asked specifically health care professionals:

1. What should be taught to enable future health care professionals to build trusting relationships with their patients?

2. How can these competencies be taught?

3. How can identified competencies be matched with teaching methods?

## 1 Methods

This was a qualitative, descriptive study of multiple professional perspectives on teaching trust. Data consisted of the summaries from symposium presentations and two group discussions that followed the nominal group technique (NGT) approach (33). We chose this approach to investigate the research questions carefully including the views of different experts from the symposium and the two NGT rounds. We believe this is a suitable approach to answer the research question, as trust is seen as a very complex human phenomenon (14), even though contributors to trust have been defined (13). In health professions education there is no common ground yet what needs to be taught and how to foster trust. NGT is an acknowledged method to address complex issues like defining competencies within medical education (34). A graphical overview of our method can be found in Figure 1.

### 1.1 Symposium presentations

To gather different perspectives on our three research questions, a two-day symposium was conducted where ten different health care professionals held presentations concerning how trustful patient relationships are taught in their fields.

### 1.2 Characteristics of presenters

Lucia Wagner (LW) has a Master's degree in Business Administration and a Bachelor's degree in Physical Therapy and works as a standardized patient and clinical skills trainer at the Institute for Medical Education at the University of Bern and was head of the Patient Council of the Insel Group. Her presentation explored why a trusting doctor-patient relationship is important. Beatrice Metry (BM) has a Master's degree in Industrial and Organizational Psychology and works as an independent consultant and trainer and as a research associate at the Bern Institute of Family Medicine at the University of Bern. The topic of her presentation was how relationship building and communication is taught in medical school at the University of Bern. Anne de la Croix (AC) is an assistant professor at the Faculty of Medicine at the Vrije Universiteit Amsterdam. Her presentation was on teaching trust at medical schools and how a pedagogy of human connection can be accomplished. Laura Möseneder is the head psychologist of inpatient geriatric psychiatry at the Regionalspital Emmental in Burgdorf, Switzerland. The focus of her presentation was on shaping relationships with patients in psychiatric and psychotherapeutic settings. Claudia Graf works as a chaplain at the Hospital Region Oberaargau (Spital Region Oberaargau; SRO Langenthal) and is the study director of the Certificate of Advanced Studies Hospital and Clinic Chaplaincy Study Director at the University of Bern. Her presentation was concerned with how relationship building is taught in hospital chaplaincy education and training and how it works in practice. Dörte Watzek (DW) is a lecturer in the physiotherapy program at the Bern University of Applied Sciences Health. Her background is masseur and psychologist, and she now combines the fields of physiotherapy and counseling. She was accompanied by David Werner, a communication coach and actor. Their presentation focused on the various forms of communication training and Forum Theater. Claudia Schlegel (CS) is the head of the Learning Area Training and Transfer at Berner Bildungszentrum Pflege. The focus of her presentation was on building trusting relationships between nurses and patients. Mia Macdonald (MM) and Christina Thomas are co-directors of the BSc & MSc degrees in Osteopathy at the Swiss Distance University of Applied Sciences (FFHS) and work as osteopathic clinicians. Their presentation was on the development of trustworthy relationships using the Principal Relevant Objectives and Framework for Integrative Learning and Education in Switzerland (PROFILES) for the osteopathic degree.

### 1.3 Characteristics of the other authors

All presenters and participants at the symposium were invited to co-author this paper. The final group of co-authors consisted of six presenters (DW, MM, CS, AC, LW, and BM), four participants (DM, SH, JW, and KS) and the three organizers of the symposium (SL, YB, and AL). Sören Huwendiek (SH) MD, PhD, MME, FAMEE is Head of the Department for Assessment and Evaluation and associate professor for Medical Education at the Institute for Medical Education, University of Bern. His research focuses on medical educational innovations with the goal to improve patient care. Daniela Mauer (DM) and Dörte Watzek (DW) are psychologists, coaches and trainers for social and communicative skills. DM works as a curriculum developer for medical education, focusing on communication, relationship building, and professional identity formation. DW teaches at a university of advanced studies for physiotherapists and takes part in developing curricula including communication training, interprofessional communication, relationship building, and dealing with conflicts. Mia Macdonald (MM) is degree co-director of a modern BSc & MSc in Osteopathy and in charge of developing the new curriculum for osteopaths at the Swiss Distance University of Applied

Sciences. She has experience with quantitative research at the University of Applied Sciences Western Switzerland, mainly publishing in the field of osteopathy, chronic pain management, transgender health care, and works as an osteopathic clinician in Zurich. Kai Schnabel (KS) MD, MME is Head of the Department for Education and Media at the Institute for Medical Education. His research focuses on the effects of media on clinical skills. Juliane Walther (JW) is a PhD student in medical education. She studied philosophy, neuroscience and cultural science and teaches at the Swiss Distance University of Applied Sciences. Seraina Lerch (SL) is a psychologist who is currently undergoing postgraduate training in health and emergency psychology. She is employed as a research assistant and is a doctoral candidate in medical psychology. Her research focuses on investigating trust and entrustment in the context of medical education. Yara Bussmann (YB) is a psychology student at the University of Basel and assisted in the project as part of a research internship. Andrea Lörwald (AL) is a postdoc in medical education. She studied neuroscience and business psychology. Her research focuses on communication and relationship building.

### 1.4 Nominal Group Technique

Following the symposium, YB summarized the presentations using PowerPoint slides and audio recordings from the presentations. These summaries in German can be requested at the corresponding author. Afterwards, the speakers were asked to verify the content of the summaries of their presentations. Three research questions were developed: 'What should be taught to enable future health professionals to build trusting relationships with their patients?'; 'How can this be taught?'; and 'How can identified competencies be matched with teaching methods? To answer these questions defined with help of the symposium, we conducted two rounds of NGT. This technique is chosen for complex problems (35), like defining competencies within medical education (34). NGT is a structured method commonly used for group brainstorming. In its original version, the NGT consists of five steps: First, the research question is stated. In the second step, each group member suggests as many solutions or ideas as possible and writes these down during a set period of time. For the third step, the group members take turns stating their ideas, which are then discussed in the fourth step. In the fifth step, all of the recorded ideas are prioritized in relation to the original research question (36). Usually, there is no analysis after rounds of NGT as the results are discussed and finalized during the discussion rounds. We carefully predefined each step of the NGT, starting with step 1, in this case outsourced at the symposium. Step two, the silent generation of ideas, was not conducted in the online meetings but experts could answer the questions by themselves quietly and prepare for step 3 of NGT before each meeting. For this, we sent E-Mails to the respective participants of the NGT round with a predefined task to brainstorm about the RQ.

Co-authors JW, DM, LW, CS, and AL individually brainstormed on the first research question "what should be taught" using the summaries of the symposium presentations (step 2). In addition to the summaries, own ideas could be generated. In a joint online meeting (step 3-5) of JW, DM, LW, CS, SL, YB and AL, the contents were further condensed and synthesized (Same ideas named differently were merged. All ideas were kept). To do this, a modified version of the NGT was used (33). In our modified version, everyone presented their results concerning the first research question in the first round (step 3), which they prepared previously to the meeting by themselves. While sharing their ideas, they were not interrupted, to ensure all participants can speak and share their ideas. Afterwards, clarification questions could be asked to make sure, everyone understands what is meant. Then, these results were discussed and condensed into nine different key points concerning what should be taught (step 4). For this, information was reduced: Many ideas were presented by multiple experts of the NGT rounds but named differently. Therefore, during these discussions the same themes were merged into ones until consensus was reached. All presented ideas by the experts were kept in the results. These

discussions were moderated to ensure, all experts would be heard. After this meeting, all co-authors rated these key points from most to least important in their opinion. These results were then summarized into a ranking list. All participants at the end could verify that this list maps what was discussed (step 5).

For a second NGT round regarding RQ 2 and 3, AL and YB analyzed the summaries of the symposium presentations regarding the second research question and identified the most important teaching methods (steps 1 and 2). In a second joint meeting with DM, DW, MM, JW, CS, LW, YB, SL and AL, each member added further potential teaching methods (step 2). In the next step, the members explained and described what was meant for each teaching method (step 3). Teaching methods were then discussed and condensed (step 4). Same ideas named differently were merged. All teaching methods were kept. A general rating for which method was most important was not performed (step 5). Instead, this rating was performed individually by analyzing how appropriate the single methods were for teaching the different competencies (third research question).

To answer our third research question 'How can identified competencies be matched with teaching methods?', we combined the basic requirements and methods in a matrix. The co-authors DM, DW, MM, JW, CS, and LW assigned the different teaching methods to the competencies by rating them from 0 to 3, with zero indicating that the competency could not be taught with a given method and three indicating that the method worked well for teaching the competency. YB then calculated the rounded mean for each combination of teaching method and competencies.



## 2 Results

### 2.1 What should be taught?

The following results were obtained for our first research question 'What should be taught to enable future health professionals to build trusting relationships with their patients?':

**1) Aspects of the health care system and context**

Students should be aware of "aspects of the health care system and of the general context" in which they will be working. They must understand and fulfill their professional roles. They should know which factors facilitate building trusting relationships and how to create a positively facilitating environment. For this, they need to be aware of those factors that act as barriers or have a negative effect.

**2) Humanistic attitude**

Students should have a "humanistic attitude", which includes acceptance, empathy, congruence, and respect (37). They should be attentive, receptive, and show genuine empathy and interest in patients and their relatives. They should accept the other person as they are and view their patient as a person with agency, dignity, and self-efficacy.

**3) Patient perspective and context**

The "patient's perspective and context" includes the understanding of the counterpart and their individual situation as good as possible. Furthermore, health care professionals should acknowledge that patients are always the experts for their own condition. This includes perceiving and professionally dealing with patient emotions.

**4) Self-reflection and inner attitude**

Students should be strengthened in their "self-reflection and inner attitude". This includes knowing themselves as a person with their own attitudes and prejudices and to reflect on their own way to address the needs of others, including the needs of patients.

**5) Providing Information**

Students should be able to "provide information" adequately and clearly through the ability to adapt to the cognitive abilities of the patient and their relatives.

**6) Knowledge about relationships**

Students should have "knowledge about relationships" and the normality of ruptures. A rupture refers to a disruption or breakdown in the relationship between two or more people. Ruptures can occur when there is a disagreement, a misunderstanding, or a conflict between the two parties. The term 'rupture' is often used to describe a situation where the client feels misunderstood, unsupported, or invalidated by the professional, and, as a result, they may become resistant or defensive (38, 39). Ruptures can be caused by various factors including communication breakdowns, unmet expectations, cultural differences, and boundary violations. However, ruptures are an opportunity for growth and learning in therapy, as they can provide a chance for the professional and patient to work through difficult issues and improve their relationship. Student health care professionals may learn various strategies to repair the relationship and restore trust, such as acknowledging the client's feelings, apologizing for any mistakes or misunderstandings, exploring the underlying issues that led to the rupture, and collaboratively developing a plan to move forward.

Students should also recognize that a trusting relationship is healing. In addition, they should be aware of the effect of facial expressions, gestures, and body language on others and how to take this into account in a situation-specific way. This includes knowing the concept and elements of active listening as well as how to use it professionally.

**7) Dealing with diversity**

Students should be taught how to properly deal with people from diverse backgrounds. This includes knowledge related to inhibiting and reinforcing psychosocial and sociocultural factors. For this, curiosity for the counterpart is needed as well as a role-specific self-image that strengthens the ability to deal adequately with potentially influencing factors. Diversity-sensitive language and communication should be adapted appropriately to the person and situation.

**8) Promoting patient agency**

Students should learn how to "promote patient agency" such that patients can take an active role in dealing with their condition. Patient agency is defined as the capacity of the patient to act (40) to sustain or improve their own health (41).

**9) Professional competence**

Future health professionals must be competent in their field, including understanding the conditions of professional behavior and ensuring patient privacy.

## 2.2 How could it be taught?

We identified the following methods for how the contents from our first research question could be taught:

1) **(Interprofessional) communication trainings**

   In "communication training", students can practice conversations in a protected setting with standardized patients. Following conversations, students receive feedback by the standardized patient, communication trainer, or observers.

2) **Educational role play**

   In "educational role play", all conversational roles are portrayed by the students. In contrast to communication training, students also take on the role of a patient, a family member, teammate, etc.

3) **Exchange of experiences with real patients and their relatives**

   When students have the possibility to "interact with real patients and their relatives", they can better understand their experiences, the individual patient journey, and the complexity of the network of different doctors and institutions surrounding them.

4) **Supervised clinical practice**

   From internships, students can learn from a diverse pool of role models on how interaction and communication between physicians and patients occurs, acquire routine experience in taking medical histories, practice conversations with patients and their families, and gain experience in interprofessional communication and teamwork.

5) **Plan analysis and motive-oriented therapeutic relationship**

   "Plan Analysis and Motive Oriented Therapeutic Relationship (MOTR)" are frequently used in psychotherapy to establish therapeutic alliances with patients. In a plan analysis, a person's behaviors are related to their needs, and it is assumed that different behaviors are used to satisfy one's own needs. The goal of a plan analysis is to understand the patient's problems and to assess the requirements and possibilities for the therapy relationship. With MOTR, the goal is to individually address and support the satisfaction of identified needs and motives. The patient's needs should be continuously assessed during the course of therapy as they can change.

   In "plan analysis and MOTR", it is assumed that addressing patient needs both meaningfully and over the long-term will reduce problematic behavior because both meet the same necessities. When teaching "plan analysis or MOTR", it is important to work with concrete patient examples early on (e.g., in the form of videos of initial conversations) and to practice developing plan structures (42).

6) **Mindfulness Training**

   In "mindfulness training", students can practice the conscious perception of the inside (of one's own feelings) and the outside (of the moment/the atmosphere) without judgment.

7) **(Interprofessional) Forum Theater**

In a “Forum Theater”, a scene (usually from a health care setting) is presented to a group of 20 or more students. Students then have the opportunity to develop the scene. Forum Theaters often take place in an interprofessional setting.

**8) Sequential simulations**

“Sequential simulations” help students to not only see and perceive the patient in the moment, but to consider their past and present history as they interact with the same standardized patient in sequential settings. In this way, students learn about the patient's pathway and recognize their needs and the seams of the respective care chains (patient experience chain).

**9) Reflection**

To enhance their learning process, students should have the opportunity to reflect on their own attitudes, goals, behavior, and experiences. One specific method is Learning Training and Transfer, which facilitates the transfer of learning from theory to practice.

**10) Feedback**

During their learning process, students should receive “feedback”. This can occur during conversations, as unidirectional short feedback, or as 360° feedback (peer, supervisors, standardized patients, and video) according to the Fact, Impact, Tipps/Transfer Structure.

**11) Knowledge transfer**

In seminars, lectures, videos, texts, blended learning, and e-learning students can enlarge their knowledge.

**12) Video analysis**

By using “video analysis”, students can analyze their own and/or someone else's behavior.

**13) Language training**

In “language training”, students can learn how to adjust their language to their audience.

### 2.3 How can the identified competencies be matched with teaching methods?

To connect the competencies/abilities and the teaching methods, we designed a matrix (see Table 1).

**Aspects of the (health care) system** can best be taught using knowledge transfer. They can also be taught via the exchange of experiences with real patients and their relatives and through supervised clinical practice.

The **humanistic attitude** can be preferentially taught by using reflection or through (interprofessional) communication trainings, role playing, the exchange of experiences with real patients and their relatives, supervised clinical practice, plan analysis and MOTR, (interprofessional) Forum Theater, sequential simulations, and feedback.

**Patient perspectives and context** are best taught through (interprofessional) communication trainings, role playing, exchange of experiences with real patients and their relatives, and sequential simulations. It can also be taught using supervised clinical practice, plan analysis and MOTR, (interprofessional) Forum Theater, reflection, feedback, and video analysis.

**Self-reflection/Inner attitude** can be taught preferably through mindfulness training and reflection. It can also be taught by (interprofessional) communication trainings, role playing, the exchange of experiences with real patients and their relatives, supervised clinical practice, plan analysis and MOTR, sequential simulations, feedback, and video analysis.

**Providing information** is best taught by using knowledge transfer. It can also be taught via supervised clinical practice.

**Knowledge about relationships** can be taught by (interprofessional) communication trainings, role playing, the exchange of experiences with real patients and their relatives, supervised clinical practice, plan analysis and MOTR, (interprofessional) Forum Theater, sequential simulations, reflection, and knowledge transfer.

The exchange of experiences with real patients and their relatives and supervised clinical practice were found to be the best teaching methods for **dealing with diversity**. It can also be taught well by (interprofessional) communication trainings, role playing, (interprofessional) Forum Theater, sequential simulations, reflection and feedback.

**Promoting patient agency** can be taught by (inter-professional) communication trainings, role playing, the exchange of experiences with real patients and their relatives, supervised clinical practice, (inter-professional) Forum Theater, reflection, feedback, and video analysis.

Knowledge transfer is the best method for teaching **professional competence**. It can also be taught well by supervised clinical practice, feedback, and video analysis.

For some competencies, there are a number of possible teaching methods, while other competencies such as knowledge about relationships and promoting patient agency appear to be more difficult to teach.

### 2.4 Assessment

When students are assessed for empathy, reflection, or anything to do with human contact or professional identity formation, it is crucial that they are not assessed according to a specific standard of what is right and wrong. In such instances, they often only focus on what they need to do to pass the test. Hence, they can display empathy without feeling it. This is also called empathic dissonance (43). However, for patients, health care professionals need to be truly empathetic and authentic and not simply display the skill (43).

## 3 Discussion

We found several factors that should be taught and that could enable health care professionals to build trusting relationships. These include a “humanistic attitude”, “patient perspective and context” and “self-reflection and inner attitude”. According to the broader literature on trust, our factors include the health care provider’s benevolence (“humanistic attitude”), ability (“providing information”, “professional competence”), and integrity (“self-reflection and inner attitude”), the dyadic relationship (“knowledge about relationships”, “dealing with diversity”, “promoting patient agency”) as well as context factors (“aspects of the health care system and context”, “patient perspective and context”) (13, 14). While some of these factors have long been recognized in health professions education, others might have been previously neglected, such as “knowledge about relationships”, e.g. dealing with ruptures, and “knowledge about the health care system and context”, e.g. being aware of barriers and facilitators of trust in the health care system. Methods to teach these include “(interprofessional)

communication training", "role playing", and "supervised clinical practice". While some of these teaching methods are broadly used in all professions, others, such as "mindfulness training", "plan analysis, and motive-oriented relationships", are not widely implemented. Based on our expert consensus, different aspects of trust can be taught in various ways. While some teaching methods are specific in their approach to imparting certain competencies, others are more universally applicable in their ability to teach a variety of needed competencies. Those universal methods are "feedback", "reflection", and "supervised clinical practice"—which includes diverse role models.

Our research aligns with Hattie's (2009) educational study, which highlighted the importance of feedback and the supervisor-trainee relationship in facilitating learning . We believe that this also applies to teaching trust to health care professional students. Several other studies have emphasized the significance of feedback, including van der Leeuw et al. (2018), who redefined feedback as performance-relevant information (44). In the context of trust, this performance-relevant information could be provided by standardized patients or real ones, as they are credible sources for learners as noted by Schlegel et al. (2012) and Eijkelboom et al. (2023) (45, 46).

Previous studies have shown that supervised clinical practice is an effective teaching method. As suggested by van der Zwet et al. (2014) (47), supervisors that have been carefully instructed can enhance medical students' learning. Our findings are supported by the model of Kirkpatrik & Kirkpatrik (1996), which highlights the importance of role models in clinical practice learning, both positively and negatively (48). However, other studies have found that role models may also be counterproductive, thereby hindering students' learning experiences, as Lynch et al. (2022) discovered (49). Some studies have suggested that once clinical practice training has begun, student empathy levels decline (50) – this could be due to the limited number of positive role models in clinical practice (51).

Reflection is an important topic in health professional education , but its use in education has recently been criticized (52) due to concerns that students may engage in superficial reflection and 'cheat' the process. Despite this, we found that reflection is essential for teaching trust to health care professional students. However, it is important to implement reflection such that it encourages genuine introspection while minimizing superficial reflection, as highlighted by the research of De la Croix & Veen (2018) . This reinforces the need for skilled supervisors who can establish productive educational relationships with students. We believe that such educational alliances can help students develop the skills needed to build therapeutic alliances with their future patients.

One of the main challenges in teaching how to establish a trusting relationship is the mismatch between teaching scenarios and the reality of clinical practice. Often students complain that, in practice, they do not have the time to implement what they have learned (53, 54). In addition, they might be missing positive role models that would enhance their self-efficacy and support the implementation of their skills and attitudes (55). Moreover, the teaching that should take place at the workplace, including observations, reflection, and feedback, is often challenged by the limited resources on the teaching site and is, therefore, not implemented properly (56, 57). To teach students how to establish trusting relationships, it is critical to ensure that applied teaching methods are implemented properly and with high quality. Contents must align with the entire curriculum—including clinical practice.

## 4 Strengths & Limitations

One major strength of our study is the diversity of health care professionals who were involved throughout the entire process. During the symposium, we had eight presentations from different fields. Likewise, during the expert consensus process, we incorporated the perspectives of many different

health care professionals who brought with them extensive experience in teaching and knowledge concerning the establishment of trusting patient-health care provider relationships. Despite the diversity of presenters and experts within the NGT, it needs to be considered as a limitation that all of the participants are from the same cultural area in middle Europe which limits generalizability. While we cannot rule out the possibility of experts influencing each other during the group consensus process, we employed a structured and well-recognized method, namely the NGT, to minimize this potential limitation. One limitation of our study is that we cannot not draw any conclusions regarding the effectiveness of the various teaching methods. Further, qualitative research depends on participants within the research, which might influence subjectivity of results. We tried to counteract this with a heterogeneous sampling of presenters at the symposium and within the NGT.

## 5 Implications for educational practice

Using our matrix, curriculum directors and teachers can gain an overview of how to teach trust, thereby filling any gaps in the curriculum.

Teachers and curriculum directors should prioritize quality of the implemented teaching methods over quantity. Potential strategies to integrate the methods within the entire curriculum and bridge the gap between classroom teaching and clinical practice could be:

1) **Introduction of teaching fellowships:** To strengthen the importance of teaching in general, clinical practice teaching fellowships could be introduced. Many faculties have begun to allocate resources to strengthen teaching. One possibility is to introduce grants that enable salaried payment of faculty teachers with innovative teaching ideas. An example of this is the supporting innovative teaching grant at the medical faculty of the University of Bern. Other initiatives have gone even further and have allocated resources and finances for teaching fellowships (58). These programs have been evaluated positively.
2) **Teach students to be change agents**: Health care professional students should be taught to be critical thinkers and change agents in their job. Students should be prepared for clinical practice by gaining strategies to be change agents in the system and being empowered to improve health care with their actions. Exploratory studies that have investigated how students are taught to be change agents have shown these teachings to be effective (59, 60).
3) **Introduce early supervised clinical practice:** Students should start as early as possible with supervised clinical practice, and many study programs are incorporating this . For instance, Germany has realized the importance of early supervised clinical practice. The currently established standard curriculum for the study of human medicine at German universities has led to a strong separation between preclinical and clinical training. As a result, patient-related teaching often does not take place until the third year of study, along with the teaching of social and communicative skills (61). However, with the introduction of new licensing regulations for physicians, an early clinical-practical training with patient contact will be implemented in the future. This requires significantly more trained medical practice supervisors (62) who will oversee the students' practice assignments and promote their professional development through role modeling (63). In the future, graduates should feel better prepared for their medical practice than they have in the past (64).
4) **Ensure continual supervisor or mentor relationships:** It is helpful when students are assigned to a supervisor or mentor that will accompany them over a long period of time to ensure that an educational alliance is built. An example of this is the Master's in medicine at the University of Fribourg in Switzerland, where students are assigned and accompanied by the same mentor for three years (65). This mentor is also called a learning advisor and meets with

the student several times a year. The learning advisors have access to student learning portfolios and support them by giving formative feedback. The learning advisors receive training in advising students and are, at minimum, advanced chief residents.

## 6 Implications for future research

Trust is a complex phenomenon that is influenced by many factors. The behavior of health care professionals is only one of these factors, albeit one that is amenable to change. Consequently, it is particularly important that teaching skills that build trust is effective and not merely perfunctory. Unfortunately, targeted training has not yet been shown to improve trusting relationships from the perspective of patients, as two studies from Thom et al. (1999, 2000) have shown (17, 18). In both studies, training increased trust-related behaviors, but patient reporting did not suggest increased trust (17, 18). Further research should, therefore, investigate the effectiveness of the methods outlined in this study. In future studies, trust-related behaviors, trust itself, as well as other potential influencing factors on trust should be evaluated.

Another area of focus for future research should address how students' learning in building trusting relationships with patients can be assessed. Previous research has shown that current assessment methods in communication, empathy, and relationship building can be problematic (52, 66, 67). The question is whether human connectedness can be measured (as it should not be 'skillified'). The inquiry at hand is whether human connectedness can be quantified, and not merely reduced to a set of skills. Consequently, it may not be feasible to evaluate connectedness using currently known assessment techniques. Initial approaches to resolving this dilemma include standardized patient-rating of students' behavior in exams (68), dynamic evaluations that include different stakeholders in a continuous process with qualitative methods (69), transformative learning, triangulation of methods, (67), and significant learning experiences . Typically, these methods require greater resources, and research efforts should concentrate on how to effectively implement such assessments given the limited resources available. Furthermore, it is imperative to determine whether these assessments are appropriate for the given context.

## 7 Conclusion

Establishing trusting relationships with patients is crucial for all health care professionals. Therefore, we investigated what should be taught to enable students to establish these relationships with their patients, how it can be taught, and then combined the content and methods in a matrix. Using our matrix, curriculum directors and teachers can improve their curricula and ensure that their students will be able to establish trusting relationships with their patients. One major challenge in teaching trust is to bridge the gap between classroom teaching and clinical practice. To integrate these, we recommend that students begin supervised clinical practice early and receive a supervisor or mentor who accompanies them continuously. Future research should focus on the effectiveness of the different teaching methods.

## 8 Author Contributions

SL and AL contributed to conception and design of the study. SL, YB and AL coordinated the study. AC, MM, BM, CS, LW and DW presented at the symposium as part of the study. AC, SH, MM, DM; BM, CS, KS, LW, JW and DW supported data collection as part of the nominal group technique. SL wrote the first draft of the manuscript. YB, BM, AC and AL wrote sections of the manuscript. AL edited the first draft of the manuscript. All authors contributed to the manuscript revision, read, and approved the submitted version.

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## 9 Contribution to the field statement

In recent decades, there has been a growing recognition of the heightened significance and focus placed on the communication skills of healthcare professionals. As a result, curricula have been developed to specifically address these skills, with the aim of equipping future healthcare practitioners with the ability to establish therapeutic alliances and foster trusting relationships with their patients. However, it is important to emphasize that the establishment of trust itself constitutes a crucial competency that extends well beyond mere communication skills. Thus, it warrants dedicated attention in educational programs. The purpose of this paper is to lay the foundation for teaching trust to students in healthcare professional programs and to underscore the importance of this key competency that surpasses the boundaries of effective communication, thereby encouraging further recognition and exploration.

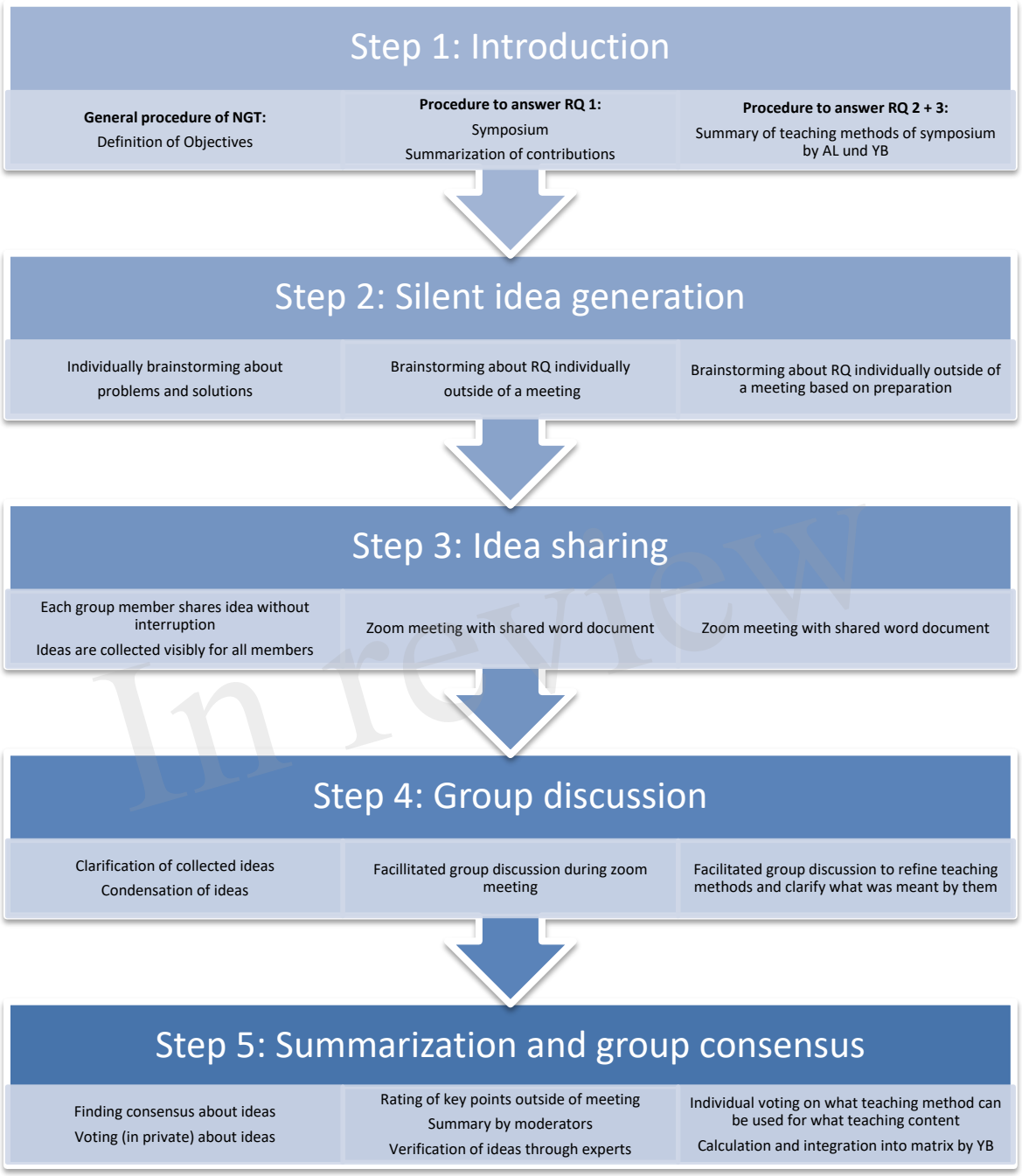
## 10 Conflict of Interest

The authors have no conflicts of interest to declare.

## Figures

**Figure 1. Overview of the two NGT rounds.**

The five steps displayed typically guide the execution of the Nominal Group Technique. The left column outlines the customary procedures for this process, the middle column illustrates the approach adopted for addressing RQ 1 (What should be taught?), and the right column elucidates the corresponding strategies for RQ 2 and 3 (How can it be taught and how can what be taught?).






## Tables

**Table 1. Matrix: Teaching methods – competencies/abilities**

The matrix columns show the competencies/abilities that should be taught to enable students to build trusting relationships with their patients. The teaching methods are listed in rows. Numbers from 0 to 3 indicate how well a method is likely to work in teaching a certain competency/ability (higher numbers indicate a better likelihood)

| | Aspects of health care | Humanistic attitude | Patient perspective and context | Self-reflection and inner attitude | Providing information | Knowledge about relationships | Dealing with diversity | Promoting patient agency | Professional competence |
|---|---|---|---|---|---|---|---|---|---|
| (Interprofessional) communication trainings | 1 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 1 |
| Role playing | 1 | 2 | 3 | 2 | 1 | 2 | 2 | 2 | 1 |
| Exchange of experiences with real patients and their relatives | 2 | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 1 |
| Supervised clinical practice | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 2 |
| Plan Analysis and Motive-Oriented Therapeutic Relationship | 0 | 2 | 2 | 2 | 1 | 2 | 1 | 1 | 1 |
| Mindfulness training | 0 | 1 | 1 | 3 | 0 | 1 | 1 | 1 | 0 |
| (Interprofessional) Forum Theater | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 1 |
| Sequential simulations | 1 | 2 | 3 | 2 | 1 | 2 | 2 | 1 | 1 |
| Reflection | 1 | 3 | 2 | 3 | 0 | 2 | 2 | 2 | 1 |
| Feedback | 0 | 2 | 2 | 2 | 1 | 1 | 2 | 2 | 2 |
| Knowledge transfer | 3 | 1 | 1 | 0 | 3 | 2 | 1 | 0 | 3 |
| Video analysis | 0 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 2 |
| Language training | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

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## Appendix VI: Paper VI

Felber, S. J., **Lerch, S. P.**, Bauer, D., Liaudet, F., Eychmüller, S., & Lörwald, A. C. (2023). Compassion training: Towards a better understanding of patients through self-exposure. *Medical education*. https://doi.org/10.1111/medu.15032.

**Lerch's contribution according to the contributor roles taxonomy (CRediT) author statement (Allen et al., 2019):** Conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, writing – review and edit.

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REALLY GOOD STUFF

# Compassion training: Towards a better understanding of patients through self-exposure

## 1 | WHAT PROBLEMS WERE ADDRESSED?

In healthcare, clinicians are expected to communicate in a compassionate way with patients.[1] Although medical training for students at the University of Bern offers communication training, for example, breaking bad news or motivational interviewing, compassion or compassionate behaviour is not yet specifically addressed.

## 2 | WHAT WAS TRIED?

An interdisciplinary team (medical education, psychology, communication and palliative care) designed and piloted an elective blended course with 1 day of classroom training to improve sixth-year medical students' compassion in patient–physician communication. The learning goals of the pilot included (a) understanding the role of compassion in the patient-physician relationship; (b) characterise the components of compassion; (c) reflecting one's own emotions and developing self-compassion techniques; (d) demonstrate understanding a patient's situation; and (e) developing a compassionate care plan together with the patient.

In order to learn about the existing concepts and the importance of compassion, students ($n = 8$) received preparatory e-learning material in advance. Its contents were discussed and reflected upon during the classroom training. Preparatory reading included directions regarding self-compassion techniques and two case descriptions to initiate reflection about one's own emotions. These materials were contemplated during the training with an expert input about self-compassion and group discussions about integrating these techniques into daily clinical practice. Using simulation, students then explored their feelings and emotions from a patient perspective through self-exposure to various life conditions, such as physical restrictions (wearing bariatric suits or age simulator) or having stigmatising skin diseases (using a moulage of psoriasis or acne). The goal was to foster a deeper understanding of the patient's situation through own experiences. Based on these experiences ('how did I feel myself, and what might be the related feeling of my patient?'), students created a communication guide for a conversation with simulated patients (SP). In a second step, students used this guide in SP interactions trying to shift from medical reasoning and counselling to assessing and addressing emotions and individual suffering. The final step in this interaction then was to create a compassionate care plan yielding to integrate medical treatment and emotional comfort. The evaluation of the course included (a) students' verbal feedback immediately after the training, (b) students' written evaluation in respect of content and learning goals as well as methodological and didactic aspects and (c) students' self-assessment of skills in compassionate communication using the Sinclair Compassion Questionnaire (SCQ) prior and after the training (www.compassionmeasure.com).

## 3 | WHAT LESSONS WERE LEARNED?

Our interactive compassion training seems to address students' needs and expectations in terms of a high quality and compassionate patient-physician interaction. Students very much appreciated the exchange and the reflections within the group about compassion, communication and their own experiences during simulation. Before the training, the majority rated themselves according to the SCQ in most items as 'somewhat competent' or 'neutral'. After the training, students' ratings were more differentiated, ranging from 'somewhat lacking competence' to 'very competent'.

All participants strongly recommended offering this 'compassion training' to all medical students as a mandatory class; one student even regarded this training as being one of the most important aspects of medical school.

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## AUTHOR CONTRIBUTIONS

Andrea Lörwald, Seraina Petra Lerch, Daniel Bauer, Steffen Eychmüller and Sibylle Jeanine Felber made substantial contributions to conception and design of the course. Daniel Bauer, Steffen Eychmüller, Sibylle Jeanine Felber, Seraina Petra Lerch, Florence Liaudet and Andrea Lörwald conducted the training and acquired the data for evaluation. Florence Liaudet, Sibylle Jeanine Felber, Steffen Eychmüller, Seraina Petra Lerch and Andrea Lörwald analysed and interpreted the data. Sibylle Jeanine Felber and Andrea Lörwald drafted the manuscript. Daniel Bauer, Steffen Eychmüller and Seraina Petra Lerch revised it critically for important intellectual content. All authors approved the version to be published and agree to be accountable for all aspects of this study.

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