## Interactions that matter

*Understanding residents' professional growth through workplace relationships*

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## Colophon

**About the cover**
The cover pictures a kaleidoscope which is an optical tube that, with each rotation, creates impressive patterns through reflections caused by overlying, colorful lenses that cross each other's path. With each rotation of the tube, the same fragments take on new patterns and positions in relation to each other.

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# Interactions that Matter

## Understanding Residents' Professional Growth Through Workplace Relationships

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door Iris Jansen
geboren te Apeldoorn

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*"You are braver than you believe, stronger than you seem,*
*and smarter than you think."*

**Winnie the Pooh**

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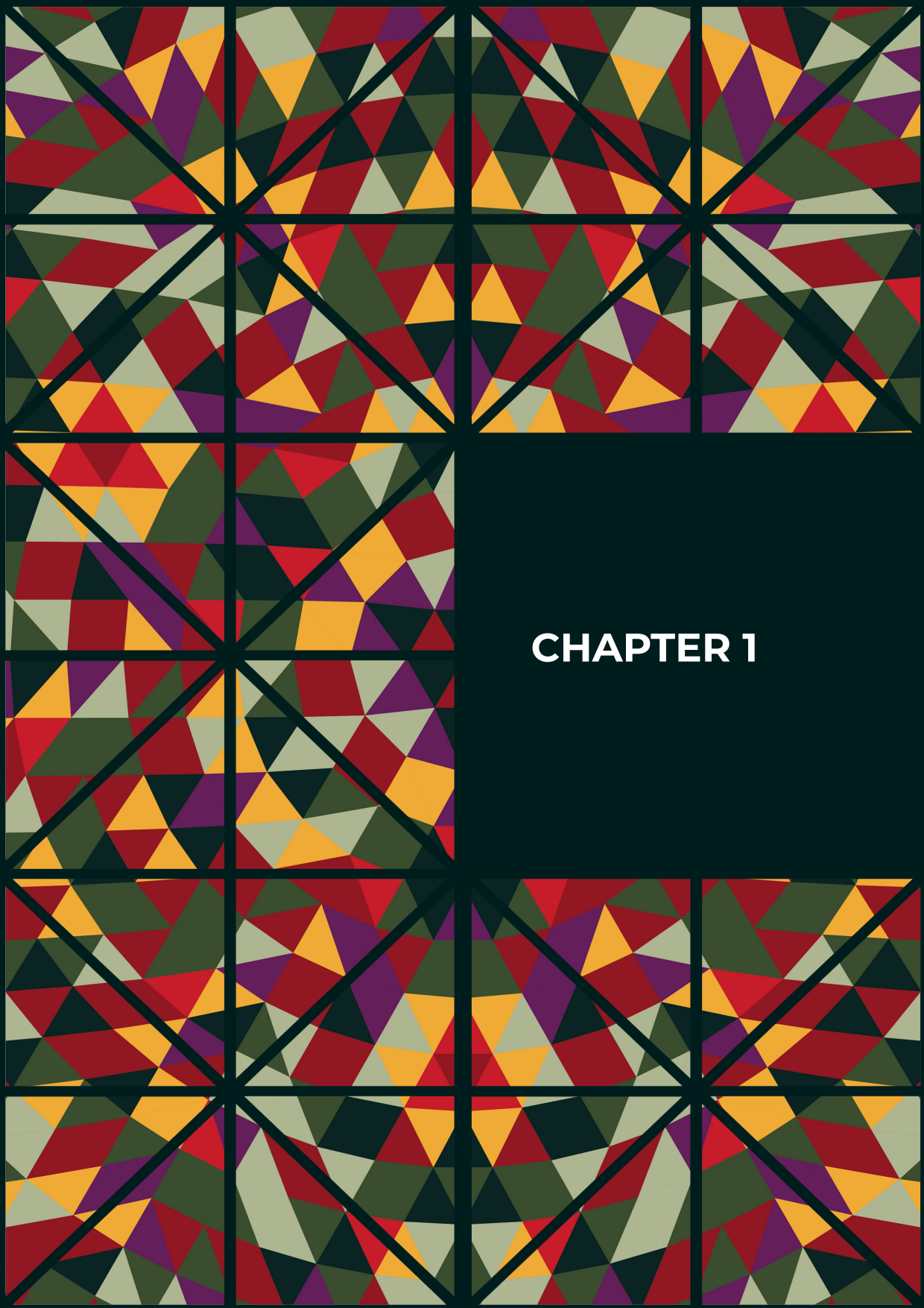


# CHAPTER 1

# General Introduction

1

*All human interactions are opportunities either to learn or to teach – M. S. Peck*[1]

For the past four years, I have had the opportunity to explore residents' professional growth by looking at the workplace relationships they encounter. With professional growth in the context of this dissertation, I refer to the process of residents' development as healthcare professionals. This development largely takes place within the workplace, where residents develop from novices into medical specialists having the knowledge and skills necessary to provide high-quality and safe patient care.[2, 3] Supervisors fulfill a key role in facilitating residents' professional development as they ideally demonstrate clinical skills, role model the qualities of a good physician, and ensure a supportive learning environment for residents.[4-8] Although the relationship with supervisors is essential for residents' professional development, only considering the relationship with supervisors may limit our understanding of how residents' learning in the workplace is shaped.[9, 10] At the heart of learning within the workplace is learning through interaction.[11-14] Consider, for instance, a surgical resident who needs to interact with a nurse anesthetist, physician assistant, and an operating room nurse to complete the surgery successfully. Based on the perspective that learning results from these interactions, our eye is drawn to how this surgical resident learns from *all* the interactions they encounter. What would it bring to postgraduate medical education if we try and understand it from residents' workplace interactions and see how these interactions shape their learning and clinical practice?

Exploring the view that supervisors *and* other healthcare professionals in the workplace have a role in residents' learning, may open up new ways of thinking about optimizing residency training. Indeed, all healthcare members have their own, professional perspective on patient care and fulfill complementary roles in caring for patients.[15] These insights can be relevant to residents' trajectory to become a competent medical specialist.

To show the potential of this view, I have chosen the metaphor of kaleidoscopic thinking, referring to the colorful, moving images of a kaleidoscope.[a] A kaleidoscope is an optical tube that, with each rotation, creates impressive patterns through reflections caused by overlying, colorful lenses that cross each other's path. With each rotation of the tube, the same fragments take on new patterns and positions in relation to each other. Likewise, kaleidoscopic thinking allows for creativity when looking at a phenomenon. In this case, it allows me to look at residents' interactions from different theoretical perspectives and from the perspective of different actors within the workplace. It will help me see how different actors come into the picture, how these actors uniquely contribute to residents' learning and how all these interactions ultimately come together in residents' professional growth as a medical specialist. A better understanding of how interactions in the workplace shape residents' learning may move the field of medical education forward.

[a] As depicted on the cover of this dissertation

In this introductory chapter, I will first elaborate on the focus of the research topic and the knowledge gap. I will then describe the theoretical perspective I have chosen to study the phenomenon of residents' learning through interactions. This will be followed by a description of what we already know about the topic, that is: how supervisors, nurses, and patients shape residents' learning and clinical practice. Finally, I pose the overall research question leading the series of studies in this dissertation, provide an overview of all the studies and finish with a section on reflexivity.

# Introducing the research topic

## Medical education

Residents gradually develop into competent medical specialists who provide safe and high-quality patient care by participating in day-to-day clinical practice and being guided by supervisors. This process of workplace learning is considered to be the backbone of residency training.[11-14] Residency training or postgraduate medical education (PGME) lasts between three to six years. Obtaining a position within residency training is very competitive, and most residents, therefore, first work as junior doctors before being accepted as a resident. This preparatory, pre-residency, clinical time may take as long as several years. Parts of residency training are formal and consist of specific curricula regarding knowledge and skills.[16] However, during workplace learning, learning can mainly be described as informal and occurring through a range of more tacit, implicit and informal types of lessons that residents can discern from what is known as 'the hidden curriculum'.[17, 18] The hidden curriculum includes all the implicit messages that are not described in the formal curriculum, which residents receive through the process of socialization into clinical practice.[18] This is the "process by which people selectively acquire the values and attitudes, the interests, skills and knowledge (i.e., culture) in the groups they are or seek to be a member in."[19(p.287)] It is about understanding 'how the things work around here'.[20]

## The learning environment within medical education

The learning environment can be defined as "the social interactions, organizational cultures and structures, and physical and virtual spaces that surround and shape participants' experiences, perceptions, and learning".[21(p.36)] Within residency training, *working* and *learning* are closely linked and even hard to separate within the learning environment.[22] The word 'environment' means 'that which surrounds', so the learning environment is that which surrounds learning.[21] The concepts of learning environment, climate, and culture are often used interchangeably.[23] In this dissertation, I look at all three concepts using the learning environment as the umbrella under which climate and culture are situated. Climate refers more to fixed and generalizable dimensions that characterize environments, which are created through an organization's system of values.[23] In contrast, culture includes the values, beliefs and assumptions of people in an organization.[23]

The learning environment within the clinical workplace has received ample attention from educators, accreditors, educational organizations, and researchers, given the foundational impact on residents' learning and patient care.[24-26] A supportive learning environment benefits residents' well-being,[27] socialization processes,[22, 28] and also the quality and safety of patient care.[21, 25, 29] For instance, Silkens and colleagues[30] demonstrated that a supportive learning climate benefits an environment where patient safety is prioritized, which indirectly benefits residents' patient safety behavior. On the other hand, Smirnova and colleagues[31] found that teaching departments with the highest learning climate scores were more likely to have adverse patient outcomes, i.e., an adverse perinatal event. They point to the fact that the goal of creating a positive learning climate is to improve residents' well-being and to adjust working and learning to residents' training levels. These goals of the learning environment are resident-centered and not necessarily aimed at safeguarding patient care. This could create tensions "between learning and patient care when activities coincide, but are directed at different goals".[31(p.149)]

## Reforms in medical education: competency-based medical education

Major reforms have been implemented to optimize and ensure both high-quality safe patient care and residents' workplace learning within the clinical learning environment.[32-35] One fundamental reform was the introduction of competency-based medical education (CBME),[34, 36-39] including the systematic monitoring of residents' performance[40-43] with valid and reliable assessment methods.[44, 45] With the implementation of CBME, competency frameworks have become prominent in residency training with the aim to improve patient care by enhancing the training of residents.[37, 46] Along with Canada and sixteen other countries, the Netherlands adopted the Canadian Medical Education Directives for Specialists (CanMEDS) framework.[b,47] This framework defines the necessary competencies required for excellent medical practice, and it structures and influences medical education programs.[48, 49] The competencies are thematically grouped under seven roles: Medical Expert, Communicator, Collaborator, Leader, Health Advocate, Scholar, and Professional.[48] Residents are trained, guided, and ultimately assessed on their progress towards attaining the competencies that belong to the seven roles.[45, 47] The educational philosophy underpinning the framework is characterized by focusing on the desired learning *outcomes* that need to be 'ticked off' at the end of residency training.[36, 37, 50] For example, is a resident able to 'respond to a patient's non-verbal behaviors to enhance communication'[51] or able to 'determine the most appropriate procedures or therapies'?[52] Competency frameworks have helped to identify the complex set of knowledge, skills, and attitudes that residents must master to meet today's healthcare needs effectively.[53]

[b] The USA has a similar framework: the Accreditation Council for Graduate Medical Education (ACGME). Instead of seven roles, this framework has six roles: Patient Care, Medical Knowledge, Professionalism, Interpersonal and Communication Skills, Practice-based Learning and Improvement, and Systems-based Practice.

## Identifying the knowledge gap addressed in this dissertation

Supervisors are highly influential in residents' journey to mastering the necessary set of competencies.[4-8] They have a formal responsibility for the training of residents and simultaneously need to ensure the safety of both residents and patients.[4, 7] Moreover, supervisors ideally help residents to navigate their individual learning trajectories by providing feedback on residents' performance, monitoring residents' progress and being a role model for residents.[4, 6, 7] To date, research into optimizing residents' workplace learning has, to a large part, focused its attention on the resident-supervisor interaction.[4, 7, 8] However this focus might limit our perspective on how residents learn from the interactions with other workplace actors such as nurses, advanced practice practitioners, allied health, therapists, midwives, and many more.[9, 10] This more inclusive perspective on which other interactions contribute to residents' learning and clinical work is informed by sociocultural learning theories. These theories explain how learning occurs through interactions (which will be explained in more detail below).[11-14] If we view learning as a sociocultural process, we are able to see that in addition to supervisors, other workplace actors can also contribute to residents' learning.

In this dissertation, I have chosen to explore how residents' interactions with supervisors, nurses, and patients impact their learning and clinical care. Indeed as supervisors have a formal responsibility for training residents, their interactions are very influential on residents' learning.[4] Choosing nurses and patients as the other two groups of actors to study in this dissertation, was informed by the reality of clinical practice in which residents interact with nurses and patients on a daily basis. The value of these two perspectives in relation to residents' learning has been previously noted.[10] For example, the perspective of nurses on training and patient care was demonstrated to be complementary to that of supervisors,[15] and, as such, nurses observe different skills and practices,[54-56] providing valuable insights for residents' workplace learning.[57] Patients, on the other hand, are inherently linked to the clinical workplace where they receive care from, amongst other healthcare professionals, residents.

To summarize, previous research has mainly centered on residents' interactions with supervisors as facilitators of residents' learning. However, this focus might limit our understanding of how residents learn from other workplace actors with whom they interact daily. In this dissertation, I have deliberately chosen to add two additional lenses to the kaleidoscope with which I want to study residents' workplace learning and clinical practice; that of nurses and patients.

# Theory

From the perspective that residents learn through their interactions with supervisors, nurses, and patients, several theories are relevant in understanding and explaining how these interactions shape residents' learning and clinical practice. I have chosen to use sociocultural learning theories. This group of theories is distinct from another group of theories commonly used to explain learning processes, namely cognitive learning theories. Cognitive learning theories align with the metaphor of *learning through acquisition* which sees learning as a process in which an individual acquires knowledge and skills.[12] The purpose of learning within this metaphor is to acquire new knowledge.[12] In contrast, sociocultural learning theories posit that learning is the product of social interactions,[17] which aligns with a *learning through participation* metaphor: learning is a process of actively constructing meaning by participating in the activities of a community with the purpose of becoming a member of that community.[12] Thus, whereas these cognitive theorists view participation in the workplace as leading *to* learning, the participation metaphor sees participation in the workplace *as* learning. Given my main interest in exploring how residents' *interactions* shape their learning and clinical practice, sociocultural theories are particularly suited. More specifically, three features of sociocultural theories will help understand and explain the complexity of these interactions.[17] First, learning is situated within the context; therefore, learning and context are inseparable. Second, interactions are central to learning. Third, residents need support or guidance from (more) experienced others during their learning processes.

In my dissertation, I focus on three sociocultural perspectives: Landscape of Practice (LoP),[58] Workplace Pedagogy,[13, 59] and Cognitive Apprenticeship Model (CAM).[60] I will elaborate on these theories below, but as I have already used the word 'interaction' several times, let us first discuss the meaning of this concept.

## Interaction

The Oxford dictionary defines interaction as "communication or direct involvement with someone or something".[61] Interaction is thus inherently social; it can only occur when two or more people or groups are involved. Moreover, interactions are reciprocal exchange relationships that influence the interacting individuals and the quality of relationships.[62, 63] For example, consider the conversation (interaction) between a supervisor and resident before the night shift about when the resident should call her supervisor and under which circumstances she is entrusted to act by herself. As a result of this interaction, the resident modifies her behavior and provides the care she is entrusted with. In sum, when I talk about interactions, I refer to the process whereby *two or more persons or groups are in meaningful contact and might modify their actions and reactions in response to their interaction partner(s)*.[63] When social interactions occur repeatedly, we speak of social processes.[64]

## Landscape of Practice (LoP)

In the 1990s, building on the work of Lave & Wenger,[11] Wenger developed the theory of Communities of Practice (CoP) to understand how learning takes place within daily work.[14] A CoP is a group of people who are mutually engaged in a joint enterprise (i.e., the goals of the group) and develop a shared repertoire (i.e., common language, routines, and stories).[14] Learning arises from interacting within communities. For novices to the communities, this process was characterized by Lave & Wenger as legitimate peripheral participation.[11] Novices move from the legitimate periphery of a community to the center of that community by participating in the specific practice to become a full member. The traditional training of residents can be understood in this way: residents first observe supervisors (legitimate peripheral participation), and through increased understanding of medical skills and knowledge (repertoire), they are entrusted with the joint enterprise of patient care.[11]

However, CoP is limited by focusing on a single community[14] and Wenger-Trayner advanced CoP by introducing Landscape of Practice (LoP).[65] They describe a LoP as a complex system of various COPs and the boundaries or borders between these communities.[58] What the LoP adds is the idea that learning does not only entail a journey from outsider to insider within *one* community but also a journey over borders i.e., *between* communities. Indeed, in the journey of residents toward medical specialists, they collaborate with various healthcare professionals from other communities (e.g., nurses, midwives) with whom their care for patients.[10] To this end, residents not only need to develop the competencies needed for the physician community, they must also understand the unique practices of other communities including the goals, routines, procedures and language.[10] Understanding these practices of other communities is what Wenger-Trayner et al., call 'knowledgeability'.[58] For example, for residents, this could mean being knowledgeable about what other healthcare professionals do and what these other professionals mean to the medical profession or how do both professions could complement each other.[66] Aside from understanding the practices of others, knowledgeability is also about developing an identity. Through residents' journey within the landscape, their experiences are shaped by interactions with other healthcare professionals, and these experiences become part of the idea about 'who I am' (identity).

Wenger-Trayner described how knowledgeability develops at the boundaries of the communities within a landscape.[58] These boundaries have been described as "interesting places"[58 (p.18)] where novel learning and growth arises. Being knowledgeable makes residents recognizable as reliable sources of information or trustworthy colleagues.[58] How knowledgeable residents are will determine the extent to which they are accepted by and within the various communities within the landscape. Moreover, their level of knowledgeability will determine what learning opportunities will be afforded or withheld from them.[10, 67] To conclude, LoP enables us to see the complex interactions between residents, supervisors, nurses, and patients as they are together part of the landscape. It foregrounds the idea that residents not only need to be competent members of their own physician community of practice, but also

knowledgeable members about the landscape of healthcare practice and its varying participants.

## Workplace Pedagogy

Billets' workplace pedagogy describes how learning results from participating and engaging in authentic, everyday work activities,[13] such as providing patient care. Learning arises from the affordances provided by the workplace on the one hand, and on the other hand, how learners elect to engage in what is afforded to them.[13, 59] The workplace affords learning by providing guidance and allowing learners to participate in meaningful activities.[13, 68] However, workplaces can either afford and invite learners to participate but also deny access to participation, depending on the norms, practices, and cultural history of the workplace as well as on the willingness of colleagues to provide guidance.[13] Affordances are then not the same for all learners, resulting in an uneven distribution of learning opportunities.[13]

Workplace affordances are only one aspect influencing workplace learning. The other aspects are the learners themselves and the extent to which they have agency and take agency to choose whether and how they participate in work activities.[13] This decision depends upon their personal goals, intentions, individual interests, and priorities.[13, 59] A study within medical education demonstrated, for example, that some residents were eager to participate in affordances that aligned with their professional goals and interests.[67] At the same time, they were less interested to participate in activities that did not align with their goals.[67] To support residents in interpreting the learning opportunities afforded to them, Billet points to the practice of guidance.[68] Guidance refers to how more experienced co-workers in a workplace guide the development of less experienced co-workers (learners). Through guidance, residents develop the kind of knowledge that is hidden and cannot be learned by discovery alone (e.g., the tricks and trades of the workplace).[13, 59, 68] So, the work of Billett provides a lens to unravel the dynamic interplay between workplace affordances and residents' agency. How and why are learning opportunities (not) afforded to residents? And why do some residents decide to engage in these affordances in interaction with supervisors, nurses, patients, while others do not?

## Cognitive Apprenticeship Model (CAM)

Collins and colleagues' cognitive apprenticeship model (CAM) provides more insight into how experts can guide the learning processes of novices.[60] Rooted in theories of situated learning, CAM operationalizes four interconnected dimensions of all learning environments: (1) the content that should be taught; (2) teaching strategies or methods for expertise development; (3) sequence of the learning tasks; and (4) a cooperative and supportive learning environment.[60] Regarding the second dimension, Collins described six teaching methods that experts can use to promote expertise development.[60] With the teaching methods modeling, coaching, and scaffolding, teachers observe students, demonstrate and explain skills, and provide feedback tailored to students' needs. With the methods of articulation and

reflection, teachers stimulate learning by asking questions and encouraging learners to reflect on their functioning. Finally, exploration encourages learners to formulate learning goals. While traditionally, CAM was intended for classroom settings, the model has found its way into postgraduate medical education.[69-71] The relevance for medical education is partially informed by CAM's attention to making tacit processes explicit to learners.[72] Thus, CAM provides concrete teaching methods to understand how supervisors and nurses can facilitate residents workplace' learning.

Now that we have discussed the three theories that I have chosen to use in my dissertation, we can explore what the literature already tells us about how supervisors, nurses, and patients shape residents' learning and clinical practice. And perhaps more importantly, what insights have we yet to develop to advance our understanding of residents' workplace learning?

## Influential figures for residents' learning and clinical practice: supervisors, nurses, and patients

### Supervisors

By far the most studied interaction in the clinical workplace is the interaction between residents and supervisors (also known as 'attending' or 'senior' physician). Traditionally, this relationship has been described as the apprenticeship model, in which the apprentice (resident) learns to master the skills of the medical profession from the master (supervisor).[73] In many ways, supervisors are influential for residents' professional development: supervisors guide residents to attain the competencies required to practice safe patient care independently.[4, 7, 74, 75] As residents progress through their training and their competence grows, supervision decreases until the point that residents can practice patient care independently.[4, 76, 77] Research has offered essential insights into characteristics of successful supervisors,[78-80] how and why supervisors come to trust residents,[76, 77] and the various supervisory styles supervisors can adopt.[8, 81]

While these studies mainly focused on the role of the individual supervisor in training and guiding residents, approaching supervision as a team endeavor has also received attention.[46, 82-84] One of the implications of the transformation of residency training, including the introduction of competency-based medical education, is the shift in responsibility for training residents from the individual clinical teacher to the collective of clinical teachers – referred to as the teaching team. Teaching teams are responsible for training residents and creating a supportive learning climate for residents.[85, 86] A supportive learning climate is essential for residents' well-being,[27, 28] professional competence development[87] and medical knowledge.[88] Although several studies have been conducted into the benefits of effective teamwork on, for example, high-quality patient care,[89, 90] the assumption that residents' learning climate benefits from effective teamwork of teaching teams still remains to be explored.

## Nurses

Nurses are key healthcare team members in the workplace and work closely together on a daily basis with residents when providing high-quality and safe patient care.[91, 92] Several studies highlighted that, in interaction, nurses have a unique contribution to residents' workplace learning and professional development. Nurses, for instance, contribute to residents' socialization processes, provide learning opportunities, or could even obstruct learning when nurses feel patient safety issues are at stake.[93-97] Samuriwo et al.,[57] demonstrated that nurses could serve as educators to residents, which involved teaching residents, providing advice, navigating them around the ward, and providing general support. Other studies highlighted that nurses observe other skills and practices than supervisors do, and therefore nurses could provide residents with valuable feedback on their professional performance, such as, communication with patients and families.[54, 55, 98] A few studies demonstrated the dynamics in the interaction between residents and nurses: in reaction to residents' attitudes, nurses acted in a specific way.[67, 99] For instance Samuriwo et al.,[57] described that nurses acted as navigator, if they perceived residents as lost, or nurses provided support if they perceived a functional deficit by residents, for instance, in their by patient examination skills. Similarly, Olmos-Vega et al.,[67] demonstrated how nurses were less interested in engaging with residents when they perceived that the residents had no personal intention to participate and collaborate with nurses. These studies teach us that: the resident-nurse interaction is dynamic, a positive constructive interaction between residents and nurses is essential for residents' learning opportunities, and nurses impact residents' workplace learning. Despite this empirical evidence pointing to the highly relevant role of nurses in residents' learning, a more profound understanding of how nurses perceive their role in residents' workplace learning is still lacking.

## Patients

Over time, advances in medical practice have been incorporated to improve high-quality and safe patient care.[100] Evidence-based practice can, for example, be seen as a clear result of these improvements as physicians integrate their clinical expertise with the best available clinical evidence.[101] But also advances in quality monitoring of healthcare practices[102] and significant technological innovations have impacted the field of medicine.[103] However, not all advances have contributed to improvements, and some have even inadvertently distanced physicians from their patients.[100] In particular, the rapid technological developments have significantly changed the physician-patient relationship.[104-106] Consider, for example, the impact of the electronic health record (EHR). It is noted that physicians nowadays often focus more on their computer screens during patient consultations than on their patients; the computer literally sits between them.[104] Also, Verghese points to the emergence of the 'iPatient', which symbolizes how residents form an image of patients based on scans and tests even before seeing the real patient.[106] These developments run the risk of letting physicians 'forget' about the 'real' patient in the consultation room, threatening the human-to-human connection.[106] This problem is serious. Trzeciak et al.,[107] even state that we are in a global compassion crisis. Especially during

residency training, compassion is under pressure, evidenced by studies reporting a decline in compassion among residents.[108, 109] Often, the skills and attitudes to provide compassionate care are not routinely taught.[108-110] The ramifications of the lack of compassion are highly impactful in that less physician compassion has been associated with lower quality of care, such as higher risks of medical errors,[107] slower wound healing,[111] and less optimal blood sugar levels in diabetic patients.[112] In recent years, there has been considerable attention towards developing and enhancing compassionate care.[113] Studies focused, for example, on cultivating compassion through interventions,[114] identifying compassion predictors[115] or developing tools to measure compassion.[116] However, explicit attention to how compassion is *perceived* remains underexplored, especially by residents[113, 117] and even more by patients.[113, 118, 119] It is essential to understand how patients perceive compassion as residents might learn from these insights helping them to refine their practices so that the practices reflect patients' compassion needs.[113]

## Aim and outline of this dissertation

As outlined above, there are several knowledge gaps regarding how these influential figures shape residents' learning and clinical care. It remains unknown whether effective teamwork within teaching teams contributes to a supportive learning climate for residents. We also still need more insight into how nurses perceive their role in residents' workplace leaning. Finally, we need to examine how compassionate care interactions between residents and patients can shape residents' learning and clinical practice. These insights are crucial to gain a better understanding of how residents learn through interaction, aiding their workplace learning and fostering safe and high-quality patient care.

To that end, the overarching research question of this dissertation is:

> *How do residents' interactions with supervisors, nurses, and patients shape their learning and clinical practice?*

First, to answer this question, we ask *how do residents navigate all these interactions in the workplace*? To unravel this, **Chapter 2** focuses on the process of how residents decide to seek help while navigating interactions and forces within the learning environment.

Second, in the subsequent chapters, we take a closer look at *interactions between residents and respectively patients, nurses, and supervisor teams*. **Chapter 3** foregrounds the interaction between patients and residents and studies both their perceptions of compassionate care. **Chapter 4** describes the interaction between nurses and residents by examining how residents perceive the nurses' role in guiding their learning in the workplace. **Chapter 5** highlights the interaction with supervisors; specifically, how supervisors' collaboration within teaching teams shapes residents' learning environment. To answer our questions, we conducted four studies with specific research questions, of which an outline is provided in Table 1.

**Chapter 6** summarizes and discusses the main findings of the work outlined in this dissertation.

## Reflexivity

I started my PhD journey in 2018, right after finishing my Masters in Sociology. In the beginning, the topic of my PhD was still rather broadly defined as 'better understanding residents' learning climate'. The inspiration for researching learning climates originated from a study conducted by Alina Smirnova,[31] one of my predecessors in the research group Professional Performance & Compassionate Care, and her team, who reported a counterintuitive and indeed unexpected finding: learning climates that had been characterized by residents as being more supportive were associated with adverse patient care outcomes. Within the research team, we wanted to uncover potential mechanisms to explain this odd finding. In order to get a grasp on the 'black box' that the clinical learning environment can be, we first chose to narrow the research topic to 'how residents' interactions within the workplace shaped their learning?'. This question evolved in conducting the four original studies now included in this dissertation.

The topic of 'interactions' suits me as an individual and as a sociologist. As an individual, I (try to) see learning opportunities everywhere, and Sociology studies the structure of groups and how people interact within contexts. So, I see learning as something that happens in interaction, captured within the sociocultural perspective on learning I chose for this dissertation. Within my PhD supervisory team, all members have different professional backgrounds which I feel facilitated rich, open, and critical conversations about research and methodology. As a novice in the medical world and medical education research, these interactions with my team socialized me in doing research and looking at the medical profession in a certain way. I feel the perspective on research we adopted within the team focused on growth: 'how can we best train the next generation of physicians?'. For individual articles, I also worked with other researchers who have a medical or nursing background to reflect the participants' perspectives we were studying. Also, I worked with researchers having different research backgrounds (e.g., medical ethics). Next to the fact that I enjoyed collaborating with other researchers, I felt this was important as it allowed me to better understand my research and enhanced the quality of the work.

**Table 1.** Overview the empirical studies in this dissertation

| Chapter | Purpose | Design | Data source | Analysis |
|---|---|---|---|---|
| 1 | To explore how residents' decision-making processes to seek help are shaped by their workplace environment, including their experiences of the social and cultural practices in the workplace | Constructivist grounded theory interview study | Semi-structured interviews with residents | Iterative data analysis using constant comparison |
| 2 | To understand patients' and residents' views and experiences with compassionate care | Qualitative interview study | Semi-structured interviews with residents and patients | Template analysis |
| 3 | To explore 1) the extent to which residents' and nurses' perceptions align regarding the guiding role of nurses during residents' workplace learning 2) nurses' and residents' motivations of their perceptions regarding nurses' guiding role of residents' workplace learning | Mixed-method study with concurrent collection of quantitative and qualitative data | Quantitative and qualitative survey data from residents and nurses | Analysis of variance (quantitative) and template analysis (qualitative) |
| 4 | To identify the extent to which teamwork effectiveness within teaching teams is associated with (1) the overall learning climate, and (2) its affective, cognitive and instrumental facets | Cross-sectional survey study | Quantitative survey data from individual residents and individual clinical teachers | Multilevel models and multivariate general linear models |

## Literature


1. Peck MS. The road less traveled: A new psychology of love, traditional values, and spiritual growth: Simon and Schuster; 2002.
2. Teunissen PW. Experience, trajectories, and reifications: an emerging framework of practice-based learning in healthcare workplaces. Adv Health Sci Educ. 2015;20(4):843-56.
3. Teunissen PW, Scheele F, Scherpbier AJJA, Van der Vleuten CPM, Boor K, Van Luijk SJ, et al. How residents learn: qualitative evidence for the pivotal role of clinical activities. Med Educ. 2007;41(8):763-70.
4. Kilminster S, Cottrell D, Grant J, Jolly B. AMEE Guide No. 27: Effective educational and clinical supervision. Med Teach. 2007;29(1):2-19.
5. Bartz RL. A true role model. Orthopedics. 2007;30(1):7.
6. Skeff KM, Mutha S. Role Models — Guiding the Future of Medicine. NEJM 1998;339(27):2015-17.
7. Kennedy TJT, Lingard LA, Baker GR, Kitchen L, Regehr G. Clinical Oversight: Conceptualizing the Relationship Between Supervision and Safety. J Gen Intern Med. 2007;22(8):1080-85.
8. Goldszmidt M, Faden L, Dornan T, van Merriënboer J, Bordage G, Lingard LA. Attending physician variability: a model of four supervisory styles. Acad Med. 2015;90(11):1541-46.
9. Stalmeijer RE. Teaching in the clinical workplace: looking beyond the power of 'the one'. 2015;4(3):103-04.
10. Stalmeijer RE, Varpio L. The wolf you feed: Challenging intraprofessional workplace-based education norms. Med Educ. 2021;55(8):894-902.
11. Lave J, Wenger E. Situated learning: Legitimate peripheral participation. New York (UK): Cambridge University Press; 1991.
12. Sfard A. On Two Metaphors for Learning and the Dangers of Choosing Just One. Educ Res. 1998;27(2):4-13.
13. Billett S. Toward a Workplace Pedagogy: Guidance, Participation, and Engagement. AEQ 2002;53(1):27-43.
14. Wenger E. Communities of Practice: Learning, Meaning, and Identity. New York (UK): Cambridge University Press; 1999.
15. Allen D. The invisible work of nurses: hospitals, organisation and healthcare: Routledge (UK); 2014.
16. Ramani S, Leinster S. AMEE Guide no. 34: Teaching in the clinical environment. Med Teach. 2008;30(4):347-64.
17. Yardley S, Teunissen PW, Dornan T. Experiential learning: AMEE Guide No. 63. Med Teach. 2012;34(2):e102-15.
18. Hafferty FW. Beyond curriculum reform: confronting medicine's hidden curriculum. Acad Med. 1998;73(4):403-7.
19. Merton RK, Reader GR, Kendall PL. The student-physician: Introductory studies in the sociology of medical education. Cambridge (USA): Harvard University Press; 1957.
20. Biesta GJJ, van Braak M. Beyond the Medical Model: Thinking Differently

about Medical Education and Medical Education Research. Teach Learn Med. 2020;32(4):449-56.
21. Irby DM. Improving Environments for Learning in the Health Professions. New York, NY: Josiah Macy Jr. Foundation; 2018.
22. Nordquist J, Hall J, Caverzagie K, Snell L, Chan MK, Thoma B, et al. The clinical learning environment. Med Teach. 2019;41(4):366-72.
23. Schneider B, Ehrhart MG, Macey WH. Organizational Climate and Culture. Annu Rev Psychol. 2013;64(1):361-88.
24. Weiss KB, Bagian JP, Nasca TJ. The clinical learning environment: The foundation of graduate medical education. JAMA. 2013;309(16):1687-88.
25. Kilty C, Wiese A, Bergin C, Flood P, Fu N, Horgan M, et al. A national stakeholder consensus study of challenges and priorities for clinical learning environments in postgraduate medical education. BMC Med Educ. 2017;17(1):226.
26. Shimizu T, Tsugawa Y, Tanoue Y, Konishi R, Nishizaki Y, Kishimoto M, et al. The hospital educational environment and performance of residents in the General Medicine In-Training Examination: a multicenter study in Japan. Int J Gen Med. 2013;6:637-40.
27. Van Vendeloo SN, Godderis L, Brand PLP, Verheyen KCPM, Rowell SA, Hoekstra H. Resident burnout: evaluating the role of the learning environment. BMC Med Educ. 2018;18(1):54.
28. Lases LSS, Arah OA, Busch ORC, Heineman MJ, Lombarts KMJMH. Learning climate positively influences residents' work-related well-being. Adv Health Sci Educ. 2019;24(2):317-30.
29. Gruppen L, Irby DM, Durning SJ, Maggio LA. Interventions designed to improve the learning environment in the health professions: a scoping review. MedEdPublish. 2018;7(211):211.
30. Silkens MEWM, Arah OA, Wagner C, Scherpbier AJJA, Heineman MJ, Lombarts KMJMH. The Relationship Between the Learning and Patient Safety Climates of Clinical Departments and Residents' Patient Safety Behaviors. Acad Med. 2018.
31. Smirnova A, Ravelli AC, Stalmeijer RE, Arah OA, Heineman MJ, Van der Vleuten CPM, et al. The Association Between Learning Climate and Adverse Obstetrical Outcomes in 16 Nontertiary Obstetrics–Gynecology Departments in the Netherlands. Acad Med. 2017;92(12):1740-48.
32. Thomas NK. Resident burnout. JAMA. 2004;292(23):2880-9.
33. Fahrenkopf AM, Sectish TC, Barger LK, Sharek PJ, Lewin D, Chiang VW, et al. Rates of medication errors among depressed and burnt out residents: prospective cohort study. Bmj. 2008;336(7642):488-91.
34. Ludmerer KM, Johns MM. Reforming graduate medical education. JAMA. 2005;294(9):1083-7.
35. Institute of Medicine Committee on Quality of Health Care in A. In: Kohn LT, Corrigan JM, Donaldson MS, editors. To Err is Human: Building a Safer Health System. Washington (DC): National Academies Press (US); 2000.
36. Harden RM. Developments in outcome-based education. Med Teach. 2002;24(2):117-20.

37. Leung WC. Competency based medical training: review. Bmj. 2002;325(7366):693-6.
38. Frank JR, Snell LS, Ten Cate O, Holmboe ES, Carraccio C, Swing SR, et al. Competency-based medical education: theory to practice. Med Teach. 2010;32(8):638-45.
39. Gruppen L, Frank JR, Lockyer J, Ross S, Bould MD, Harris P, et al. Toward a research agenda for competency-based medical education. Med Teach. 2017;39(6):623-30.
40. Fokkema JP, Teunissen PW, Westerman M, Van der Lee N, Van der Vleuten CPM, Scherpbier AJJA, et al. Exploration of perceived effects of innovations in postgraduate medical education. Med Educ. 2013;47(3):271-81.
41. Lombarts KMJMH, Bucx MJL, Arah OA. Development of a system for the evaluation of the teaching qualities of anesthesiology faculty. Anesthesiology. 2009;111(4):709-16.
42. Silkens MEWM, Smirnova A, Stalmeijer RE, Arah OA, Scherpbier AJJA, Van der Vleuten CPM, et al. Revisiting the D-RECT tool: Validation of an instrument measuring residents' learning climate perceptions. Med Teach. 2016;38(5):476-81.
43. Hennel EK, Trachsel A, Subotic U, Lorwald AC, Harendza S, Huwendiek S. How does multisource feedback influence residency training? A qualitative case study. Med Educ. 2022;56(6):660-69.
44. Schuwirth L, Van der Vleuten CPM, Durning SJ. What programmatic assessment in medical education can learn from healthcare. Perspect Med Educ. 2017;6(4):211-15.
45. Henry D, West DC. The Clinical Learning Environment and Workplace-Based Assessment: Frameworks, Strategies, and Implementation. Pediatr Clin N Am. 2019;66(4):839-54.
46. Carraccio C, Englander R, Van Melle E, Ten Cate O, Lockyer J, Chan M-K, et al. Advancing Competency-Based Medical Education: A Charter for Clinician–Educators. Acad Med. 2016;91(5):645-49.
47. Norman G. CanMEDS and other outcomes. Adv Health Sci Educ. 2011;16(5):547-51.
48. The Royal College of Physicians and Surgeons of Canada. About CanMEDS 2022 [Internet]. Accessed 22 June 2022. Available from: https://www.royalcollege.ca/rcsite/canmeds/about-canmeds-e
49. Frank JR, Danoff D. The CanMEDS initiative: implementing an outcomes-based framework of physician competencies. Med Teach. 2007;29(7):642-47.
50. Jarvis-Selinger S, Pratt DD, Regehr G. Competency Is Not Enough: Integrating Identity Formation Into the Medical Education Discourse. Acad Med. 2012;87(9):1185-90.
51. The Royal College of Physicians and Surgeons of Canada. Communicator 2022 [Internet]. Accessed 22 June 2022. Available from: https://www.royalcollege.ca/rcsite/canmeds/framework/canmeds-role-communicator-e.
52. The Royal College of Physicians and Surgeons of Canada. Medical Expert 2022 [Internet]. Accessed 22 June 2022. Available from: https://www.royalcollege.ca/rcsite/canmeds/framework/canmeds-role-medical-expert-e.

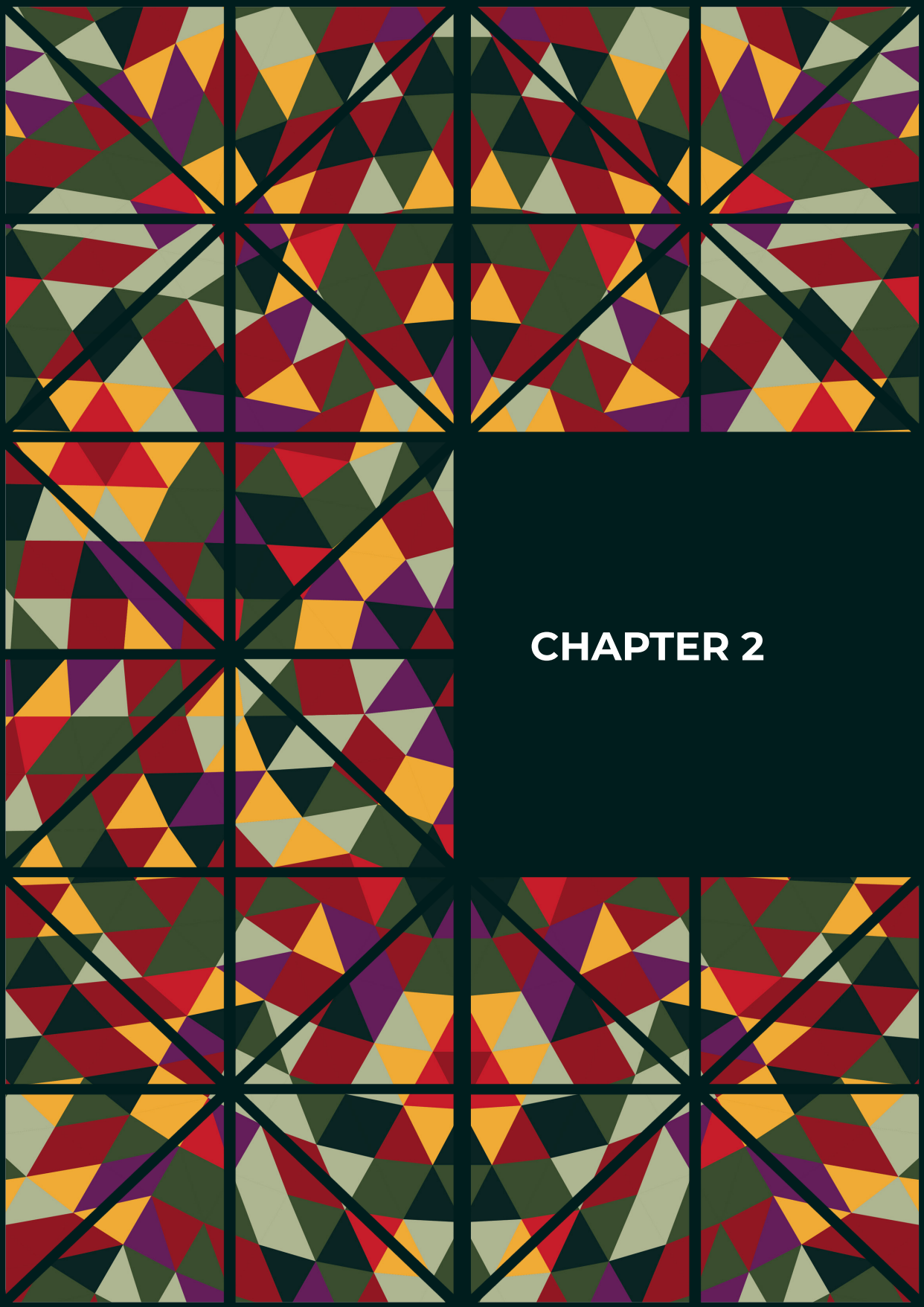
53. Teunissen PW. Leren helen. Maastricht University; 2018.
54. Bhat C, LaDonna KA, Dewhirst S, Halman S, Scowcroft K, Bhat S, et al. Unobserved Observers: Nurses' Perspectives About Sharing Feedback on the Performance of Resident Physicians. Acad Med. 2022;97(2):271-77.
55. Sonnenberg LK, Pritchard-Wiart L, Hodgson CS, Yu Y, King S. Assessment of Resident Physicians' Communicator and Collaborator Competencies by Interprofessional Clinicians: A Mixed-Methods Study. Teach Learn Med. 2017;29(4):392-401.
56. Vesel TP, O'Brien BC, Henry DM, van Schaik SM. Useful but Different: Resident Physician Perceptions of Interprofessional Feedback. Teach Learn Med. 2016;28(2):125-34.
57. Samuriwo R, Bullock A, Webb K, Monrouxe LV. 'Nurses whisper.' Identities in nurses' patient safety narratives of nurse-trainee doctors' interactions. Med Educ. 2021;55(12):1394-406.
58. Wenger-Trayner E, Wenger-Trayner B. Learning in a landscape of practice. In: Wenger-Trayner E, Fenton-O'Creevy M, Hutchinson S, Kubiak C, Wenger-Trayner B, editors. Learning in landscapes of practice: Boundaries, identity, and knowledgeability in practice-based learning. Abingdon (UK): Routledge; 2015. p. 14– 29.
59. Billett S. Workplace Pedagogic Practices: Co-Participation and Learning. Br J Educ Stud. 2002;50(4):457-81.
60. Collins A, Brown JS, Newman SE. Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. 1 ed: Routledge (UK); 1989.
61. Dictionary OE. "interaction, n.": Oxford University Press.
62. Gillin JL, Gillin JP. Cultural sociology. New York (USA): McMillan 1948.
63. Merrill FE, Eldredge HW. Culture and Society: An Introduction to Sociology New York (SA): Prentic-Hall; 1952.
64. King E, Turpin M, Green W, Schull D. Learning to interact and interacting to learn: a substantive theory of clinical workplace learning for diverse cohorts. Adv Health Sci Educ. 2019;24(4):691-706.
65. Wenger-Trayner E, Fenton-O'Creevy M, Hutchinson S, Kubiak C, Wenger-Trayner B. Learning in landscapes of practice: Boundaries, identity, and knowledgeability in practice-based learning: Routledge (UK); 2014.
66. de Nooijer J, Dolmans DHJM, Stalmeijer RE. Applying Landscapes of Practice Principles to the Design of Interprofessional Education. Teach Learn Med. 2022;34(2):209-14.
67. Olmos-Vega FM, Dolmans DHJM, Guzman-Quintero C, Echeverri-Rodriguez C, Teunnissen PW, Stalmeijer RE. Disentangling residents' engagement with communities of clinical practice in the workplace. Adv Health Sci Educ Theory Pract. 2019;24(3):459-75.
68. Billett S. Co-participation at work: Learning through work and throughout working lives. Stud Contin Educ. 2004;36(2):190-205.
69. Stalmeijer RE, Dolmans DHJM, Wolfhagen IH, Muijtjens AM, Scherpbier AJJA. The development of an instrument for evaluating clinical teachers: involving stakeholders to determine content validity. Med Teach. 2008;30(8):e272-7.

70. Olmos-Vega FM, Dolmans DHJM, Donkers J, Stalmeijer RE. Understanding how residents' preferences for supervisory methods change throughout residency training: a mixed-methods study. BMC Med Educ. 2015;15:177.
71. Lyons K, McLaughlin JE, Khanova J, Roth MT. Cognitive apprenticeship in health sciences education: a qualitative review. Adv Health Sci Educ Theory Pract. 2017;22(3):723-39.
72. Stalmeijer RE. When I say … cognitive apprenticeship. Med Educ. 2015;49(4):355-6.
73. Freidson E. Profession of medicine: A study of the sociology of applied knowledge. Chicago (USA): University of Chicago Press; 1988.
74. Wiese A, Kilty C, Bennett D. Supervised workplace learning in postgraduate training: a realist synthesis. Med Educ. 2018;52(9):951-69.
75. Malling B, Scherpbier AJJA, Ringsted C. What is the role of the consultant responsible for postgraduate education in the clinical department? Med Teach. 2007;29(5):471-7.
76. Gingerich A, Daniels V, Farrell L, Olsen SR, Kennedy T, Hatala R. Beyond hands-on and hands-off: supervisory approaches and entrustment on the inpatient ward. Med Educ. 2018.
77. Kennedy TJT, Regehr G, Baker GR, Lingard LA. Progressive Independence in Clinical Training: A Tradition Worth Defending? Acad Med. 2005;80(10):S106-S11.
78. Scheepers RA, Arah OA, Heineman MJ, Lombarts KMJMH. In the eyes of residents good supervisors need to be more than engaged physicians: the relevance of teacher work engagement in residency training. Adv Health Sci Educ. 2015;20(2):441-55.
79. Wright SM, Kern DE, Kolodner K, Howard DM, Brancati FL. Attributes of excellent attending-physician role models. NEJM 1998;339(27):1986-93.
80. Boor K, Teunissen PW, Scherpbier AJJA, Van der Vleuten CPM, Van de Lande J, Scheele F. Residents' perceptions of the ideal clinical teacher—a qualitative study. Eur J Obstet Gynecol. 2008;140(2):152-57.
81. Sheu L, Kogan JR, Hauer KE. How Supervisor Experience Influences Trust, Supervision, and Trainee Learning: A Qualitative Study. Acad Med. 2017;92(9):1320-27.
82. Holmboe ES, Ward DS, Reznick RK, Katsufrakis PJ, Leslie KM, Patel VL, et al. Faculty Development in Assessment: The Missing Link in Competency-Based Medical Education. Acad Med. 2011;86(4):460-67.
83. Steinert Y, Basi M, Nugus P. How physicians teach in the clinical setting: The embedded roles of teaching and clinical care. Med Teach. 2017;39(12):1238-44.
84. Slootweg I, Lombarts KMJMH, Van der Vleuten CPM, Mann K, Jacobs J, Scherpbier AJJA. Clinical teachers' views on how teaching teams deliver and manage residency training. Med Teach. 2013;35(1):46-52.
85. [KNMG] Royal Dutch Medical Association. Kaderbesluit Centraal College Medische Specialismen 2009 [Internet]. Accessed 22 June 2022. Available from: https://www.knmg.nl/web/file?uuid=a61aa841-c67b-48b3-a6ab-8791714 1c709&owner=5c945405-d6ca-4deb-aa16-7af2088aa173&contentid=4444&elementid=171092.

86. [KNMG] Royal Dutch Medical Association. Stimulans voor interne kwaliteitsverbetering van de geneeskundige vervolgopleidingen (Scherpbier 2.0) 2015 [Internet]. Accessed 22 June 2022. Available from: https://www.knmg.nl/opleiding-herregistratie-carriere/cgs/themas-projecten/scherpbier-2.0.htm.
87. Hoff TJ, Pohl H, Bartfield J. Creating a Learning Environment to Produce Competent Residents: The Roles of Culture and Context. Acad Med. 2004;79(6):532-40.
88. Shimizu T, Tsugawa Y, Tanoue Y, Konishi R, Nishizaki Y, Kishimoto M, et al. The hospital educational environment and performance of residents in the General Medicine In-Training Examination: a multicenter study in Japan. Int J Gen Med. 2013;6:637-40.
89. Manser T. Teamwork and patient safety in dynamic domains of healthcare: a review of the literature. Acta Anaesthesiol Scand. 2009;53(2):143-51.
90. Rosen M, DiazGranados D, Dietz A, Benishek L, Thompson D, Pronovost P, et al. Teamwork in Healthcare: Key Discoveries Enabling Safer, High-Quality Care. Am Psychol. 2018;73(4):433-50.
91. Tang CJ, Chan SW, Zhou WT, Liaw SY. Collaboration between hospital physicians and nurses: An integrated literature review. Int Nurs Rev. 2013;60(3):291-302.
92. Siedlecki SL, Hixson ED. Relationships between nurses and physicians matter. Online J Issues Nurs. 2015;20(6).
93. Martimianakis MAT, Fernando O, Schneider R, Tse S, Mylopoulos M. "It's Not Just About Getting Along": Exploring Learning Through the Discourse and Practice of Interprofessional Collaboration. Acad Med. 2020;95(11S):S73-S80.
94. Bannister SL, Dolson MS, Lingard LA, Keegan DA. Not just trust: factors influencing learners' attempts to perform technical skills on real patients. Med Educ. 2018;52(6):605-19.
95. Burford B, Morrow G, Morrison J, Baldauf B, Spencer J, Johnson N, et al. Newly qualified doctors' perceptions of informal learning from nurses: implications for interprofessional education and practice. J Interprof Care. 2013;27(5):394-400.
96. Varpio L, Bidlake E, Casimiro L, Hall P, Kuziemsky C, Brajtman S, et al. Resident experiences of informal education: how often, from whom, about what and how. Med Educ. 2014;48(12):1220-34.
97. Polansky MN, Govaerts MJB, Stalmeijer RE, Eid A, Bodurka DC, Dolmans DHJM. Exploring the effect of PAs on physician trainee learning: An interview study. JAAPA. 2019;32(5):47-53.
98. Vesel TP, O'Brien BC, Henry DM, van Schaik SM. Useful but Different: Resident Physician Perceptions of Interprofessional Feedback. Teach Learn Med. 2016;28(2):125-34.
99. Ray S, Yasumati P, Katie W, Alison B. Medical education and patient safety: time to look beyond gendered attributes? Med Educ. 2018;52(7):685-87.
100. Barry MJ, Edgman-Levitan S. Shared Decision Making — The Pinnacle of Patient-Centered Care. NEJM. 2012;366(9):780-81.
101. Sackett DL, Rosenberg WMC, Gray JAM, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. BMJ. 1996;312(7023):71-72.

102. Rosenbaum L. Peers, Professionalism, and Improvement - Reframing the Quality Question. N Engl J Med. 2022;386(19):1850-54.
103. NEJM Catalyst. Healthcare big data and the promise of value-based care. NEJM Catalyst. 2018;4(1).
104. Pearl R. LinkedIn2022. [Internet]. Accessed 1 June 2022. Available from: https://www.linkedin.com/pulse/breaking-healthcares-rules-selecting-best-technology-pearl-m-d-?trk=pulse-article_more-articles_related-content-card.
105. Trzeciak S, Mazzarelli A, Booker C. Compassionomics: The revolutionary scientific evidence that caring makes a difference. Florida (USA): Studer Group; 2019.
106. Verghese A. Culture Shock — Patient as Icon, Icon as Patient. NEJM. 2008;359(26):2748-51.
107. Trzeciak S, Roberts BW, Mazzarelli AJ. Compassionomics: Hypothesis and experimental approach. Med Hypotheses. 2017;107:92-97.
108. Neumann M, Edelhäuser F, Tauschel D, Fischer MR, Wirtz M, Woopen C, et al. Empathy Decline and Its Reasons: A Systematic Review of Studies With Medical Students and Residents. Acad Med. 2011;86(8):996-1009.
109. Bellini LM, Shea JA. Mood Change and Empathy Decline Persist during Three Years of Internal Medicine Training. Acad Med. 2005;80(2):164-67.
110. Lown BA, McIntosh S, Gaines ME, McGuinn K, Hatem DS. Integrating Compassionate, Collaborative Care (the "Triple C") Into Health Professional Education to Advance the Triple Aim of Health Care. Acad Med. 2016;91(3):310-6.
111. Pereira L, Figueiredo-Braga M, Carvalho IP. Preoperative anxiety in ambulatory surgery: The impact of an empathic patient-centered approach on psychological and clinical outcomes. Patient Educ Couns. 2016;99(5):733-38.
112. Hojat M, Louis DZ, Markham FW, Wender R, Rabinowitz C, Gonnella JS. Physicians' Empathy and Clinical Outcomes for Diabetic Patients. Acad Med. 2011;86(3):359-64.
113. Malenfant S, Jaggi P, Hayden KA, Sinclair S. Compassion in healthcare: an updated scoping review of the literature. BMC Palliat Care. 2022;21(1):80.
114. Sinclair S, Kondejewski J, Jaggi P, Dennett L, Roze des Ordons AL, Hack TF. What Is the State of Compassion Education? A Systematic Review of Compassion Training in Health Care. Acad Med. 2021;96(7):1057-70.
115. Pavlova A, Wang CXY, Boggiss AL, O'Callaghan A, Consedine NS. Predictors of Physician Compassion, Empathy, and Related Constructs: a Systematic Review. J Gen Intern Med. 2022;37(4):900-11.
116. Sinclair S, Russell LB, Hack TF, Kondejewski J, Sawatzky R. Measuring Compassion in Healthcare: A Comprehensive and Critical Review. Patient. 2017;10(4):389-405.
117. Sinclair S, Hack TF, McClement S, Raffin-Bouchal S, Chochinov HM, Hagen NA. Healthcare providers perspectives on compassion training: a grounded theory study. BMC Med Educ. 2020;20(1):249.
118. Maben J, Cornwell J, Sweeney K. In praise of compassion. J Res Nurs. 2010;15(1):9-13.

119. Sinclair S, McClement S, Raffin-Bouchal S, Hack TF, Hagen NA, McConnell S, et al. Compassion in Health Care: An Empirical Model. J Pain Symptom Manage. 2016;51(2):193-203.


CHAPTER 2

# An act of performance: exploring residents' decision-making processes to seek help

Iris Jansen, Renée E. Stalmeijer, Milou E.W.M. Silkens, Kiki M.J.M.H. Lombarts. Med Educ. 2021;55(6):758-767.

## Abstract

**CONTEXT** Residents are expected to ask for help when feeling insufficiently confident or competent to act in patients' best interests. While previous studies focused on the perspective of supervisor-resident relationships in residents' help-seeking decisions, attention for how the workplace environment and, more specifically, other health care team members influence these decisions is limited. Using a sociocultural lens, this study aimed to explore how residents' decision-making processes to seek help are shaped by their workplace environment.

**METHODS** Through a constructivist grounded theory methodology, we purposively and theoretically sampled 18 residents; 9 juniors (postgraduate year 1/2) and 9 seniors (postgraduate year 5/6) at Amsterdam University Medical Centers. Using semi-structured interviews, participating residents' decision-making processes to seek help during patient care delivery were explored. Data collection and analysis were iterative; themes were identified using constant comparative analysis.

**RESULTS** Residents described their help-seeking decision-making processes as an 'act of performance': they considered how asking for help could potentially impact their assessments. They described this act of performance as the product of an internal 'balancing act' with at its core the non-negotiable priority for providing safe and high-quality patient care. With this in mind, residents weighed up demonstrating the ability to work independently, maintaining credibility, and becoming an accepted member of the health care team when deciding to seek help. This 'balancing-act' was influenced by sociocultural characteristics of the learning environment, residents' relationships with supervisors, and the perceived approachability of other health care team members.

**CONCLUSIONS** This study suggests that sociocultural forces influence residents to experience help-seeking as an act of performance. Especially a safe learning environment resulting from constructive relationships with supervisors and the approachability of other health care team members, lowered the barriers to seek help. Supervisors could address these barriers by having regular conversations with residents about when to seek help.

## Introduction

Complex, critical and challenging situations during the delivery of patient care are an everyday reality for residents. In such situations, residents are expected to seek help when they feel insufficiently able, confident, or competent to act in patients' best interest.[1-5] However, several studies suggest that residents may be hesitant to seek help, which could jeopardize the quality of patient care[1, 2, 5, 6] and result in a loss of learning opportunities.[3, 6] Research highlights the complexities involved in residents' decisions to seek help, especially in relation to their supervisors, due to the existing hierarchy.[1-8] Approachability and availability of supervisors determine the experienced threshold for residents to seek help[2, 5, 8] but do not eliminate worries residents have about how they might come across when asking for help from their supervisors.[5, 6] Even when supervisors are approachable and available, residents still fear losing their autonomy[8] and professional credibility[2] or being seen as incompetent.[1, 4] As a consequence, residents might refrain from asking for help or employ strategies to maintain their image of being a 'credible' or 'believable' physician.[6]

Although, thus far, studies foregrounded the perspective of supervisor-resident relationships in residents' asking for help, only considering this perspective may not be sufficient to understand residents' help-seeking decisions. As patient care requires the joint effort of health care teams, residents interact with many different health care professionals on a day-to-day basis. From the perspective of sociocultural learning theories, our eye is drawn to how learning arises from these interactions that residents engage in and how interactions are influenced by the cultural practices within the workplace environment.[9-12] Bleakley[13] argues that the sociocultural perspective is especially helpful in understanding how learning and social practices occur in complex systems such as health care teams. Similarly, organizational psychologist Bamberger[14] advocates for considering not only help-seeking as an individual trait but also to examine the interplay between the help-seeker and provider within the workplace.

While studies within medical education have more and more adopted the sociocultural lens to advance our understanding of workplace learning,[15-19] it has not yet been used to study residents' decision-making processes to seek help. Hence, attention for the extent to which residents decide to seek help from other team members is still warranted. Some empirical examples do already touch upon the role of the other health care team members and the workplace environment.[2, 20, 21] For instance, Kennedy and colleagues,[2] described how residents turned their questions to "less powerful" team members (e.g., nurses, and peers), to maintain their credibility towards supervisors or when supervisors were not available. Olmos-Vega and colleagues[8] highlighted that if residents perceived an unsafe workplace environment, they requested help from peers as it felt safer to ask from an equal team member.

Using a sociocultural lens, this study sets out to understand residents' decision-making processes to seek help regarding patient care. Such an understanding could provide useful starting points for safeguarding patient care and enhance learning opportunities during residency training. The current study aims to explore how residents' decision-making processes to seek help are shaped by their workplace environment, including their experiences of the social and cultural practices in the workplace.

## Method

We used a constructivist grounded theory (CGT) methodology as we sought to explain how residents' decisions to seek help are shaped as a social process embedded in the workplace.[22] Following this methodology, our data collection and analysis were iterative, meaning that each informed and influenced the other.[22, 23] To inform our data collection and analysis, we used sensitizing concepts from sociocultural learning theories, in line with the constructivist approach.[22] These theories are based upon the idea that residents' learning results from the interplay between individual agency and the social and cultural context.[9-12] We specifically used ideas from theories on workplace learning,[10, 24] Communities of Practice[11, 12] and, Landscape of Practice.[25, 26] Using these ideas allowed us to study residents' perceptions about their decision-making processes to seek help, while also being aware how these processes are shaped by their social context with the specific focus on interactions between health care members and the underlying workplace culture. This research was conducted by a sociologist pursuing a PhD in medical education (IJ), an educationalist with expertise in qualitative methodology (RS) and, two health care scientists (MS and KL). RS, MS, and KL are experienced researchers with respectively significant expertise in workplace learning, learning environments, and the medical profession.

### Setting

This study was conducted among residents at Amsterdam University Medical Centers (Amsterdam UMC) in the Netherlands. In the Netherlands, the duration of residency training varies per specialty and lasts between three to six years. As in other Western health care systems, obtaining a position within residency training is very competitive.[27] During their training, residents follow various rotations in both academic and (several) non-academic teaching hospitals, where they are part of the health care team and work alongside multiple health care professionals (e.g., nurses, fellow residents, and supervisors). As residents progress through their training, they will gradually and, with guidance from their supervisors, work towards independent practice. Lastly, competency based medical education (CBME) and systematic quality assessments and improvements have been implemented in Dutch residency training programs over the past decade. Measuring residents' learning climate, the use of Entrustable Professional Activities (EPA's), and residents providing feedback on their supervisors' teaching qualities, can be considered a routine practice in most Dutch training programs.[28, 29]

## Sampling and data collection

We purposively sampled residents from internal medicine, pediatrics, and obstetrics and gynecology training to encompass different work settings, regarding the nature and urgency of care, the type of health care team members, how team members collaborate, as well as the culture within the workplace providing rich information aiding to understand residents' decision-making processes. We purposively included junior residents (postgraduate training year 1/2) and senior residents (postgraduate training year 5/6). It is suggested that residents' decisions to seek help might be expressed differently depending on their level of training.[2] In a later stage, we used theoretical sampling,[22] seeking residents from surgery training programs and higher postgraduate years to deepen the findings and capture the comprehensiveness of the preliminary defined results (see Table 1). Invitation e-mails, including a brief study description and an information letter, were sent to residents. Participation in the study was voluntary at all times.

The initial semi-structured interview guide was developed by the research team and piloted with one resident. The guide was refined by reformulating questions that were not well understood by the participant (see Appendix 1). During the interviews, residents were asked to describe the process by which they seek help, using probes based on residents' responses and previous findings to further explore residents' decisions to seek help.[23] Following CGT methodology, after examining the transcripts, recurring themes were deepened during subsequent interviews using a refined interview guide.[22] Notably, as residents were hesitant to use the word 'help-seeking' or said never to ask for help, we used similar but less pejorative terms for help-seeking, i.e., 'checking' or 'consulting' at the start of the interview. After establishing rapport between the interviewer (IJ) and participants, we explicitly referred to 'help-seeking' and the phenomenon's sensitivity.

Theoretical sufficiency was met after interviewing eighteen residents, meaning that we had collected sufficient data to understand and explain residents' help-seeking decisions for this study.[30] All interviews were conducted between January 2019 and December 2019 by the first author IJ and lasted between 40 and 65 minutes. Interviews were audiotaped, transcribed verbatim, and anonymized before data analysis.

**Table 1.** Characteristics of residents interviewed (N = 18)

| Characteristic | No. |
|---|---|
| Gender | |
| Male | 5 |
| Female | 13 |
| Training level | |
| Junior | 9 |
| Senior | 9 |
| Training program | |
| Internal medicine | 9 |
| Pediatrics | 2 |
| Obstetrics and gynecology | 5 |
| Surgery | 2 |

## Data analysis

The first four transcripts were read and open coded independently by IJ and a research assistant with expertise in qualitative methods. During this process, RS and MS additionally double coded parts of the transcripts to compare the interpretation of initially developed codes. After approximately ten transcripts, we iteratively refined initial codes during regular team meetings until we agreed upon a preliminary code scheme with major categories, capturing relationships between codes (axial coding process). The preliminary code scheme was an iterative and ongoing process applied to the next five transcripts and further refined through group review and discussion. After the team agreed on the refinement, the scheme was applied to the subsequent transcripts. We then constructed the relationships among categories, facilitating a deeper conceptual understanding of residents' decision-making processes to seek help. To check whether the constructed conceptual framework captured residents' decision-making processes to seek help, we discussed the framework during two final interviews with residents,[30, 31] who had the same characteristics as described in the sampling section. Our discussions with these residents suggested that the framework resonated with their experiences and, they provided further details supporting the framework we had constructed. As such, no major changes were made to the framework. MAXQDA (version MAXQDA Plus 2020) supported data analysis.

## Ethical approval

The institutional ethical review board of the Amsterdam UMC of the University of Amsterdam provided a waiver declaring the Medical Research Involving Human Subjects Act (WMO) did not apply to the current study (reference number W18_374 # 18.428).

## Results

Residents described their decision-making processes to seek help as an *act of performance* in which they considered how their asking for help could be taken into account in their assessment as a learner and future medical specialist by all members of the health care team. This act of performance was described as the product of an internal 'balancing act' and how residents' perceived certain sociocultural forces within the workplace. During this balancing act of whether or not to seek help, residents considered four aspects: 1) providing safe and high-quality patient care, 2) demonstrating the ability to work independently, 3) maintaining credibility as a (junior) physician, and 4) becoming an accepted member of the health care team. Three sociocultural forces of the workplace strongly influenced the weighing of these aspects: a safe learning environment that was conveyed through a constructive relationship with supervisors and the approachability of other health care team members.

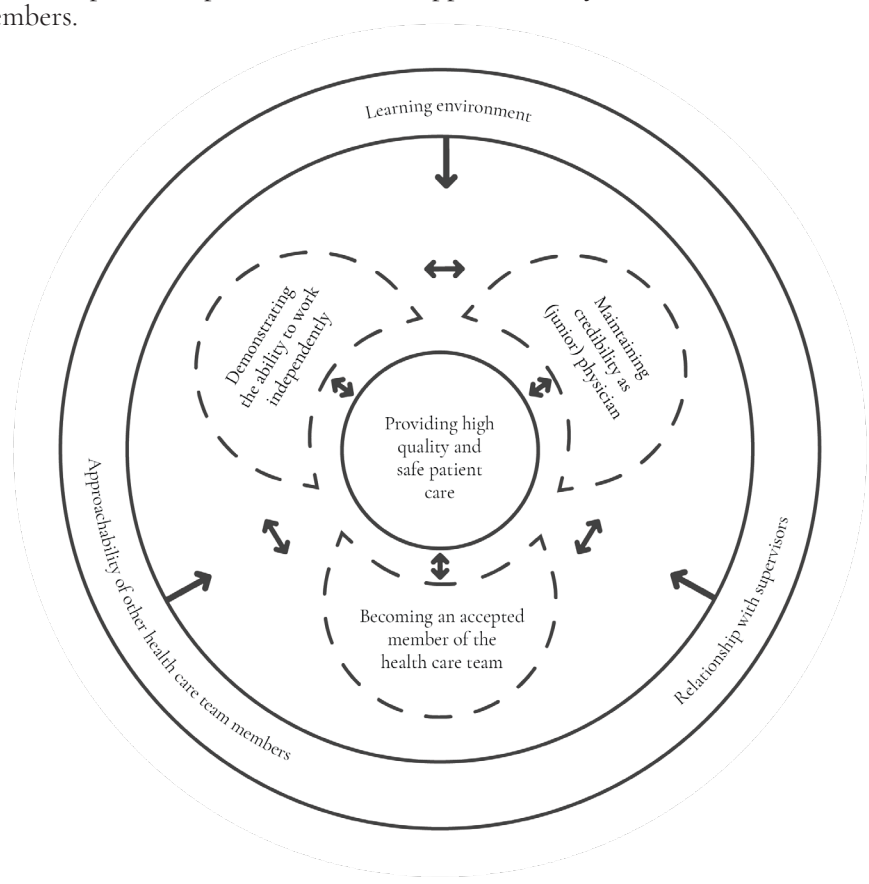



**Figure 1.** Conceptual model of how residents' help-seeking decisions are shaped. Residents' internal dialogue and the four aspects they balance are portrayed in the middle. The outer ring displays the forces within the workplace influencing which aspects were given more weight in residents' decisions to seek help or not.

## Residents' internal dialogue: the balancing act and act of performance

Residents likened asking for help as an act of performance: they felt that asking for help could positively or negatively impact their assessments. As such, asking for help was experienced as high-stakes or low-stakes, depending on the patient case and who they wanted to ask help from within the health care team. Residents described that the decision to ask for help was each time preceded by an internal dialogue in which four aspects were considered. Although individual differences were apparent, the same four aspects were consistently present within residents' help-seeking considerations regardless of residents' gender or training program. Residents' desire to *provide safe and high-quality patient care* was the core around which their internal dialogue revolved. When residents considered asking for help from supervisors, *maintaining their credibility*, and their drive to *demonstrate the ability to work independently* were most pertinent. *Becoming an accepted member of the health care team* was mostly considered when seeking help from members of the health care team in general and physicians from other departments.

The balance between providing *safe and high-quality patient care* and *maintaining credibility* could raise tensions and cause conflicting feelings for residents towards seeking help. Residents, for example, explained this tension as preferring more information or details about a clinical case. However, asking for such details could be at odds with maintaining their credibility in the eyes of their supervisors. By asking questions that might be perceived as "dumb" (P2) or "inappropriate" (P7) by supervisors, residents worried about performing in a wrong way, harming their credibility, which could negatively impact their assessment:

> And then I notice that asking help from people who also have to assess you immediately creates a risk (…) Because if they [supervisors] interpret a question as, oh, she doesn't know (…) I think that it just affects the assessment you get as a resident. (P12)

Furthermore, residents described that seeking help in non-urgent or less complex clinical situations (e.g., small laboratory abnormalities) was challenging: seeking help in such situations was recognized as generally preferred for *safe and high-quality patient care,* while at the same time residents wanted to *demonstrate the ability to work independently,* strengthened by the feeling that this was expected from them as a physician in training. This challenge seemed to affect junior and senior residents differently. Juniors felt not yet fully able to work independently and talked about the desire for a final "confirmation" (P10) or "reassurance" (P6) from supervisors, indicating that they were making the right clinical decisions for their patients. Seniors, on the other hand, reflected that the ability to work independently without seeking help became more important and that both asking too many questions and being "indecisive" (P18) was not a desirable performance as "it [reputation of indecisiveness] will stick to you" (P18). Interestingly, to perform well, one resident talked about being a "chameleon" (P15): adapting the way of working and asking

questions to what is perceived as expected to do. As a consequence, this resident said "sometimes you're acting a little bit." (P15).

While residents perceived that seeking help to provide safe and high-quality patient care could run counter to maintaining their credibility and demonstrating the ability to work independently, residents experienced that *becoming an accepted member of the health care team* went hand in hand with *providing safe and high-quality patient care*. Residents described how, by deliberately asking questions, they learned how "things are done" (P4) within this particular workplace, and simultaneously could establish collegial and reciprocal relationships needed to become an accepted member within the health care team. In turn, being accepted and included as a full team member afforded residents in current and future clinical cases to get the daily patient care done: "that people enjoy working with you and are willing to work half an hour overtime so that we can finish surgery (...)" (P15).

## Forces within the workplace influencing the balancing act

Residents' described how forces within the workplace inherently influenced their help-seeking balancing act. Within the workplace, a safe learning environment was repeatedly described as a force influencing the balancing act. It created a sense of safety that was conveyed through a constructive relationship with supervisors and the approachability of other health care team members. These forces, including whom they were seeking help from, influenced which aspects were given more weight in residents' decisions to ask for help.

*Safe learning environment*

Residents recognized how the experienced learning environment within the workplace shaped their decisions to seek help, especially their sense of a safe and constructive atmosphere was imperative. Residents described such an atmosphere as "open" (P9), "welcoming" (P4), and "equal" (P3) in which they were being recognized as a person as well as a learner by team members. In such departments, residents felt more included within the team and were more comfortable to share clinical uncertainties:

> And if you ask or say something, it is listened to and addressed. So, the feeling that you are a team (...) Not that all decisions are made for you from above, but that you are also heard. (...) then you just feel like a full member of the team. And that has the effect (...) on me that you feel happy, you feel comfortable, and you feel safe. I think it promotes safe patient care because you feel free to ask and to share your doubts. (P3)

In contrast, in more punitive atmospheres, residents experienced the feeling of being "punished" (P17) for asking questions or being "constantly assessed" (P11). In such atmospheres, residents felt this burden always lurking, which affected their asking for help in current and future help-seeking situations throughout their training: "that you choose to make a plan [for the patient] yourself instead of discussing your doubts [with supervisors]" (P3).

*A constructive relationship with supervisors*

Residents considered supervisors who shared their expectations about when and how they should seek help as contributing to a constructive relationship. Such conversations positively influenced residents' help-seeking decisions, mitigating the odds of losing credibility and the need to perform questions. However, these conversations were rare, causing residents to turn to fellow residents and nurses who helped them to understand their "supervisors' manual" (P15) (e.g., supervisors' expectations and preferences regarding help-seeking). Especially junior residents pre-consulted nurses or fellow residents about "whether they also find it [ECG] normal or abnormal, or whether you should consult a supervisor" (P11). As this other resident explained:

> I often ask the nurses, what do you think? Just for back-channeling, that you are more certain about what you want to discuss [with supervisors], or whether your treatment policy is the right one. (P15)

Residents also described how a nonconstructive relationship with and strong reactions from supervisors to requests for help had them "trying to find a work-around not having to ask the supervisor in question" (P3), because – as one resident put it – "you do not want to be the pain-in-the-ass resident" (P17). Residents then preferred "thinking about that [question] later [by myself]" (P10). A typical example was supervisors who acted too hurried or rushed to answer questions:

> My supervisor came into [the room] in a hurry holding a sandwich: 'I have 25 minutes, 8 patients, just quickly'. And then you look through the [lab] results together. [supervisor says] 'Do you have any questions? No okay, and continue'. It is just: you report and they dictate. (...) While you do not even know yet why a CT, why not an MRI? (P10)

*Approachability of other health care team members*

Residents spoke about fellow residents and allied health professionals' approachability as they often worked physically close together by sharing offices. Such proximity lowered the threshold to ask quick and "practical things [to fellow residents] about (...) how do you make a discharge letter or how do I go through medication changes?" (P10). Whereas calling supervisors from other departments was "difficult because you sometimes don't know who you are calling" (P1). Working physically close to each other thus facilitated a relationship based on trust, support and, reciprocity by which help-seeking "went more smoothly" (P2). Residents recognized that their own attitude towards nurses contributed to such a reciprocal relationship:

> I also invest very actively in it [relationship with nurses] and approach them with a lot of respect and I explicitly thank them if they do things that - as a result - I do not have to do. (...) I think if you are kind to each other that way, it helps in on all sides. It also helps me in the end, because next time they are willing to call a patient again. (P17).

Moreover, residents indicated how they experienced a lower threshold when seeking help from "equal colleagues" (P15), i.e., fellow residents and allied health professionals, as compared to supervisors. This was partly due to their non-involvement in formal assessments (i.e., less high-stakes). Similarly, residents preferred seeking help from fellow residents and allied health professionals, especially regarding specific clinical practices and "how the things are done around here" (P9). Other team members sometimes had more useful expertise in clinical practices than supervisors "if I have any doubts about ultrasounds, I know she [fellow resident] can do better than my supervisor. So then I consult her (...)" (P2). Also, residents talked about asking fellow residents about areas they wanted to improve their knowledge and skills in:

> I invited [fellow resident] once for a physical examination, as I would like to see the joints [the expertise of the fellow resident]. Then we just did it [physical examination] together and then he taught me how to really do it. So I learned a lot from it and it is also just a lot of fun. (P1)

## Discussion

In this study using a sociocultural lens, we explored how residents' help-seeking decision-making processes are being shaped by their workplace environment, including their experiences of the social and cultural practices in the workplace. We found that residents experience asking for help as an act of performance: they perceive the 'how' and 'when' of asking questions, as well as the content of these questions, as a measure of their competence. Moreover, this act of performance was preceded by an internal dialogue in which the need for and potential ramifications of help-seeking were balanced. Residents' sense of responsibility for providing safe and high-quality patient care was the core around which their internal dialogue revolved. With this in mind, residents weigh up demonstrating the ability to work independently, maintaining their credibility as a physician, and becoming an accepted member of the health care team when seeking help. Residents' internal dialogue was strongly influenced by sociocultural forces of the workplace, including a safe learning environment that was conveyed through a constructive relationship with their supervisors and the approachability of other health care team members. In identifying the complex interplay between the internal balancing act and workplace forces, our study joins a growing body of literature, raising attention for the sociocultural perspective in aiding to unravel the interplay between the social and cultural aspects of residents' learning and clinical practice.[15–19, 32]

Framing help-seeking as an act of performance resonates with the literature on how residents perceive the pressure to come across as certain, decisive, and independent.[1-3, 6, 7, 19] Residents feel that such attributes are rewarded in performance assessments and, thus, are expected from them during their training towards becoming future medical specialists.[1, 19] These pressures are partially embodied by the wide implementation of competency frameworks within medical education with a strong focus on outcomes, competencies, and achieving milestones.[33-37] Our study demonstrated how such pressures and expectations influenced residents' internal dialogue, resulting in the unintended consequence of hampering help-seeking. Notably, not posing the less relevant or less clearly worked out questions is potentially problematic as such questions contribute to residents' professional development by providing feedback on knowledge gaps or how to structure their case when presenting a patient.[15] Although residents proclaimed that not seeking help never interfered with providing safe and high-quality patient care, it does raise the question of whether the *most optimal* patient care can always be guaranteed. A previous study reported that patients' treatment could be delayed when residents were uncertain about clinical decisions and did not seek help or input from supervisors.[38] Ultimately, perceiving help-seeking as an act of performance could run counter to residents' learning and potentially the provision of optimal patient care.[6] Hence, our study suggests that to mitigate pressures on residents' internal dialogue, a safe learning environment nurturing the sharing of uncertainty and vulnerability while paying attention to the individual resident and their personal learning needs is imperative.[39, 40] In such environments, residents are more likely to speak up and disclose errors partly due to less hierarchy, which may be instrumental for providing safe and high quality patient care.[41, 42]

The fact that residents framed help-seeking as a measure of their competence altered their way of asking questions: they tailored the 'right' way of help-seeking, to the 'right' supervisor or to the 'right' health care team member. By performing questions in that way, residents could more easily access opportunities to demonstrate their ability to work independently (e.g., being granted to perform a surgical procedure), safeguard their credibility as a physician, and secure a position as an accepted team member. Various studies described how supervisors greatly vary in their supervisory preferences[43, 44] and how through tailoring processes (e.g., altering questions), a shared interaction pattern could be created between residents and supervisors.[44, 45] While our results point to similar processes, we also highlighted how residents actively develop their understanding of supervisors' preferences, partially through 'checking' the validity and legitimacy of their questions with other health care team members before asking supervisors. This resonates with Goffman's theory of impression management. He describes how we try to understand what is expected from us during social interactions and then use these insights to influence the perceptions others may hold about us.[46] He described that performance arises in two contexts: in the frontstage where 'some aspects of the activity are expressively accentuated and other aspects, which might discredit the fostered impression, are suppressed,[46] whereas in the backstage 'the suppressed facts make an appearance'.[46] Previous research on feedback conversations suggested how residents wanted to

create a front stage performance to display confidence to supervisors.[47] While our results underline this finding, we also provide insights into the interplay between the frontstage and backstage. Residents 'rehearse' their performance of asking questions in the backstage on professionals within the perceived same scope of practice (e.g., allied health professionals or fellow residents), before asking their questions to supervisors in the frontstage. In that way, residents could manage their impression as they had more certainty that their question aligned with the expected level of independence, and they could portray themselves as a competent (future) colleague, promoting a positive assessment.[36]

Moreover, we also shed light on how help-seeking as performance does not only occur in the presence of supervisors but also how allied health professionals and fellow residents played a key role in residents' decision-making processes to seek help. Our study suggests that while supervisors seemed to be the *gatekeepers* of the medical community, other members within the health care team might serve as *guides* providing practical knowledge and enculturating them into the clinical workplace.[11, 12, 17, 20, 26, 48, 49] Compared to supervisors, other co-workers afforded the 'know-how' of and guided them through the local norms and practices of the particular workplace.[17, 20, 50] This knowledge is an essential part of socialization into the health care team[51] as it helped residents to understand and secure their position as an accepted, legitimate team member. The metaphor of asking questions as 'exchanging currency'[52, 53] is useful to understand how - by asking for help as performance - residents secure their position within the team. Residents pay by asking for the 'right' help and by forging relationships through actively involving members of the health care team in the delivery of patient care. Residents realized that these communication skills are highly valued by team members.[54] In return, residents are 'paid' by being seen as a credible physician and legitimate team member by health care team members. Studies identified the importance of residents actively engaging and building relationships with all health care team members as more learning opportunities were afforded them[17] and to better ensure patient safety.[55]

## Implications for practice and research

As our results indicate, it is imperative to create a learning environment in which help-seeking is normalized and seen as intrinsically linked with providing safe patient care and the development as a learner. Addressing potential barriers related to help-seeking decisions should, therefore, be addressed on different levels. Supervisors could address residents' credibility concerns[40, 56] by having regular conversations with them about expectations regarding residents' level of training and when they should seek help.[43, 44] Furthermore, given the important role of other (non-physician) health care team members in lowering the threshold for residents to ask for help, both formal and informal feedback conversations with fellow residents and allied health professionals could be actively stimulated in training programs. Such conversations could aid in clarifying role expectations among team members[17] and foreground the shared purpose of patient care,[57] which might help to create a constructive learning environment. This might also support the view that help-

seeking is not seen as a potential threat for residents' credibility, but as confirming the team's shared purpose of providing safe patient care. Future research should address how to foster learning environments in which the health care team's shared purpose of safe patient care trumps residents' concerns of negative assessments. We encourage other researchers to consider adopting a perspective that views all health care team members to influence workplace learning interactions.[17, 20, 21, 26, 50] Hereto, sociocultural theories can offer guidance.[9-12] We agree with colleagues that such an inclusive perspective may result in a more in-depth understanding of residents' help-seeking decisions and workplace learning in general.[18, 32] Finally, although not the aim of our study, we came across some differences in how junior and senior residents weigh up their decisions to seek help. For instance, in how they dealt with demonstrating the ability to work independently. We feel this could be further explored in future research.

## Strengths and limitations

In unraveling the process by which residents decide to seek help and what shaped this process, our study's strength was adopting the lens of sociocultural learning theories using constructivist grounded theory methodology. It enabled us to construct a model reflecting residents' perceptions of their decisions to seek help and how it played out in the workplace. Simultaneously we acknowledge that the results of this study are constructed based on a combination of the answers of the participants as well as the backgrounds of members of the research team and our use of sociocultural learning theories to understand the results. Our results should be considered within certain limitations.[58] Since not asking for help may have negative consequences for the quality of patient care and patient safety, residents may have responded in a socially desirable way to the interview questions. In this research, we tried to minimize this bias by using similar but less pejorative terms for help-seeking (e.g., 'checking'). Moreover, as the interview proceeded, we acknowledged the sensitivity around help-seeking and invited residents explicitly to reflect on this. Data collection took place in only one Academic Medical Center in the Netherlands, which could limit our findings' transferability. However, like in other countries, residency training in the Netherlands is built upon a competency-based framework with generally the same characteristics among countries. Therefore, how residents framed help-seeking as performance, their considerations and, the workplace' influences might be relevant to other training programs grounded on CBME. Furthermore, the majority of our participants was female. Although this is an accurate representation of the male-female balance within Dutch postgraduate medical education, and our participants did not discuss gender aspects, future research might focus on the gender dimension within the balancing act and how the workplace environment might react differently to requests of help by female residents as compared to male residents.

## Conclusion

This study suggests that sociocultural forces of the workplace highly influence how residents balance their considerations of whether or not to seek help and the extent to which they frame help-seeking as an act of performance. To lower the barriers for residents to seek help, a safe learning environment resulting from constructive relationships with supervisors and the perceived approachability of fellow residents and allied health professionals seems crucial. We recommend addressing the potential barriers in dialogue with all members of the health care team as they are all tied into residents' help-seeking decisions. Future research could examine how to foster learning environments in which the health care team's shared purpose of safe patient care, trumps residents' concerns of negative assessments.

## References


1. Kennedy TJT, Regehr G, Baker G, Lingard L. 'It's a cultural expectation…' The pressure on medical trainees to work independently in clinical practice. Med Educ. 2009;43(7):645-53.
2. Kennedy TJT, Regehr G, Baker GR, Lingard L. Preserving professional credibility: grounded theory study of medical trainees' requests for clinical support. Bmj. 2009;338:b128.
3. Novick RJ, Lingard L, Cristancho SM. The Call, the Save, and the Threat: Understanding Expert Help-Seeking Behavior During Nonroutine Operative Scenarios. J Surg Educ. 2015;72(2):302-09.
4. Ott M, Schwartz A, Goldszmidt M, Bordage G, Lingard L. Resident hesitation in the operating room: does uncertainty equal incompetence? Med Educ. 2018;52(8):851-60.
5. Wiese A, Kilty C, Bennett D. Supervised workplace learning in postgraduate training: a realist synthesis. Med Educ. 2018;52(9):951-69.
6. Patel P, Martimianakis MA, Zilbert NR, Mui C, Hammond Mobilio M, Kitto S, et al. Fake It 'Til You Make It: Pressures to Measure Up in Surgical Training. Acad Med. 2018;93(5):769-74.
7. Stewart J. To call or not to call: a judgement of risk by pre-registration house officers. Med Educ. 2008;42(9):938-44.
8. Olmos-Vega FM, Dolmans DHJM, Vargas-Castro N, Stalmeijer RE. Dealing with the tension: how residents seek autonomy and participation in the workplace. Med Educ. 2017;51(7):699-07.
9. Sfard A. On Two Metaphors for Learning and the Dangers of Choosing Just One. Educ Res. 1998;27(2):4-13.
10. Billett S. Workplace pedagogic practices: Co–participation and learning. Br J Educ. 2002;50(4):457-81.
11. Lave J, Wenger E. Situated learning: Legitimate peripheral participation. Cambridge: Cambridge University Press; 1991.
12. Wenger E. Communities of Practice: Learning, Meaning, and Identity. New York: Cambridge University Press; 1999.
13. Bleakley A. Broadening conceptions of learning in medical education: the message from teamworking. Med Educ. 2006;40(2):150-57.
14. Bamberger P. Employee help-seeking: antecedents, consequences and new insights for future research. Martocchio J, Liao H, editors. Bingley: Emerald Group Publishing Limited; 2009. 49-98 p.
15. Eppich WJ, Dornan T, Rethans J-J, Teunissen PW. "Learning the Lingo": A Grounded Theory Study of Telephone Talk in Clinical Education. Acad Med. 2019;94(7):1033-39.
16. LaDonna KA, Hatala R, Lingard L, Voyer S, Watling C. Staging a performance: learners' perceptions about direct observation during residency. Med Educ. 2017;51(5):498-10.
17. Olmos-Vega FM, Dolmans DHJM, Guzmán-Quintero C, Echeverri-Rodriguez C, Teunnissen PW, Stalmeijer RE. Disentangling residents' engagement with

communities of clinical practice in the workplace. Adv Health Sci Educ. 2019;24(3):459-75.
18. Stalmeijer RE. Teaching in the clinical workplace: looking beyond the power of 'the one'. Perspect Med Educ. 2015;4(3):103-04.
19. Watling C, LaDonna KA, Lingard L, Voyer S, Hatala R. 'Sometimes the work just needs to be done': socio-cultural influences on direct observation in medical training. Med Educ. 2016;50(10):1054-64.
20. Polansky MN, Govaerts MJB, Stalmeijer RE, Eid A, Bodurka DC, Dolmans DHJM. Exploring the effect of PAs on physician trainee learning: An interview study. JAAPA. 2019;32(5):47-53.
21. Bannister SL, Dolson MS, Lingard L, Keegan DA. Not just trust: factors influencing learners' attempts to perform technical skills on real patients. Med Educ. 2018;52(6):605-19.
22. Charmaz K. Constructing grounded theory. 2nd ed. Los Angeles: SAGE; 2014.
23. Watling C, Lingard L. Grounded theory in medical education research: AMEE Guide No. 70. Med Teach. 2012;34(10):850-61.
24. Billett S. Learning through health care work: premises, contributions and practices. Med Educ. 2016;50(1):124-31.
25. Wenger-Trayner E, Fenton-O'Creevy M, Hutchinson S, Kubiak C, Wenger-Trayner B, eds. Learning in Landscapes of Practice: Boundaries, Identity, and Knowledgeability in Practice-Based Learning. London, UK: Routledge; 2015.
26. Hodson N. Landscapes of practice in medical education. Med Educ. 2020;54(6):504-09.
27. Teunissen PW. Unravelling learning by doing. A study of workplace learning in postgraduate medical education [dissertation]. Amsterdam, Netherlands: VU University Amsterdam; 2008.
28. [KNMG] Royal Dutch Medical Association. Stimulans voor interne kwaliteitsverbetering van de geneeskundige vervolgopleidingen (Scherpbier 2.0) 2015 [Internet]. Accessed 8 June 2022. Available from https://www.knmg.nl/web/file?uuid=a61aa841-c67b-48b3-a6ab-8791714 1c709&owner=5c945405-d6ca-4deb-aa16-7af2088aa173&contentid=4444&elementid=171092.
29. [KNMG] Royal Dutch Medical Association. Kaderbesluit Centraal College Medische Specialismen 2009 [Internet]. Accessed 8 June 2022. Available from: https://www.knmg.nl/web/file?uuid=a61aa841-c67b-48b3-a6ab-8791714 1c709&owner=5c945405-d6ca-4deb-aa16-7af2088aa173&contentid=4444&elementid=171092.
30. Varpio L, Ajjawi R, Monrouxe LV, O'Brien BC, Rees CE. Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. Med Educ. 2017;51(1):40-50.
31. Tracy SJ. Qualitative Quality: Eight "Big-Tent" Criteria for Excellent Qualitative Research. Qual Inq. 2010;16(10):837-51.
32. Olmos-Vega FM, Dolmans DHJM, Teunissen PW, Stalmeijer RE. Expanding our understanding regarding residents' participation in the workplace. Med Educ. 2018;52(6):582-84.
33. Carraccio C, Wolfsthal SD, Englander R, Ferentz K, Martin C. Shifting paradigms: from Flexner to competencies. Acad Med. 2002;77(5):361-67.

34. Hawkins RE, Welcher CM, Holmboe ES, Kirk LM, Norcini JJ, Simons KB, et al. Implementation of competency-based medical education: are we addressing the concerns and challenges? Med Educ. 2015;49(11):1086-102.
35. Malone K, Supri S. A critical time for medical education: the perils of competence-based reform of the curriculum. Adv Health Sci Educ Theory Pract. 2012;17(2):241-46.
36. Sawatsky AP, Huffman BM, Hafferty FW. Coaching Versus Competency to Facilitate Professional Identity Formation. Acad Med. 2020;95(10):1511-14.
37. Jarvis-Selinger S, Pratt DD, Regehr G. Competency Is Not Enough: Integrating Identity Formation Into the Medical Education Discourse. Acad Med. 2012;87(9).
38. Farnan JM, Johnson JK, Meltzer DO, Humphrey HJ, Arora VM. Resident uncertainty in clinical decision making and impact on patient care: a qualitative study. Qual Saf Health Care. 2008;17(2):122.
39. Atherley A, Meeuwissen SNE. Time for change: Overcoming perpetual feelings of inadequacy and silenced struggles in medicine. Med Educ. 2020;54(2):92-94.
40. Molloy E, Bearman M. Embracing the tension between vulnerability and credibility: 'intellectual candour' in health professions education. Med Educ. 2019;53(1):32-41.
41. Silkens MEWM, Arah OA, Wagner C, Scherpbier AJJA, Heineman MJ, Lombarts KMJMH. The Relationship Between the Learning and Patient Safety Climates of Clinical Departments and Residents' Patient Safety Behaviors. Acad Med. 2018;93(9):1374-80.
42. Voogt JJ, Taris TW, van Rensen ELJ, Schneider MME, Noordegraaf M, van der Schaaf MF. Speaking up, support, control and work engagement of medical residents. A structural equation modelling analysis. Med Educ. 2019;53(11):1111-20.
43. Goldszmidt M, Faden L, Dornan T, van Merriënboer J, Bordage G, Lingard L. Attending physician variability: a model of four supervisory styles. Acad Med. 2015;90(11):1541-46.
44. Sheu L, Kogan JR, Hauer KE. How Supervisor Experience Influences Trust, Supervision, and Trainee Learning: A Qualitative Study. Acad Med. 2017;92(9):1320-27.
45. Olmos-Vega FM, Dolmans DHJM, Guzmán-Quintero C, Stalmeijer RE, Teunissen PW. Unravelling residents' and supervisors' workplace interactions: an intersubjectivity study. Med Educ. 2018;52(7):725-35.
46. Goffman E. The Presentation of Self in Everyday Life. New York: Anchor Books; 1959.
47. Huffman BM, Hafferty FW, Bhagra A, Leasure EL, Santivasi WL, Sawatsky AP. Resident impression management within feedback conversations: A qualitative study. Med Educ. 2021;55(2):266-74.
48. Burford B, Morrow G, Morrison J, Baldauf B, Spencer J, Johnson N, et al. Newly qualified doctors' perceptions of informal learning from nurses: implications for interprofessional education and practice. J Interprof Care. 2013;27(5):394-400.
49. Varpio L, Bidlake E, Casimiro L, Hall P, Kuziemsky C, Brajtman S, et al. Resident experiences of informal education: how often, from whom, about what and how. Med Educ. 2014;48(12):1220-34.

50. Huda N, Faden L, Wilson C, Plouffe R, Li E, Kaur Saini M, et al. The Ebb and Flow of Identity Formation and Competence Development in Sub-specialty Residents: Study of a Continuity Training Setting [published online ahead of print]. 2020.
51. Vanstone M, Grierson L. Medical student strategies for actively negotiating hierarchy in the clinical environment. Med Educ. 2019;53(10):1013-24.
52. Kennedy E, Lingard L, Watling C, Hernandez Alejandro R, Parsons Leigh J, Cristancho SM. Understanding helping behaviors in an interprofessional surgical team: How do members engage? Am J Surg. 2019;219(2):372-78.
53. Zwet J, Croix A, Jonge LPJWM, Stalmeijer RE, Scherpbier AJJA, Teunissen PW. The power of questions: a discourse analysis about doctor–student interaction. Med Educ. 2014;48(8):806-19.
54. Burm S, Chahine S, Goldszmidt M. "Doing it Right" Overnight: a Multi-perspective Qualitative Study Exploring Senior Medical Resident Overnight Call. J Gen Intern Med. 2021;36(4):881-87.
55. Reader TW, Flin R, Cuthbertson BH. Communication skills and error in the intensive care unit. Curr Opin Crit Care. 2007;13(6).
56. Sawatsky AP, Santivasi WL, Nordhues HC, Vaa BE, Ratelle JT, Beckman TJ, et al. Autonomy and professional identity formation in residency training: A qualitative study. Med Educ. 2020;54(7):616-27.
57. Sims S, Hewitt G, Harris R. Evidence of a shared purpose, critical reflection, innovation and leadership in interprofessional healthcare teams: a realist synthesis. J Interprof Care. 2015;29(3):209-15.
58. Frambach JM, van der Vleuten CPM, Durning SJ. AM Last Page: Quality Criteria in Qualitative and Quantitative Research. Acad Med. 2013;88(4):552.

# Appendix 1

**Semi-structured initial interview guide**

This interview guide is the initial interview guide; it evolved and was revised iteratively during data analysis. To provide insight into some of the follow-up and probing questions that resulted from these iterations, we highlighted these in *italics*.

1. Could you please tell me your name, your current residency training year, and in which rotation you are currently?

*Introductory questions*

2. If you think back to the first week of working in this department, what did you notice during your collaboration with the various health care professionals (e.g., supervisors, fellow peers, allied health professionals and, physicians from other departments)?
3. In general, how do you experience seeking help during daily patient care?

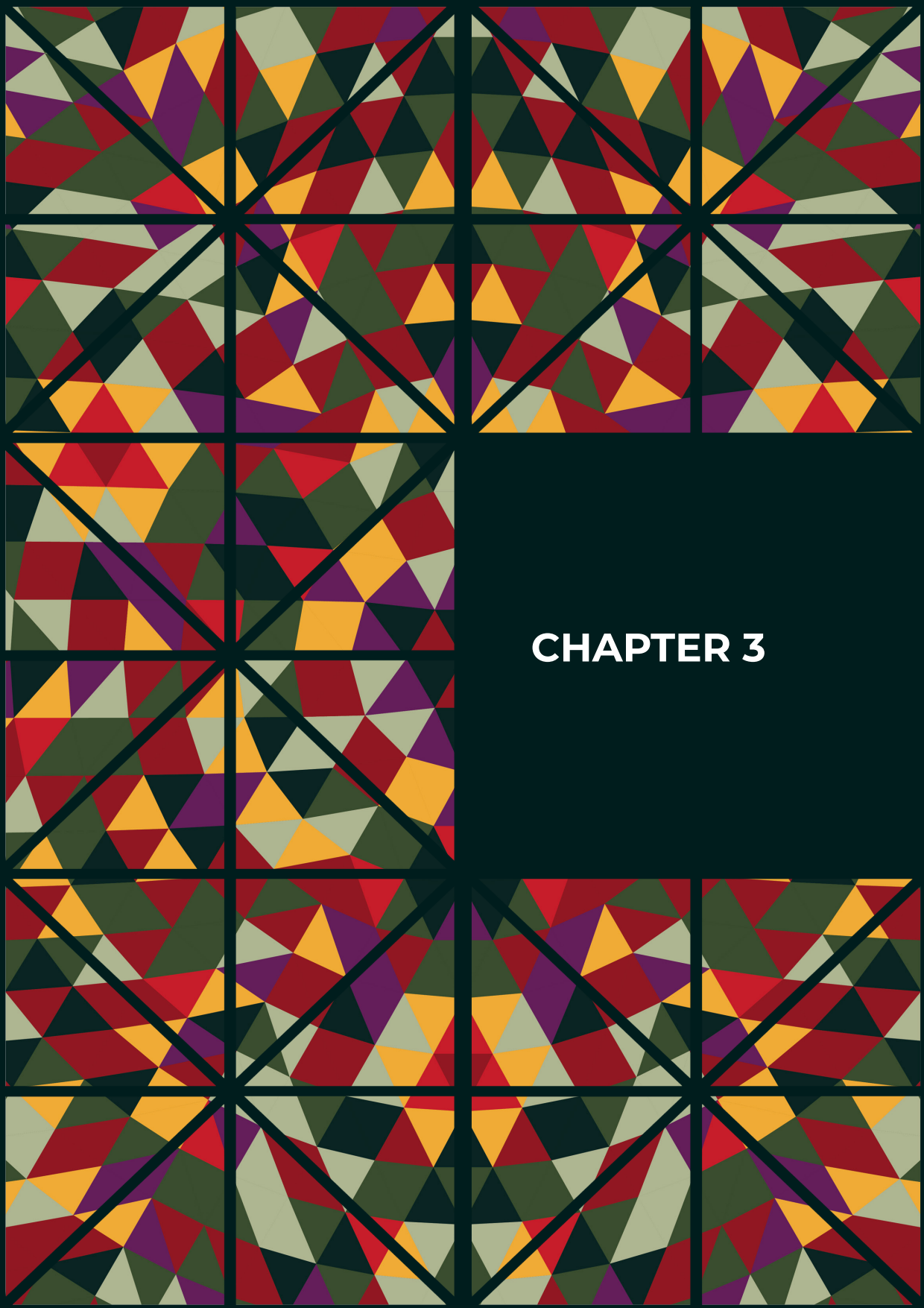
*Key questions*

4. If you think back to this week, what situation comes to mind first when thinking about a situation in which you wanted to seek help during the delivery of patient care? Please describe the situation.
   *a. What were your considerations to seek help?*
   *b. From whom did you seek help and what were your considerations?*
5. What situation comes to mind first when thinking about a situation in which seeking help during the delivery of patient care was easy? Please explain.
   *a. What (or who) enabled you to seek help and why?*
6. What situation comes to mind first when thinking about a situation in which seeking help during the delivery of patient care was difficult? Please explain.
   *a. What (or who) hindered you from seeking help and why?*
   *b. How did you handle this situation and what were your considerations to handle the situation in that specific way?*
7. If you compare yourself at the beginning of your training to the present day, to what extent has seeking help become easier or more difficult for you?
   *a. Why did asking for help become easier or more difficult?*
   *b. From what moment did you notice that asking for help became easier or more difficult? What did affect this change?*
8. In what situations do you seek help from other health care professionals?
   *a. What drives you to ask these others? (e.g., patient care, learning)*
9. Could you tell me about a situation when postponing questions or not asking questions has had consequences for patient care? Please explain.
   *a. What were these consequences?*
   *b. What were your considerations to postpone your questions or not asking your question(s)?*

10. To what extent could postponing questions or not asking questions have had implications for your development or learning? Please explain.
    *a. What were these consequences?*
    *b. What were your considerations to postpone your questions or not asking your question(s)?*
11. What would you describe as the added value of seeking help from someone else?
    *a. What are the benefits? (e.g., for yourself, learning, patient care)*

*Wrap-up questions*

12. Are there topics that I did not ask about but are essential?


CHAPTER 3

# Compassionate care through the eyes of patients and physicians: an interview study

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## Abstract

**BACKGROUND** While compassion is the cornerstone of healthcare, research into residents' perspectives on compassionate patient care remains limited, and the voice of patients is largely absent. Understanding both perspectives is essential to guarantee compassionate patient care. Therefore, this study aims to understand how patients and residents perceive both the concept and practice of compassionate care by identifying key themes for both groups.

**METHODS** We conducted semi-structured interviews with 8 patients and 10 residents at a University Medical Center (UMC) in the Netherlands. Using thematic analysis, we separately coded patient and resident transcripts to identify themes capturing their perspectives on compassionate care.

**RESULTS** We identified four themes that, for patients and residents, encompassed compassionate care: being there, empathizing, actions to relieve patients' suffering, and connection. For residents, there was a fifth theme: fulfillment that resulted from providing compassionate care. Although both patients and residents emphasized the importance of compassionate care, patients did not always perceive the physician-patient encounter as compassionate, and being compassionate could be challenging for some residents.

**CONCLUSION** This is one of few studies investigating the perceptions of both patients and residents on compassionate care. Compassion serves the interests of both patients and residents, as compassionate care is critical for patient care quality and a source of professional fulfillment for residents. Based on patients' and residents' perceptions, we formulated recommendations – directed at residents – to enhance compassionate practice, including responding to patients' compassion needs, acknowledging that compassion is a necessity for all patients, can be expressed in small gestures, and may be time saving. Given the known health effects of human connection in patient care, we call for reinvigorating compassion in medical education and clinical practice.

## Background

*"If you want others to be happy, practice compassion.*
*If you want to be happy, practice compassion."* – Dalai Lama [1]

Compassion is the cornerstone of healthcare.[2] Compassion involves the response to patients' suffering coupled with the wish, intention, and action to relieve it.[3, 4] Patients value compassionate physicians,[4-6] and ample research showed that compassion benefits patients' clinical experience and alleviates their distress and anxiety.[2, 4, 7, 8] Moreover, compassionate patient care is associated with better patient self-care as it drives patient engagement and treatment adherence.[2] Although patients find compassion crucial, it is yet an unmet need.[2, 9-12] In a large US survey, only half of the patients reported receiving compassionate care.[9] Similar results have been found in other countries.[13, 14] The ramifications of this unmet need are serious, as less physician compassion has been associated with slower wound healing, [8] less optimal blood sugar in diabetic patients,[7] and higher levels of anxiety and pain.[8] Moreover, a lack of compassion is linked with lower quality of care, such as higher risks of medical errors.[12]

While physicians agree with patients on the significance of compassion for successful medical treatment, they too report that healthcare systems largely prevent them from providing compassionate care.[9] Physicians indicate that they do not have enough time to serve patients with compassion.[9] Moreover, during residency training, the skills and attitudes to provide compassionate care are not routinely taught.[15] Studies report a decline in compassion among residents and early physicians.[16, 17] Healthcare systems are potentially suffering a double whammy due to a lack of compassion: on top of reduced quality and safety of patient care, physicians' well-being is at risk.[2, 9, 12] Compassion also has profound benefits for physicians as it functions as a buffer against burnout and increases work engagement and job satisfaction for physicians.[18] Physicians with superior well-being are better able to provide compassionate and high-quality patient care.[12]

Therefore, healthcare institutions, and those working in them, are expected to develop and sustain compassionate care in practice.[14, 19, 20] In contrast to the nursing profession, where compassion has been profiled and cultivated since Florence Nightingale founded it,[21-23] the explicit attention to providing compassionate care by physicians has only been of a recent date.[24] The focus on physicians' perspectives on compassion in clinical practice remains limited, and the voice of patients - those receiving compassion - is largely absent, even within the nursing literature.[11, 21] The few studies that touched upon patients' perspectives on compassion mainly focused on cancer patients. These studies highlighted how for those patients, compassion included, for instance, providers understanding of patients' needs, relational communicating, and attending to needs.[11, 25]

Against this background, this study aims to understand how patients and residents perceive both the concept and practice of compassionate care by identifying key themes for both groups. Such an understanding provides insights for physicians into patients' compassion needs and how this may differ from their own understanding. Indeed, missed opportunities to provide compassionate care represent a significant challenge[26, 27]: when physicians are unaware of what compassionate care means for patients, providing compassionate care is complicated. Understanding both perspectives could provide helpful starting points to enhance compassionate patient care. The current study answers the following research question: how do patients and resident physicians perceive compassionate care?



## Method

This interview study was conducted among patients and resident physicians (hereafter: residents) at a large University Medical Center (UMC) in the Netherlands. Residents are physicians in training and responsible for providing patient care. This study was part of a project to develop a compassion improvement intervention for residents.

### Sampling and data collection

Patients and residents were selected through convenience sampling, meaning that patients and residents who were willing to participate were interviewed. We recruited patients via medical specialists and the Client Advisory Council in the UMC. Residents were recruited via Program Directors and through snowballing by asking participating residents. In total, eight patients (5 female) participated in an interview. Patients were between the age of 22 and 79. Patients were under treatment within the (sub)specialties of cardiology (4) or internal medicine (4). Ten residents (8 female) participated in an interview. They varied in postgraduate years (ranging from year 1 to 6) and specialty, including radiology (1), internal medicine (5), ophthalmology (1), and surgery (3). All participants were either invited by phone call or e-mail, and they received a study information letter by e-mail.

The research team developed semi-structured interview guides for patients and residents. The guides contained the same questions; only the wording was tailored to patients or residents (Appendix 1). During the interview, patients and residents were asked to describe their experiences with respectively receiving and providing (less) compassionate care to explore their perceptions. To ensure that participants understood how compassion was defined in this study, the interviewer shared the literature-based definition of compassion: the response to patients' suffering coupled with the wish, intention, and action to relieve it.[3, 4] All interviews were conducted between August 2019 and December 2019 by authors IJ, MD, RB, and MDie. They regularly discussed the interviews afterward to share reflections as it facilitated the following interviews. Interviews were audiotaped, transcribed verbatim, and anonymized before data analysis.

### Data analysis

All interviews were analyzed using thematic analysis.[28] We took the following steps to develop the final template. First, three resident transcripts were read and open coded independently by IJ and MD. Then, IJ and MD discussed the codes and constructed themes (i.e., how codes cluster together), resulting in an initial template. After the research team discussed the template, IJ applied the template to the following transcripts. We refined the themes iteratively during regular team meetings until we agreed upon the template. In the final stage, IJ applied the template to all transcripts. Then, the same data analysis steps were applied to patient interviews. During the analysis of patient interviews, we kept the results of residents in our minds while being open to new insights. We regularly checked throughout the interviews whether patients were talking about residents instead of medical specialists or nurses.[29] We excluded fragments that were not about residents during data analysis as we were interested in compassionate care provided by residents. After analyzing ten resident and eight patient transcripts, saturation was met, meaning that we had collected sufficient data to understand the perspective of patients and residents on compassionate care.[30] MAXQDA (version MAXQDA Plus 2020) supported data analysis.

### Reflexivity

This research was conducted by four researchers pursuing a Ph.D. and with a background in sociology (IJ), strategic human resource management (MD), medicine and ethics (MDie), and bio-ethics and public administration (RB). GW, BM, and KL are all professors with respectively significant expertise in philosophy and ethics of medicine, clinical ethics (support), and physicians' professional performance. The multifaceted perspectives of the research team resulted in in-depth conversations about patients' and residents' perspectives on compassionate care.

## Results

From our data analysis, we found four interrelated themes that together express what compassionate care entails for patients and residents: (1) being there, (2) empathizing with the patients' suffering, (3) actions aimed to relieve this suffering, and (4) connection. While both identified the same four themes in explaining their perceptions, different subthemes emerged for patients and residents. For residents, there was a fifth theme: fulfillment that resulted from providing compassionate care (see Table 1). Generally, patients and residents emphasized the importance of compassion for optimal patient care. Nevertheless, patients also shared that they did not always perceive their care as compassionate, and residents touched upon the challenges in providing compassionate care to their patients.

**Table 1.** Themes and subthemes for patients and residents expressing compassionate care

| Theme | Subthemes of patients | Subthemes of residents |
|---|---|---|
| Being there with and for patients | Displaying attention by taking time and being prepared (+) | Taking the time for patients (+) |
| | Having a demeanor of calmness (+) | Taking responsibility to manage patients' healthcare processes (+) |
| | Showing stress (-) | |
| Empathizing | Seeing and treating patients as a person (+) | Seeing patients as fellow human beings (+) |
| | Asking about patients' needs (+) | Standing in patients' shoes (+) |
| | A lack of empathy (-) | Balancing over-involvement and detachment (+/-) |
| | | Judging the severity of patients' medical condition (+/-) |
| Action | Communicating clearly (+) | Small and extraordinary actions (+) |
| | Involving patients during the medical process (+/-) | Relieving patients' suffering (+) |
| | | Time pressures and lack of time (-) |
| Connection | Having a click (+) | Having a click (+) |
| | Equal relationship (+) | Reciprocal relationship (+/-) |
| | Engaged and medically interested patients (+) | Bad mood (-) |
| Fulfillment | N.A. | Making a difference for patients (+) |
| | N.A. | Organizational hassle (-) |

(+) indicates that the subtheme had a positive influence on compassion.
(-) indicates that the subtheme had a negative influence on compassion.

## Patients

*Being there with and for patients*

This theme included three subthemes: residents' displaying attention by taking time and being prepared, having a demeanor of calmness, and showing stress. Patients perceived residents' attention when they literally took (more) time by, for example, planning them "at the end of the consultation so that I had enough time to ask questions" (P3). Also, when residents had well prepared for the consultation and were informed about their situation, patients felt that residents were interested in them:

> Reading about the patient before the visit [...] They [residents] know that patient X comes to see me, and he may or may not practice a sport. He does this and lives there. [...] I think that this already contributes to compassion, letting them [the patient] know that I [resident] am interested in you, and now I have ten minutes for you, and I really take these ten minutes for you. Whereas, if you [resident] ask the same question every year [...], which you'll likely have forgotten, that patient only comes once a year and surely remembers that the same questions were asked last year. [...] then it feels more distant. (P1)

Also, patients experienced residents being there for them through their demeanor of calmness by sitting down while talking to patients as it "emanates that [residents] have more time instead of just quickly call on me" (P5). In contrast, when residents were stressed out or in a hurry, patients felt being a "box that should be ticked off" (P5). In these situations, they felt unheard, less free to ask questions and, at times, a burden:

> [the resident came] to check medical imaging and left again. He said, 'I don't see anything', and he really made me feel that I was wasting his time. (P2)

*Empathizing*

Empathizing included three subthemes: being seen and treated as a person, asking about patients' need, and a lack of empathy. Patients felt being seen as a person when residents were understanding and caring, rather than only having an eye for the disease by "looking at the heart and moving on" (P5). According to patients, empathy could be expressed by saying "I notice that it does a lot to you, or it is intense" (P5). Within this subtheme, patients also shared that while residents should make an effort to understand them truly, actually feeling patients' emotions is not preferable:

> They don't have to feel those emotions and pain. In fact, they should stay clear of that. But, they should be able to imagine what it's like for me. (P6)

As patients mentioned the difficulty for residents of recognizing their specific needs, they frequently indicated that residents should ask patients "what do you need" (P4). This subtheme was also closely related to the previous one, as asking contributes to being seen as a person. When residents did ask such questions, patients felt taken seriously, and it was easier for them to open up and share thoughts or concerns:

> So, not a resident who thinks 'I need to do this, so I'm just going to tell everything and that's it'. But instead 'what do you need?'. Whom is that person sitting across from me? [...] I really believe that then you will have a better conversation with each other [...] seeing the complete picture and not only the illness sitting across from you, really seeing the person facing you. (P3)



Patients also provided narratives when they experienced residents' lack of empathy. They felt that residents were disrespectful to them, did not recognize their unease, or made an inappropriate statement. Patients mentioned that such behaviors evoked emotional reactions:

> Then he puts his ultrasound on [belly pregnant patient]. He says 'O, I can only see four fingers and a thumb', which was a joke. I thought, well, you have no idea how I lay here, as it was the special clinic for high-risk pregnancies. [...] I was terrified because I thought, now it is all wrong. And I really thought, when I knew it was a joke, I thought, he is crazy. (P5)

*Action*

Patients recognized the relevance of action as an element of compassion: residents doing something to relieve their suffering, in which suffering could be for example pain, confusion or uncertainty. An act of compassion could be remembering what patients said in an earlier consult or comforting patients by saying "boy, it's going to be okay" (P4). Patients indicated two actions that could relieve their suffering: communicating clearly, and involving patients during the medical process. For patients, clear communication included residents' clarification of what they could expect or explaining a medical procedure step-by-step. Patients noticed how clear communication alleviated their concerns and aided to ask questions:

> But the fact that he told everything that he was going to do was comforting. Like, o, now I am going to do this and I am going to do that now [...]. That you just know where you stand [...] Because he clarified a lot, I dared to ask my questions. (P1)

Within this subtheme, patients found it important that residents were aware of their way of communicating as "c'est le ton qui fait la musique [it is the tone that makes the music]" (P8). Also, they mentioned that residents should adjust their communication to patient's level of understanding:

> But I mean the fact that you [the resident] are taking away worries, clearly communicate what the purpose is and also to talk on 'an equal level' to say it bluntly [...], he is on this level, so now we have to go back to basics and explain it clearly. (P1)

The importance patients ascribed to clear communication became apparent as patients highlighted how medical interventions could technically be successful but fail in the sense that patients still suffered from confusion and uncertainty due to insufficient explanation:

> I say, but technically I think I was treated well. [...] But I very much missed the explanation at the time [...] If you think back, I think he [resident] really missed something there. (P5)

For patients, action also included involving them during the medical process, enabling them to maintain voice and control. When residents involved patients for example, during decision-making processes, they felt "taken seriously" (P6). In contrast, noninvolvement could evoke emotions such as frustration or anger. Especially during physical examinations, patients felt extra vulnerable and were upset when residents did not involve them in what was going to happen or did not provide reassurance:

> Well, I was lying there in the room covered by my towel, so that makes you vulnerable, right. And he walked in [...] Immediately, a blob on the ultrasounds head, pulling down the towel and putting the ultrasound on my skin. It's really an invasion on your body. [...] instead that you [the resident] just show some understanding of hey, we're just going to see if we can find something. A little reassurance. (P2)

*Connection*

Connection included three subthemes: having a click, a relationship based on equality, and patients being engaged and interested in their own medical process. Patients described a connection with residents as having a "click" (P8) which a long-term relationship with residents could promote:

> I have been a patient with [physician] for six years. [...] I noticed that we very quickly developed a certain mutual sympathy. We have the same humor, I think. And the connection was there right away. [...] We have a connection, understand each other and you do not have to make that explicit. (P8)

For patients, a connection with residents also entailed a relationship based on equality, meaning residents are "standing next to me, instead of positioning themselves above me" (P4). As a result, patients noticed being more forgiving (e.g., if a consultation runs late), taking residents' advice more seriously, and feeling safer asking questions:

> It helps if you have a good connection with a physician, of course, it helps to ask more questions [...] and come back more quickly. Or sooner alert the physician if something might be wrong. (P1)

Finally, patients noticed residents' enthusiasm when patients were engaged and interested in their own medical situation through, for instance, preparing the consultation and asking questions. Similarly, medically educated patients talked about how their relationship with residents strengthened, as they were able to talk to residents using medical language:



> Yes, there was a personal connection. And I think that's partly because I did a [medical study] and my boyfriend is in medical research. But I think she [resident] really liked the fact that we could talk with her on the same level as she knew we understood and we did our research before seeing her. (P3)

## Residents

*Being there with and for patients*

For residents, being there with and for patients included: taking the time for patients, and taking responsibility to manage patients' healthcare processes when they were not physically present. By taking time for patients, residents intended to give them the feeling that they were being heard and taken seriously. Removing distracters (e.g., pagers) and sitting down with patients helped residents to take time for patients and be present:

> What I often do, when I have a conversation, I sit down with the patient. [...] it also gives the patient the feeling of, oh, you take your time by really sitting down with me. [...] I notice that patients really appreciate that. (R9)

Also, residents talked about the responsibility to manage healthcare processes when patients were not physically present, such as making phone calls or consulting other physicians. Even when residents could not physically be there for patients, i.e., because their shift had ended or they were on leave, they still felt responsible for searching for replacement:

> If another patient shows up at four o'clock, you can't say I only work until five. You have to find at least someone else to see the patient. [...] Being a physician is not just an activity, rather it is a responsibility. (R3)

*Empathizing with patients*

This theme encompasses: seeing patients as fellow human beings, standing in patients' shoes, balancing over-involvement and detachment, and judging the severity of patients' medical condition. For residents, empathy included looking beyond the patients' disease and seeing them as fellow human beings by, for example, asking patients about:

> […] hobbies and the home situation. If you just ask people like, what do you like to do? Then a patient changes into a human being. (R4)

Residents empathized with patients by metaphorically standing in their shoes: residents imagined how they themselves would like to be treated or how "I would like my mother to be taken care of" (R9). While residents described the ability to empathize as a personality trait, they also stressed that it can be learned and developed as an "antennae" (R9). Empathizing with patients could also create tensions for residents, for example when trying to find the balance between over-involvement and detachment in patient encounters:



> You can't cry along with every patient. Then you can't practice medicine because there are just happening tremendously miserable things […] so you need to keep a kind of professional distance as well […] the empathy and involvement is sincere […] but if you have too much compassion, yes, too much compassion will get to you and I think it keeps bothering you at home. (R8)

Empathizing was facilitated or hindered by residents' judgment of the severity of patients' medical condition. If residents judged the medical situation as severe, feelings of empathy arose and providing compassionate care was "more obvious and recognizable" (R6). On the other hand, when residents evaluated the situation as less severe, being compassionate felt less necessary. Situations in which compassion felt less necessary included, for example, when patients had already undergone the treatment before and knew what to expect:

> We have a few patients who are coming back more often and they have undergone that procedure more often; they know what it means. They will also say themselves, well doc, I'm going to lie down, come on, chop chop and it is done again. I think, in those cases, you don't have to ask well, how do you feel about this lump [lipoma]? […] Then of course I'm not going to give a whole emotional explanation. Because it's also clear to the patient what's going on, as he had undergone it before [the treatment]. (R9)

*Action*

Compassionate care also implied taking action aimed at alleviating patients' suffering. Action encompasses three subthemes: small and extraordinary actions, relieving patients' suffering, and constraints of time pressure and lack of time. While residents highlighted that actions could be small gestures which are "the little things one can do" (R9), they often talked about big or extra, out-of-routine care efforts, such as visiting the patient once more during on-call shifts. In addition, actions could also imply deciding to refrain from further medical intervention:

> Or to say we aim for quality of caring and no longer for curing. Sometimes you feel like you're better helping people with that than by saying we're going to try another, fifth chemotherapy. (R2).

Regardless of whether the actions were small or extraordinary, residents aimed to relieve patients' suffering. For example, one resident described alleviating patients' stress by playing their favorite music during surgery:

> So in that sense, it just created peace for him. That's a good thing, of course. Because it means that the anesthesia team – being busy with the epidural – can focus on that while the man [patient] experiences less stress. And of course you can clearly observe that in the heart rate. You can see that very nicely of course when someone is attached to the monitor in the OR. (R9).



Residents consistently reported how a lack of time and time pressures constrained their ability to act compassionately. Residents experienced "too little time per patient" (R1) and felt unable to go that "extra mile and perhaps listen a little more [to the patient]" (R1), as otherwise, their outpatient clinic ran late. Moreover, as some residents experienced high time pressures during consults with patients, they noticed that being compassionate "sometimes slips through the cracks" (R10).

*Connection*

This theme includes three subthemes: having a click, reciprocal interaction, and being in a bad mood. Residents described a connection as having a "click", a good relationship or being close with patients. They noticed that a connection with patients could be fostered by identifying with patients, being moved by their stories, or being involved in patients' care process for an extended period. Moreover, some residents felt that a connection was promoted when patients expressed their emotions (e.g., by crying) or came with "very clear symptoms" (R5). Some residents also shared that they enjoyed a good connection with patients and how patients were more open to them:

> Well, I think that patients then [if there is a good patient-physician relationship] feel safer and eventually maybe share more. [...] Yes, and then you will have a more pleasant physician-patient relationship. [...] Because I prefer knowing some more about someone, than just a very professional, distant relationship. (R10)

Residents saw a reciprocal relationship as important, meaning that patients behaved appropriately since the patient-resident relationship is a matter of "giving and taking" (R10). Hence, providing compassionate care felt more natural if patients were polite, respectful, and were interested in residents.

> I think it's important that people are immaculately groomed. Otherwise, I also find it difficult- Let me think, just polite, a bit of politeness. (R4)

In contrast, patients who were demanding, complaining, nagging or had ideas that "go against your convictions" (R2), "annoyed" residents (R2) and made the expression of compassion more difficult. One resident asked herself whether her "irritation" (R4) towards a patient could have affected her medical judgment:

> And if you compare it with patients who have metastasized cancer, then they [patients with breast cancer] nag too easily really, that is the kind of the feeling you get. [...] So did this lady [patient]. [...] There was not much of a change that something was wrong. And then, later, it turned out that she [patient] had metastases everywhere. [...] I wondered whether my lack of patience or empathy actually hampered my assessment. [...]. (R4)

Residents also recognized how being in a bad mood could interfere with establishing and maintaining a connection. If they, for example, "had a terrible night of sleep and were cranky" (R6), residents had the feeling that they provided less compassionate care and found themselves "less nice to patients" (R6).



*Fulfillment*

While residents generally felt satisfied by providing patient care, being compassionate entailed the feeling of really making a difference for patients. This was especially experienced in situations where patients expressed their contentedness, even though residents had delivered "bad news" (R9) or when residents could guide patients during important health decisions and shared intimate moments in their lives:

> Sometimes I even get a few goosebumps [...] that I think what a unique profession we have, [...] that we are allowed to guide people in this. [...] Of course it also takes energy because you discuss heavy themes, but the fact that you can help people so well. Sometimes I walk out of the consulting room: wow, special. (R2)

Residents' fulfillment was mitigated if organizational hassle hindered their efforts to go that extra mile:

> But she [patient] really wants to go on vacation in the meantime so I try to schedule the MRI in a certain week and now I am told there really is no opening [for an MRI] yes I find that very frustrating. (R8)

## Discussion

This study sought to understand how both patients and residents perceive compassionate care. We identified four interrelated themes that encompass compassionate care for patients and residents: (1) being there, (2) empathizing with the patients' suffering, (3) actions aimed to relieve this suffering, and (4) connection. For residents, there was a fifth theme: fulfillment that resulted from providing compassionate care. These themes resonate with previous research on compassion [11, 24, 31] and add to a more comprehensive understanding of when and how compassionate care may or may not arise in the physician-patient encounter. Indeed, we found that patients did not always perceive the physician-patient encounter as compassionate and being compassionate could be challenging for some residents. We will now discuss our findings, considering that healthcare providers and institutions, and

not patients, are primarily responsible for guaranteeing compassionate patient care.[2] This allows us to formulate recommendations to enhance high-quality and compassionate patient care.

*Responding to patients' compassion needs*

Our study suggests that residents often perceive providing compassionate care as difficult, hard work, and an increase of their workload ('doing more'). Conversely, from the patients' perspective, compassionate care does not require major or extra efforts from their healthcare providers; for them even small gestures can be experienced as an act of compassion, such as a physician putting a comforting hand on the patient's shoulder. This insight may bring compassionate care within the reach of more patients without much extra costs or 'hard work', if residents are able to notice and accordingly respond to patients' specific, attainable compassion needs. In line with other research,[3, 24, 25] residents shared that assessing patients' compassion needs often comes down to the adage 'do unto others as you would have them do unto you'. However, from patients in this study it can be learned that this approach may not always accurately reflect how patients wish to be treated. Patients themselves suggest that healthcare providers could simply ask them about their needs. It should be noted here that using such questions (e.g., 'what do you need') merely instrumental, that is, without making a meaningful and sincere connection with patients, is not helpful and can even be harmful.[2] Matching residents' compassionate actions with patients' needs is important as studies point to missed opportunities otherwise, that is, for instance, when residents do not acknowledge or recognize patients' concerns or talk right over it.[2, 26, 27] Such missed opportunities could have adversely affect the quality of care.[26, 27] More generally, it is vital to incorporate patients' perspectives in clinical practice, as patients could provide residents' feedback on their compassion skills.[19, 32]

*Acknowledging that compassion is necessary and can be time saving*

Some residents in this study seemed to perceive providing compassionate care as time-consuming and not a necessity, especially when their clinics were running late. This resonates with other research [9,18] reporting how a lack of time and experiencing time pressures create a persistent challenge in providing compassionate care. Balancing scarce resources (such as time) to deliver optimal care for all patients remains a challenge for healthcare institutions and providers. Nevertheless, 'giving up compassion' when time is limited, as residents reported, also reveals that compassion is misunderstood as a 'nice to have' rather than a necessity and as consuming (too) much time.[2] However, there is mounting evidence showing the opposite, according to Trzeciak and Mazzarelli.[2] They refer to studies in which participants receive bad health news, comparing 'standard' communication to 'enhanced compassionate' communication which included warm and caring communication at the beginning and end of the consultation.[33, 34] These studies found that patients in the 'enhanced compassionate' communication group reported lower anxiety levels, while 'enhanced compassionate' communication only took less than forty seconds per patient.[33, 34] Hence, making an appropriate, sincerely small investment of less than one minute may benefit patients, providers, and the healthcare system.[2]

*Reconciling compassion and technical aspects of care*

Internationally, the importance of compassion is emphasized in, for example, the American Medical Association's Principles of Medical Ethics and the British NHS constitution.[31] It is therefore remarkable that residency training programs still devote little attention to the humanistic aspects of clinical care.[15, 35, 36] Implicit messages within the medical environment champion certainty, objectivity, and physicians' procedural skills, while the more elusive qualities like communication and compassion are rarely explicitly included during residency training.[15, 35, 37] Residents in our study too reported having a hard time dealing with (how to provide) compassionate care. This became evident in their struggle to balance over-involvement and detachment: when residents experienced difficult emotions caused by witnessing patients' suffering, they would sometimes choose to detach themselves emotionally as a self-protection strategy by focusing on the objective medical facts.[38] Although a certain level of detachment may be helpful and healthy in coping with emotionally challenging situations, physicians should also be aware that a lack of empathy could cause uncertainty or anxiety among patients.[12] Notably, while compassionate care for patients in our study also included acts of softening their pain and physical symptoms, they especially valued residents' compassionate, humane qualities, including non-verbal practices such as sitting down with patients and clear communication.[6] Given the ample evidence on the significance of compassion for effective healthcare,[2] there seems to be a need to reinvigorate the humanistic qualities in clinical practice. Echoing other studies,[2, 19, 39] we propose including the science of compassion and the provision of compassionate care more explicitly in both formal and informal (e.g., role models), medical education, and training.

*Providing compassionate care to all patients*

We found that residents' perceptions of patients could impact their ability to provide compassionate care. For example, when patients behaved 'appropriately' (e.g., were respectful), were actively involved in their own healthcare process, or had clear symptoms, providing compassionate care took residents less effort. This finding is supported by other studies highlighting how compassion is positively affected when residents self-identify with patients (e.g., share characteristics such as gender or education) [40] or when residents perceive patients as intelligent, likable, and treatment adherent.[41, 42] In such cases, residents are found to be more interested and kind towards patients, behaviors associated with better patient health and greater patient satisfaction.[41] Patients in our study intentionally adapted their communication with their treating physicians, for example by using medical terms to connect with them. While preferences for certain people and personalities are inherent in all human relationships, a positive physician-patient connection is crucial for patients' health and should therefore be established independent of patients' characteristics.[2] Even when residents experience patients as 'difficult', it may be considered their responsibility to try and find a way to connect with patients in order to best serve them in a compassionate manner.[2]

## Practical Implications

Establishing a connection with patients is foundational for compassionate care,[9] and therefore investing in the knowledge, skills, and attitude for providing compassionate care is recommended. One 'simple' way of strengthening a compassionate connection with patients, as suggested by this study, is for residents to ask patients about their compassion needs. Acknowledging that establishing a compassionate connection with certain patients can be challenging for some residents, a training inviting residents to reflect on their (limiting) beliefs about serving all patients in a compassionate manner has been found to be supportive.[19] Supervisors' role modeling on how to practice compassionate care may further help residents develop compassion skills, as is providing residents with feedback on their compassionate care practices.[43, 44] Finally, given the known health effects of the human-to-human connection in patient care,[2] we call for reinvigorating compassion in medical education and clinical practice. Clearly, these potential implications for enhancing compassion practices can only be successful when healthcare organizations foster a supportive, and indeed a compassionate, work environment for their workers.[43]

## Strengths and limitations

Our study's major strength was the inclusion of both patients and residents to provide new insights into their perceptions of compassionate care, thereby addressing a current shortage in the literature.[18] The results should be considered within certain limitations. Participating residents mainly were white women, which mirrors the Dutch resident population but likely influenced our results as providing compassionate care might be shaped by such characteristics. For example, female physicians' practice patterns are found to include more patient-centered empathetic communication.[37] Moreover, the majority of participating patients were well-educated, white females. Also, patients' different medical histories may likely have influenced their perspectives about compassion which could further limit the transferability of this study's findings. However, research on the influence of patients' medical background on physicians' compassion is scarce and inconsistent.[42] More research is necessary to explore if and how patients' medical background influences the patient's perspective on compassionate care. We recommend that future studies adopt purposive sampling strategies to select a more diverse type of patients and residents, given the importance of the patient-physician connection.

## Conclusion

This is one of few studies investigating the perceptions of both patients and residents on compassionate care. Although both patients and residents emphasized the importance of compassionate care, patients did not always perceive the physician-patient encounter as compassionate, and being compassionate could be challenging for some residents. For both patients and residents, we found that compassionate care encompassed: being there, empathizing, actions to relieve patients' suffering, and connection. Based on the perspectives of patients and residents, we formulated several practice recommendations for residents to take to heart. Compassion has been shown to be beneficial for patients and residents, facilitating compassionate care also serves healthcare organizations.

## References


1. Kostanski M. The Power of Compassion: An Exploration of the Psychology of Compassion in the 21st Century. Newcastle: Cambridge Scholars Publishing; 2007.
2. Trzeciak S, Mazzarelli A, Booker C. Compassionomics: The revolutionary scientific evidence that caring makes a difference. Florida: Studer Group; 2019.
3. Sinclair S, Beamer K, Hack TF, McClement S, Raffin Bouchal S, Chochinov HM, et al. Sympathy, empathy, and compassion: A grounded theory study of palliative care patients' understandings, experiences, and preferences. Palliat Med. 2017;31(5):437-47.
4. Goetz JL, Keltner D, Simon-Thomas E. Compassion: an evolutionary analysis and empirical review. Psychol Bull. 2010;136(3):351-74.
5. Gaufberg E, Hodges B. Humanism, compassion and the call to caring. Med Educ. 2016;50(3):264-6.
6. Bendapudi NM, Berry LL, Frey KA, Parish JT, Rayburn WL. Patients' Perspectives on Ideal Physician Behaviors. Mayo Clin Proc. 2006;81(3):338-44.
7. Hojat M, Louis DZ, Markham FW, Wender R, Rabinowitz C, Gonnella JS. Physicians' Empathy and Clinical Outcomes for Diabetic Patients. Acad Med. 2011;86(3):359-64.
8. Pereira L, Figueiredo-Braga M, Carvalho IP. Preoperative anxiety in ambulatory surgery: The impact of an empathic patient-centered approach on psychological and clinical outcomes. Patient Educ Couns. 2016;99(5):733-38.
9. Lown BA, Rosen J, Marttila J. An agenda for improving compassionate care: a survey shows about half of patients say such care is missing. Health Aff (Millwood). 2011;30(9):1772-8.
10. Sinclair S, Kondejewski J, Hack TF, Boss HCD, MacInnis CC. What is the Most Valid and Reliable Compassion Measure in Healthcare? An Updated Comprehensive and Critical Review. Patient. 2022;15(4):399-21.
11. Sinclair S, McClement S, Raffin-Bouchal S, Hack TF, Hagen NA, McConnell S, et al. Compassion in Health Care: An Empirical Model. J Pain Symptom Manage. 2016;51(2):193-203.
12. Trzeciak S, Roberts BW, Mazzarelli AJ. Compassionomics: Hypothesis and experimental approach. Med Hypotheses. 2017;107:92-97.
13. Lown BA, Dunne H, Muncer SJ, Chadwick R. How important is compassionate healthcare to you? A comparison of the perceptions of people in the United States and Ireland. J Res Nurs. 2017;22(1-2):60-69.
14. Francis R. Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry. London: Department of Health; 2013.
15. Lown BA, McIntosh S, Gaines ME, McGuinn K, Hatem DS. Integrating Compassionate, Collaborative Care (the "Triple C") Into Health Professional Education to Advance the Triple Aim of Health Care. Acad Med. 2016;91(3):310-16.

16. Neumann M, Edelhäuser F, Tauschel D, Fischer MR, Wirtz M, Woopen C, et al. Empathy Decline and Its Reasons: A Systematic Review of Studies With Medical Students and Residents. Acad Med. 2011;86(8):996-1009.
17. Bellini LM, Shea JA. Mood Change and Empathy Decline Persist during Three Years of Internal Medicine Training. Acad Med. 2005;80(2):164-67.
18. Sinclair S, Norris JM, McConnell SJ, Chochinov HM, Hack TF, Hagen NA, et al. Compassion: a scoping review of the healthcare literature. BMC Palliat Care. 2016;15(1):6.
19. Sinclair S, Kondejewski J, Jaggi P, Dennett L, Roze des Ordons AL, Hack TF. What Is the State of Compassion Education? A Systematic Review of Compassion Training in Health Care. Acad Med. 2021;96(7):1057-70.
20. Vanselow N, Cuff PA. Institute of Medicine (US) Committee on Behavioral and Social Sciences in Medical School Curricula. Improving Medical Education: Enhancing the Behavioral and Social Science Content of Medical School Curricula. Washington: National Academies Press; 2004.
21. Maben J, Cornwell J, Sweeney K. In praise of compassion. J Res Nurs. 2010;15(1):9-13.
22. Dev V, Fernando AT, Kirby JN, Consedine NS. Variation in the barriers to compassion across healthcare training and disciplines: A cross-sectional study of doctors, nurses, and medical students. Int J Nurs Stud. 2019;90:1-10.
23. Dev V, Fernando AT, Consedine NS. Self-compassion as a Stress Moderator: A Cross-sectional Study of 1700 Doctors, Nurses, and Medical Students. Mindfulness (N Y). 2020;11(5):1170-81.
24. Sinclair S, Hack TF, McClement S, Raffin-Bouchal S, Chochinov HM, Hagen NA. Healthcare providers perspectives on compassion training: a grounded theory study. BMC Med Educ. 2020;20(1):249.
25. Sinclair S, Bouchal SR, Schulte F, M. T. Guilcher G, Kuhn S, Rapoport A, et al. Compassion in pediatric oncology: A patient, parent and healthcare provider empirical model. Psycho-Oncol. 2021;30(10):1728-38.
26. Easter DW, Beach W. Competent patient care is dependent upon attending to empathic opportunities presented during interview sessions. Curr Probl Surg. 2004;61(3):313-18.
27. Kalish R, Dawiskiba M, Sung Y, Blanco M. Raising medical student awareness of compassionate care through reflection of annotated videotapes of clinical encounters. Educ Health. 2011;24(3):490-90.
28. Brooks J, McCluskey S, Turley E, King N. The Utility of Template Analysis in Qualitative Psychology Research. Qual Res Psychol. 2015;12(2):202-22.
29. Tracy SJ. Qualitative Quality: Eight "Big-Tent" Criteria for Excellent Qualitative Research. Qual Inq. 2010;16(10):837-51.
30. Varpio L, Ajjawi R, Monrouxe LV, O'Brien BC, Rees CE. Shedding the cobra effect: problematising thematic emergence, triangulation, saturation and member checking. Med Educ. 2017;51(1):40-50.
31. Strauss C, Lever Taylor B, Gu J, Kuyken W, Baer R, Jones F, et al. What is compassion and how can we measure it? A review of definitions and measures. Clin Psychol Rev. 2016;47:15-27.

32. Naik H. Patients' Voices Are Important in Compassion Education. Acad Med. 2022;97(3):319.
33. Fogarty LA, Curbow BA, Wingard JR, McDonnell K, Somerfield MR. Can 40 seconds of compassion reduce patient anxiety? J Clin Oncol. 1999;17(1):371-9.
34. Sep MSC, van Osch M, van Vliet LM, Smets EMA, Bensing JM. The power of clinicians' affective communication: How reassurance about non-abandonment can reduce patients' physiological arousal and increase information recall in bad news consultations. An experimental study using analogue patients. Patient Educ Couns. 2014;95(1):45-52.
35. Phillips SP, Dalgarno N. Professionalism, professionalization, expertise and compassion: a qualitative study of medical residents. BMC Med Educ. 2017;17(1):21.
36. Baker LR, Martimianakis MAT, Nasirzadeh Y, Northup E, Gold K, Friesen F, et al. Compassionate Care in the Age of Evidence-Based Practice: A Critical Discourse Analysis in the Context of Chronic Pain Care. Acad Med. 2018;93(12):1841-49.
37. Lombarts MJMH, Verghese A. Medicine Is Not Gender-Neutral — She Is Male. New England Journal of Medicine. 2022;386(13):1284-87.
38. Cole-King A, Gilbert P. Compassionate care: the theory and reality. J Holist Nurs. 2011;8:29-37.
39. Chen AY, Kuper A, Whitehead CR. Competent to provide compassionate care? and critical discourse analysis of accreditation standards. Med Educ. 2021;55(4):530-40.
40. Thornton RLJ, Powe NR, Roter D, Cooper LA. Patient–physician social concordance, medical visit communication and patients' perceptions of health care quality. Patient Educ Couns. 2011;85(3):201-08.
41. Street RL, Jr., Gordon H, Haidet P. Physicians' communication and perceptions of patients: is it how they look, how they talk, or is it just the doctor? Soc Sci Med. 2007;65(3):586-98.
42. Pavlova A, Wang CXY, Boggiss AL, O'Callaghan A, Consedine NS. Predictors of Physician Compassion, Empathy, and Related Constructs: a Systematic Review. J Gen Intern Med. 2022;37(4):900-11.
43. MacArthur J, Wilkinson H, Gray MA, Matthews-Smith G. Embedding compassionate care in local NHS practice: developing a conceptual model through realistic evaluation. J Res Nurs. 2016;22(1-2):130-47.
44. Sinclair S, Torres M-B, Raffin-Bouchal S, Hack TF, McClement S, Hagen NA, et al. Compassion training in healthcare: what are patients' perspectives on training healthcare providers? BMC Med Educ. 2016;16(1):169.

# Appendix 1

**Semi-structured initial interview guide for residents and patients**

Not all follow-up and probing questions are included in the interview guides below. During interviews with patients, we regularly checked whether patients talked compassionate care provided by residents.



**Interview guide residents**

*Introductory questions*

1. Can you please indicate, in three to five words, on this paper what associations compassion evokes in you?
2. What is the value of compassionate care for you?

*Key questions*

3. Can you give an example of a situation in which you felt successful in providing compassionate care?
4. Can you also give an example of a situation in which you felt less successful in providing compassionate care?
5. What would be too much or too little compassion for you?
6. What helps you in providing compassionate care to patients?
7. What hinders you in providing compassionate care to patients?
8. Within your current work environment, is there attention for compassion?
9. How good are you at providing compassionate care? Does it feel like a second nature, or do you have to put effort into it?

*Wrap-up questions*

10. Are there topics that I did not ask about but are essential?

**Interview guide patients**

*Introductory questions*

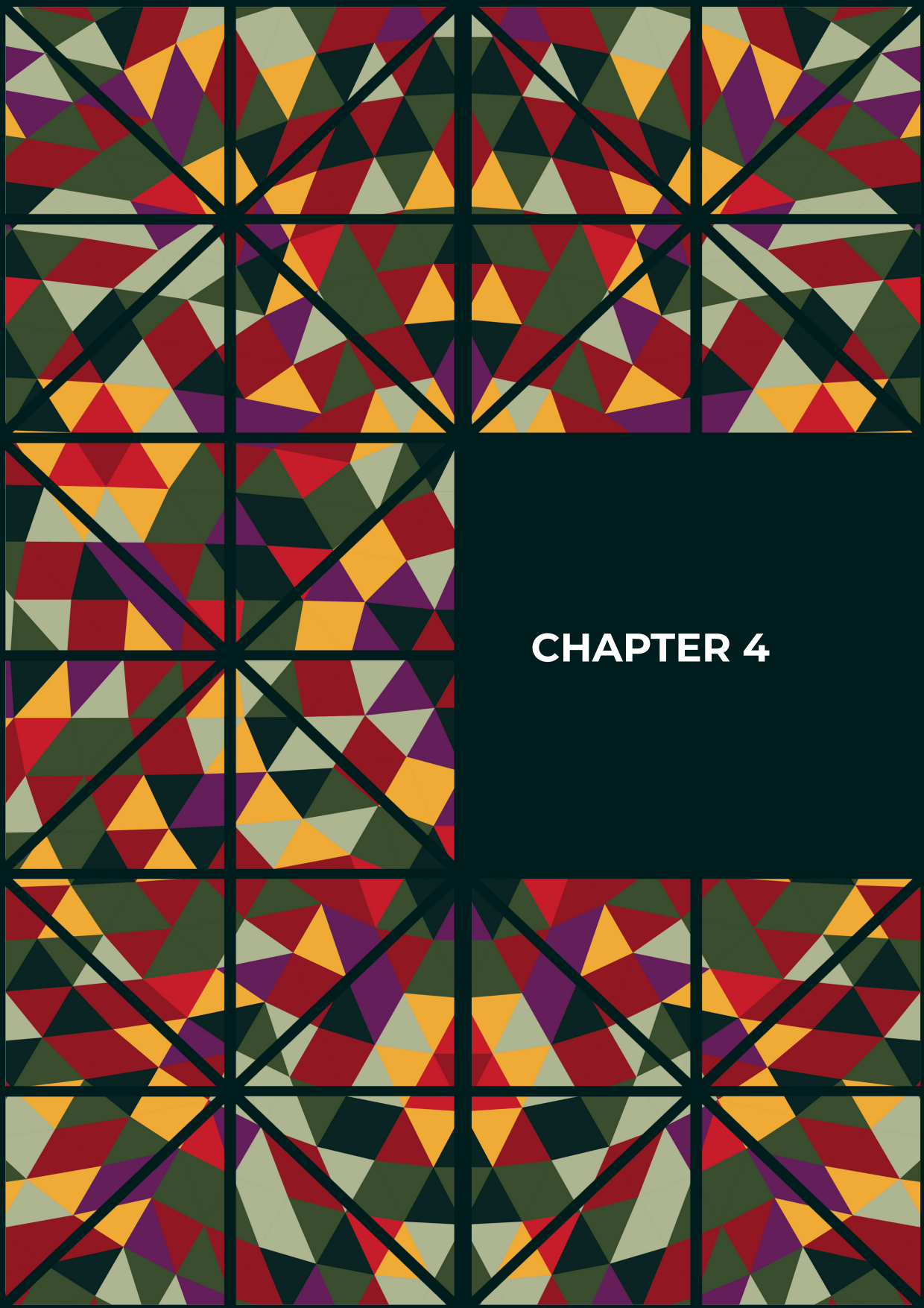
1. Can you please indicate in three to five words on this paper what associations compassion evokes in you?
2. How did you experience compassion in your health care trajectory within this hospital?

*Key questions*

3. Can you give an example of a situation where you felt that your physician provided compassionate care?
4. Can you also give an example of a situation where you felt that your physician provided less compassionate care?
5. Looking back at the examples you just offered, how do you feel when you:
    a. Are treated compassionately by your physician?
    b. Are treated less compassionately by your physician?
6. What would be too much or too little compassion for you?
7. What aspects contribute to your experience of compassionate care?
    a. What factors promote the experience?
    b. What factors hinder the experience?
8. What tip would you give to physicians so that they can provide (more) compassionate care?

*Wrap-up questions*

9. Are there topics that I did not ask about but are essential?



# CHAPTER 4

# Exploring the role of nurses in guiding residents during postgraduate medical education: a mixed-method study

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Submitted.

## Abstract

**PURPOSE** Understanding residents' workplace learning could be optimized by not only considering attending physicians' role but also the role of nurses. While previous studies already described nurses' role during discrete activities (e.g., feedback), a more profound understanding of how nurses contribute to residents' learning remains warranted. Therefore, we used the concept of guidance and explored the extent to which residents' and nurses' perceptions align regarding nurses' guiding role and how both motivate their perceptions.

**METHOD** This mixed-method study was conducted at four Dutch University Medical Centers in 2021. We simultaneously collected quantitative and qualitative data from 103 residents and 401 nurses through a theory-informed questionnaire with a Likert-scale and open-ended questions. Quantitative data explored respondents' perceptions of nurses' guiding role using ANOVA. The thematically analyzed qualitative open-comments explored respondents' motivations for their perceptions.

**RESULTS** Nurses indicated to provide significantly more support ($p$ = .01) and guidance on learning from patient care ($p$ < .01) than perceived by residents. Moreover, nurses indicated that attending physicians did not always involve them in guiding residents, whereas residents perceived nurses were being involved ($p$ <.001). Themes suggest that nurses and residents could be divided into two groups: (1) respondents who felt that guiding was inextricably linked to good interprofessional collaboration and patient care, and (2) respondents who saw the guiding role as limited and emphasized the distinct fields of expertise between nurses and physicians.

**CONCLUSIONS** Although residents felt that nurses played an important role in their guidance, residents did not always perceive to be guided, while nurses indicated to guide residents. To further capitalize on nurses' guiding role, we suggest that residents can be encouraged to engage in the learning opportunities nurses provide to achieve optimal team-based patient care. Attending physicians could explicitly involve nurses to guide and work towards legitimizing nurses' valuable contributions to residents' workplace learning.

## Introduction

Workplace learning is considered the backbone of postgraduate medical education. Residents gradually develop into competent healthcare professionals who provide safe and high-quality patient care by participating in day-to-day clinical practice within healthcare teams and being supervised by attending physicians.[1, 2] Given the fact that the demands of clinical practice largely shape residents' learning during postgraduate medical education, researchers and educators alike have sought various ways to optimize workplace learning. The role of attending physicians in optimizing residents' workplace learning has received ample attention and has been recognized as highly instrumental.[3-5] This instrumentality resides in attending physicians' role in helping residents to navigate their trajectory into the community of physician practice through role modelling, coaching, scaffolding, and general supervision.[6-8] However, only considering the role of attending physicians in this navigation process might offer a limited perspective on how residents learn during workplace learning and which other members of the healthcare team are involved in this process.[8, 9]



The potential of widening our perspective on residents' workplace learning and who is involved in this process is informed by sociocultural theories on learning. These theories posit that learning occurs through interaction and participation.[6, 10-12] Considering the situated nature of residents' workplace learning, one of the key healthcare team members residents interact with on a daily basis besides attending physicians are nurses.[13] Several studies have confirmed the role of nurses in residents' workplace learning through, for example, demonstrating specific skills,[14-18] and supporting residents' socialization through enculturation within clinical departments.[9, 19] Other studies have highlighted nurses' unique feedback perspective on residents' performance regarding communication with patients and families as well as their collaboration within the healthcare team.[20-22] Despite this empirical evidence pointing to the highly relevant role of nurses in residents' learning, our understanding of nurses' role remains underexplored.[8] A more profound understanding of nurses' role in residents' learning may help further optimize residents' workplace learning.[8]

Thus far, research has described the role of nurses in residents' workplace learning in discrete activities like giving (informal) feedback, demonstrating skills, and enabling socialization.[9, 14-22] A potential concept that may help capture nurses' roles in residents' workplace learning more fully is that of 'guidance'.[12] Derived from the work of Billett on workplace learning,[12] guidance is described as a process through which more experienced members of a workplace guide novice employees to become effective members of that workplace. Guidance entails enabling workplace participation, directing novices to learning opportunities, and socializing them within the workplace. Research on workplace learning in medical education has typically used umbrella concepts like supervision[3, 5, 23] and teaching[7, 24] to describe the activities of attending physicians. Both concepts invoke the image of deliberate and formal activities geared towards residents' learning. By using the concept of

guidance, we aim to focus on the formal and informal role of nurses as experienced members within the clinical workplace in facilitating residents' learning and development to become effective healthcare team members.

In this study, we set out to explore the extent to which the interactions between nurses and residents are perceived as guidance from the perspective of both residents and nurses. We have chosen to incorporate both perspectives as research has pointed out that might have difficulty valuing and accepting the role of nurses in their learning.[20, 25, 26] We therefore pose the following questions 1) to what extent do residents' and nurses' perceptions align regarding the guiding role of nurses during residents' workplace learning? 2) how do nurses and residents motivate their perceptions regarding nurses' guiding role of residents' workplace learning?



## Method

In this mixed-method study, we simultaneously collected quantitative and qualitative data from residents and nurses through a questionnaire. The quantitative component was the primary method in this study and was used to assess whether the perceptions of residents and nurses aligned regarding nurses' guiding role.[27] However, the motivations behind their perceptions could not be discerned and informed the qualitative component which was the secondary method.[27] The qualitative component was collected with the questionnaires' open-ended questions and provided insight into the motivations behind nurses' and residents' perceptions regarding the guiding role. By using a mixed-method methodology specifically, we could understand better what the guiding role of nurses in clinical practice looked like and complement this understanding by exploring both nurses' and residents' explanations of their perceptions.[27] Integration of the quantitative and qualitative results occurred during data analysis; the initial quantitative results influenced the focus of the qualitative analysis.[28]

### Setting

This study was conducted among residents and nurses at four University Medical Centers (UMCs) in the Netherlands. During the four to six years of residency training, residents follow various rotations in UMCs and (several) non-UMCs teaching hospitals. Residents are part of the healthcare team and work alongside various healthcare professionals, including nurses. The team of attending physicians, directed by a program director, are ultimately responsible for training residents and guiding them towards independent practice.[29] Similar to other countries, programmatic assessment is implemented in Dutch residency programs, meaning the routine collection and analysis of information about residents' competencies and progress. This information is collected through several instruments such as Entrustable Professional Activities (EPA's), multisource feedback, and performance surveys.[29-31] Generally, four types of nurses with different roles and responsibilities are distinguished within the Dutch healthcare system. Vocational Nurses (VN)

and Registered Nurses (RN) are trained respectively three and four years; they are concerned with giving and organizing direct nursing care. Some have had additional training and specialization (e.g., diabetic nurses). The number of Master degree nurses is growing and they could be trained as Advanced Nurse Practitioners (ANP) who are concerned with care on the cutting edge of the nursing and medical domain and quality improvement.[32] Physician Assistants (PA) also hold a master degree, but belong to the medical domain and can perform (complex) risky (medical technical) interventions.[33] Within UMCs, all types of nurses work alongside and together with residents and attending physicians. However, compared to general hospitals, nurses in UMCs often hold higher educational degrees.

## Sample and procedures

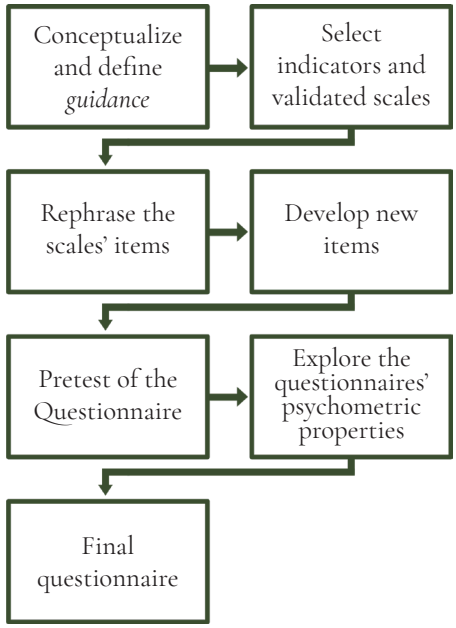
From February to August 2021, we approached residents and nurses to participate in a web-based online questionnaire using the platform Castor EDC (Version: 1.6) and LimeSurvey. We recruited residents and nurses through convenience sampling, meaning that all nurses (VNs, RNs, NPs, and PAs) and residents from different specialties could participate in the questionnaire. We only requested participation when nurses or residents regularly collaborated with each other, to assure they were able to provide information on the guiding role of nurses. We checked this by asking key informants and through an item in the questionnaire. We recruited residents via residency training program directors and hospital-wide education committees (responsible for monitoring and promoting the quality of residency training within a teaching hospital).[34] Nurses were recruited via nursing managers within the UMCs. Both were invited and reminded up to three times through e-mails.

## Development questionnaire

As there was no suitable questionnaire measuring the construct of guidance, the research team developed a new questionnaire (see Figure 1). Mirroring the literature on workplace guidance,[1, 12, 35] clinical supervision,[3, 36, 37] and interprofessional collaboration,[8, 9, 18, 38] we first conceptualized and defined guidance as 'all that nurses do (or intentionally not do) to support residents' professional development towards independent medical practice'. We determined relevant indicators of guidance and selected scales to represent these indicators from the following validated questionnaires: System of Evaluation of Teaching Qualities (SETQ),[37] The Maastricht Clinical Teaching Questionnaire (MCTQ),[36] and Dutch Residents Educational Climate Test (D-RECT).[39] We then rephrased the scales' items to incorporate the nurse; for example, the item 'attending physicians provide positive feedback to residents'[37] was rephrased as 'nurses provide positive feedback to residents'. Finally, we added newly developed items to fill in missing information about the guiding role of nurses, for instance we added items about whether guidance by nurses is (formally) recognized and acknowledged by residents and attending physicians. The questionnaire contained the same questions for both nurses and residents, only the wording was altered (for the complete questionnaire see Appendix 1). We piloted the preliminary questionnaire on five nurses and four residents in an individual

online interview using the think-aloud technique and verbal probing.[40, 41] That is, researcher (IJ) asked participants to verbalize every thought while answering the questionnaire's items. The interviewer also used probe questions to elicit specific information on whether items were unclear, inappropriate, or misunderstood (e.g., is there a section or question on this page that is unclear to you?).[41] Participants' feedback led to minor modifications in the wording of the demographic variables and we added three items (items 8, 15, and 25). We explored the questionnaires' psychometric properties and discussed the results within the research team. The satisfactory results led to minor changes (see Appendix 2). The final questionnaire consisted of 25 items measuring the guiding role of nurses across 7 scales: *Demonstrating* (e.g., Nurses demonstrate how compassionate patient care is performed), *Feedback* (e.g., Nurses give me positive feedback), *Support* (e.g., Nurses emphasize that I can ask them for help), *Socialization* (e.g., Nurses support me in familiarizing with the departments' organizational aspects), *Learning from Patient Care* (e.g., Nurses assess my competence when I perform certain clinical routines), *Engagement* (e.g., During my training, nurses play an important role in guiding me), and *Involvement in Evaluation* (e.g., Nurses are asked by attending physicians to provide feedback on my performance). Responses were recorded on a 5-point Likert scale (1 = never; 2 = seldom; 3 = sometimes; 4 = regularly; 5 = always). Only the scale *Engagement* was measured on a 5-point Likert scale, where 1 = strongly disagree and 5 = strongly agree. We also analyzed the following data: residents' postgraduate year (years 1 to 6) and nurses' work experience in years.

**Figure 1.** The Stepwise Guidance Questionnaire Development From a Mixed Method Study on the Guiding Role of Nurses During Postgraduate Medical Education at Four Dutch University Medical Centers, 2021



## Quantitative analysis

First, we used a 50% missing data cutoff, meaning that participants were excluded from further analyses if they missed more than 13 items. The remaining missing data were imputed using the expectation-maximization (EM) algorithm. We did not impute the 'not applicable' answer option as we considered this answer as valid rather than a missing value.[42] For all seven scales separately, total mean scores were calculated using the mean of the scales' corresponding items. To examine whether nurses' and residents' perceptions aligned on the guiding domains, we conducted a one-way ANOVA. Second, to examine the difference in guiding domains between residents' postgraduate years (PGY) and nurses' work experience, we conducted a one-way ANOVA. We categorized PGY into three groups using the 33$^{th}$ percentile and the 66$^{th}$ percentile: junior = resident not in formal residency training/ PGY 1; intermediate = PGY 2/3; senior = PGY 4/5/6. We categorized nurses' work experience into three groups using the same approach: early-career = 0-7 years, mid-career = 8-22 years, and late-career = ≥ 23 years. For all analyses, the significance level was adjusted for the number of comparisons completed (Bonferroni method). We used SPSS version 26 (IBM Corp. 2019) for the statistical analysis.



## Qualitative component

**Sample.** The open-ended questions within the domains *Engagement* and *Involvement in Evaluations* had elicited the longest, descriptive and in-depth answers from participants and were selected for thematic analysis. These domains contained three open-ended questions that were presented to both nurses and residents. The open-ended questions asked participants to further motivate their thoughts about the (non) importance of the guiding role and how nurses were in another way involved in guiding residents.

**Qualitative analysis.** Participants' comments were analyzed using thematic analysis.[43] First, the principal researcher (IJ) open coded roughly one third of residents' and nurses' comments to get a general impression of the data and constructed initial codes. Using these codes, two researchers (IJ and GG) coded the same batch of residents' and nurses' comments. Together with another researcher (RS), they discussed the codes and constructed themes resulting in an initial template. IJ and GG independently applied the template on a different batch of comments and refined the themes iteratively during online discussions. Then, IJ wrote a draft results section on how the themes relate to each other, facilitating a discussion within the research team. As a result, the template was not further modified, IJ coded the remaining comments and refined the draft results. In two meetings with nurses, attending physicians, and residents, IJ presented the results, which were recognized and further explained by the participants aiding the interpretation of the results. MAXQDA (version MAXQDA Plus 2020) supported data analysis.

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## Reflexivity

The research team represented different fields of expertise brought together to represent the phenomenon of guiding adequately. IJ and GG are both pursuing a Ph.D. in medical education. IJ is a sociologist (IJ), and GG is a resident anesthesiology. MS is a health scientist and a mixed-methods research fellow in medical education, and RS is an educationalist with significant expertise in qualitative methodology and mixed-methods research. Both RS and IJ have used socio-cultural lenses before to study residents' workplace learning. KL, SG, and HV are all full professors and hold research chairs on physicians' professional performance (KL), internal medicine and quality of care (SG), and nursing science (HV). SG is also program director at the department of Internal Medicine at a UMC. The research teams' multifaceted perspectives resulted in in-depth conversations about how to interpret data from both the perspective of the residents and the nurses.

## Ethics

The institutional ethical review board of the Amsterdam UMC of the University of Amsterdam provided a waiver declaring the Medical Research Involving Human Subjects Act (WMO) did not apply for the project (reference number W20_538 # 20.597). Informed consent was asked in the questionnaire. Participation in the study was anonymous and voluntary at all times.

## Results

A total of 103 residents and 401 nurses completed the questionnaire. Most responding residents were woman (73; 71%) and all postgraduate years were equally represented. Of the responding nurses, 346 (86%) were woman. One hundred ninety-five nurses (49%) had 15 years or more work experience (see Table 1). Ninety-eight residents and 260 nurses responded to the selected open-ended questions.

**Table 1.** Demographics of Resident and Nurse Participants, From a Mixed Method Study on the Guiding Role of Nurses During Postgraduate Medical Education at Four Dutch University Medical Centers, 2021

| | Residents *N* (%) | Nurses *N* (%) |
|---|---|---|
| **Gender** | | |
| Man | 30 (29%) | 55 (14%) |
| Woman | 73 (71%) | 346 (86%) |
| **Age (years)** | | |
| ≤ 30 | 46 (45%) | 138 (34%) |
| 31 – 40 | 56 (54%) | 81 (20%) |
| 41 – 50 | 1 (1%) | 67 (17%) |
| ≥ 51 | - | 115 (29%) |
| **Specialty** | | |
| Surgical | 22 (22%) | 149 (44%) |
| Internal medicine | 56 (56 %) | 181 (53%) |
| Remaining | 22 (22%) | 7 (2%) |
| **PGY** | | |
| Residents not in training/1 | 32 (32%) | |
| 2/3 | 31 (31%) | |
| 4/5/6 | 38 (38%) | |
| **Years of experience** | | |
| ≤ 7 | | 138 (34%) |
| 8 – 22 | | 129 (32%) |
| ≥ 23 | | 134 (34%) |
| **Total** | 103 (100%) | 401 (100%) |

## RQ #1. Alignment of the guiding domains

In total, 70 residents (68%) and 303 nurses (76%) perceived nurses' guiding role as important ($M_{residents}$ = 3.8 (0.9); $M_{nurses}$ = 4.0 (0.9)). While the differences in scores between nurses and residents were not significant for the domains *Demonstrating*, *Feedback*, and *Socialization*, nurses scored higher compared to residents (see Table 2). The differences in scores between nurses and residents were significant for the domains *Support* ($F$(1.495) = 6.09; $p$ = .01) and *Learning from Patient Care* ($F$(1.494) = 7.94; p < .01). Residents scored significantly higher compared to nurses on the domains *Engagement* ($F$(1.499) = 5.89; $p$ = .02) and *Involvement in Evaluations* ($F$(1.502) = 27.60; $p$ <.001). Finally, residents' years of postgraduate training did not result in a significant difference in any domain (data not presented). Nurses' years of working experience was significant in the four domains of *Demonstrating* ($F$(2.387) = 3.68; $p$ = .03), *Feedback* ($F$(2.391) = 5.34; $p$ < .01), *Engagement* ($F$(2.395) = 19.56; $p$ < .001) and *Involvement in Evaluations* ($F$(2.398) = 25.37; $p$ < .001). Nurses with more years of work experience applied these three guiding domains more often than nurses with less years of work experience (see Table 3).

**Table 2.** Mean Scores for Residents and Nurses Demonstrating Differences Between Guiding Perceptions, From a Mixed Method Study on the Guiding Role of Nurses During Postgraduate Medical Education at Four Dutch University Medical Centers, 2021

| | Residents | | Nurses | | | |
|---|---|---|---|---|---|---|
| Domain[a] | *M (SD)* | *No.* | *M (SD)* | *No.* | *F* value | *P* value[d] |
| Demonstrating[b] | 3.25 (0.69) | 100 | 3.42 (0.97) | 390 | 2.93 | .09 |
| Feedback[b] | 3.14 (0.64) | 99 | 3.19 (0.72) | 394 | 0.35 | .56 |
| Support[b] | 3.13 (0.82) | 101 | 3.36 (0.86) | 396 | 6.09 | **.01** |
| Socialization[b] | 3.10 (0.76) | 101 | 2.96 (0.89) | 387 | 2.05 | .15 |
| Learning from Patient Care[b] | 2.73 (0.85) | 99 | 3.00 (0.84) | 397 | 7.94 | **< .01** |
| Engagement[c] | 2.93 (0.76) | 103 | 2.72 (0.78) | 395 | 5.89 | **.02** |
| Involvement in Evaluation[b] | 2.56 (0.78) | 103 | 2.13 (0.72) | 401 | 27.60 | **<.001** |

Abbreviation: M, mean; SD, standard deviation; No., Number

[a] See Supplemental Digital Appendix 1 for corresponding items

[b] Responses were on a 5-point Likert scale (1 = never; 2 = seldom; 3 = sometimes; 4 = regularly; 5 = always)

[c] Responses were on a 5-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree)

[d] *P* values in bold represent statistically significant values (<.05)

**Table 3.** Mean Scores for Nurses' Work Experience Demonstrating Differences Between Guiding Perceptions, From a Mixed Method Study on the Guiding Role of Nurses During Postgraduate Medical Education at Four Dutch University Medical Centers, 2021

| | Early-career | | Mid-career | | Late-career | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Domain[a] | *M (SD)* | *No.* | *M (SD)* | *No.* | *M (SD)* | *No.* | *F* value | Sig[d] | Significantly different groups[d,e] |
| Demonstrating[b] | 3.24 (1.05) | 134 | 3.50 (0.90) | 125 | 3.53 (0.94) | 131 | 3.68 | **.03** | Early vs. Late (*P* = .04) |
| Feedback[b] | 3.02 (0.79) | 133 | 3.28 (0.64) | 129 | 3.27 (0.70) | 132 | 5.34 | < **.01** | Early vs. Mid (*P* = .01)<br>Early vs. Late (*P* = .02) |
| Support[b] | 3.28 (0.91) | 134 | 3.39 (0.78) | 129 | 3.41 (0.89) | 133 | 0.84 | .43 | |
| Socialization[b] | 2.89 (0.88) | 132 | 3.02 (0.91) | 128 | 2.97 (0.88) | 127 | 0.72 | .49 | |
| Learning from Patient Care[b] | 2.89 (0.86) | 135 | 3.10 (0.81) | 129 | 3.00 (0.85) | 133 | 2.13 | .12 | |
| Engagement[c] | 2.41 (0.74) | 136 | 2.79 (0.71) | 128 | 2.97 (0.77) | 134 | 19.56 | < **.001** | Early vs. Mid (*P* < .001)<br>Early vs. Late (*P* < .001) |
| Involvement in Evaluation[b] | 1.81 (0.58) | 138 | 2.20 (0.64) | 128 | 2.39 (0.81) | 134 | 25.37 | < **.001** | Early vs. Mid (*P* < .001)<br>Early vs. Late (*P* < .001) |

Abbreviation: M, mean; SD, standard deviation; No., Number

[a] See Supplemental Digital Appendix 1 for corresponding items

[b] Responses were on a 5-point Likert scale (1 = never; 2 = seldom; 3 = sometimes; 4 = regularly; 5 = always)

[c] Responses were on a 5-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree)

[d] *P* values in bold represent statistically significant values (<.05)

[e] Tukey post-hoc test

## RQ #2. Motivations of the perceptions regarding nurses' guiding role

We could group the motivations of both nurses and residents under two response types: respondents who acknowledged the guiding role of nurses (majority of respondents) and respondents who perceived the guide role as limited (minority of respondents). Table 4 provides an overview of the (sub)themes and quotes.

## Response type 1: Acknowledging the guiding role of nurses

**Nurses**. Nurses were motivated to guide residents because they felt that guiding was inextricably linked with good collaboration and, in turn, contributed to safe and high-quality patient care. Providing residents with insights into the nursing profession was another frequently mentioned motivator by nurses to guide residents. Providing insight could create an understanding for residents about what they could expect and ask from nurses, aiding high-quality patient care. Nurses also highlighted how they could teach residents from their own humanistic expertise and experience, which they recognized as complementary to the expertise of attending physicians. For example, nurses taught "how the human aspect works when dealing with the sick and their loved ones" (Nurse 532). Finally, nurses considered introducing residents to the departments' processes as necessary, especially junior residents, as they were not or hardly onboarded by attending physicians and "thrown in at the deep end" (Nurse 498). To safeguard patient care, nurses felt compelled to instruct residents themselves.

**Residents**. Residents too underlined that guidance from and collaboration with nurses could not be seen as separate. For residents, guidance also contributed to their professional development toward an attending physician as "health care is teamwork, so that must be reflected in the workplace and during residency training" (Resident 54). Furthermore, residents described how through nurses' knowledge and experience, residents could develop clinical reasoning skills, their "gut feeling" (Resident 147), and the departments' "common practice" (Resident 42). Residents described this expertise, which "cannot be learned from the books" (Resident 140), as a valuable addition to the medical-related knowledge of attending physicians. A few residents struggled with how to relate to nurses as "nurse practitioners know certain things much better than I do and I can learn a lot from them, but in other things, they ask me for supervision [...] which makes it sometimes difficult to know what your position and responsibility is [in relation to nurses]" (Resident 18).

## Response type 2: The limited guiding role of nurses

**Nurses**. Nurses often felt that they were not being involved by attending physicians in guiding residents. For instance, attending physicians did not ask them about their impression of a resident. Nurses saw this as a missed opportunity since information on residents' professional development could be lost. Nurses described that not being involved as well as a high workload prevented them from having an active role in guiding residents. Moreover, some nurses felt that guiding was not their responsibility. Instead, they felt that guidance belonged to medical professionals themselves. Finally, for some nurses, it was unclear what guiding meant as they said "not to guide residents" (Nurse 167), while their written answers revealed aspects that could be considered as guiding by the definition used in this study.

**Residents**. Most residents who described the guiding role of nurses as limited stressed how the professional roles, knowledge, and expertise of nurses and physicians are too distinct, given their different professional disciplines and backgrounds. A few residents experienced the nursing expertise as less relevant for their learning trajectory, and some residents stated they needed to guide nurses instead. However, other residents differentiated explicitly between specific types of nurses and described how the expertise of PAs was highly relevant, and they could serve as "attending physicians" (Resident 95). A few residents stated that the workplace afforded little situations for guidance, which was recognized as a shortcoming as they felt guidance was valuable. Finally, for a few residents, it was unclear what guidance entailed.

**Table 4.** Overview of Two Response Types From the Thematic Analysis Describing Nurses and Residents Motivations for the Guiding Role of Nurses, From a Mixed Method Study on the Guiding Role of Nurses During Postgraduate Medical Education at Four Dutch University Medical Centers, 2021

| Response type | | Theme | Description | Quote |
|---|---|---|---|---|
| **Acknowledging the guiding role of nurses** | Nurses | Guiding contributes to good collaboration and patient care | Guiding residents was inextricably bound up with good collaboration; contributing to safe and high-quality patient care. | Investing in guiding residents contributes to good collaboration between residents and nurses and improves the quality of care. (Nurse 665) |
| | | Providing insight into the nursing profession | Through guidance, nurses could provide insight into their nursing roles, expertise, and work routines, aiding high-quality patient care. | Because it [providing insight] leads to a better understanding of each other's work and the departmental processes, ultimately resulting in better and safer patient care. (Nurse 479) |
| | | Teaching residents | Nurses teach residents from their own expertise and experiences which was complementary to the expertise of attending physicians. | Nurses can also play a role in supporting/ guiding [residents] with regard to conversations with patients and relatives. (Nurse 954) |

| Response type | Theme | Description | Quote |
|---|---|---|---|
| | | | Communication with patients is something that attending physicians do not always observe. (Nurse 338) |
| | Introducing residents to the departments' processes | This includes explaining work agreements, rules, and protocols, how the team usually works together, or how residents should perform the ward. Some nurses mentioned that attending physicians did not introduce residents well and these nurses felt compelled to introduce residents themselves to safeguard patient care. | Every few months, a new resident starts, who is not yet familiar with the department's processes. I think it is nice and important to support them in this. (Nurse 634)<br><br>The onboarding of residents is often poor. Investing in guiding residents contributes to good collaboration between residents and nurses and improves the quality of patient care. (Nurse 665) |
| Residents | Patient care is a team effort | Patient care is a team effort requiring good collaboration between all healthcare team members. | Good collaboration between residents and nurses is essential for good patient care. Therefore I also like feedback from nurses about the way of communicating etc. (Resident 1193) |

| Response type | | Theme | Description | Quote |
|---|---|---|---|---|
| | | Nurses teach valuable knowledge and experience | Nurses helped residents develop clinical reasoning skills, communication with patients, understanding the departments' rules and common practices, and specific knowledge (e.g., psychosocial aspects of patient care). This knowledge was a valuable addition to the knowledge of attending physicians. | A nurse is well-positioned to help develop residents' clinical view and help them to learn to collaborate within a multidisciplinary team. (Resident 71)<br><br>The experience and knowledge of the nurse are different and a valuable addition to attending physicians. (Resident 61) |
| **Limited guiding role of nurses** | Nurses | Not being involved | Attending physicians rarely actively involved nurses in residents' guidance by, for instance, asking nurses about their impression of residents. | Nurses are not involved enough, if at all, in guiding residents. This is a missed opportunity because, especially in the early stages, we [nurses] can contribute to the learning process [of residents]. (Nurse 498) |
| | | High workload | A high workload prevented nurses from guiding residents due to a shortage of staff and the responsibility to guide nursing students. | We already have our hands full with 10 to 15 nursing students. I often can't take it in the day [to guide residents]. (Nurse 924) |

| Response type | | Theme | Description | Quote |
|---|---|---|---|---|
| | | Not my responsibility | Guiding residents was not seen as nurses' responsibility. Instead, it was the responsibility of the medical profession itself. | Guidance is the main responsibility of attending physicians and not one of the nurses. (Nurse 904) |
| | | Unclear what guiding entails | Nurses' written answers revealed aspects that could be considered as guiding by the definition of the concept used in this study, although nurses said not to guide residents. | I am not a residents' attending physician, however, I can advise from my own experience. (Nurse 167). |
| | Residents | Professional roles and knowledge are too distinct | Professional roles, knowledge and, expertise of nurses and physicians are too distinct as both have studied for another profession. | Giving nurses a big role within residency training in terms of knowledge is not a good idea because nurses have a lot of knowledge that is not necessarily relevant during the training toward a medical specialist. (Resident 81) |

| Response type | Theme | Description | Quote |
|---|---|---|---|
| | Workplace affords little guidance | The workplace did not always afford guiding situations as, for instance, nurses were only present during the night shifts. | There is sometimes only once-a-week contact with nurses when you have night shifts. (Resident 107) |
| | Unclear what guidance entails | Residents' written answers revealed aspects that could be considered as guiding by the definition of the concept used in this study, although residents said nurses did not guide them. | Guidance is not necessary, but feedback on collaboration is useful. (Resident 48) |

## Discussion

Residents' workplace learning may be optimized by incorporating the role of nurses in this process. Using mixed methods, we examined to what extent residents' and nurses' perceptions align on the guiding role of nurses and how they motivate their perceptions regarding nurses' guiding role. The perceptions on the extent to which guidance took place differed; nurses indicated to provide significantly more practical and emotional support (domain *Support*) as well as guidance on safe and high-quality patient care (domain *Learning from Patient Care*) than perceived by residents. We also found that nurses indicated that attending physicians did not always involve them in guiding residents, whereas residents perceived nurses were being involved (domain *Involvement in Evaluation*). Thematic analyses of the open-ended question suggest that answers of both nurses and residents could be categorized into two themes: (1) respondents who saw the need for guidance as they felt that guidance was inextricably linked to good interprofessional collaboration and patient care, and (2) respondents who saw the need for guidance as limited and emphasized the distinct fields of expertise and professional roles between nurses and physicians.



Our results both confirm and build on previous studies focusing on the role of nurses in residents' learning.[9, 14–22] Our results confirm previous research pointing to the unique perspective of nurses on medicine and residents' competence.[17, 22] The novel perspective our study brings is nurses' role in providing residents with crucial insights into the nursing profession, including the nature of their nursing roles, expertise, and work routines. By providing these insights, nurses can make their (for residents often invisible) role within the workplace more visible[13] and help residents understand better what they could expect and ask from nurses. Providing these insights seemed to serve two purposes: enabling better teamwork with residents as residents were more familiar with the nurses' workflow, aiding patient safety,[17, 44] and enabling residents' understanding of their own physician role and the nurses' role within the healthcare team.[38] Through this understanding, residents develop the knowledge and skills how to be a reliable member within the healthcare team, which is essential in their journey to become a future attending physician.[8, 38, 45]

Notably, residents' perceptions about whether they were being guided by nurses differed. Whether residents perceived to be guided by nurses seemed to align with residents' perspective on what it entails to be a physician and who could help them to navigate their trajectory towards their community of practice.[8] Residents who did not see a guiding role for nurses referred to nursing as a distinct field in comparison to the medical field and therefore saw the transferability of the nursing perspective as limited. Residents who acknowledged the guiding role of nurses emphasized the collaborative nature of healthcare and the value of varying perspectives on care. In line with the work of Billett,[12] the nature of the perspective residents hold will influence the type of interactions and learning opportunities they will look for during workplace learning. For example, Bannister et al.[18] found how residents wanted to come across as 'keen to learn' to healthcare team members as they understood

that this keenness could result in being afforded opportunities to perform clinical skills. Another example of the interplay between residents' perspective on nurses' guiding role and their learning opportunities is described by Olmos-Vega et al.,[46] who demonstrated that nurses were less motivated to afford residents learning opportunities if residents lacked a personal interest in collaborating with nurses.

The nurses in our study took on the guiding role towards residents, even if they felt that attending physicians did not involve them in doing so. However, if attending physicians would explicitly involve nurses, residents may be more inclined to fully appreciate nurses and their contributions to residents' workplace learning.[22, 47, 48] Attending physicians are powerful role models who can encourage residents to seek guidance from nurses as well as value and engage in the afforded learning opportunities by nurses.[22, 49] Moreover, attending physicians could stimulate team inclusiveness[50, 51] which is known to benefit interprofessional collaboration, through explicitly inviting nurses to play a role in residents' workplace learning.[17] By doing so, attending physicians legitimize the guiding role of nurses, thereby helping residents understand the valuable contributions nurses can make to their workplace learning and professional development.[17, 22, 52]



## Limitations

When interpreting the results, it is important that we only included nurses and residents working in UMCs in the Netherlands. This means that the nurses in our sample have all completed advanced training, more so than the average nursing workforce in general hospitals. Therefore, residents in this study may have rated the guidance of nurses more positively, especially considering that residents might perceive nurses with higher educational levels as part of their own profession, and literature on feedback shows that residents find the feedback from within their own profession more reliable.[20, 21, 26] Future research could include and specifically sample non-academic hospitals to explore whether this would yield similar results to the current study. Another limitation is that, due to the recruitment strategy, we were unable to calculate the response rate. Through discussions with experts such as residents, nurses, and attending physicians, as well as conversations within the research team, we assured to the best of our ability that the findings are representative of the Dutch practice. Lastly, participants provided different interpretations of the concept of guiding, despite our best efforts to define the concept when introducing the study to participants. This may point to potential underlying social and cultural forces influencing how the concept of guiding is understood. Qualitative research is needed to explore these underlying forces further. In terms of future research, we suggest to further explore the role of other allied healthcare professionals, such as physiotherapists, dietitians, OR nurses, and anesthesia workers in residents' workplace learning.

## Conclusion

Nurses play a critical role in residents' workplace learning and professional development. Although residents felt that nurses played an important role in their guidance, residents did not always perceive to be guided while nurses indicated to guide residents. To further capitalize on nurses' guiding role, our study suggests that residents can be encouraged to engage with the learning opportunities provided by nurses to achieve optimal team-based patient care. Moreover, attending physicians are advised to explicitly involve nurses to guide residents and work towards legitimizing the valuable contributions of nurses within residents' workplace learning.

## References


1. Teunissen PW, Scheele F, Scherpbier AJJA, van der Vleuten CP, Boor K, van Luijk SJ, et al. How residents learn: qualitative evidence for the pivotal role of clinical activities. Med Educ. 2007;41(8):763-70.
2. Teunissen PW. Experience, trajectories, and reifications: an emerging framework of practice-based learning in healthcare workplaces. Adv in Health Sci Educ. 2015;20(4):843-56.
3. Kilminster SM, Jolly BC. Effective supervision in clinical practice settings: a literature review. Med Educ. 2000;34(10):827-40.
4. Kennedy TJ, Lingard L, Baker GR, Kitchen L, Regehr G. Clinical oversight: conceptualizing the relationship between supervision and safety. J Gen Intern Med. 2007;22(8):1080-85.
5. Goldszmidt M, Faden L, Dornan T, van Merriënboer J, Bordage G, Lingard L. Attending physician variability: a model of four supervisory styles. Acad Med. 2015;90(11):1541-46.
6. Wenger E. Communities of Practice: Learning, Meaning, and Identity. Cambridge (UK): Cambridge University Press; 1999.
7. Stalmeijer RE, Dolmans DHJM, Snellen-Balendong HAM, van Santen-Hoeufft M, Wolfhagen IHAP, Scherpbier AJJA. Clinical Teaching Based on Principles of Cognitive Apprenticeship: Views of Experienced Clinical Teachers. Acad Med. 2013;88(6):861-65.
8. Stalmeijer RE, Varpio L. The wolf you feed: Challenging intraprofessional workplace-based education norms. Med Educ. 2021;55(8):894-902.
9. Jansen I, Stalmeijer RE, Silkens MEWM, Lombarts KMJMH. An act of performance: Exploring residents' decision-making processes to seek help. Med Educ. 2021;55(6):758-67.
10. Sfard A. On Two Metaphors for Learning and the Dangers of Choosing Just One. Educ Res. 1998;27(2):4-13.
11. Lave J, Wenger E. Situated learning: Legitimate peripheral participation. Cambridge (UK): Cambridge University Press; 1991.
12. Billett S. Toward a Workplace Pedagogy: Guidance, Participation, and Engagement. AEQ. 2002;53(1):27-43.
13. Allen D. The invisible work of nurses: hospitals, organisation and healthcare. London (UK): Routledge; 2014.
14. Baggaley A, Robb L, Paterson-Brown S, McGregor RJ. Improving the working environment for the delivery of safe surgical care in the UK: a qualitative cross-sectional analysis. BMJ Open. 2019;9(1):e023476.
15. Varpio L, Bidlake E, Casimiro L, Hall P, Kuziemsky C, Brajtman S, et al. Resident experiences of informal education: how often, from whom, about what and how. Med Educ. 2014;48(12):1220-34.
16. Polansky MN, Govaerts MJB, Stalmeijer RE, Eid A, Bodurka DC, Dolmans DHJM. Exploring the effect of PAs on physician trainee learning: An interview study. JAAPA. 2019;32(5):47-53.

17. Samuriwo R, Bullock A, Webb K, Monrouxe LV. 'Nurses whisper.' Identities in nurses' patient safety narratives of nurse-trainee doctors' interactions. Med Educ. 2021;55(12):1394-406.
18. Bannister SL, Dolson MS, Lingard L, Keegan DA. Not just trust: factors influencing learners' attempts to perform technical skills on real patients. Med Educ. 2018;52(6):605-19.
19. Martimianakis MAT, Fernando O, Schneider R, Tse S, Mylopoulos M. "It's Not Just About Getting Along": Exploring Learning Through the Discourse and Practice of Interprofessional Collaboration. Acad Med. 2020;95(11S):73-80.
20. Vesel TP, O'Brien BC, Henry DM, van Schaik SM. Useful but Different: Resident Physician Perceptions of Interprofessional Feedback. Teach Learn Med. 2016;28(2):125-34.
21. Sonnenberg LK, Pritchard-Wiart L, Hodgson CS, Yu Y, King S. Assessment of Resident Physicians' Communicator and Collaborator Competencies by Interprofessional Clinicians: A Mixed-Methods Study. Teach Learn Med. 2017;29(4):392-401.
22. Bhat C, LaDonna KA, Dewhirst S, Halman S, Scowcroft K, Bhat S, et al. Unobserved Observers: Nurses' Perspectives About Sharing Feedback on the Performance of Resident Physicians. Acad Med. 2022;97(2):271-77.
23. Olmos-Vega FM, Dolmans DHJM, Donkers J, Stalmeijer RE. Understanding how residents' preferences for supervisory methods change throughout residency training: a mixed-methods study. BMC Med Educ. 2015;15:177.
24. Ramani S, Leinster S. AMEE Guide no. 34: Teaching in the clinical environment. Med Teach. 2008;30(4):347-64.
25. Polansky MN, Herrmann D, Dolmans DHJM, Govaerts M, Koch U, Berger J, et al. Exploring residents' perceptions of PA and NP roles and barriers to collaboration. JAAPA. 2021;34(5):42-50.
26. van Schaik SM, O'Sullivan PS, Eva KW, Irby DM, Regehr G. Does source matter? Nurses' and Physicians' perceptions of interprofessional feedback. Med Educ. 2016;50(2):181-88.
27. Creswell JW, Plano Clark VL. Designing and conducting mixed methods research. California (US): Sage; 2011.
28. Fetters MD, Curry LA, Creswell JW. Achieving integration in mixed methods designs-principles and practices. Health Serv Res. 2013;48(6 Pt 2):2134-56.
29. [KNMG] Royal Dutch Medical Association. Kaderbesluit Centraal College Medische Specialismen. Published 2019. Accessed 22 June 2022. https://www.knmg.nl/web/file?uuid=2fda8a3b-cab9-4c83-851e-2ca3bf805d29&owner=5c945405-d6ca-4deb-aa16-7af2088aa173&contentid=88751
30. Schuwirth L, van der Vleuten CP, Durning SJ. What programmatic assessment in medical education can learn from healthcare. Perspect Med Educ. 2017;6(4):211-15.
31. [KNMG] Royal Dutch Medical Association. Stimulans voor interne kwaliteitsverbetering van de geneeskundige vervolgopleidingen (Scherpbier 2.0). Published 2015. Accessed 22 June 2022. https://www.knmg.nl/opleiding-herregistratie-carriere/cgs/themas-projecten/scherpbier-2.0.htm

32. Kappert J, de Hoop I. Nurse Practitioner professional competency framework.) Dutch Nursing Society [V&VN]; Published 2019. Accessed 22 June 2022. https://cstor.eu/venvnvs/2019/06/2019-06-25-Nurse-Practitioner-Professional-Competency-Framework.pdf
33. Dutch Association of Physician Assistants [NAPA]. Het kloppend hart van het beroep Beroepsprofiel Physician Assistant 2017. Published 2017. Accessed 22 Juni 2022. https://www.napa.nl/dl-file.php?file=2017/11/NAPA-Beroepsprofiel-2017.pdf
34. Silkens MEWM, Slootweg IA, Scherpbier AJJA, Heineman MJ, Lombarts KMJMH. Hospital-wide education committees and high-quality residency training. Perspect Med Educ. 2017;6(6):396-404.
35. Billett S. Workplace Pedagogic Practices: Co-Participation and Learning. Br J Educ Stud. 2002;50(4):457-81.
36. Stalmeijer RE, Dolmans DHJM, Wolfhagen IH, Muijtjens AM, Scherpbier AJJA. The Maastricht Clinical Teaching Questionnaire (MCTQ) as a valid and reliable instrument for the evaluation of clinical teachers. Acad Med. 2010;85(11):1732-38.
37. Lombarts KMJMH, Ferguson A, Hollmann MW, Malling B, Arah OA. Redesign of the System for Evaluation of Teaching Qualities in Anesthesiology Residency Training (SETQ Smart). Anesthesiology. 2016;125(5):1056-65.
38. Wenger-Trayner E, Wenger-Trayner B. Learning in a landscape of practice. In: Wenger-Trayner E, Fenton-O'Creevy M, Hutchinson S, Kubiak C, Wenger-Trayner B, editors. Learning in landscapes of practice: Boundaries, identity, and knowledgeability in practice-based learning. Abingdon (UK): Routledge; 2015. p. 14– 29.
39. Silkens MEWM, Smirnova A, Stalmeijer RE, Arah OA, Scherpbier AJJA, Van Der Vleuten CP, et al. Revisiting the D-RECT tool: Validation of an instrument measuring residents' learning climate perceptions. Med Teach. 2016;38(5):476-81.
40. Nápoles-Springer AM, Santoyo-Olsson J, O'Brien H, Stewart AL. Using cognitive interviews to develop surveys in diverse populations. Med Care. 2006;44(11 Suppl 3):21-30.
41. Artino AR, La Rochelle JS, Dezee KJ, Gehlbach H. Developing questionnaires for educational research: AMEE Guide No. 87. Med Teach. 2014;36(6):463-74.
42. Dolnicar S. Asking Good Survey Questions. J Travel Res. 2013;52(5):551-74.
43. Kiger ME, Varpio L. Thematic analysis of qualitative data: AMEE Guide No. 131. Med Teach. 2020;42(8):846-54.
44. Pomare C, Long JC, Churruca K, Ellis LA, Braithwaite J. Interprofessional collaboration in hospitals: a critical, broad-based review of the literature. J Interprof Care. 2020;34(4):509-19.
45. de Nooijer J, Dolmans DHJM, Stalmeijer RE. Applying Landscapes of Practice Principles to the Design of Interprofessional Education. Teach Learn Med. 2022;34(2):209-14.

46. Olmos-Vega FM, Dolmans DHJM, Guzmán-Quintero C, Echeverri-Rodriguez C, Teunnissen PW, Stalmeijer RE. Disentangling residents' engagement with communities of clinical practice in the workplace. Adv Health Sci Educ. 2019;24(3):459-75.
47. Crommelinck M, Anseel F. Understanding and encouraging feedback-seeking behaviour: a literature review. Med Educ. 2013;47(3):232-41.
48. Baggs JG, Schmitt MH. Nurses' and resident physicians' perceptions of the process of collaboration in an MICU. Res Nurs Health. 1997;20(1):71-80.
49. Watling C, Driessen E, van der Vleuten CPM, Lingard L. Learning from clinical work: the roles of learning cues and credibility judgements. Med Educ. 2012;46(2):192-200.
50. Morris M, Eppich WJ. Changing workplace-based education norms through 'collaborative intentionality'. Med Educ. 2021;55(8):885-87.
51. Steinert Y. Learning together to teach together: interprofessional education and faculty development. J Interprof Care. 2005;19: sup1:60-75.
52. Paradis E, Whitehead CR. Beyond the Lamppost: A Proposal for a Fourth Wave of Education for Collaboration. Acad Med. 2018;93(10):1457-63.

# Appendix 1

**Guidance Questionnaire From a Mixed Method Study on the Guiding Role of Nurses During Postgraduate Medical Education at Four Dutch University Medical Centers, 2021**

**Questionnaire Version Residents**

*Demonstrating*

1. Nurses demonstrate how compassionate patient care is performed
2. Nurses demonstrate how certain clinical routines are performed

*Feedback*

3. Nurses give me positive feedback
4. Nurses explain to me why I acted (in)correctly
5. Nurses give me improvement suggestions

*Support*

6. Nurses emphasize that I can ask them for help
7. Nurses support me when I experience difficulties in my work
8. Nurses provide me with emotional support when I need it

*Socialization*

9. Nurses support me in familiarizing with the departments' organizational aspects (e.g., work processes and departmental logistics)
10. Nurses familiarize me with the responsibilities of the various healthcare professionals within the department
11. Nurses familiarize me with how different healthcare professionals usually collaborate within the department
12. Nurses draw my attention to the different routines of my attending physicians

*Learning from Patient Care*

13. Nurses assess my competence when I perform certain clinical routines
14. Nurses discuss with me the extent to which I practice patient safety
15. If nurses believe I am not practicing patient safety, they intervene
16. Nurses draw my attention to patient cases that are of particular educational value
17. Nurses alert me to the adherence of protocols and guidelines

*Engagement*

18. During my training, nurses play an important role in guiding me
19. Nurses are sufficiently involved to provide guidance to me
20. Attending physicians actively involve nurses to provide guidance to me (e.g., ask nurses for feedback)
21. In this department, attending physicians take the guiding role of nurses seriously

*Involvement in Evaluations*

22. Nurses are asked by attending physicians to provide feedback on my performance
23. I ask nurses for feedback
24. Nurses are involved by attending physicians during formal evaluation situations
25. Nurses themselves take the initiative to guide me (e.g., give unsolicited feedback or ask about learning goals)

**Questionnaire Version Nurses**

*Demonstrating*

1. I demonstrate how compassionate patient care is performed
2. I demonstrate how certain clinical routines are performed

*Feedback*

3. I give residents positive feedback
4. I explain why residents acted (in)correctly
5. I give improvement suggestions

*Support*

6. I emphasize that residents can ask me for help
7. I support residents when they experience difficulties in their work
8. I provide residents with emotional support when they need it

*Socialization*

9. I support residents in familiarizing with the departments' organizational aspects (e.g., work processes and departmental logistics)
10. I familiarize residents with the responsibilities of the various healthcare professionals within the department
11. I familiarize residents with how different healthcare professionals usually collaborate within the department
12. I draw the attention of residents to the different routines of their attending physicians

*Learning from Patient Care*

13. I assess residents' competence when they perform certain clinical routines
14. I discuss with residents the extent to which they practice patient safety
15. If I believe that residents are not practicing patient safety, I intervene
16. I draw the attention of residents to patient cases that are of particular educational value
17. I alert residents to the adherence of protocols and guidelines

*Engagement*

18. I feel it is important to play a role in guiding residents during their training
19. I experience being sufficiently involved in providing guidance to residents

20. Attending physicians actively involve me in providing guidance to residents (e.g., ask me for feedback)
21. In this department, attending physicians take my guiding role seriously

*Involvement in Evaluations*

22. I am asked by attending physicians to provide feedback on residents' performance
23. I am asked by residents for feedback
24. I am involved by attending physicians during residents formal evaluation situations
25. I take the initiative to guide residents (e.g., give unsolicited feedback or ask about learning goals)



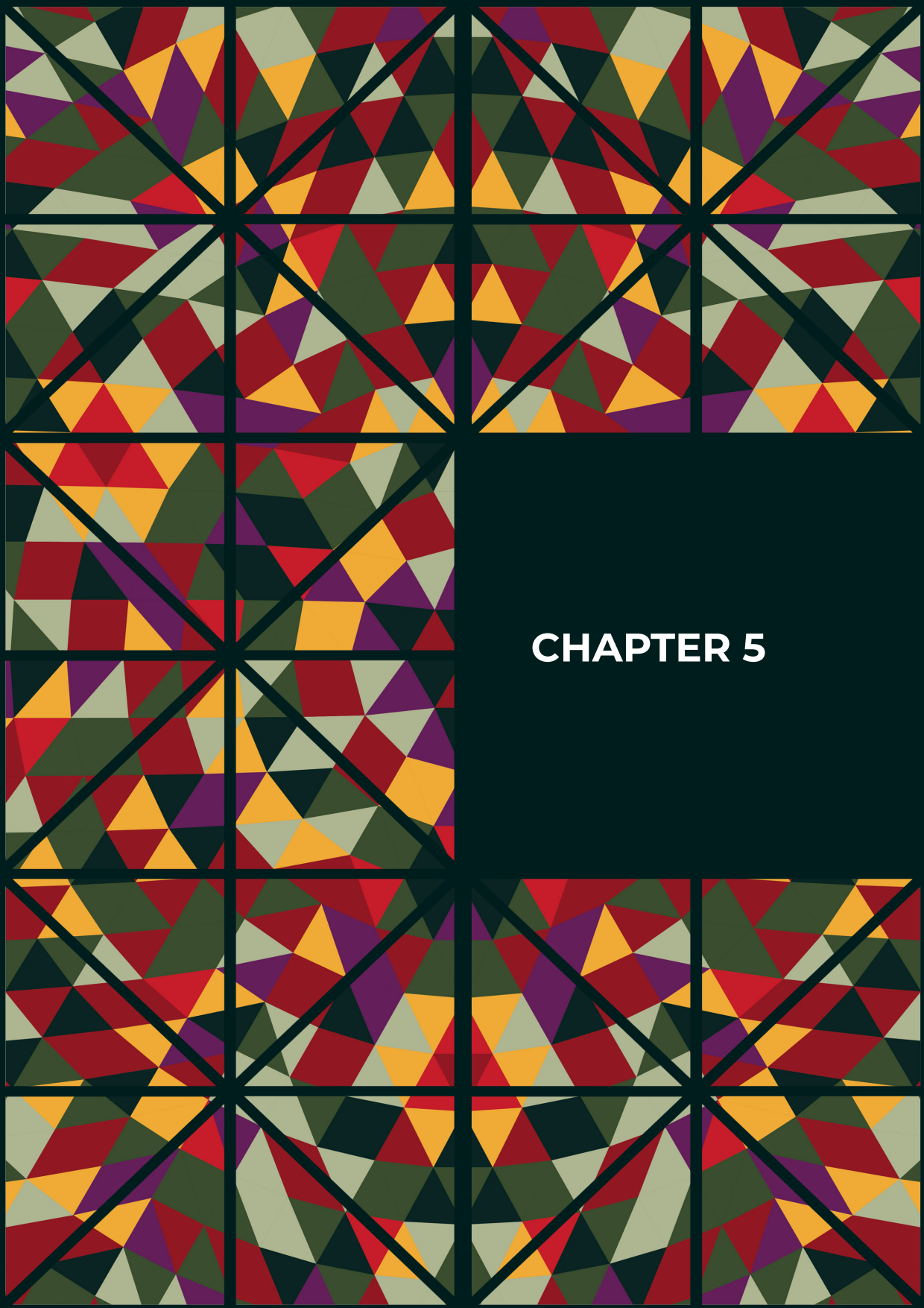
Responses were recorded on a 5-point Likert scale (1 = never; 2 = seldom; 3 = sometimes; 4 = regularly; 5 = always). Only the scale Engagement was measured on a 5-point Likert scale, where 1 = strongly disagree and 5 = strongly agree.

# Appendix 2

**Reliability Scores for the Guiding Domains, From a Mixed Method Study on the Guiding Role of Nurses During Postgraduate Medical Education at Four Dutch University Medical Centers, 2021 at Four Dutch University Medical Centers, 2021**

| | Residents | | | Nurses | | |
|---|---|---|---|---|---|---|
| **Domain**[a] | ***N*** | **Items** | **Cronbach's α** | ***N*** | **Items** | **Cronbach's α** |
| Demonstrating[b] | 98 | 2 | 0.47 | 358 | 2 | 0.65 |
| Feedback[b] | 100 | 3 | 0.76 | 408 | 3 | 0.84 |
| Support[b] | 98 | 3 | 0.74 | 375 | 3 | 0.79 |
| Socialization[b] | 93 | 4 | 0.80 | 387 | 4 | 0.83 |
| Learning from Patient Care[b] | 65 | 5 | 0.82 | 369 | 5 | 0.77 |
| Engagement[c] | 95 | 4 | 0.72 | 364 | 4 | 0.79 |
| Involvement in Evaluation[b] | 95 | 4 | 0.66 | 337 | 4 | 0.73 |

[a] See Supplemental Digital Appendix 1 for corresponding items
[b] Responses were on a 5-point Likert scale (1 = never; 2 = seldom; 3 = sometimes; 4 = regularly; 5 = always)
[c] Responses were on a 5-point Likert scale (1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree)



# CHAPTER 5

# Team Up! Linking teamwork effectiveness of clinical teaching teams to residents' experienced learning climate

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## Abstract

**BACKGROUND** Supportive learning climates are key to ensure high quality residency training. Clinical teachers, collaborating as teaching team, have an important role in maintaining such climates, since they are responsible for residency training. Successful residency training, is dependent on effective teamwork within teaching teams. Still, it remains unclear whether this team effort benefits residents' perceptions of the learning climate. We therefore investigated to what extent teamwork effectiveness within teaching teams is associated with (1) the overall learning climate, and (2) its affective, cognitive and instrumental facets?

**METHODS** This study used a web-based platform to collect data in clinical departments in the Netherlands from January 2014 to May 2017. Teamwork effectiveness was measured with the TeamQ questionnaire, administered amongst clinical teachers. The learning climate was measured with the D-RECT, applied amongst residents. Associations were analysed using multilevel models and multivariate general linear models.

**RESULTS** Teamwork effectiveness was positively associated with the overall learning climate as well as with the affective and the instrumental facets of the learning climate. No significant associations were found with the cognitive facet.

**CONCLUSION** Effective teamwork within teaching teams benefits learning climates in postgraduate medical education. Therefore, departments aiming to improve their learning climate should target teamwork within teaching teams.


## Practice points:

- Supportive learning climates in residency training are important to ensure high quality training and subsequently patient care.
- Teaching teams have an important role in creating and maintaining supportive learning climates, which requires effective teamwork within these teaching teams.
- Teamwork effectiveness benefits the overall learning climate, as well as its affective and instrumental facets.
- To improve learning climates in postgraduate medical education, departments should promote teamwork effectiveness within teaching teams.
- We suggest a holistic approach to faculty development to improve teamwork effectiveness within teaching teams as it might provide a more comprehensive view of teaching and learning in the clinical workplace.

## Introduction

Learning climates in postgraduate medical education (PGME) are increasingly recognized as a cornerstone in ensuring high quality residency training and subsequently patient care.[2, 3] These climates, which are embedded in clinical departments, reflect residents' collective experience of the formal and informal aspects regarding their training such as departments' practices and policies as well as the overall atmosphere.[1] Learning climates that are experienced as supportive benefit residents' well-being,[4] professional competence development[5] and medical knowledge.[6] Clinical teachers have an important role in creating and maintaining a supportive learning climate, since they are responsible for training residents.[7, 8] Efforts aimed at strengthening this crucial role of clinical teachers have mainly focused on improving teaching skills[9, 10] and supervisory styles[11] of individuals. However, residency training is not merely the effort of individuals, as it should also be considered the collective endeavour of clinical teachers – referred to as the teaching team.[7, 12, 13] Still, it remains unclear whether this team effort by teaching teams is linked to supportive learning climates in postgraduate medical education.



Clinical teachers collaborate as a teaching team to fulfil educational tasks and activities regarding residency training,[14] such as discussing residents' professional development, dividing teaching tasks and monitoring the quality of training. Successful execution and alignment of these activities requires effective teamwork [7] and might be essential for a supportive learning climate. Such teamwork within teaching teams has several key characteristics,[15] including effective communication (e.g., regular and adequate), mutual respect among members (e.g., value diversity in opinions) and having a common goal (e.g., organisation of residency). Within healthcare, positive outcomes of effective teamwork are widely demonstrated for, amongst others, the safety and quality of patient care as well as the well-being of professionals.[16] Concerning PGME, however, we only assume that learning climates benefit from effective teamwork within teaching teams.

In this study we therefore investigated the association between teamwork effectiveness within teaching teams and learning climates in PGME. The learning climate concept can be divided into three discrete facets.[1, 17] Each facet reflects residents' experiences regarding a specific dimension of the learning climate. The *affective facet* is concerned with social interactions, for example how residents experience collaborating with colleagues and their feeling about the overall departmental atmosphere. The *cognitive facet* represents residents' personal development, for example whether residents are guided in reflecting on their performance. The *instrumental facet* comprises the formal aspects of residency training, evaluating aspects as planned education and the availability and accessibility of supervisors. Due to the multi-dimensional character of the learning climate, we furthermore aim to identify to what extent the separate facets are associated with teamwork effectiveness to provide insight for specific learning climate improvements. In sum, we pose the following research questions: To what extent is teamwork effectiveness within teaching teams associated with (1) the overall learning climate, and (2) its affective, cognitive and instrumental facets?

# Methods

## Study setting

In the Netherlands, residency training is regionally provided by the eight academic medical centres in collaboration with multiple affiliated teaching hospitals. The duration of residency training generally varies between three to six years and residents rotate every one to two years to another hospital. Each residency program is coordinated by a program director: an experienced clinical teacher who is formally responsible for the quality and delivery of residency training as well as the functioning of the teaching team.[18]

## Study population and data collection

As part of mandatory Dutch quality requirements,[18] clinical departments use several tools to monitor and improve the quality of their residency training. Two widely-used tools are (1) the TeamQ questionnaire, measuring teamwork effectiveness as perceived by clinical teachers collaborating in teaching teams,[19] and (2) the Dutch Residency Educational Climate Test (D-RECT) questionnaire, measuring the perceived quality of the residents' learning climate.[1] Many teaching departments use both questionnaires periodically as part of their on-going quality improvement processes.[20]



For the current multicentre study, we used data from departments that completed the TeamQ evaluation and the D-RECT evaluation at the same time or within one year apart between January 2014 and May 2017. Both the TeamQ and the D-RECT evaluation were administered through a web-based system called Professional Performance Online (PPO). Using PPO, program directors of each residency program could request a TeamQ and/or D-RECT evaluation. For both questionnaires, participants were invited and reminded up to three times through automatically generated e-mails. Typically, participants had one month to complete the questionnaire.

## Measures

**Teamwork effectiveness.** The TeamQ questionnaire was developed and validated in 2014 to evaluate the perceived teamwork effectiveness of teaching teams within clinical departments.[19] The TeamQ consists of 48 items grouped into eight domains: task expertise, team expertise, team decision-making, program directorship, feedback culture, team results, engaging residents and residents' empowerment. All items are rated on a 5-point Likert scale (1 = not at all applicable, 2 = applicable to a small extent, 3 = somewhat applicable, 4 = applicable, 5 = very applicable and an additional option 'not applicable' is provided). All members of a teaching team fill out the TeamQ questionnaire individually.

**Learning climate.** The validated D-RECT questionnaire aims to evaluate residents' experienced learning climate.[1] Residents, junior doctors not in training and fellows complete the questionnaire. The D-RECT has 35 items grouped into nine learning climate domains. Based on climate theory, the nine domains can be categorized into three higher order facets: affective, cognitive and instrumental facets.[1, 17] The affective facet contains the D-RECT domains of educational atmosphere, resident peer collaboration and teamwork. The cognitive facet encompasses coaching and assessment, work is adapted to residents' competence and patient sign-out. The instrumental facet includes formal education, role of the specialty tutor and accessibility of supervision. All 35 items are rated on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, and an additional option 'not applicable' is provided).

**Covariates.** In this study, we included covariates when their relevance was demonstrated in previous research and/or hypothesized by the researchers. We adjusted for type of specialty (surgical/ nonsurgical)[21] and constructed department level ratio's for the following potential covariates: years of clinical teacher experience (0 to 15 years/ 16 to 30 years), gender of clinical teachers and residents (male/female),[22] year of residency training (years 1 to 3/ years 4 to 6).[21-23] We used the number of completed evaluations within one department as proxy for the group size of teaching teams and resident groups.[24, 25]



## Analysis

First, we described the study sample using descriptive statistics and frequencies. Based on previous research we determined a cut-off of 50% missing data,[1] meaning that TeamQ evaluations missing more than 24 questions and D-RECT evaluations missing more than 17 questions were excluded for further analysis. For the remaining evaluations of both questionnaires, missing values were assumed to be missing at random and therefore imputed separately by using expectation-maximization (EM). If departments used the TeamQ or D-RECT evaluation more than once during the study period the most recent data collection was included. However, we included evaluations of an earlier period (n = 9), when the most recent data yielded insufficient data per department. To obtain a reliable overall score, at least five TeamQ evaluations[19] and three D-RECT evaluations[1] per department were needed. To evaluate teamwork effectiveness, we first calculated individual mean scores using the total set of item scores of the completed TeamQ evaluations. Then, we aggregated these individual mean scores to the team level. The overall learning climate score was calculated as mean score using the total set of item scores of the D-RECT evaluations. The three separate learning climate facets were calculated using the mean of the corresponding item scores. We then aggregated these mean scores to the department level, resulting in three separate aggregated mean scores per department.

To address our first research question we built an unadjusted and adjusted random intercept multilevel model. We used teamwork effectiveness as the predictor and the overall learning climate as outcome. By using the random intercept multilevel model with a Maximum Likelihood estimation, hierarchical clustering of residents (level 1) nested within departments (level 2), was taken into account. To address our second research question we built unadjusted and adjusted multivariate general linear models. In these models we used the same predictor (teamwork effectiveness) and the three aggregated learning climate facets (affective, cognitive and instrumental) as outcomes variables. Both multilevel and multivariate adjusted models controlled for specialty, clinical teachers gender and experience, size of the teaching team, residents' gender, year of training and size of the resident group.

Associations were reported as regression coefficients (b), their 95% confidence interval (95% CI), and p-values (the significance threshold was set at .05). We used SPSS version 24 (IBM Corp. 2016) for the statistical analysis.

### Ethics



The institutional ethical review board of the Amsterdam UMC of the University of Amsterdam provided a waiver declaring the Medical Research Involving Human Subjects Act (WMO) did not apply to the current study (reference number W18_222 # 18.226). Filling out the D-RECT and TeamQ was anonymous for all participants

## Results

In total, 47 teaching teams within 47 clinical departments in 16 hospitals used the TeamQ questionnaire. Teaching teams consisted on average of 14 clinical teachers (range 5 – 31) and rated their teamwork effectiveness as a 3.7 out of 5.0 (SD = 0.24; range = 3.3 – 4.3). Within teaching teams, the average variation of scores among clinical teachers was 1.3 points on a 5-point Likert scale. The lowest variation of scores within teaching teams was 0.6 points (range 3.2 – 3.8) and the highest variation 2.2 points (range 2.4 – 4.6). Within the same 47 clinical departments, 47 resident groups used the D-RECT questionnaire. On average resident groups counted 8 residents (range 3 – 28) and scored their learning climate a 3.9 out of 5.0 (SD = 0.4; range = 2.5 – 5.0). The average variation of scores within resident groups was 1.0 point, ranging from 0.1 to 2.2 points. Detailed information is presented in Table 1.

**Table 1.** Characteristics of the study population

| **General characteristics** | ***N* (%)** |
|---|---|
| Number of teaching hospitals | |
| Academic | 3 (19%) |
| Non- academic | 13 (81%) |
| Number of departments | |
| Surgical | 16 (34%) |
| Nonsurgical | 31 (66%) |
| **Characteristics (non)residents** | ***N* (%)** |
| Number of resident evaluations | 315 (100%) |
| Male | 117 (37%) |
| Female | 198 (63%) |
| Years of training | |
| Junior | 178 (56%) |
| Senior | 137 (44%) |
| Number of nonresident evaluations | 85 (100%) |
| **Characteristics clinical teachers** | ***N* (%)** |
| Number of clinical teacher evaluations | 578 (100%) |
| Male | 329 (57 %) |
| Female | 249 (43%) |
| Years of clinical experience | |
| Junior | 435 (75%) |
| Senior | 143 (25%) |

## Associations with the overall learning climate

We found a positive, significant association between teaching teams' teamwork effectiveness and the overall learning climate for the unadjusted and adjusted model ($b$ = 0.33; 95% CI = 0.06 – 0.60) (Table 2). Detailed information on all the covariates is provided in the Supplementary Material.

**Table 2.** Unadjusted and adjusted associations of teamwork effectiveness with the overall learning climate score

| | Unadjusted model | | Adjusted model[a] | |
|---|---|---|---|---|
| | Regression coefficient (95% CI) | *P* value | Regression coefficient (95% CI) | *P* value |
| **Teamwork effectiveness** | 0.43 (0.16 – 0.70) | 0.00 | 0.33 (0.06 – 0.60) | 0.02 |

[a]Adjusted for specialty, clinical teachers gender and experience, size teaching team, residents' gender, year of training and size resident group.

## Associations with separate learning climate facets

The unadjusted model showed a significant association between teaching teams' teamwork effectiveness and all three separate learning climate facets. Within the adjusted model, teamwork effectiveness was significantly associated with the affective (*b* = 0.49; 95% CI = 0.05 – 0.93) and instrumental (*b* = 0.43; 95% CI = 0.12 – 0.74) learning climate facets. The association with the cognitive facet was non-significant (*b* = 0.35; 95% CI = -0.07 – 0.77) (Table 3).

**Table 3.** Unadjusted and adjusted associations of teamwork effectiveness with the separate learning climate facets

| | Unadjusted model | | Adjusted model[a] | |
|---|---|---|---|---|
| | Regression coefficient (95% CI) | *P* value | Regression coefficient (95% CI) | *P* value |
| **Teamwork effectiveness on affective facet** | 0.52 (0.11 – 0.93) | 0.01 | 0.49 (0.05 – 0.93) | 0.03 |
| **Teamwork effectiveness on cognitive facet** | 0.48 (0.12 – 0.85) | 0.01 | 0.35 (-0.07 – 0.77) | 0.10 |
| **Teamwork effectiveness on instrumental facet** | 0.51 (0.24 – 0.79) | 0.00 | 0.43 (0.12 – 0.74) | 0.01 |

[a]Adjusted for specialty, clinical teachers gender and experience, size teaching team, residents' gender, year of training and size resident group.

# Discussion

## Main findings

This study suggests that teamwork effectiveness within teaching teams is positively associated with the overall learning climate as perceived by residents. More specifically, teamwork is positively associated with the affective and instrumental learning climate facets. The association between teamwork effectiveness and the cognitive facet of the learning climate was not found to be significant in this study.

## Explanation of main findings

Our results suggest that learning climates in PGME benefit from effective teamwork within teaching teams. This finding resonates with the literature on positive outcomes of effective teamwork within healthcare teams.[16] Mazzocco et al.[26] showed, for example, that patients were less likely to experience complications or even death, if treated by teams demonstrating effective teamwork. Processes such as adequate information sharing and constructive briefings characterized these teams during handoffs.



The affective facet reflects learning climate domains that focus on how well residents work together with peers, supervisors and other professionals as well as residents' perceptions of the overall atmosphere.[1] Effective teamwork is characterized by mutual respect among team members,[15] reflected by TeamQ items asking whether or not clinical teachers are able to discuss opinions honestly and address problems adequately.[19] If teaching teams perceive such positive team dynamics, it cultivates a positive departmental atmosphere.[2] As residents work and learn within that same department, it is likely they inhabit this positive atmosphere[27] and experience a supportive learning climate (e.g., to asks questions or seek guidance) which is crucial for their professional development.[28]

Next, the instrumental facet reflects the formal aspects of residency training such as the organisation of formal education and supervision.[1] We consider that TeamQ items reflecting the organisation of residency training [19] explain the association with the instrumental facet. In most countries, PGME is increasingly organised on the basis of prescribed structures, regulations and professional standards,[7, 18, 29] which might facilitate teaching teams in the organisation of residency training. This is illustrated by Slootweg et al.,[7] who showed that teamwork within teaching teams is mainly concerned with discussing organisational elements of residency training such as the division of teaching tasks and the process of resident assessment. We might assume that such discussions contribute to clarifying expectations for residents (e.g., how they are assessed), as is known that clear expectations are associated with positive learning climate perceptions.[15, 30]

Finally, our study did not show a significant association between teamwork effectiveness and the cognitive learning climate facet. This facet reflects, for

example, how supervisors stimulate residents to reflect on their own performance and to what extent work of residents is adapted to their level of competence.[1] Stimulating reflection on learning and aiding residents in formulating appropriate learning goals, are known teaching methods that can be used by supervisors to guide residents' learning in the workplace.[31-33] Specifically focusing on reflection and exploration of learning goals is assumed to enhance residents' learning climate experience.[34] TeamQ items that reflect reflection and exploration evaluate whether or not teams follow residents individual teaching plan and if teachers refer residents to other – more skilled – colleagues when appropriate.[19] We speculate that the non-significant finding might be due to teaching teams using other teaching strategies (e.g., modelling) more effectivity compared to reflection and exploration. This is also suggested by previous research, indicating that reflection and exploration were less (effectively) used teaching methods.[33, 35] Teaching methods such as modeling are facilitated by clinical teachers, while the teaching methods reflection and exploration aim to stimulate residents' self-regulated learning.[32] The latter methods might be more difficult to perform for clinical teachers due to time constraints or a lack of teaching skills.[33] Hence, research indicated that residents (especially in higher years of training) emphasize the importance of reflection and exploration as it facilitates their professional development.[31] Strategies to improve teaching methods should focus on the teaching team as a collective within the clinical workplace.[14,38] This aligns with the current competency-based approach embraced in medical education (CBME), as its main goal is to monitor residents' progress and to create individualized learner approaches by teaching teams.[36]



## Implications for practice and research

Our study implies that departments aiming to improve their learning climate should pay attention to teamwork effectiveness within teaching teams. This move from an 'individualistic perspective' on clinical teaching to a 'team perspective' resonates with the growing body of literature in medical education stressing the importance of a holistic view on faculty development.[14, 37] Faculty development refers to all activities aimed at improving knowledge, skills and behaviours of teachers.[14] Faculty development, underpinned by a holistic approach, suggests that improving teaching qualities of clinical teachers should be in collaboration with team members and located the clinical workplace.[37] Such an approach is more contextual sensitive to the everyday work of teaching teams and might facilitate continuing professional development.[38] Therefore, if clinical departments aim to foster a supportive learning climate, we suggest, in line with Steinert et al.[14] that teamwork interventions should be located in the workplace and have a longitudinal design. Hence, interventions aimed at enhancing the cognitive learning climate facet might address teaching skills necessary to perform reflection and exploration within a prolonged team training. Specifically, this could entail teachers sharing experiences about, and reflecting on how to evaluate residents' progress in relation to learning goals, as it is known that such skills (e.g., providing adjusted feedback) stimulate residents' engagement in reflection and exploration.[32] Furthermore, on-going team training might result in

might result in clear and stable communication between residents and teaching teams; creating a supportive environment for dialogues concerning learning goals and needs.[36] Moreover, if teaching teams effectively stimulate reflection and exploration, residents' learning needs – given their level of training – may be better met by their clinical teachers both as a team and individually. This is necessary to ensure optimal learning opportunities for residents while providing high quality care. Future research could build on the findings in this study by investigating mechanisms that tie teamwork within teaching teams to residents' experienced learning climate.

## Strengths and limitations

A strength of this study is the use of two widely applied, validated questionnaires measuring teamwork effectiveness (TeamQ) and residents' learning climate (D-RECT), to assure valid and reliable results. Furthermore, we gathered data from academic and non-academic hospitals representing various specialities within the Netherlands. Therefore, we argue that the results may also apply to other residency programs within the Netherlands. Results may even be applicable beyond the Netherlands as, with the shift towards competency-based medical education (CBME), teaching has become a team effort in various postgraduate training programmes around the world.[36] However, more research is necessary to confirm our results in these other CBME training programmes. Although the TeamQ aims to involve program directors' evaluations in addition to clinical teachers' evaluations, the role of participants could not yet be distinguished within the data. We consider this a limitation, since studies suggest that the leadership style of program directors contribute to teamwork effectiveness of teaching teams.[39] Therefore, future research could address this by examining the moderating effect is of the programs directors' leadership style on the association between teamwork effectiveness and the departments' learning climate. Furthermore, due to the cross-sectional design of this study we cannot draw conclusions about causality or rule out reverse causality. However, we ensured that administration of the D-RECT was paralleled by administration of the TeamQ within the same department: residents completed the questionnaire within one year after completion of the TeamQ by clinical teachers to minimize the possibility that associations might be explained by unmeasured variables (e.g., like residents rotating in and out of departments).

## Conclusion

This study showed that teamwork effectiveness within teaching teams contributes to learning climates in PGME. Teamwork effectiveness especially benefits a supportive departmental atmosphere and positive team interactions, as reflected by the affective learning climate facet. Also, residents' experiences of the formal aspects of residency training (instrumental facet) benefit from teamwork effectiveness within teaching teams. Finally, in our study we did not find an association between teamwork effectiveness and residents' experiences of professional development (cognitive facet), such as stimulating reflection and adapting work to residents' competence level. Our results could encourage departments to promote teamwork effectiveness within teaching teams as a way to improve their learning climate.

## References


1. Silkens MEWM, Smirnova A, Stalmeijer RE, Arah OA, Scherpbier AJJA, Van der Vleuten CPM, et al. Revisiting the D-RECT tool: Validation of an instrument measuring residents' learning climate perceptions. Med Teach. 2016;38(5):476-81.
2. Silkens MEWM, Arah OA, Wagner C, Scherpbier AJJA, Heineman MJ, Lombarts KMJMH. The Relationship Between the Learning and Patient Safety Climates of Clinical Departments and Residents' Patient Safety Behaviors. Acad Med. 2018;93(9):1374–80.
3. Smirnova A, Arah OA, Stalmeijer RE, Lombarts KMJMH, van der Vleuten CPM. The Association Between Residency Learning Climate and Inpatient Care Experience in Clinical Teaching Departments in the Netherlands. Acad Med. 2019;94(3):419-26.
4. Van Vendeloo SN, Godderis L, Brand PLP, Verheyen KCPM, Rowell SA, Hoekstra H. Resident burnout: evaluating the role of the learning environment. BMC Med Educ. 2018;18(1):54.
5. Hoff TJ, Pohl H, Bartfield J. Creating a Learning Environment to Produce Competent Residents: The Roles of Culture and Context. Acad Med. 2004;79(6):532-40.
6. Shimizu T, Tsugawa Y, Tanoue Y, Konishi R, Nishizaki Y, Kishimoto M, et al. The hospital educational environment and performance of residents in the General Medicine In-Training Examination: a multicenter study in Japan. Int J Gen Med. 2013;6:637-40.
7. Slootweg IA, Lombarts KMJMH, van der Vleuten CPM, Mann K, Jacobs J, Scherpbier AJJA. Clinical teachers' views on how teaching teams deliver and manage residency training. Med Teach. 2013;35(1):46-52.
8. Stalmeijer RE, Dolmans DHJM, Snellen-Balendong HAM, van Santen-Hoeufft M, Wolfhagen IHAP, Scherpbier AJJA. Clinical Teaching Based on Principles of Cognitive Apprenticeship: Views of Experienced Clinical Teachers. Acad Med. 2013;88(6):861-65.
9. Boor K, Teunissen PW, Scherpbier AJJA, van der Vleuten CPM, van de Lande J, Scheele F. Residents' perceptions of the ideal clinical teacher—a qualitative study. Eur J Obstet Gynecol Reprod Biol. 2008;140(2):152-57.
10. Lombarts KMJMH, Heineman MJ, Scherpbier AJJA, Arah OA. Effect of the learning climate of residency programs on faculty's teaching performance as evaluated by residents. PLoS One. 2014;9(1):e86512.
11. Goldszmidt M, Faden L, Dornan T, van Merriënboer J, Bordage G, Lingard L. Attending physician variability: a model of four supervisory styles. Acad Med. 2015;90(11):1541-46.
12. Stalmeijer RE. Teaching in the clinical workplace: looking beyond the power of 'the one'. Perspect Med Educ. 2015;4(3):103-04.
13. Steinert Y, Basi M, Nugus P. How physicians teach in the clinical setting: The embedded roles of teaching and clinical care. Med Teach. 2017;39(12):1238-44.

14. Steinert Y, Mann K, Anderson B, Barnett BM, Centeno A, Naismith L, et al. A systematic review of faculty development initiatives designed to enhance teaching effectiveness: A 10-year update: BEME Guide No. 40. Med Teach. 2016;38(8):769-86.
15. Mickan SM, Rodger SA. Effective health care teams: a model of six characteristics developed from shared perceptions. J Interprof Care. 2005;19(4):358-70.
16. Rosen M, DiazGranados D, Dietz A, Benishek L, Thompson D, Pronovost P, et al. Teamwork in Healthcare: Key Discoveries Enabling Safer, High-Quality Care. Am Psychol. 2018;73(4):433-50.
17. Ostroff C. The effects of climate and personal influences on individual behavior and attitudes in organizations. Organ Behav Hum Decis Process. 1993;56(1):56-90.
18. [KNMG] Royal Dutch Medical Association. Kaderbesluit Centraal College Medische Specialismen 2009 [Available from: https://www.knmg.nl/web/file?uuid=a61aa841-c67b-48b3-a6ab-87917141c709&owner=5c945405-d6ca-4deb-aa16-7af2088aa173&contentid=4444&elementid=171092.
19. Slootweg IA, Lombarts KMJMH, Boerebach BC, Heineman MJ, Scherpbier AJJA, van der Vleuten CPM. Development and validation of an instrument for measuring the quality of teamwork in teaching teams in postgraduate medical training (TeamQ). PLoS One. 2014;9(11):e112805.
20. [KNMG] Royal Dutch Medical Association. Stimulans voor interne kwaliteitsverbetering van de geneeskundige vervolgopleidingen (Scherpbier 2.0) 2015 [Available from: https://www.knmg.nl/opleiding-herregistratie-carriere/cgs/themas-projecten/scherpbier-2.0.htm.
21. Schultz KW, Kirby J, Delva D, Godwin M, Verma S, Birtwhistle R, et al. Medical Students' and Residents' preferred site characteristics and preceptor behaviours for learning in the ambulatory setting: a cross-sectional survey. BMC Med Educ. 2004;4:12.
22. Arah OA, Heineman MJ, Lombarts KMJMH. Factors influencing residents' evaluations of clinical faculty member teaching qualities and role model status. Med Educ. 2012;46(4):381-89.
23. Piek J, Bossart M, Boor K, Halaska M, Haidopoulos D, Zapardiel I, et al. The work place educational climate in gynecological oncology fellowships across europe: the impact of accreditation. Int J Gynecol Cancer. 2015;25(1):180-90.
24. Colquitt JA, Conlon DE, Wesson MJ, Porter COLH, Ng KY. Justice at the millennium: a meta-analytic review of 25 years of organizational justice research. J Appl Psychol. 2001;86(3):425-45.
25. Schneider B, Ehrhart MG, Macey WH. Organizational Climate and Culture. Annu Rev Psychol. 2013;64:361-88.
26. Mazzocco K, Petitti DB, Fong KT, Bonacum D, Brookey J, Graham S, et al. Surgical team behaviors and patient outcomes. Am J Surg. 2009;197(5):678-85.
27. Genn JM. AMEE Medical Education Guide No. 23 (Part 2): Curriculum, environment, climate, quality and change in medical education - a unifying perspective. Med Teach. 2001;23(5):445-54.

28. Silkens MEWM, Chahine S, Lombarts KMJMH, Arah OA. From good to excellent: Improving clinical departments' learning climate in residency training. Med Teach. 2018;40(3):237-43.
29. [ACGME] Accreditation Council for Graduate Medical Education. ACGME: Common Program Requirements (Residency) 2017 [Available from: https://www.acgme.org/.
30. Hexter AT, O'Dowd-Booth C, Hunter A. Factors that influence medical student learning in the operating room. Med Teach. 2018;40:1-6.
31. Olmos-Vega FM, Dolmans D, Donkers J, Stalmeijer RE. Understanding how residents' preferences for supervisory methods change throughout residency training: a mixed-methods study. BMC Med Educ. 2015;15:177.
32. Stalmeijer RE, Dolmans DHJM, Wolfhagen IHAP, Muijtjens AMM, Scherpbier AJJA. The Maastricht Clinical Teaching Questionnaire (MCTQ) as a valid and reliable instrument for the evaluation of clinical teachers. Acad Med. 2010;85(11):1732-38.
33. Stalmeijer RE, Dolmans DHJM, Wolfhagen IHAP, Scherpbier AJJA. Cognitive apprenticeship in clinical practice: can it stimulate learning in the opinion of students? Adv Health Sci Educ Theory Pract. 2009;14(4):535-46.
34. McConnell M, McKay K. What factors make for a positive or negative clinical learning experience? Exploring the perceptions of postgraduate medical trainees. J Med Educ Train. 2018;2:038.
35. Ravindra P, Fitzgerald JEF, Bhangu A, Maxwell-Armstrong CA. Quantifying Factors Influencing Operating Theater Teaching, Participation, and Learning Opportunities for Medical Students in Surgery. J Surg Educ. 2013;70(4):495-501.
36. Orr CJ, Sonnadara RR. Coaching by design: exploring a new approach to faculty development in a competency-based medical education curriculum. Adv Med Educ Pract. 2019;10:229-44.
37. Boud D, Brew A. Reconceptualising academic work as professional practice: Implications for academic development. Int J Acad Dev. 2013;18(3):208-21.
38. Strand P. Situating Faculty Development in the Clinical Workplace [dissertation]. Sweden: Lund University.; 2017.
39. Slootweg IA, van der Vleuten CPM, Heineman MJ, Scherpbier AJJA, Lombarts KMJMH. Program directors in their role as leaders of teaching teams in residency training. Med Teach. 2014;36(12):1073-79.

# Appendix 1

**Unadjusted and adjusted associations of teamwork effectiveness with the overall learning climate including covariates**

| | Unadjusted model | | Adjusted model[a] | |
|---|---|---|---|---|
| | Regression coefficient (95% CI) | *P* value | Regression coefficient (95% CI) | *P* value |
| **Teamwork effectiveness** | 0.43 (0.16 – 0.70) | 0.00 | 0.33 (0.06 – 0.60) | 0.02 |
| Specialty | | | -0.09 (-0.23 – 0.06) | 0.24 |
| Gender clinical teachers | | | -0.00 (-0.01 – 0.00) | 0.12 |
| Experience | | | -0.01 (-0.01 – -0.00) | 0.01 |
| Size teaching team | | | 0.00 (-0.01 – 0.01) | 0.34 |
| Gender residents | | | 0.00 (-0.00 – 0.00) | 0.42 |
| Year of training | | | 0.00 (-0.00 – 0.00) | 0.56 |
| Size resident group | | | 0.00 (-0.01 – 0.01) | 0.98 |

[a]Adjusted for specialty, clinical teachers gender and experience, size teaching team, residents' gender, year of training and size resident group.

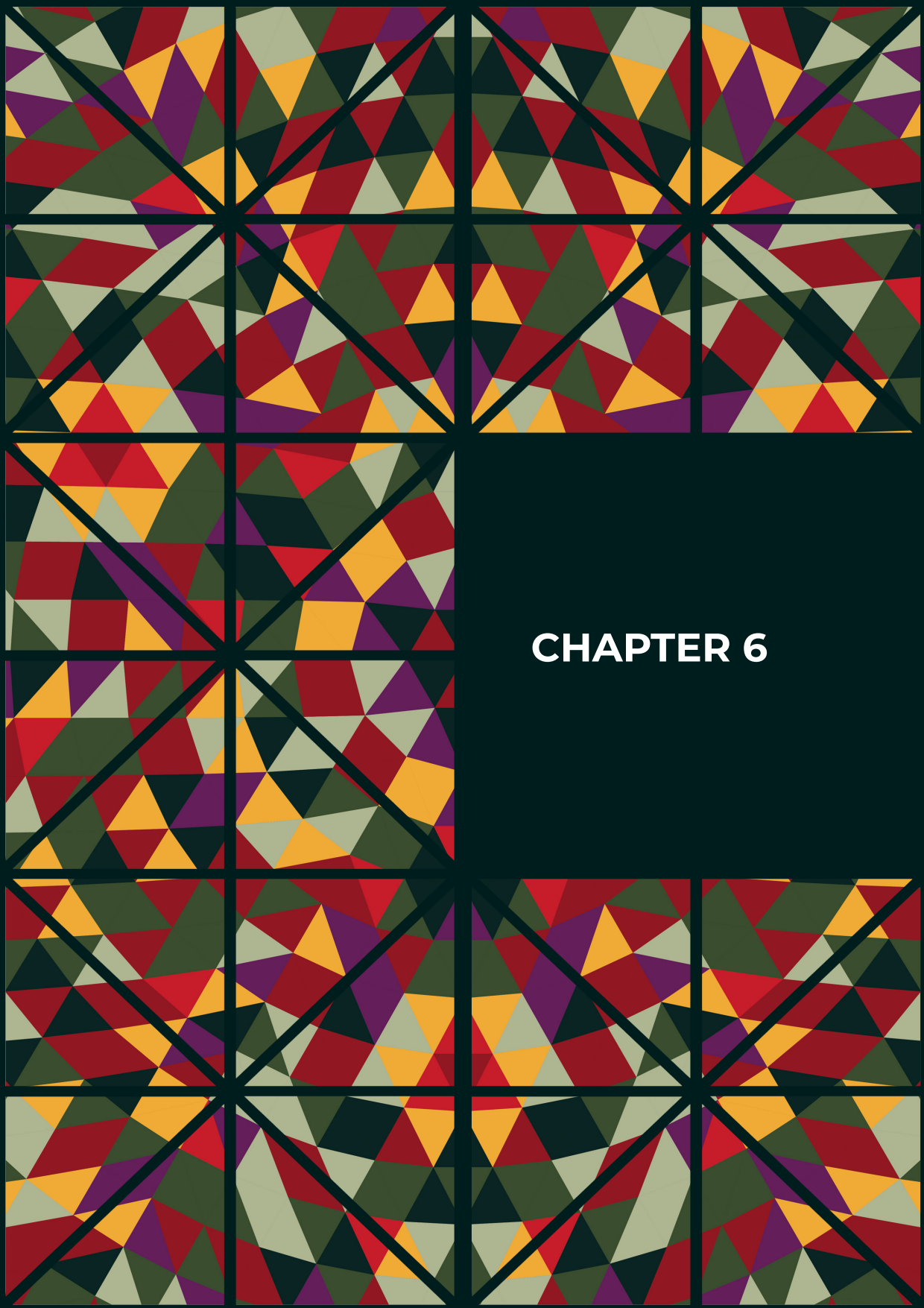
## Appendix 2

**Unadjusted and adjusted associations of teamwork effectiveness with separate learning climate facets including covariates**

| | Unadjusted model | | Adjusted model[a] | |
|---|---|---|---|---|
| | Regression coefficient (95% CI) | *P* value | Regression coefficient (95% CI) | *P* value |
| **Teamwork effectiveness on affective facet** | 0.52 (0.11 – 0.93) | 0.01 | 0.49 (0.05 – 0.93) | 0.03 |
| Specialty | | | -0.09 (-0.34 – 0.16) | 0.46 |
| Gender clinical teachers | | | -0.01 (-0.01 – 0.00) | 0.11 |
| Experience | | | -0.01 (-0.01 – 0.00) | 0.06 |
| Size teaching team | | | 0.02 (0.00 – 0.04) | 0.04 |
| Gender residents | | | 0.00 (-0.00 – 0.01) | 0.41 |
| Year of training | | | -0.00 (-0.00 – 0.00) | 0.68 |
| Size resident group | | | -0.01 (-0.03 – 0.01) | 0.31 |
| **Teamwork effectiveness on cognitive facet** | 0.48 (0.12 – 0.85) | 0.01 | 0.35 (-0.07 – 0.77) | 0.10 |
| Specialty | | | -0.09 (-0.32 – 0.15) | 0.45 |
| Gender clinical teachers | | | -0.00 (0.01 – 0.01) | 1.00 |

| | | | | |
|---|---|---|---|---|
| Experience | | | -0.01 (-0.01 – -0.00) | 0.03 |
| Size teaching team | | | 0.00 (-0.01 – 0.02) | 0.79 |
| Gender residents | | | 0.00 (-0.01 – 0.01) | 0.90 |
| Year of training | | | 0.00 (-0.00 – 0.00) | 0.28 |
| Size resident group | | | -0.01 (-0.03 – 0.01) | 0.46 |
| **Teamwork effectiveness on instrumental facet** | 0.51 (0.24 – 0.79) | 0.00 | 0.43 (0.12 – 0.74) | 0.01 |
| Specialty | | | 0.02 (-0.15 – 0.19) | 0.83 |
| Gender clinical teachers | | | -0.00 (-0.01 – 0.00) | 0.16 |
| Experience | | | -0.01 (-0.01 – 0.00) | 0.06 |
| Size teaching team | | | -0.00 (-0.01 – 0.01) | 0.71 |
| Gender residents | | | 0.00 (-0.00 – 0.00) | 0.98 |
| Year of training | | | 0.00 (-0.00 – 0.00) | 0.33 |
| Size resident group | | | 0.01 (-0.01 – 0.02) | 0.47 |

[a]Adjusted for specialty, clinical teachers gender and experience, size teaching team, residents' gender, year of training and size resident group.



# CHAPTER 6

# General Discussion

In this dissertation, I explored how residents' interactions with supervisors, nurses, and patients shape their learning and clinical practice. To this end, I conducted four studies, each focusing on one or more workplace interactions. I first focused on how residents navigate various workplace interactions by examining how they seek help during their training (Chapter 2). Then, I explored resident-patient interactions to gain an understanding of residents' and patients' perceptions of compassionate care (Chapter 3). Next, I delved into the interactions between residents and nurses by examining how both residents and nurses perceive the guiding role of nurses within residents' workplace learning (Chapter 4). Finally, in Chapter 5, I focused on residents' interactions with supervisors; specifically, I looked at the effectiveness of teams of supervisors collaborating within teaching teams and whether this teamwork is associated with how residents perceived their learning climate.

By using a sociocultural lens to look at interactions during residents' workplace learning,[1-4] I found that, in their daily work, residents interact with supervisors, nurses, and patients and that these interactions can afford residents learning opportunities.[5-7] Through these interactions, residents developed the necessary skills and knowledge and gradually came to think, act and feel like a physician.[8] However, learning did not *automatically* result from interacting with other healthcare professionals. Rather, whether and what residents learned was dependent on a complex and dynamic interplay of residents' agency, the opportunities provided by workplace actors, and influencing forces within the learning environment (e.g., the culture at the workplace).[3, 6, 9-12] These results help explain why learning outcomes emerging from interactions during residents' workplace learning can be serendipitous and varying.[6] Hence, a better understanding of these interactions is critical in order to optimize residents' workplace learning.



In this Discussion chapter of my dissertation, I will first answer the main research question which I formulated in the Introduction chapter and critically consider what I have learned about the interactions taking place during residents' workplace learning. Next, I will describe the practical implications for the optimization of learning through interactions within the workplace environment. Finally, I will reflect on the limitations of this work and close with suggestions for future research.

## Critical considerations of the findings

Reflecting on the results of my dissertation, I would like to focus on three overarching themes that capture the dynamic nature of residents' workplace learning: staging a performance, learning to become part of the healthcare team, and learning to provide patient-centered care. In my discussion of these three overarching themes, one interaction will be foregrounded per theme. However, as will soon become clear, to capture the complexity of residents' interactions during workplace learning, each actors will make an appearance in every theme.

## Staging a performance

Within all the studies of this dissertation, the role of supervisors was omnipresent. Supervisors were the 'be all and end all' in residents' focus regarding how to direct their own learning trajectories within the workplace. Given this determining influence, supervisors could 'make or break' residents' workplace learning experiences and opportunities. Supervisors could, for instance, 'make' workplace learning by adjusting the work and learning to residents' training levels and by clarifying their expectations of residents,[13-16] which could aid in a constructive supervisory relationship between residents and supervisors, leading to a sense of trust for residents to explore new learning experiences.[13]

Within competency-based medical education (CBME) and its increased focus on outcomes and formal evaluations,[17-21] residents seem to view all interactions with supervisors as potential moments of assessment.[11, 22, 23] As a result, in the presence of a supervisor, residents tend to adapt their behavior in order to come across as certain, independent, and decisive.[11, 24-29] Residents learned that independence and decisiveness were rewarded and expected from them during their training toward becoming a medical specialist as well as within the medical profession in general.[11, 25, 30] This result resonates with several studies that have previously highlighted how asking for help or being directly observed were rarely thought of as *learning opportunities*.[11, 22, 25, 28] Since the feeling of being assessed dominated, residents felt the need to *stage a performance* to manage the impression supervisors might have about them.[11, 22, 25, 28]



*Staging a performance: creating a positive image*

The studies in this dissertation demonstrate that residents are agentic in shaping their performance to create a positive image of themselves.[11, 22, 25, 28] By creating a positive image of themselves, residents could *create* and *gain access* to learning opportunities, but also *appear* competent.[31] This draws our eye to Goffman's work on impression management in which he theorizes how we as humans try to understand what is expected from us during social interactions and then use these insights to influence the perceptions others may hold about us.[32] Goffmans' work has seen an increase in use within the field of medical education as a way to understand how residents shape and manage their 'frontstage' performance with supervisors to portray themselves as confident and hide weaknesses.[23, 33, 34] However, by using a sociocultural lens,[1-4] I introduced another dimension to this perspective, namely how residents navigate between frontstage and backstage performance. In Chapter 2, it became clear that residents checked the validity and legitimacy of their questions with nurses (backstage) before asking supervisors (frontstage), which afforded them an opportunity to adjust their way of asking questions to the preferences of individual supervisors. Residents could then portray themselves as a (more) competent (future) colleague and, as a result, access and create learning opportunities.[14, 16] This highlights how nurses are perceived as safer for residents in sharing vulnerabilities (e.g., asking questions) than supervisors. Residents did not seem to feel a strong need to stage their performance when working with nurses.

The phenomenon that residents alter their behavior and hide their insecurities to manage the image supervisors might hold about them raises the question of the consequences of these processes for residents' learning and clinical care.[33] Previous research has already described the unintended consequences of diminished help-seeking as a result of portraying oneself as certain and credible.[23, 28, 35] However, asking questions, especially the ones that could be feared to be 'less relevant' or 'not yet clearly worked out' in the eyes of residents, are beneficial to identify residents' knowledge gaps and provide them with new insights crucial for their learning.[31] Similarly, Huffman et al. state that "learning may be impaired by the complete and perfect front stage performance"[33(p. 271)] as residents can learn from sharing and displaying their 'thinking steps' which precede their performance. By not sharing these thinking steps, learning opportunities might be lost. However, strikingly, in their realist review on supervised workplace learning Wiese et al.[12] found that residents' requests for help negatively influenced supervisors' entrustment of these residents. Moreover, asking questions too frequently could lower supervisors' evaluation of residents and residents' credibility.[12] Residents, perhaps not unreasonably stage a performance given supervisors view on this topic.

*Creating a supportive learning environment*

Both diminished help-seeking and staging a performance may have serious ramifications for residents' learning, and potentially the quality and safety of the provided patient care.[23, 28, 35] These are important challenges that need to be addressed on various levels. Program directors within residency programs should create and nurture a supportive learning environment where help-seeking is normalized and seen as intrinsically linked with providing safe patient care and the development as a learner.[36, 37] One way to nurture a supportive learning environment is by facilitating the teamwork of supervisors within teaching teams. Chapter 5 supports this suggestion as effective teaching teams were associated with residents' experienced learning climate. Effective teams foster psychological safety,[38, 39] and emerging evidence within medical education shows that psychological safety within teams is associated with a supportive clinical learning environment for residents.[40, 41] In a psychologically safe team, all team members feel safe to speak up, voice concerns, and provide ideas about how to improve clinical practice.[37-39] Moreover, these behaviors are linked to the better reporting of adverse events, which is essential to improve the quality and safety of patient care.[42-44] Ensuring a psychologically safe environment within interprofessional teams could address the challenges with help-seeking, ensuring that residents can seek help without the fear of negative consequences for their reputation, and safeguarding the quality and safety of patient care.

## Learning to become part of the healthcare team

The studies included in this dissertation demonstrate the valuable role of nurses in residents' workplace learning. However, this dissertation also highlighted how this role was not always self-evident for residents and supervisors. Residents perceived nurses as the 'eyes and ears' of the department. Nurses could enculturate residents within the department by providing the 'know-how' about the local norms

and practices of a particular workplace. Through their interactions with nurses, residents could learn *from* nurses (e.g., communicating with patients), but also *about* the nursing profession, including their practices and how they organize themselves.

*Nurses enable residents' knowledgeability*

In my studies I shed light on the critical role nurses play in enabling residents' knowledgeability through which residents gain an understanding of the possibilities and limitations of their own profession.[1, 45-47] Being knowledgeable means that residents, next to developing the competencies needed for the physician community, also need to understand the unique practices of other communities within the landscape of practice, including the goals, routines, procedures, and language.[48] Knowledgeability is essential for residents to be able to navigate and collaborate with the different professionals within the landscape of practice.[45] By stimulating the development of knowledgeability, nurses facilitate residents' professional socialization: the process of identity formation as a medical professional.[49] While professional identity formation is often approached as the sole responsibility of physicians,[50] I highlighted in Chapter 4 how, through stimulating residents' knowledgeability, nurses also have a role in the residents' identity formation process. As professional identity formation is often seen as the ultimate goal of medical education, nurses have a key role in medical education.[51]

This finding suggests that the role and expertise of nurses in residents' workplace learning could be seen as complementary to the role and expertise of supervisors in guiding residents' workplace learning.[52] Biesta & Van Braak[49] argue that learning includes the process of knowledge acquisition (qualification), but also the development of a professional identity (socialization), so that learners become "a thoughtful, independent, responsible professional"[49(p.1)] (subjectification). Indeed, supervisors provide residents with the medical knowledge, skills, and professional attitude as well as contribute to their development as medical specialists so that residents can make professional judgments and act as medical professionals.[53-57] However, I demonstrate that nurses, in addition to supervisors, also have a role in all three processes as described by Biesta & Van Braak[49]: nurses teach residents about their own profession,[58-61] contribute to residents' identity formation (through stimulating knowledgeability),[60] and as such guide residents in becoming competent and thoughtful members within the interprofessional healthcare team. The insight that nurses play a role in each of these three processes provides us with a much more refined language to talk explicitly about and maybe formalize nurse-resident encounters within the course of residents' workplace learning.[49]

*Learning from nurses: a matter of perspective*

Despite the rich potential of resident-nurse interactions for residents' learning, actually learning from nurses was not self-evident. Whether residents learned from the learning opportunities afforded by nurses depended on residents' decision to engage in these opportunities.[3] In Chapter 4, I suggest that whether residents engaged in nurses' affordances seemed to align with the perspective residents hold on who could be instrumental to their workplace learning. Whereas some residents seemed

to hold a more *intra*professional (i.e., profession-centric) perspective on workplace learning, others emphasized the *inter*professional (i.e., collaborative) nature of how patient care and residency training is the collective effort of all healthcare team members.[46] The nature of residents' perceptions about learning from nurses could matter significantly, as residents label the lessons learned and feedback from their own professional domain, i.e., supervisors, as more credible and useful.[62-66] The feedback literature, in particular, points to the importance of residents perceiving the feedback provider as credible for the successful uptake of feedback.[67, 68] Hence, encouraging residents' interprofessional perspective on workplace learning may take away some of these credibility biases towards non-medical professionals and could make resident-nurse encounters more effective for learning.

The perspective residents hold on who has a role in their workplace learning has ramifications for the type of interactions and learning opportunities they will look for during workplace learning.[3] This is further underlined by the findings in Chapter 2, where some residents saw the benefit of actively involving nurses during decision-making processes, as this resulted in better collaboration and workflow around patient care. Moreover, as nurses value communication and collaboration skills, residents could access learning opportunities for these specific skills.[69] All of our studies hinted at how learning from interactions with nurses could be different for junior and senior residents. The image juniors painted was that the nurse was their first 'go-to person' when they were new in the workplace. For seniors, I could not discern a specific interaction pattern from my research. However, Miles et al.[65] highlighted how senior residents were better able to recognize the value of nurses' feedback as they were more familiar with the roles and perspectives of nurses, suggesting a positive interaction pattern. Future research could explore how interaction patterns differ between nurses and junior and senior residents.

Overall, supervisors have a (joint) responsibility to create an environment where residents perceive nurses' feedback as credible and valuable for their learning.[70, 71] However, Chapter 4 suggests that supervisors did not always involve nurses in residents' workplace learning. This can have a big impact on who residents will judge as a credible source to guide their workplace learning. The traditional, intraprofessional perspective on clinical training is still present: physicians solely teach physicians.[72] As my studies suggest, this exclusivity perspective might hinder the development of residents' ability to 'move across landscapes', and as such, to become a competent member of the healthcare team.[73] As supervisors are powerful role models, they can legitimize the nurses' role in residents' workplace learning by acknowledging and valuing the provided leaning opportunities.[60, 64, 74, 75] When supervisors would explicitly empower the whole team as a credible source within residents' workplace learning, residents may be more inclined to fully understand and appreciate nurses' contributions to their professional growth.[46, 73]

## Learning to provide patient-centered care

Residents' interactions with supervisors and nurses (literally) gather around providing safe, high-quality, patient-centered care. Patient-centered care means that "providers treat patients not only from a clinical perspective, but also from an emotional, mental, spiritual, social, and financial perspective."[76] It is the ultimate goal of medical education to train residents as well-rounded professionals providing safe, high-quality, patient-centered care.

*Nurses' and supervisors' complementary roles in training residents to provide patient-centered care*

Throughout the studies in my dissertation, I demonstrated that residents learn to provide patient-centered care in interaction with supervisors and nurses who each bring their own specific knowledge and expertise to the patient-case and thus provide complementary affordances when training residents. For instance, in Chapter 4, nurses were lauded for their guiding role in communicating with patients and their families. Residents recognized this guidance as complementary to the expertise of supervisors. Clearly, compared to supervisors, nurses observe other aspects of residents' interactions with patients as they collaborate more often at the bedside with them. The observations by nurses, therefore, provide a unique perspective on residents' performance.[52] Studies, for instance, highlighted that nurses are well-positioned to teach residents communication and collaboration skills[61, 63] and provide them with feedback about their behaviors related to "professionalism, patient advocacy, and leadership."[64(p.274)] This is not to say that supervisors do not contribute to training residents in these complex, non-technical skills, nor that nurses do not have an essential role in teaching residents technical skills.[61]

Despite the many opportunities to train residents in providing patient-centered care, in Chapter 3, I suggest that residency training programs could and maybe should do more in this domain, particularly when it comes to delivering compassionate care. Other studies also demonstrate that the more elusive qualities like communication and compassion are rarely explicitly included in residency training.[77-79] As we consider residency training as physicians' developmental journey into becoming specialists with 'cool heads *and* warm hearts', rethinking what best facilitates residents in learning about human-centered care and how to practice such care seems useful.[80]

*Learning from patients: focus on caring rather than learning*

Notably, in interaction with patients, residents predominantly focused on *caring* for their patients during their routine daily practice. Residents were less explicitly engaged in how they could *learn* from their patients and adjust their actions accordingly. However, the interaction with patients can be regarded as a valuable source of information aiding residents' workplace learning and professional growth.[81] Kawamura et al.[82] found that discussions with patients and families allowed residents to reflect through which they could explore new ways of interacting with patients and families. This is also underlined by Sehlbach et al.,[83] demonstrating how physicians learned from previous interactions with patients, guiding their practice.

In Chapter 3, I suggest that it can be especially valuable for residents to learn and understand how patients perceive communication with healthcare professionals and how they perceive their care. In this Chapter, I demonstrated that patients could have different needs and wishes regarding how they would like to receive care compared to the care actually provided by residents. This points to missed opportunities in providing patient-centered care, which is evidenced to significantly affect patients' satisfaction and the quality of care.[84-86]

*Tensions between learner- and patient-centeredness*
The literature describes a tension between learner-centeredness and patient-centeredness[87-89] when the activities around learning and patient care "coincide but are directed at different goals"[88(p.149)]. Although throughout all my studies providing safe and high-quality patient care was residents' primary focus in their daily practice, specifically in Chapter 2, I argue how diminished help-seeking could interfere with providing the most *optimal* patient care. Previous studies reported, for example, that patients' treatment could be delayed when residents were uncertain about clinical decisions and did not seek help or input from a supervisor.[35] Samuriwo et al.[60] describe how nurses in such situations can act as 'guardians of patient wellbeing' by 'whispering' instructions (e.g., correct residents' prescribings) to residents, ensuring patient safety. This is also underlined by Varpio et al.[61] and Allen[52], suggesting that nurses discreetly and indirectly prompt residents to consider information that may have been overlooked otherwise to provide safe patient care.



## Practical implications

Based on the critical considerations of the main findings of this dissertation, I will continue by suggesting practical implications following from my research.

*Pro-actively involving and inviting nurses within residents' workplace learning*
Results from my research suggest that residents may require guidance in recognizing and valuing afforded learning opportunities in the workplace, especially if these learning opportunities reside in the interactions with nurses and patients.[3] Due to supervisors' hierarchical position and the power that comes with it,[60, 64, 74, 75] they have the potential to empower the role of the entire healthcare team in residents' workplace learning.[46, 73, 75] Supervisors can initiate this empowerment by actively involving and inviting nurses and patients to residents' workplace learning and, ultimately, towards legitimizing the role of nurses and patients in residents' workplace learning.[60, 64, 73-75] A first way to actively involve nurses and patients is that supervisors could take on the role of "collaborative role models",[73(p.10)] highlighting the learning opportunities that nurses and patients can afford. More specially, as a collaborative role model, supervisors could demonstrate interprofessional collaboration by asking questions to nurses, considering their ideas, and showing respect.[90] By demonstrating that they value the opinion and input of nurses and patients, supervisors may aid in counteracting known problems with the credibility of other actors during workplace learning.[62-65] A second way to enable nurses' and

patients' input in residents' learning may be through the use of feedback tools. For example, the Westerveld framework was specifically designed to facilitate interprofessional feedback dialogues between supervisors, residents, and nurses, especially taking into account credibility and hierarchy.[91] Such a tool might help nurses in formulating specific feedback on residents' performance. Finally, based on their work on team reflexivity in healthcare teams, Eppich & Schmutz point to the importance of inclusive leadership by supervisors in which a sense of *us* rather than *we* and *they* is fostered.[92] Nembhard and Edmondson[93] demonstrated that inclusive leadership contributes to psychological safety, which is essential for a supportive learning environment in which residents feel safe to share vulnerabilities and nurses feel free to guide residents. Inclusive leaders "include others in discussions and decisions in which their voices and perspectives might otherwise be absent."[93(p.947)] By doing so, leaders also address the lingering power differentials that otherwise hinder the learning from each other.[92] While inclusive leadership is critical, ultimately, all team members must work together to create an environment of 'learning from one another' from a basis of interest and curiosity to ensure the common goal of patient care every day and all day.

*Identifying interprofessional learning moments*

To ensure that interprofessional learning opportunities become more explicit and recognizable for residents, it could help to make these opportunities more explicit by promoting interprofessional collaboration as a specific (learning) goal within the department and by highlighting specific learning opportunities that arise from day-to-day clinical practice.[73, 94, 95] Promoting interprofessional collaboration as a specific goal may help residents become more aware of the possibilities of learning from nurses. Additionally, foregrounding the importance of interprofessional collaboration as both a learning goal and a working goal could encourage all team members to learn from each other.[46] In line with the suggestions made by Morris & Eppich,[95] such collaborative learning can be facilitated, for example, during the daily ward round as this is a "clinical event well-suited to facilitate boundary-crossing through structured inter-disciplinary participation and promotion of team reflection across traditional professional and hierarchical boundaries."[95(p.886)] Collaboratively reflecting on team processes and goals will furthermore stimulate collaborative learning, promote team functioning,[96] and aid in understanding the roles of each profession in the healthcare process.[73]

*Formalizing learning from interactions*

While inviting nurses and patients as well as and identifying learning opportunities are critical, we should not underestimate the lingering influence of power, hierarchies, and conflict within workplaces. Paradis & Whitehead[74] already alerted us to the fact that explicit discussions on power issues in interprofessional education and collaboration are often absent even though we know they exist.[97] Without the proper system and structures to enable meaningful interprofessional education and collaboration, including, for example, a formal curriculum and the necessary time and resources, it will be challenging to equip residents with the necessary competencies and knowledgeability to become a medical specialist within

the landscape of healthcare practice.[46, 74, 97] While this requires substantial efforts of healthcare organizations to implement and effect such changes, there are already smaller steps that interprofessional teams can take to benefit residents' learning.[46, 66] For instance, formalizing the use of feedback tools (e.g., multisource feedback tool) wherein all team members provide (each other) feedback,[91, 98] and consciously role modeling interprofessional collaboration by teaching teams.[73] Finally, residency programs could require residents to shadow nursing staff as part of each new rotation.[99, 100]

## Limitations

I used quantitative and qualitative methods to explore how interactions with supervisors, nurses, and patients shaped residents' learning and clinical practice. Throughout the studies in my dissertation, I had to make decisions informed by feasibility and pragmatism that might have affected the findings.

All data in this dissertation were collected within the context of Dutch healthcare and residency training programs which will have colored the results. Currently, within the Dutch healthcare setting, there is a strong focus on shared decision-making (SDM), in which physicians actively involve their patients in making choices about their own healthcare process.[101] This is contrasted against paternalism, where the physician chooses what they find is bests for their patients.[102] Residency training in the Netherlands, like in many other countries, is built upon a CBME framework which has largely the same characteristics worldwide. Therefore, the findings will be largely transferable to other postgraduate medical training programs grounded on CBME principles and within comparable contexts. Moreover, by grounding my work in relevant theories, providing rich descriptions on the contexts of the studies, and participants in my research, and linking my research to published work, I aimed to heighten the transferability of the work.[103]

As I aimed to explore residents' interactions in general, I wanted to include a wide range of specialties to explore how residents' interactions shape their learning and clinical practice. As such, I did not deliberately zoom in on the differences between specialties. Results from my research, however, hint at possible differences between specialties in how interactions with the various actors in the workplace shape residents' learning and clinical practice. For example, in the emergency department and other acute specialties, the collaboration between residents and nurses often seemed more prominent, and nurses seemed to have a greater role in residents' workplace learning compared to, for example, departments where nurses and residents work more separately (e.g., radiology).

What I consider another limitation is that I have not directly asked supervisors about their views on nurses' role in residents' workplace learning and how they see their own role in this interaction. I explored the supervisors' role in this specific interaction through the questionnaire in Chapter 4, in which residents and nurses

were asked to consider the supervisors' role in this process. While a large body of research exists on the general role of supervisors in residents' workplace learning, I feel it would still be interesting to further explore whether supervisors recognize themselves in the descriptions of residents and nurses. In addition, the nurses' perspective was only obtained through open-ended questions in the questionnaire in Chapter 4. While this has provided rich and interesting findings, I would have had a deeper understanding of nurses' motivations to contribute to residents' workplace learning by interviewing them. This could be an area for further research.

In Chapters 2 and 4, I unexpectedly stumbled on having to search for the right language so that participants would understand what I wanted their thoughts and opinions on. In Chapter 2, I found that residents perceived 'help-seeking' as a negatively-charged term. Throughout the iterative steps in my research project, I tried to minimize this issue by using similar but less pejorative terms for help-seeking (e.g., 'checking' or 'consulting'). In Chapter 4, the word 'guiding' (*begeleiden* in Dutch) was not always well understood. I tried to manage this by extensively piloting the questionnaire through qualitative interviews to check whether the participants clearly understood the questions. Also, I chose to include a definition of guidance within the questionnaire. It seems that we are still searching for the right language to address all aspects of the phenomenon of 'learning through interactions'. Therefore, future research should always consider which language to use, as my research has pointed to the critical fact that 'language matters'. Piloting the questions within the interview guides and the questionnaire has been essential in my research to minimize the limitation of language.



## Suggestions for future research

In this dissertation, I explored how residents' interactions with supervisors, nurses, and patients shape their learning and clinical practice. However, there are still several exciting areas left that deserve exploration and explanation in future studies.

Although I did not explore how supervisors view their role in explicitly involving and inviting nurses to participate in residents' workplace learning, I feel it is important that future research explores this. This suggestion is motivated by the fact that when supervisors take on this role explicitly, residents may be more inclined to fully appreciate nurses' contributions to residents' workplace learning.[46, 73] However, like residents, supervisors could also have (unintentional) biases regarding the credibility of nurses and, as such, may be cautious to involve nurses within residents' workplace learning. So, follow-up research could explore supervisors' perspectives on involving nurses in residents' workplace learning. In addition, understanding what supervisors need to be able to involve nurses as well as what is required from the organization to take on this role (e.g., protected time) is a worthy avenue for future research. Furthermore, gaining a deeper understanding of how nurses perceive to be involved in residents' workplace learning and what they need, if they were more deliberately included in this process, requires attention.

Some of the questions left unanswered by my research into the resident-nurse interaction could be explored using ethnographic research.[104] Ethnography tries to capture what actually *happens* in practice rather than obtaining *perceptional* data.[104] Therefore, this methodology might be particularly suited to understand how various players in the workplace speak about and react to the role of nurses in residents' workplace learning. This could provide more insight into the knowledge gap we identified in Chapter 4: the fact that the concept of guiding was understood differently by various participants. Furthermore, the guiding questionnaire we developed for the study in Chapter 4 could serve as a starting point for an observational study as it describes several aspects that encompass guiding based on the literature on workplace guidance,[7, 105] clinical supervision,[106–108] and interprofessional collaboration.[10, 45, 46, 109] Using the questionnaire as a framework for further research could address, for instance, the questions: In what ways do nurses guide residents? Which moments of guiding do residents recognize (or not), and how can this be explained? But also: what are potentially rich learning opportunities within the context of day-to-day clinical practice for residents, and how could these opportunities be formalized?

We also found that more attention should be paid to the human-to-human aspects (e.g., compassion) of patient-centered care. Using a longitudinal design, future research could explore the impact of specific compassion enhancing interventions, i.e., compassion training, on residents and their patients.[110] To what extent does such a training enhance residents' compassionate behaviors, and to what extent is this change noticed by patients? Moreover, given the evidenced health effects of compassionate care (e.g., better wound healing[111]), it would be interesting to see whether patient-reported outcomes or other measures can be used to explore the effects of a compassion intervention.[86, 112]

Finally, rather than zooming in on specific types of interactions and actors, such as in the suggestions provided above, future research could also adopt an overarching approach and focus on the learning environment as a whole, foregrounding all its actors and interactions. This would allow for an even more holistic understanding of the complexity of all the interactions taking place during residents' workplace learning and how these impact learning outcomes for residents. As an example, follow-up research may select a department characterized by good interprofessional collaboration where residents have ample opportunity to observe and enact interprofessional collaboration through their interactions, and on the other hand, sample a department in which interprofessional collaboration is not yet well established. A comparative case-study approach would allow a more in-depth analysis of the interactions' complexity and potential working ingredients that enable learning through interactions during workplace learning.[113]

## Final note

In exploring interactions within residents' workplace learning, I have chosen a sociocultural perspective, and specifically three theories from this school of thought guided me. However, there are many different types of theories within the sociocultural family (see for instance, Yardley[114]). From the perspective of the kaleidoscope I built in the Introduction of my dissertation, each lens provides *another* way to study residents' workplace learning, and it is the combination of theories that will bring "the advantages of each of them while keeping their respective drawbacks at bay."[2(p.11)] Moreover, *widening* the lens is crucial to further explore how residents interact with other communities within the landscape of practice, such as physiotherapists, dietitians, OR nurses, and anesthesia workers, to explore what their role is or can be within residents' workplace learning.

I hereby hand over my metaphorical kaleidoscope to other researchers and invite them to explore residents' workplace learning from different theoretical perspectives and incorporating various allied health professionals to provide new knowledge enhancing medical education and ultimately aid in further optimizing patient care.

## Literature


1. Lave J, Wenger E. Situated learning: Legitimate peripheral participation. New York (UK): Cambridge University Press; 1991.
2. Sfard A. On Two Metaphors for Learning and the Dangers of Choosing Just One. Educ Res. 1998;27(2):4-13.
3. Billett S. Toward a Workplace Pedagogy: Guidance, Participation, and Engagement. AEQ 2002;53(1):27-43.
4. Wenger E. Communities of Practice: Learning, Meaning, and Identity. New York (UK): Cambridge University Press; 1999.
5. Billett S. Learning through work: workplace affordances and individual engagement. J Workplace Learn. 2001;13(5):209-14.
6. Teunissen PW. Experience, trajectories, and reifications: an emerging framework of practice-based learning in healthcare workplaces. Adv Health Sci Educ. 2015;20(4):843-56.
7. Teunissen PW, Scheele F, Scherpbier AJJA, Van der Vleuten CPM, Boor K, Van Luijk SJ, et al. How residents learn: qualitative evidence for the pivotal role of clinical activities. Med Educ. 2007;41(8):763-70.
8. Merton RK, Reader GR, Kendall PL. The student-physician: Introductory studies in the sociology of medical education. Cambridge (USA): Harvard University Press; 1957.
9. Nordquist J, Hall J, Caverzagie K, Snell L, Chan MK, Thoma B, et al. The clinical learning environment. Med Teach. 2019;41(4):366-72.
10. Bannister SL, Dolson MS, Lingard LA, Keegan DA. Not just trust: factors influencing learners' attempts to perform technical skills on real patients. Med Educ. 2018;52(6):605-19.
11. Watling C, LaDonna KA, Lingard LA, Voyer S, Hatala R. 'Sometimes the work just needs to be done': socio-cultural influences on direct observation in medical training. Med Educ. 2016;50(10):1054-64.
12. Wiese A, Kilty C, Bennett D. Supervised workplace learning in postgraduate training: a realist synthesis. Med Educ. 2018;52(9):951-69.
13. Pront L, Gillham D, Schuwirth LWT. Competencies to enable learning-focused clinical supervision: a thematic analysis of the literature. Med Educ. 2016;50(4):485-95.
14. Olmos-Vega FM, Dolmans DHJM, Guzmán-Quintero C, Stalmeijer RE, Teunissen PW. Unravelling residents' and supervisors' workplace interactions: an intersubjectivity study. Med Educ. 2018;52(7):725-35.
15. Olmos-Vega FM, Dolmans DHJM, Donkers J, Stalmeijer RE. Understanding how residents' preferences for supervisory methods change throughout residency training: a mixed-methods study. BMC Med Educ. 2015;15:177.
16. Sheu L, Kogan JR, Hauer KE. How Supervisor Experience Influences Trust, Supervision, and Trainee Learning: A Qualitative Study. Acad Med. 2017;92(9):1320-27.
17. Harden RM. Developments in outcome-based education. Med Teach. 2002;24(2):117-20.

18. Leung WC. Competency based medical training: review. Bmj. 2002;325(7366):693-6.
19. Ludmerer KM, Johns MM. Reforming graduate medical education. JAMA. 2005;294(9):1083-7.
20. Frank JR, Snell LS, Ten Cate O, Holmboe ES, Carraccio C, Swing SR, et al. Competency-based medical education: theory to practice. Med Teach. 2010;32(8):638-45.
21. Gruppen L, Frank JR, Lockyer J, Ross S, Bould MD, Harris P, et al. Toward a research agenda for competency-based medical education. Med Teach. 2017;39(6):623-30.
22. LaDonna KA, Hatala R, Lingard LA, Voyer S, Watling C. Staging a performance: learners' perceptions about direct observation during residency. Med Educ. 2017;51(5):498-510.
23. Sawatsky AP, Huffman BM, Hafferty FW. Coaching Versus Competency to Facilitate Professional Identity Formation. Acad Med. 2020;95(10):1511-14.
24. Kennedy TJT, Regehr G, Baker GR, Lingard LA. Preserving professional credibility: grounded theory study of medical trainees' requests for clinical support. Bmj. 2009;338:b128.
25. Kennedy TJT, Regehr G, Baker GR, Lingard LA. 'It's a cultural expectation...' The pressure on medical trainees to work independently in clinical practice. Med Educ. 2009;43(7):645-53.
26. Novick RJ, Lingard LA, Cristancho SM. The Call, the Save, and the Threat: Understanding Expert Help-Seeking Behavior During Nonroutine Operative Scenarios. J Surg Educ. 2015;72(2):302-09.
27. Ott M, Schwartz A, Goldszmidt M, Bordage G, Lingard LA. Resident hesitation in the operating room: does uncertainty equal incompetence? Med Educ. 2018;52(8):851-60.
28. Patel P, Martimianakis MA, Zilbert NR, Mui C, Hammond Mobilio M, Kitto S, et al. Fake It 'Til You Make It: Pressures to Measure Up in Surgical Training. Acad Med. 2018;93(5):769-74.
29. Stewart J. To call or not to call: a judgement of risk by pre-registration house officers. Med Educ. 2008;42(9):938-44.
30. Ilgen JS, Eva KW, de Bruin A, Cook DA, Regehr G. Comfort with uncertainty: reframing our conceptions of how clinicians navigate complex clinical situations. Adv Health Sci Educ. 2018.
31. Eppich WJ, Dornan T, Rethans J-J, Teunissen PW. "Learning the Lingo": A Grounded Theory Study of Telephone Talk in Clinical Education. Acad Med. 2019;94(7):1033-39.
32. Goffman E. The Presentation of Self in Everyday Life. New York (US): Anchor Books; 1959.
33. Huffman BM, Hafferty FW, Bhagra A, Leasure EL, Santivasi WL, Sawatsky AP. Resident impression management within feedback conversations: A qualitative study. Med Educ. 2021;55(2):266-74.
34. Vanstone M, Grierson L. Thinking about social power and hierarchy in medical education. Med Educ. 2022;56(1):91-97.

35. Farnan JM, Petty LA, Georgitis E, Martin S, Chiu E, Prochaska M, et al. A Systematic Review: The Effect of Clinical Supervision on Patient and Residency Education Outcomes. Acad Med. 2012;87(4):428-42.
36. Silkens MEWM, Arah OA, Wagner C, Scherpbier AJJA, Heineman MJ, Lombarts KMJMH. The Relationship Between the Learning and Patient Safety Climates of Clinical Departments and Residents' Patient Safety Behaviors. Acad Med. 2018.
37. Voogt JJ, Taris TW, van Rensen ELJ, Schneider MME, Noordegraaf M, Van der Schaaf MF. Speaking up, support, control and work engagement of medical residents. A structural equation modelling analysis. Med Educ. 2019;53(11):1111-20.
38. Leonard MW, Frankel AS. Role of Effective Teamwork and Communication in Delivering Safe, High-Quality Care. MSJMAZ. 2011;78(6):820-26.
39. Newman A, Donohue R, Eva N. Psychological safety: A systematic review of the literature. Hum Resour. 2017;27(3):521-35.
40. Torralba KD, Jose D, Byrne J. Psychological safety, the hidden curriculum, and ambiguity in medicine. Clin Rheumatol. 2020;39(3):667-71.
41. Torralba KD, Loo LK, Byrne JM, Baz S, Cannon GW, Keitz SA, et al. Does Psychological Safety Impact the Clinical Learning Environment for Resident Physicians? Results From the VA's Learners' Perceptions Survey. J Grad Med Educ. 2016;8(5):699-707.
42. Han JH, Roh YS. Teamwork, psychological safety, and patient safety competency among emergency nurses. Int Emerg Nurs. 2020;51.
43. Appelbaum NP, Dow A, Mazmanian PE, Jundt DK, Appelbaum EN. The effects of power, leadership and psychological safety on resident event reporting. Medical Education. 2016;50(3):343-50.
44. Kaldjian LC, Jones EW, Wu BJ, Forman-Hoffman VL, Levi BH, Rosenthal GE. Reporting Medical Errors to Improve Patient Safety: A Survey of Physicians in Teaching Hospitals. Arch Intern Med. 2008;168(1):40-46.
45. Wenger-Trayner E, Wenger-Trayner B. Learning in a landscape of practice. In: Wenger-Trayner E, Fenton-O'Creevy M, Hutchinson S, Kubiak C, Wenger-Trayner B, editors. Learning in landscapes of practice: Boundaries, identity, and knowledgeability in practice-based learning. Abingdon (UK): Routledge; 2015. p. 14– 29.
46. Stalmeijer RE, Varpio L. The wolf you feed: Challenging intraprofessional workplace-based education norms. Med Educ. 2021;55(8):894-902.
47. Hodson N. Landscapes of practice in medical education. Med Educ. 2020;54(6):504-09.
48. Wenger-Trayner E, Fenton-O'Creevy M, Hutchinson S, Kubiak C, Wenger-Trayner B. Learning in landscapes of practice: Boundaries, identity, and knowledgeability in practice-based learning: Routledge (UK); 2014.
49. Biesta GJJ, van Braak M. Beyond the Medical Model: Thinking Differently about Medical Education and Medical Education Research. Teach Learn Med. 2020;32(4):449-56.

50. de Nooijer J, Dolmans DHJM, Stalmeijer RE. Applying Landscapes of Practice Principles to the Design of Interprofessional Education. Teach Learn Med. 2022;34(2):209-14.
51. Cooke M, Irby DM, O'Brien BC. Educating physicians: a call for reform of medical school and residency. San Francisco: Calif: Jossey-Bass; 2010.
52. Allen D. The invisible work of nurses: hospitals, organisation and healthcare: Routledge (UK); 2014.
53. Kilminster S, Cottrell D, Grant J, Jolly B. AMEE Guide No. 27: Effective educational and clinical supervision. Med Teach. 2007;29(1):2-19.
54. Bartz RL. A true role model. Orthopedics. 2007;30(1):7.
55. Skeff KM, Mutha S. Role Models — Guiding the Future of Medicine. NEJM 1998;339(27):2015-17.
56. Kennedy TJT, Lingard LA, Baker GR, Kitchen L, Regehr G. Clinical Oversight: Conceptualizing the Relationship Between Supervision and Safety. J Gen Intern Med. 2007;22(8):1080-85.
57. Goldszmidt M, Faden L, Dornan T, van Merriënboer J, Bordage G, Lingard LA. Attending physician variability: a model of four supervisory styles. Acad Med. 2015;90(11):1541-46.
58. Baggaley A, Robb L, Paterson-Brown S, McGregor RJ. Improving the working environment for the delivery of safe surgical care in the UK: a qualitative cross-sectional analysis. BMJ Open. 2019;9(1):e023476.
59. Polansky MN, Govaerts MJB, Stalmeijer RE, Eid A, Bodurka DC, Dolmans DHJM. Exploring the effect of PAs on physician trainee learning: An interview study. JAAPA. 2019;32(5):47-53.
60. Samuriwo R, Bullock A, Webb K, Monrouxe LV. 'Nurses whisper.' Identities in nurses' patient safety narratives of nurse-trainee doctors' interactions. Med Educ. 2021;55(12):1394-406.
61. Varpio L, Bidlake E, Casimiro L, Hall P, Kuziemsky C, Brajtman S, et al. Resident experiences of informal education: how often, from whom, about what and how. Med Educ. 2014;48(12):1220-34.
62. Van Schaik SM, O'Sullivan PS, Eva KW, Irby DM, Regehr G. Does source matter? Nurses' and Physicians' perceptions of interprofessional feedback. Med Educ. 2016;50(2):181-88.
63. Vesel TP, O'Brien BC, Henry DM, van Schaik SM. Useful but Different: Resident Physician Perceptions of Interprofessional Feedback. Teach Learn Med. 2016;28(2):125-34.
64. Bhat C, LaDonna KA, Dewhirst S, Halman S, Scowcroft K, Bhat S, et al. Unobserved Observers: Nurses' Perspectives About Sharing Feedback on the Performance of Resident Physicians. Acad Med. 2022;97(2):271-77.
65. Miles A, Ginsburg S, Sibbald M, Tavares W, Watling C, Stroud L. Feedback from health professionals in postgraduate medical education: Influence of interprofessional relationship, identity and power. Med Educ. 2021;55(4):518-29.
66. Feller K, Berendonk C. Identity matters - perceptions of inter-professional feedback in the context of workplace-based assessment in Diabetology training: a qualitative study. BMC Med Educ. 2020;20(1):33.

67. Watling C, Driessen E, Van der Vleuten CPM, Lingard LA. Learning from clinical work: the roles of learning cues and credibility judgements. Med Educ. 2012;46(2):192-200.
68. Sargeant J, Mann K, Sinclair D, Van der Vleuten CPM, Metsemakers J. Understanding the influence of emotions and reflection upon multi-source feedback acceptance and use. Adv Health Sci Educ Theory Pract. 2008;13(3):275-88.
69. Burm S, Chahine S, Goldszmidt M. "Doing it Right" Overnight: a Multi-perspective Qualitative Study Exploring Senior Medical Resident Overnight Call. J Gen Intern Med. 2021;36(4):881-87.
70. Carless D, Winstone N. Teacher feedback literacy and its interplay with student feedback literacy. Teach High Educ. 2020:1-14.
71. Telio S, Ajjawi R, Regehr G. The "educational alliance" as a framework for reconceptualizing feedback in medical education. Acad Med. 2015;90(5):609-14.
72. Freidson E. Profession of medicine: A study of the sociology of applied knowledge. Chicago (USA): University of Chicago Press; 1988.
73. Van Duin TS, De Carvalho Filho MA, Pype PF, Borgmann S, Olovsson MH, Jaarsma ADC, et al. Junior doctors' experiences with interprofessional collaboration: Wandering the landscape. Med Educ. 2022;56(4):418-31.
74. Paradis E, Whitehead CR. Beyond the Lamppost: A Proposal for a Fourth Wave of Education for Collaboration. Acad Med. 2018;93(10):1457-63.
75. Bose MM, Gijselaers WH. Why supervisors should promote feedback-seeking behaviour in medical residency. Med Teach. 2013;35(11):e1573-83.
76. NEJM Catalyst. What Is Patient-Centered Care? [Internet] 2017. Accessed 5 June 2022. Available from: https://catalyst.nejm.org/doi/full/10.1056/CAT.17.0559
77. Lown BA, McIntosh S, Gaines ME, McGuinn K, Hatem DS. Integrating Compassionate, Collaborative Care (the "Triple C") Into Health Professional Education to Advance the Triple Aim of Health Care. Acad Med. 2016;91(3):310-6.
78. Phillips SP, Dalgarno N. Professionalism, professionalization, expertise and compassion: a qualitative study of medical residents. BMC Med Educ. 2017;17(1):21.
79. Lombarts KMJMH, Verghese A. Medicine Is Not Gender-Neutral - She Is Male. N Engl J Med. 2022;386(13):1284-87.
80. Lombarts KMJMH. Physicians' Professional Performance: Between Time and Technology. Grou (NL): 20/10 Uitgevers; 2019.
81. Khalife R, Gupta M, Gonsalves C, Park YS, Riddle J, Tekian A, et al. Patient involvement in assessment of postgraduate medical learners: A scoping review. Med Educ. 2022;56(6):602-13.
82. Kawamura A, Harris I, Thomas K, Mema B, Mylopoulos M. Exploring How Pediatric Residents Develop Adaptive Expertise in Communication: The Importance of "Shifts" in Understanding Patient and Family Perspectives. Acad Med. 2020;95(7):1066-72.
83. Sehlbach C, Teunissen PW, Driessen EW, Mitchell S, Rohde GGU, Smeenk F, et al. Learning in the workplace: Use of informal feedback cues in doctor-patient communication. Med Educ. 2020;54(9):811-20.

84. Easter DW, Beach W. Competent patient care is dependent upon attending to empathic opportunities presented during interview sessions. Curr Probl Surg. 2004;61(3):313-18.
85. Kalish R, Dawiskiba M, Sung Y, Blanco M. Raising medical student awareness of compassionate care through reflection of annotated videotapes of clinical encounters. Educ Health. 2011;24(3):490-90.
86. Trzeciak S, Mazzarelli A, Booker C. Compassionomics: The revolutionary scientific evidence that caring makes a difference. Florida (USA): Studer Group; 2019.
87. Swanwick T. Postgraduate medical education: the same, but different. Postgrad Med J. 2015;91(1074):179.
88. Smirnova A. Unpacking Quality in residency training and health care delivery: Maastricht University; 2018.
89. Institute of Medicine Committee on Quality of Health Care in A. In: Kohn LT, Corrigan JM, Donaldson MS, editors. To Err is Human: Building a Safer Health System. Washington (DC): National Academies Press (US); 2000.
90. Baggs JG, Schmitt MH. Nurses' and resident physicians' perceptions of the process of collaboration in an MICU. Res Nurs Health. 1997;20(1):71-80.
91. Tielemans C, de Kleijn R, van der Schaaf M, van den Broek S, Westerveld T. The Westerveld framework for interprofessional feedback dialogues in health professions education. Assess Eval High Edu. 2021:1-17.
92. Eppich WJ, Schmutz JB. From 'them' to 'us': bridging group boundaries through team inclusiveness. Med Educ. 2019;53(8):756-58.
93. Nembhard IM, Edmondson AC. Making it safe: The effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. J Organ Behav. 2006;27(7):941-66.
94. Nisbet G, Lincoln M, Dunn S. Informal interprofessional learning: an untapped opportunity for learning and change within the workplace. J Interprof Care. 2013;27(6):469-75.
95. Morris M, Eppich WJ. Changing workplace-based education norms through 'collaborative intentionality'. Med Educ. 2021;55(8):885-87.
96. Schmutz JB, Eppich WJ. Promoting Learning and Patient Care Through Shared Reflection: A Conceptual Framework for Team Reflexivity in Health Care. Acad Med. 2017;92(11):1555-63.
97. Paradis E, Whitehead CR. Louder than words: power and conflict in interprofessional education articles, 1954–2013. Med Educ. 2015;49(4):399-407.
98. Sonnenberg LK, Pritchard-Wiart L, Hodgson CS, Yu Y, King S. Assessment of Resident Physicians' Communicator and Collaborator Competencies by Interprofessional Clinicians: A Mixed-Methods Study. Teach Learn Med. 2017;29(4):392-401.
99. Johnson CM, Khan A, Stark S, Samee M. A Nurse Shadowing Program for Physicians: Bridging the Gap in Understanding Nursing Roles. J Nurs Adm. 2020;50(6):310-13.
100. Monroe KK, Kelley JL, Unaka N, Burrows HL, Marshall T, Lichner K, et al. Nurse/Resident Reciprocal Shadowing to Improve Interprofessional Communication. Hosp Pediatr. 2021;11(5):435-45.

101. Van der Weijden T, van der Kraan J, Brand PLP, van Veenendaal H, Drenthen T, Schoon Y, et al. Shared decision-making in the Netherlands: Progress is made, but not for all. Time to become inclusive to patients. Z Evid Fortbild Qual Gesundhwes. 2022;171:98-104.
102. Sandman L, Munthe C. Shared Decision Making, Paternalism and Patient Choice. Health Care Anal. 2010;18(1):60-84.
103. Tracy SJ. Qualitative Quality: Eight "Big-Tent" Criteria for Excellent Qualitative Research. Qual Inq. 2010;16(10):837-51.
104. Reeves S, Peller J, Goldman J, Kitto S. Ethnography in qualitative educational research: AMEE Guide No. 80. Med Teach. 2013;35(8):e1365-e79.
105. Billett S. Co-participation at work: Learning through work and throughout working lives. Stud Contin Educ. 2004;36(2):190-205.
106. Stalmeijer RE, Dolmans DHJM, Wolfhagen IH, Muijtjens AM, Scherpbier AJJA. The Maastricht Clinical Teaching Questionnaire (MCTQ) as a valid and reliable instrument for the evaluation of clinical teachers. Acad Med. 2010;85(11):1732-38.
107. Lombarts KMJMH, Ferguson A, Hollmann MW, Malling B, Arah OA. Redesign of the System for Evaluation of Teaching Qualities in Anesthesiology Residency Training (SETQ Smart). Anesthesiology. 2016;125(5):1056-65.
108. Kilminster SM, Jolly BC. Effective supervision in clinical practice settings: a literature review. Med Educ. 2000;34(10):827-40.
109. Jansen I, Stalmeijer RE, Silkens MEWM, Lombarts KMJMH. An act of performance: Exploring residents' decision-making processes to seek help. Med Educ. 2021;55(6):758-67.
110. Sinclair S, Kondejewski J, Jaggi P, Dennett L, Roze des Ordons AL, Hack TF. What Is the State of Compassion Education? A Systematic Review of Compassion Training in Health Care. Acad Med. 2021;96(7):1057-70.
111. Pereira L, Figueiredo-Braga M, Carvalho IP. Preoperative anxiety in ambulatory surgery: The impact of an empathic patient-centered approach on psychological and clinical outcomes. Patient Educ Couns. 2016;99(5):733-38.
112. Sinclair S, Jaggi P, Hack TF, Russell L, McClement SE, Cuthbertson L, et al. Initial Validation of a Patient-Reported Measure of Compassion: Determining the Content Validity and Clinical Sensibility among Patients Living with a Life-Limiting and Incurable Illness. Patient. 2020;13(3):327-37.
113. Cresswell JW. Qualitative inquiry and research design: Choosing among five traditions. Thousand Oaks (CA): Sage; 2007.
114. Yardley S, Teunissen PW, Dornan T. Experiential learning: AMEE Guide No. 63. Med Teach. 2012;34(2):e102-15.

# Summary

**Chapter 1** provides the rationale for this dissertation. I describe that previous research has mainly centered on residents' interactions with supervisors as facilitators of residents' learning. However, this focus might limit our understanding of how residents learn from other workplace actors with whom they interact daily. At the heart of learning within the workplace is learning through interactions. Based on this perspective, our eye is drawn to how resident learns from *all* the interactions they encounter. In this dissertation I have deliberately chosen to explore - in addition to their interactions with supervisors - residents' interactions with nurses and patients as they interact with residents on a daily basis.

Therefore, the overarching research question of this dissertation is: *How do residents' interactions with supervisors, nurses, and patients shape their learning and clinical practice?* These insights are crucial to gain a better understanding of how residents learn through interaction, aiding their workplace learning and fostering safe and high-quality patient care. To that end, I conducted four studies, each focusing on one or more workplace interactions.

In **Chapter 2** we aimed to explore how residents' decision-making processes to seek help are shaped by their workplace environment. Residents are expected to ask for help when feeling insufficiently confident to act in patients' best interests. Previous studies focused on the perspective of the supervisor-resident relationship in residents' help-seeking decisions. However, attention to how the workplace environment and, more specifically, other healthcare team members influence these decisions remains limited. To deepen our understanding of residents' help seeking behaviors, we therefore conducted an interview study with residents. We purposively and theoretically sampled 18 residents; 9 juniors (postgraduate year 1/2) and 9 seniors (postgraduate year 5/6). Using semi-structured interviews, we explored participating residents' decision-making processes to seek help during patient care delivery. Following a constructivist grounded theory methodology, our data collection and analysis were iterative, and we identified themes using constant comparative analysis. We found that residents experienced their help-seeking decision-making processes as an 'act of performance': they considered how asking for help could potentially impact supervisors' assessments of their knowledge, competency or performance. This act of performance was preceded by an internal dialogue in which the need for and potential ramifications of help-seeking were balanced. Residents' sense of responsibility for providing safe and high-quality patient care was the core around which their internal dialogue revolved. With this in mind, residents weigh up demonstrating the ability to work independently, maintaining their credibility as a physician, and becoming an accepted member of the healthcare team when seeking help. This 'balancing-act' was influenced by sociocultural characteristics of the learning environment. A safe learning environment resulting from a constructive relationship with supervisors and the approachability of other healthcare team members lowered the barriers for residents to seek help. Hence, this study suggests that sociocultural forces in the learning environment influence how residents balance their considerations of whether or not to seek help and the extent to which they frame help-seeking as an act of performance. We recommend addressing the

potential barriers to seeking help in dialogue with all healthcare team members as they are all tied into residents' help-seeking decisions. Future research could examine how to foster learning environments in which the healthcare team's shared purpose of safe patient care trumps residents' concerns about negative assessments.

While compassion is the cornerstone of healthcare, research on physicians' perspectives on compassion in clinical practice remains limited. Moreover, the voice of patients – the recipients of compassionate care - is largely absent. As long as physicians are unaware of what compassionate care means for patients, providing compassionate care is hard to realize. Gaining insight into patients' compassion needs and how these may differ from physicians' understanding, is an important step in guaranteeing compassionate care for all patients. Therefore, **Chapter 3** aims to understand patients' and physicians' perspectives on compassionate care by identifying key themes for both. We conducted semi-structured interviews with 8 patients and 10 residents. We separately coded patient and resident transcripts. We used thematic analysis to capture their unique perspectives on compassionate care. We identified four themes that encompassed compassionate care for both patients and residents: being there, empathizing, actions to relieve patients' suffering, and connection. In addition, for residents only, there was a fifth theme: fulfillment that resulted from providing compassionate care. Although both patients and residents emphasized the importance of compassionate care, patients did not always perceive the physician-patient encounter as compassionate, and being compassionate could be challenging for some residents. We formulated recommendations to enhance high-quality and compassionate patient care. Our recommendations were directed at residents, considering that healthcare providers and institutions, and not patients, are primarily responsible for providing compassionate patient care. Residents should always respond to patients' compassion needs and acknowledge that compassion is a necessity. Further, it is important to know that compassion can be expressed in small gestures and that it may be time saving. Residents must be trained to serve all patients in a compassionate manner. Given the known positive health effects of human connection in patient care, we call for reinvigorating compassion in medical education and clinical practice.

To better understand residents' workplace learning it might not be sufficient to only consider the role of the attending physician; the nurses' role in residents' workplace learning should be studied as well. While previous studies already described nurses' role during discrete activities (e.g., giving feedback), a more profound understanding of how nurses contribute to residents' learning remains warranted. A potential concept that may help capture nurses' roles in residents' workplace learning more fully is that of *guidance* which refers to the process through which more experienced members of a workplace guide novice employees to also become effective members. By using the concept of guidance, in **Chapter 4** we addressed tow research questions: 1) to what extent do residents' and nurses' perceptions align regarding the guiding role of nurses during residents' workplace learning, and 2) how do nurses and residents motivate their perceptions regarding nurses' guiding role? We designed a mixed-method study in which we simultaneously collected quantitative and

qualitative data from 103 residents and 401 nurses through a theory-informed questionnaire with a Likert-scale and open-ended questions. Quantitative data analysis, using ANOVA statistics, were performed to test and compare residents' and nurses' perceptions of nurses' guiding role. The results revealed that residents and nurses hold different views regarding the extent to which guidance in clinical practice takes place. Nurses reported to provide significantly more guidance than perceived by residents, and where nurses often did not feel involved by attending physicians to guide residents, residents did perceive nurses' were involved. Next we thematically analyzed the qualitative data, or free text comments, to explore respondents' motivations for their perceptions. The results suggest that both nurses and residents could be grouped in two categories based on their motivations: (1) respondents who saw the need for guidance as they felt it was inextricably linked to good interprofessional collaboration and patient care, and (2) respondents who saw the need for guidance as limited and emphasized the distinct fields of expertise between nurses and physicians. We conclude that while nurses indicated to guide residents, residents did not always perceive to be guided, although they said to value nurses' guiding role. To further capitalize on nurses' guiding role, we suggest that residents can be encouraged to engage in the learning opportunities that nurses provide to achieve optimal team-based patient care. Attending physicians could explicitly involve nurses in guidance and work towards legitimizing nurses' valuable contributions to residents' workplace learning.

Supportive learning climates are essential to ensure high-quality residency training. Clinical teachers play a key role in creating and maintaining a supportive learning climate, as they are responsible for training residents. One of the implications of the modernization of residency training, is the responsibility shift for training residents from the individual clinical teacher – or supervisor - to the collective of clinical teachers – referred to as the teaching team. To fulfill their educational role and create a supportive learning climate, clinical teachers within teaching teams need to collaborate effectively. Up till recently, we only assumed that learning climates benefit from effective teamwork. Therefore, as reported in **Chapter 5**, we explored to what extent teamwork effectiveness within teaching teams was associated with the overall learning climate and its affective, cognitive, and instrumental facets. For this study, we used two validated measures. The TeamQ questionnaire was used to measure teamwork effectiveness among clinical teachers within teaching teams. The D-RECT questionnaire measured the learning climate as perceived by residents. In total, 47 teaching teams (578 clinical teachers) and 47 resident groups (315 residents) completed the TeamQ or the D-RECT questionnaire respectively. We analyzed associations using multilevel models and multivariate general linear models. We found that teamwork effectiveness within teaching teams contributes to residents' overall perceived learning climate. Teamwork effectiveness especially benefits a supportive departmental atmosphere and positive team interactions, as reflected by the affective learning climate facet. Also, residents' experiences of the formal aspects of residency training (the instrumental facet) benefit from teamwork effectiveness within teaching teams. Finally, in our study, we did not find an association between teamwork effectiveness and residents' experiences of

professional development (the cognitive facet), such as stimulating reflection and adapting work to residents' competence level. We speculate that teaching teams use other teaching strategies, such as role modeling, more effectively than stimulating reflection. Stimulating reflection might be more challenging to perform for teaching teams due to time constraints or a lack of specific teaching skills. Interventions to enhance the cognitive learning climate facet might address the teaching skills necessary to perform reflection and exploration. Most importantly, to improve teamwork effectiveness within teaching teams, we suggest promoting teamwork within teaching teams.

# Samenvatting

**Hoofdstuk 1** beschrijft de rationale van dit proefschrift. Ik beschrijf dat eerder onderzoek heeft gekeken naar de interacties tussen artsen in opleiding tot medisch specialist (AIOS) en supervisoren als begeleiders van het leren van AIOS. Echter, deze focus beperkt ons in het begrijpen van hoe AIOS op de werkplek leren van andere actoren met wie ze dagelijks interacteren. De kern van het leren op de werkplek is leren van interacties. Vanuit dit perspectief leren AIOS van *alle* interacties die ze hebben op de werkplek. In dit proefschrift heb ik er daarom bewust voor gekozen om – naast de interacties met supervisoren – ook de interacties van AIOS met verpleegkundigen en patiënten te onderzoeken, aangezien AIOS hen op dagelijkse basis ontmoeten.

Hieruit volgt de overkoepelende onderzoeksvraag van dit proefschrift: *Hoe geven de interacties van AIOS met supervisoren, verpleegkundigen en patiënten vorm aan hun leren en klinisch handelen?* Deze inzichten zijn van cruciaal belang om een beter begrip te krijgen van hoe AIOS leren door interacties, wat hun werkplekleren ten goede komt en de kwaliteit van de patiëntenzorg bevordert. Daartoe heb ik vier studies uitgevoerd, elk gericht op één of meer interacties op de werkplek.

In **Hoofdstuk 2** onderzochten we hoe het besluitvormingsproces van AIOS in het hulp vragen wordt gevormd, en hoe dit proces wordt beïnvloed door hun werkomgeving. Van AIOS wordt verwacht dat zij om hulp vragen wanneer zij zich onvoldoende zeker voelen over hoe te handelen in het beste belang van de patiënt. Eerdere studies naar de besluitvorming rondom een hulpvraag, richtten zich op de relatie tussen AIOS en supervisoren. Echter, aandacht voor hoe de werkomgeving en, meer specifiek, andere zorgverleners de beslissing van AIOS om al dan niet hulp te vragen beïnvloeden, blijft nog beperkt. Om het hulp-zoek gedrag van AIOS beter te begrijpen voerden we een interviewstudie uit onder AIOS. Middels een doelgerichte en theoretische steekproef hebben we 18 AIOS geselecteerd - 9 junioren (opleidingsjaar 1/2) en 9 senioren (opleidingsjaar 5/6). Aan de hand van semigestructureerde interviews onderzochten we de besluitvormingsprocessen van AIOS bij het hulp zoeken in de patiëntenzorg. De studie volgde een constructivistische 'grounded theory' methodologie waarbinnen de data iteratief werd verzameld en geanalyseerd en we thema's identificeerden door middel van 'constante vergelijking'. We vonden dat AIOS het proces van hulp vragen ervoeren als een 'act of performance': ze overwogen wat de impact van een hulpvraag zou kunnen zijn op de beoordeling van supervisoren van hun kennis, competentie en prestatie. Deze 'act of performance' werd voorafgegaan door een interne dialoog waarin AIOS de kosten en baten van het vragen om hulp afwogen. Het verantwoordelijkheidsgevoel van AIOS voor het bieden van goede en veilige patiëntenzorg vormde de kern waaromheen deze interne dialoog zich ontvouwde. Met de zorg voor de patiënt in gedachte, maakten AIOS bij het vragen van hulp de afweging tussen het willen bewijzen van hun zelfstandigheid, het behouden van hun geloofwaardigheid als arts en het geaccepteerd worden als lid van het zorgteam. Deze 'balancing-act' werd beïnvloed door sociaal-culturele kenmerken van de leeromgeving. Een veilige leeromgeving voortkomend uit een constructieve relatie met supervisoren en de goede benaderbaarheid van andere leden van het zorgteam,

verlaagde voor AIOS de drempel om hulp te vragen. Deze studie suggereert dat sociaal-culturele kenmerken van de leeromgeving invloed hebben op hoe AIOS hun overwegingen om al dan niet op hulp te vragen balanceren, en de mate waarin ze het vragen om hulp als een 'act of performance' ervaren. Omdat alle leden van het zorgteam betrokken zijn bij het besluitvormingsproces van AIOS om al dan niet hulp te vragen, bevelen we aan om de mogelijke belemmeringen voor het vragen van hulp ook met hen allen te bespreken. Toekomstig onderzoek zou zich kunnen richten op het cultiveren van een leeromgeving waarin het gezamenlijke en centrale doel van het bieden van veilige patiëntenzorg de spanning van AIOS om hulp te vragen wegnemen.

Hoewel compassie een belangrijke hoeksteen van de gezondheidszorg is, blijft onderzoek naar het perspectief van AIOS op compassie in de klinische praktijk beperkt. Bovendien is de stem van patiënten – zij die compassievolle zorg ontvangen – grotendeels afwezig. Zolang artsen zich niet bewust zijn van wat compassievolle zorg betekent voor patiënten, wordt het bieden van compassievolle zorg bemoeilijkt. Inzicht krijgen in de behoeften die patiënten hebben omtrent compassievolle zorg en hoe deze zich verhouden tot hoe AIOS compassievolle zorg begrijpen is daarom een belangrijke stap in het garanderen van compassievolle zorg voor alle patiënten. Daarom beoogt **Hoofdstuk 3** inzicht te geven in de perspectieven van patiënten en AIOS over compassievolle zorg door het identificeren van de belangrijke thema's voor beide. We voerden daartoe semigestructureerd interviews met 8 patiënten en 10 AIOS. De transcripten van patiënten en AIOS werden afzonderlijk gecodeerd en, door middel van thematische analyse, zijn hun unieke perspectieven op compassievolle zorg vastgelegd. We identificeerden vier thema's die compassievolle zorg omvatten voor zowel patiënten als AIOS: aanwezig zijn, meevoelen, acties om het lijden van patiënten te verlichten, en connectie. Specifiek voor AIOS was er nog een vijfde thema: het ervaren van voldoening voortkomend uit het verlenen van compassievolle zorg. Hoewel zowel patiënten als AIOS het belang van compassievolle zorg benadrukten, ervoeren patiënten het contact met AIOS niet altijd als compassievol. Bovendien was voor sommige AIOS compassievol zijn een uitdaging. We formuleerden aanbevelingen om goede kwaliteit en compassievolle patiëntenzorg te versterken. Onze aanbevelingen richtten zich op AIOS aangezien zij, en in algemene zin gezondheidszorgmedewerkers en organisaties, en niet patiënten, primair verantwoordelijk zijn voor het leveren van compassievolle patiëntenzorg. Het is belangrijk dat AIOS aansluiten bij de behoeften die patiënten hebben omtrent compassie en dat AIOS erkennen dat compassie noodzakelijk is voor goede zorg. Daarnaast is het belangrijk om te weten dat compassie al in kleine gebaren of handelingen kan worden getoond en tijdbesparend kan zijn voor AIOS. AIOS zouden moeten worden getraind om compassievolle zorg aan alle patiënten te verlenen. De positieve gezondheidseffecten van medemenselijk contact in de patiëntenzorg zijn al langer bekend en we doen daarom de suggestie om compassie weer centraal te stellen binnen de medische (vervolg)opleiding en de klinische praktijk.

Om het werkplekleren van AIOS beter te begrijpen is het mogelijk onvoldoende om alleen naar de rol van supervisoren hierin te kijken; ook de rol van verpleegkundigen in het werkplekleren van AIOS moet worden bestudeerd. Hoewel eerdere studies de rol van verpleegkundigen hebben beschreven gedurende specifieke activiteiten (bijv. feedback geven), is meer diepgaand onderzoek nodig om te begrijpen hoe verpleegkundigen bijdragen aan het leren van AIOS. Een mogelijk concept dat hierbij kan helpen is *begeleiding*, dat verwijst naar het proces waarbij meer ervaren collega's beginnende werknemers begeleiden in het zich eigen maken van het werk. Aan de hand van het concept begeleiding adresseerden we in **Hoofdstuk 4** twee vragen: 1) in hoeverre komen de percepties van AIOS en verpleegkundigen met betrekking tot de begeleidingsrol die verpleegkundigen hebben tijdens het werkplek leren van AIOS overeen, en 2) hoe motiveren verpleegkundigen en AIOS hun percepties over die begeleidingsrol van verpleegkundigen? We ontwierpen een mixed-method studie waarin we tegelijkertijd kwantitatieve en kwalitatieve data verzamelden van 103 AIOS en 401 verpleegkundigen via een - door de theorie geïnformeerde - vragenlijst met een Likertschaal en open vragen. We voerden kwantitatieve data analyses uit, i.e., ANOVA statistiek, teneinde te testen en vergelijken of de percepties van AIOS en verpleegkundigen over de begeleidingsrol van verpleegkundigen overeen kwamen. De resultaten laten zien dat AIOS en verpleegkundigen verschillende percepties hebben van de mate waarin verpleegkundigen begeleiding bieden aan AIOS in de klinische praktijk. Verpleegkundigen rapporteerden significant meer ondersteuning en begeleiding te bieden bij het leren van de patiëntenzorg, dan AIOS rapporteerden. Bovendien gaven verpleegkundigen aan dat de supervisoren hen niet altijd betrokken bij het begeleiden van AIOS, terwijl AIOS meenden dat verpleegkundigen wel werden betrokken. Vervolgens analyseerden we met behulp van thematische analyse de kwalitatieve data, oftewel de vrije tekst commentaren, om de motivaties van respondenten voor hun percepties te exploreren. De resultaten hiervan suggereren dat verpleegkundigen en AIOS op basis van hun motovaties in twee groepen konden worden verdeeld: (1) respondenten die het belang voor begeleiding onderkenden omdat het als onlosmakelijk verbonden met goede interprofessionele samenwerking en patiëntenzorg werd gezien, en (2) respondenten die slechts een beperkte behoefte aan verpleegkundige begeleiding zagen omdat de expertisegebieden van verpleegkundigen en artsen te verschillend zijn. We concluderen dat hoewel verpleegkundigen aangaven AIOS te begeleiden, AIOS niet altijd het gevoel deelden te worden begeleid. Dit laat onverlet dat AIOS de begeleidingsrol van verpleegkundigen wel waardeerden. Om de begeleidingsrol van verpleegkundigen te optimaliseren, doen we de suggestie AIOS aan te moedigen om deel te nemen aan de leermogelijkheden die verpleegkundigen bieden teneinde optimale team-based patiëntenzorg te realiseren. Supervisoren zouden verpleegkundigen nadrukkelijker kunnen betrekken bij de begeleiding van AIOS en zo kunnen toewerken naar het legitimeren van de waardevolle bijdragen die verpleegkundigen leveren aan het werkplekleren van AIOS.

Een ondersteunend opleidingsklimaat is essentieel voor de kwaliteit van de medische vervolgopleiding. Supervisoren spelen een belangrijke rol in het creëren en behouden van een ondersteunend opleidingsklimaat, aangezien zij verantwoordelijk

zijn voor het opleiden van AIOS. Een van de gevolgen van de modernisering van de medische vervolgopleidingen is de verantwoordelijkheidsverschuiving in het opleiden van AIOS van de individuele opleider naar het collectief van opleiders – of supervisoren - die samen de 'opleidersgroep' vormen. In het opleiden van AIOS en het creëren van een ondersteunend opleidingsklimaat, moeten supervisoren binnen opleidersgroepen effectief samenwerken. Tot voor kort veronderstelden we slechts dat effectieve samenwerking bijdraagt aan het opleidingsklimaat. Daarom onderzochten we in **Hoofstuk 5** in hoeverre de samenwerkingseffectiviteit binnen opleidersgroepen is geassocieerd met het opleidingsklimaat als geheel en met haar affectieve, cognitieve en instrumentele facetten. Voor deze studie gebruikten we twee gevalideerde meetinstrumenten. De TeamQ vragenlijst werd gebruikt om de effectiviteit te meten van de samenwerking van supervisoren binnen hun opleidersgroep. De D-RECT vragenlijst werd gebruikt om het opleidingsklimaat binnen een afdeling zoals gepercipieerd door AIOS te meten. In totaal vulden 47 opleidersgroepen (578 supervisoren) en 47 groepen van AIOS (315 AIOS) respectievelijk de TeamQ en de D-RECT vragenlijst in. We analyseerden associaties met behulp van 'multilevel models' en 'multivariate general linear models'. We vonden dat de effectiviteit van samenwerken binnen opleidersgroepen positief bijdraagt aan hoe AIOS hun opleidingsklimaat als geheel ervaren. De effectiviteit van het samenwerken komt vooral ten goede aan een prettige afdelingssfeer en positieve team interacties, zoals blijkt uit het affectieve facet van het opleidingsklimaat. Ook de ervaringen van AIOS met de formele aspecten binnen de opleiding (het instrumentele facet) hebben baat bij effectief samenwerkende opleidersgroepen. Ten slotte vonden we in onze studie geen associatie tussen de samenwerkingseffectiviteit van opleidersgroepen en de ervaringen van AIOS met het aspect professionele ontwikkeling (het cognitieve facet), waaronder het stimuleren van reflectie en aanpassen van het werk aan het opleidingsniveau van AIOS. Wij speculeren dat opleidersgroepen andere onderwijsstrategieën, zoals het zijn van een rolmodel, effectiever gebruiken dan het stimuleren van reflectie. Voor opleidergroepen kan het stimuleren van reflectie lastig zijn vanwege tijdgebrek of een tekort aan specifieke onderwijsvaardigheden. Interventies om het cognitieve facet binnen het opleidingsklimaat te verbeteren kunnen zich richten op het versterken van de onderwijsvaardigheden die nodig zijn om reflectie te stimuleren. Om de samenwerkingseffectiviteit binnen opleidersgroepen verder te verbeteren, suggereren we om samenwerking expliciet te agenderen.

# APPENDIX

**Dankwoord**
**Contributing authors and affiliations**
**PhD Portfolio**
**List of publications**
**Curriculum vitae**

# Dankwoord

Als je mij 15 jaar geleden had verteld dat ik zou gaan promoveren had ik je voor gek verklaard. Op de basisschool met de laagste cito-score was het vmbo zelfs "misschien te hoog gegrepen", aldus mijn juffrouw. Met dit advies begon mijn leertraject wat voor mij voelt als een reis. Een reis die zich kenmerkt door een groeiende gretigheid naar het opdoen van kennis en om mijzelf verder te ontplooien. Door mijn docenten op de middelbare school en later het hbo en de universiteit, werd ik keer op keer aangemoedigd om in mijn leertraject te ontdekken, groeien en plezier te hebben. De afgelopen vier jaar heb ik het voorrecht genoten mezelf te ontwikkelen als onderzoeker binnen het medisch onderwijs. Nu komt mijn reis als wetenschappelijk onderzoeker tot een einde met als resultaat dit prachtige proefschrift.

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# PhD portfolio

| | |
|---|---|
| Name PhD student: | Iris Jansen |
| PhD period: | February 2018 – July 2022 |
| PhD supervisor: | Prof. dr. MJMH Lombarts |
| Co-supervisors: | Dr. RE Stalmeijer and dr. MEWM Silkens |

| PhD training | Year | Workload (ECTS*) |
|---|---|---|
| **General courses** | | |
| The Amsterdam UMC World of Science. Graduate school for medical sciences, University of Amsterdam | 2018 | 0.7 |
| Practical Biostatistics. Graduate school for medical sciences, University of Amsterdam | 2018 | 1.4 |
| Research writing in English. Graduate school for medical sciences, University of Amsterdam | 2018 | 1.5 |
| PsycINFO. Graduate school for medical sciences, University of Amsterdam | 2018 | 0.1 |
| EndNote. Graduate school for medical sciences, University of Amsterdam | 2018 | 0.1 |
| Critical Choices in Qualitative Research. School of Health Professions Education, Maastricht University | 2018 | 1.4 |
| Clinical Data Management. Graduate school for medical sciences, University of Amsterdam | 2019 | 0.1 |
| Didactical Skills. Graduate school for medical sciences, University of Amsterdam | 2019 | 0.4 |

## Seminars, workshops and master classes

| | | |
|---|---|---|
| Workshop: Handen uit de mouwen! Aan de slag met het leerklimaat. Nederlandse Vereniging Medisch Onderwijs (NVMO), Rotterdam | 2018 | 0.5 |
| Workshop: In the lead! Hoe manage ik mijn promotieteam. NVMO preconference Promovendidag, Utrecht | 2019 | 0.5 |
| Symposium: Zin in Zorg. Utrecht | 2019 | 0.1 |
| Workshop: MedEd Beyond Your Head (online) | 2020 | 0.5 |
| Symposium: Challenging Intraprofessional Workplace Based Education Norms. Association of Medical Education in Europe (AMEE), online | 2021 | 0.1 |
| Symposium: Waanzinnige Zorg. Professional Performance & Compassionate Care research group, Amsterdam | 2022 | 0.4 |

## Presentations

| | | |
|---|---|---|
| The influence of the quality of residents' learning climate on care delivery. Rogano Conference on Medical Education, Basel | 2018 | 0.5 |
| Dilemma Pitch. NVMO Promovendidag, Utrecht | 2018 | 0.5 |
| Team Up! Linking teamwork effectiveness of clinical teaching teams to residents' experienced learning climate. AMEE, Vienna & NVMO, Egmond aan Zee | 2019 | 0.5 |
| The art of telling a story. Rogano Conference on Medical Education, Vienna | 2019 | 0.5 |
| An act of performance. Exploring residents' decision-making processes to seek help during the delivery of patient care. AMEE, online & NVMO, online | 2020 | 0.5 |
| The guiding role of nurses in residents' workplace learning. AMEE, online & NVMO, online | 2021 | 0.5 |

| | | |
|---|---|---|
| De rol van verpleegkundigen in het begeleiden van AIOS gedurende hun opleidingstraject. UMCG, Groningen & Amsterdam UMC, Amsterdam | 2022 | 0.5 |

## (Inter)national conferences

| | | |
|---|---|---|
| Nederlandse Vereniging voor Medisch Onderwijs (NVMO). Egmond aan zee and Rotterdam, the Netherlands | 2018/ 2019/ 2020/ 2021 | 1.0 |
| Association for Medical Education in Europe (AMEE). Basel, Switzerland; Vienna, Austria; Online (2x) | 2018/ 2019/ 2020/ 2021 | 2.0 |
| Rogano Conference on Medical Education. Basel, Switzerland, and Vienna, Austria | 2018/ 2019 | 0.5 |
| NVMO preconference Promovendidag. Utrecht, the Netherlands | 2018/ 2019/ 2021/ 2022 | 0.5 |
| NVMO Promovendidag. Utrecht, the Netherlands | 2018/ 2019/ 2021/ 2022 | 0.5 |
| Medische Vervolg Opleidingen (MMV)-congres. Online | 2020 | 0.2 |

## Other

| | | |
|---|---|---|
| Chair & Co-Founder of the Young Researchers Network NVMO | 2019 - 2022 | 7 |
| Organizing committee Research day Department of Medical Psychology | 2019 | 1 |
| Organizing committee of the NMVO Promovendidag | 2019 - 2021 | 5 |
| Journal club | 2019 - 2021 | 3 |

## Teaching

| | | |
|---|---|---|
| Professionele Ontwikkeling - Professional performance in de praktijk | 2019 - 2021 | 1.5 |
| Total | | 33.5 |

## Grants

| | |
|---|---|
| Quality of care and quality of caring: developing a compassion training for physicians (APH Quality of Care innovation grant) | 2019 |

*ECTS: European Credit Transfer System (1 ECTS = 28 hours)

# List of publications

*Publications in this thesis*

**Jansen I**, Silkens MEWM, Stalmeijer RE, Lombarts KMJMH. Team up! Linking teamwork effectiveness of clinical teaching teams to residents' experienced learning climate. Med Teach. 2019;41(12):1392-1398. doi: 10.1080/0142159X.2019.1641591.

**Jansen I**, Stalmeijer RE, Silkens MEWM, Lombarts KMJMH. An act of performance: Exploring residents' decision-making processes to seek help. Med Educ. 2021;55(6):758-767. doi: 10.1111/medu.14465.

**Jansen I**, Silkens MEWM, Galema G, Vermeulen H, SE Geerlings, Lombarts KMJMH, Stalmeijer RE. Exploring the Role of Nurses in Guiding Residents during Postgraduate Medical Education: a Mixed-Method Study. Submitted.

**Jansen I**, Debets MPM, Diepeveen M, Bogerd R, Molewijk BAC, Widdershoven GAM, Lombarts KMJMH. Compassionate care through the eyes of patients and physicians: a qualitative study. Submitted.

*Publications not in this thesis*

Diepeveen M, Debets MPM, Bogerd R, **Jansen I**, Lombarts KMJMH, Molewijk AC, Widdershoven GAM. Determining the right middle. Development, theoretical framework and content of a compassion training for residents in medicine in the Netherlands. In Progess.

Debets MPM, **Jansen I**, Lombarts KMJMH, Kuijer-Siebelink W, Kruithof K, Steinert Y, Daams JG, Silkens MEWM. Linking leadership development programs with hospital outcomes: a realist review. In Progress.

*Other publications*

Lombarts KMJMH, Bindels E, Debets MPM, **Jansen I**. Werkplezier en Welzijn van De Nieuwe Generatie Dokters. In opdracht van de VVAA: Amsterdam UMC, Afdeling Medische Psychologie, AMC Onderzoeksgroep Professional Performance & Compassionate Care.

# Curriculum vitae

Iris Jansen was born on the 8th of March 1993 in Apeldoorn, the Netherlands. She is the daughter of Jaap Jansen and Monique Jansen-Korver, and the sister of Femke Jansen. From 2005-2010 she attended high school at Veluws College Walterbosch. After graduating, she started her study Social Work at Windesheim in Zwolle which she completed cum laude in 2015. Although Iris enjoyed working as social worker, she was eager to continue studying and enrolled in the master Sociology: Contemporary Social Problems at Utrecht University. Within the master she specialized herself in the 'Essentials of Care' track. After graduating cum laude, Iris started her PhD at the Professional Performance and Compassionate Care research group at Amsterdam UMC (location AMC). Within the research group, she had the privilege to conduct several studies within the field of medical education. Besides her research activities, Iris was Chair & Co-Founder of the Young Researchers Network of the Dutch Association for Medical Education. As a chair, she introduced during the COVID-19 pandemic together with other researchers "The Relays" where PhD students could connect and share knowledge during interactive online sessions. Iris lives in Utrecht together with her husband Nicolaas Kerkmeijer and their dog Noortje, a two year old English Springer Spaniel. Currently, Iris is looking forward to a new challenge, which will definitely be something with interactions, healthcare, research and collaboration as that is what makes her thrive.