Time pressure and teamwork: a quest for quality improvement in hospitals

Harten, A. van

Illustration 9. Understanding as the holy grail

7

General Discussion

7.1 INTRODUCTION

This thesis presents new insights on the nature of time pressure and how it relates to learning to improve quality and safety in hospital teams.

Collaboration in hospitals is a crucial factor in improving the quality of care and, more specifically, in reducing avoidable patient harm (Schoten, 2022). Research has shown that hospitals with low preventable mortality rates do not necessarily have fewer incidents but are better equipped to respond to incidents and prevent escalation through effective collaboration (Ghaferi et al., 2009). At the same time, studies indicate that while the narrative of collaboration has become well-established in hospital care, in practice, silos still prevail (Finn, 2008; Morris et al., 2023; Weller et al., 2014) These include interprofessional silos between doctors, nurses, and patients, as well as multidisciplinary silos such as surgery and anaesthesia.

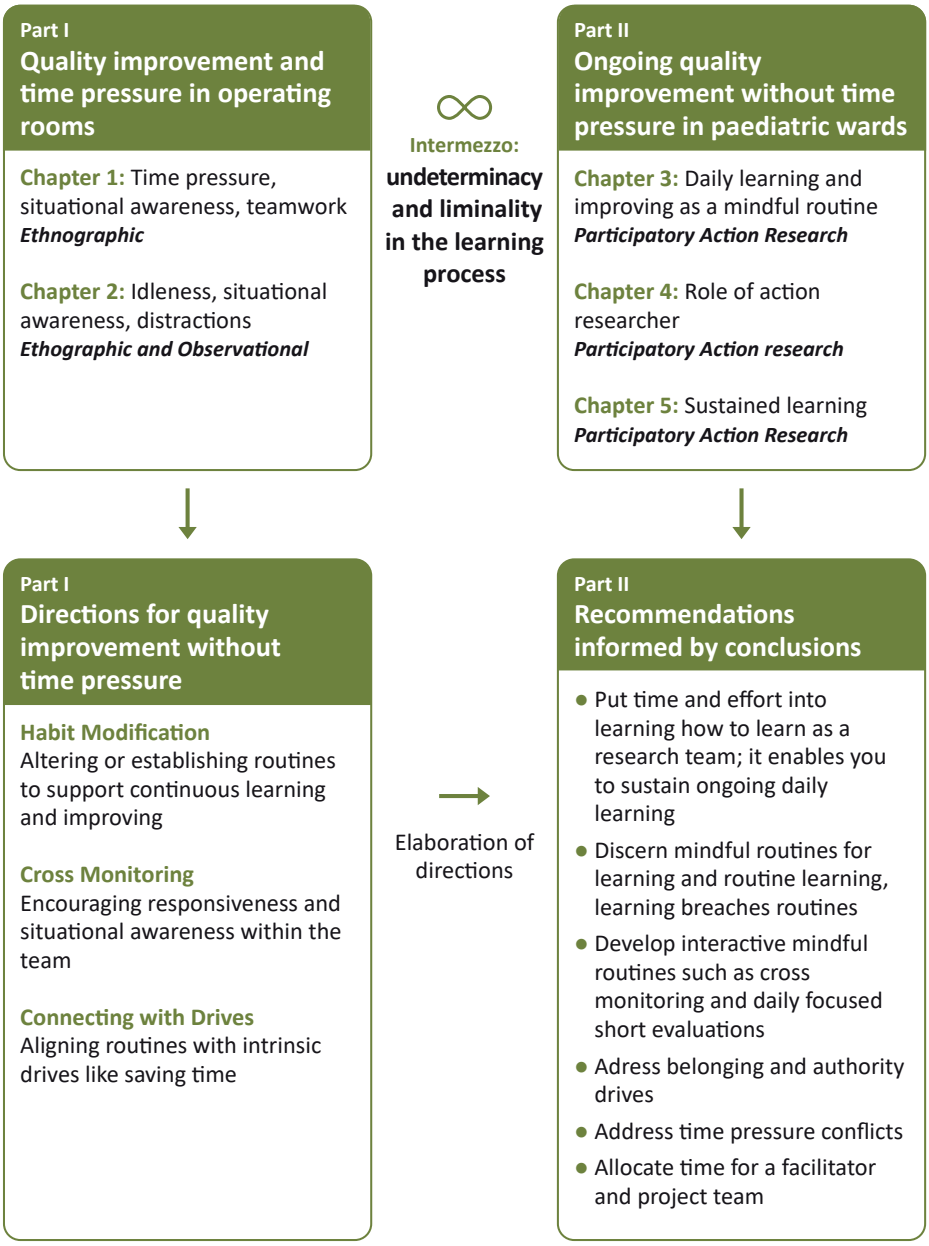
In response to this, hospitals have implemented programmes aimed at fostering effective collaboration in complex socio-technical environments, such as Crew Resource Management (CRM), which usually includes several hours or days of training for all team members. This was also the case in the hospitals where the studies were conducted.

During the first sub-study of the research, in which a team sought to implement elements of CRM, time pressure emerged as a frequently cited factor inhibiting improvements in collaboration. This led to the two main research questions:

1. What is time pressure, and how does it relate to quality improvement within a team?
2. How can teams contribute to ongoing quality improvement with less time investment and without experiencing time pressure?

To address these questions, we employed various methods (see figure 1). In the first exploratory phase we performed a naturalistic case study (Chapter 2) and an observational study in surgical teams in an academic hospital (Chapter 3). In the second phase we conducted participatory action research (Chapter 4, 5 and 6) at a paediatric ward of an education hospital. For all sub-studies, we employed thinking with theory (Jackson & Mazzei, 2022), placing emphasis on re-reading the data and deliberately selecting one or more theories to interpret, code, and thematise the data. By involving multiple authors with different backgrounds, we reduced the risk of unconscious theoretical biases influencing the interpretation. We drew on theories of mindful organising, habit formation, Safety II, desires, social complex adaptive systems, and workplace learning. Additionally, we adhered to a social constructivist epistemology, which posits that experience and knowledge of reality are (partially) constructed within social processes, influenced by the society in which we live.

Figure 1: outline of the research questions, settings, applied methods and results of the five studies.



This research spans a ten-year period. Over the course of the study, the issue of time pressure became increasingly pertinent in light of growing staff shortages, protests over workload, and rising burnout rates. This study does not offer a managerial solution to

staffing shortages, instead it offers insights into how healthcare teams manage experienced time pressure and how it can impact team collaboration and situational awareness and as such quality and safety.

Over these ten years, new theories and insights on quality and safety and the relevance of teamwork have emerged. In the Netherlands for instance, Safety-II, a safety approach that views hospitals as complex systems. This is evident in the "Time for Connection" programme (2020–2024), initiated by the Ministry of Health, Welfare and Sport, and the funding rounds focused on Safety-II and safety ergonomics by the Dutch Council for Medical and Health Research (ZonMw). Although these insights are already there in the background of the articles in part I, they became more prominent in part II.

In this chapter we return to the main questions and highlight some main findings and focus on insights that emerge from the study as a whole. Subsequently, we reflect on the strengths and limitations and implications for practice and further research.

7.2 MAIN FINDINGS

We summarise the main findings in four categories. The first two categories are related to the research question about understanding time pressure and quality improvement. The last two categories are related to the research question about ongoing quality improvement without time pressure. Daily (habitual) learning and improving was seen as key to change without time pressure. Transformative learning came to the front as a relevant concept for sustained change in the last study.

We present little findings on the patients and their parents although they participated in the research at the ward (Chapter 4, 5 and 6). They are included (implicitly) in many of the findings but overall, most sustained learning was realised by the professionals. However, their feedback had substantial impact on the measures taken and their involvement was indispensable.

Understanding time pressure as co-created in the team:

- Time pressure was not the consequence of a workload imposed on the team but co-created by pursuing conflicting priorities while avoiding conflict (2,4).
- The preoccupation with time pressure can provide the motivation for creating team situational awareness (SA) since SA reduces experienced time pressure (chapter 2).
- Having to wait for someone increases a sense of time pressure in the one to wait as well as the one to be waited for (chapter 2, 3).
- Cross monitoring increases team SA and teamwork and reduces time pressure (chapter 2, 3).

Understanding the role of habits and routines in time pressure and quality improvement

- Habitual cross monitoring is possible (chapter 2).
- Established habits and routines are performed under all circumstances and without causing the feeling of time pressure. Whereas new routines are easily compromised under time pressure (chapter 2).
- The surgical team introduced a new interprofessional briefing routine to optimise SA and save time (chapter 2).
- The ward team (including parents) adjusted the existing medical visit routine to improve their team SA and efficiency through standardisation and (daily) interprofessional interaction about the work (chapter 4).

Steering transformation through addressing desires (underlying time pressure)

- In both the OR team and the ward team the motivation for changes in teamwork were mainly grounded in semi-conscious desires, which were different from the formal goals (chapter 2, 4, 5).
- In both settings, issues of time -having to wait for someone, timely decisions, timely endings, finishing the program, speed- were connected to their desires for belonging and authority or professional pride (chapter 2, 4, 5).
- The action research team realised interventions that resonated among their colleagues, because they addressed their conflicting priorities and desires (chapter 4, 5, 6). Parents responded positively to clear information on the medical visit, visible mutual help, and the nurse giving her presentation before the parents.

Generating transformative learning and sustained daily learning trough action research:

- Through interaction perspective taking changed and daily learning grew (chapter 4).
- The interaction in the workplace was stimulated by the action research team in which all stakeholders participated (chapter 4, 6).
- Often the interaction, leading to a breach in assumptions, prompted immediate action, to fulfil expectations (chapter 4, 6), and as such prompted experiential learning in the team of the day, over time resulting in transformation in the unit (chapter 4, 5, 6).
- Transformative learning in the action research team was not a (mindful) routine, as it required disrupting habits of thinking and acting. Therefore, it often demanded conscious attention and overcoming reluctance (Chapter 6). The action research team:
  * developed insights into what was needed for learning in their colleagues and in themselves;
  * reconceptualised progress and change, which motivated ongoing effort;

    * became aware that reflection on the assumptions underlying their own collaboration was relevant to the continuity of their role;
    * developed mindful routines on the ward to sustain realised changes, and to elicit daily interaction and learning.
- An external facilitator or action researcher appeared necessary to transfer skills, address tensions, and to be the pusher (big stick in reserve) at times of low motivation (chapter 6).

7.3 DISCUSSION OF CONCEPTUAL RELATIONS BETWEEN THE OUTCOMES OF ALL STUDIES

“To conclude this study, we revisit the research questions addressed in the sub-studies by integrating the findings presented across the chapters, as outlined in Figure 1, and by incorporating additional insights. This integration allows us to build a cohesive narrative around time pressure, ongoing improvement efforts, and transformative learning in teams.

We begin by exploring how teams experience and respond to time pressure and how this connects to their improvement efforts. Drawing on the findings in Chapters 5 and 6, we introduce the concepts of Kairos—the opportune moment—and temporal shifts to enrich our understanding of how teams navigate time constraints while striving for improvement. These concepts shed light on the nuanced dynamics of time pressure in the context of organizational change.

Next, we examine the potential of creating mindful routines or habits as a strategy to sustain good practices, support ongoing improvement and adaptation, and mitigate the negative effects of time pressure. These routines serve as anchors for teams, ensuring that awareness and shared situational understanding remain embedded in daily operations.

Building on this, we explore what drives the (improvement) behaviours and the development of mindful routines. Here, we introduce the concepts of liminality and not-knowing as essential phases in transformative learning for both the organisation and the facilitator.

We then delve into the relevance of transformative learning within the action research team itself and its implications for establishing mindful routines and sustaining daily learning in the ward. To illustrate this, we present the additional concepts of play and game. These concepts highlight the necessary oscillation between adhering to established rules and experimenting with them, which creates liminal spaces where transformative learning can occur.

Finally, we discuss Participatory Action Research (PAR) as a methodology for driving change within socially complex adaptive systems. We emphasize its role in facilitating

transformative learning within the research team and enabling workplace transformation. This approach altered the perception of time in hindsight, demonstrating its potential to support long-term organizational growth.

In the conclusion, we will summarise what the discussions mean for our answers to the main research questions.

Understanding Time Pressure in the Context of Improving Care

The results show that time pressure did not result from an imposed workload on the team, but rather from handling conflicting priorities within the team. We did not measure clock time (Chronos) however we received no signal that the research affected ending times or number of patients per day. However, the teams could reduce the experienced time pressure, by resolving their conflicting priorities and therefore improve the right time for actions (Kairos). Nurses in the OR knew timely which additional materials were missing which enabled them to anticipate (Chapter 2 and 3), and nurses in the medical visit could present their nursing information before the parents spoke, which enabled them to do it more structured and without repeating the parents and which enabled the parents to focus on their experiential knowledge (Chapter 4, 5 and 6). Furthermore, instead of "having to wait until the medical visit is finished" the nurses were contributing to the medical visit. It also affected the residents that felt less rushed after the ward round by the nurses who were waiting for treatment decisions. The measures changed the experience of time: it reduced time pressure and it nurtured the agency the nurses. It gave them more control over the course of events.

The examples illustrate that Kairos is less a concept of time and more an expression of what human action can achieve when faced with its counterpart, Tuchè or Fortuna (Lamers, 2021) Kairos involves recognizing and seizing the right moment to actualize a possibility inherent in a given situation. This, however, requires the ability to perceive the opportunity, which depends on a particular kind of attentiveness and intelligence. This kind of attentiveness and intelligence in the team, inherent in Kairos, links the concept to several key concepts of the studies: situational awareness (Chapter 2, (Kaber & Endsley, 2004), mindfulness (Chapter 2, (Weick & Sutcliffe, 2007) and embodied knowledge (Chapter 5, (Varela, 1999)), all of which enable what Davis & Sumara (2005) describe as occasioning (Chapter 5). It is grounded in a fundamental understanding of reality as an ambiguous, unpredictable, and thus uncontrollable complex whole. Within this framework, the unforeseeable—the realm of Fortuna—creates the space for successful human intervention.

In part II of the research, we chose to learn on the job, instead of initiating training sessions as was done at the OR; this required less clock time of participants. Yet, the participants still sighed over the effort required of them for the sake of the action research (Chapter 4). Also, the research team at the ward experienced the research, and especially the research

team meetings, as very time consuming. The simultaneity of tasks and finding a moment in all different schedules contributes to the experience of time pressure. Reducing these meetings in length (max 1 hour) and number in the second research, did not change the feeling of time pressure (Chapter 6). Especially the physician still felt reluctance to prioritise the meetings over patient care or other obligations that render directly visible results. When muddling through without seeing the progress, time spent felt as time lost and therefore it was difficult to maintain motivation during setbacks in the process. Thus, reducing time spent (Chronos) on the improvement efforts, did not reduce the experience of time pressure.

However, at the end of both studies at the ward (Chapter 4 and 6), when they experienced the rewards in the present, participants looked at the time spent in the past in a different way. Xu et. al. (2023) state that having a near future perspective generates more time pressure, and a more utilitarian mode than a long term future perspective. This highlights the importance of a (research) team capable of making the temporal shift from the present to looking further back into the past and projecting further into the future. Otherwise, one does not see the (incremental small) results accomplished leading to larger progress. This capability is not self-evident in a team of professionals that from the nature of their profession must attend to the present almost all day.

In Chapters 2, 4, and 6 we observed the value of situational awareness (SA)[1] for reducing time pressure in the present. From chapter 6 we can conclude that a longer-term oversight, and thus a temporal shift, reduced the experience of time pressure in the action research team and was relevant to sustain ongoing learning and improving.

Notwithstanding the conclusion that also shorter research team meetings generate time pressure, it remains relevant to find ways in which professionals can combine the primary task of patient care with learning and adapting care to changing circumstances and insights, short term and long term. In that light, it is relevant to conclude that with a relatively small investment (compared to training) an entanglement of improvements could be realised (Chapter 4, 5 and 6). In the following paragraphs, we will delve deeper into the learning process and the connection between the daily, small happenstance learnings of individuals and the broader learning movement of the ward as a whole.

Using or Creating Mindful Routines for Time Pressure Free Development?

The main findings about habits and routines in part I led us to conclude that installing new mindful routines or modifying existing routines offer a chance for sustained learning and improving no matter the time pressure.

1 the process of perceiving and interpreting the situation at hand and anticipating at what comes next.

There is consensus that habits and routines are necessary for survival because this way we save our conscious thinking mind for the issues that need conscious attention. Our bandwidth for conscious thought or slow thinking (Kahneman, 2011; Mullainathan & Shafir, 2013) is limited. In theory, habits can be cued to come into operation, but in practice it is not always easy to create a cue. The second mechanism for habituation is repetition. There is no conclusive research on how often over which period something must be repeated to become a habit in an individual and how to measure it. Lally et.al. (2010) state that it can take 18-254 days. To our knowledge there is no specific literature on installing habits in interprofessional teams. Lally and others (Dewey, 1922; Duhigg, 2012; Neal et al., 2012), depart from a more or less behaviouristic stance, seeing a habitual performance as a sort of Pavlov reaction to a stimulus. McCaw (2023) however argues that habits are not just the product of cueing and repeating, but just as much the product of learning. Reflecting on habit in interpretative and performing professions, he discerns three different types of habits. Fixed habits, being a rigid stimulus response; bad habits, being a generalised reaction that would be deployed across a wide variety of different situations; good habits, which are informed by a continuing process of learning that creates a background library. While acting there is an unconscious process selecting the best match out of the background library fitting the actual situation. The notion of good habits resembles the concept of mindful routines (Vogus & Hilligoss, 2016; Weick & Roberts, 1993; Weick et al., 1999), embodied knowing (Varela, 1999), situational awareness (Kaber & Endsley, 2004), and tacit knowledge (Polanyi, 2009). It requires experience (a background library) and sensitivity to perceive the small differences in patients, teams and surroundings. In sum, good habits, or mindful routines, are the result of a learning process, just as much as the result of cueing and repeating.

In chapter 2 we sketched an example of a good habit in the experienced fast surgeon, collecting information continuously by watching, listening, and asking updates from team members. Yet, we also described that this surgeon was unwilling to change his habits, nor did he alter his habits of thinking about what constitutes safe and good care. Simply stated, he stayed with his conviction that the main factor for good health outcomes was a good surgeon. Therefore, as an educator he focused more on showing and transferring technical skills and being a decisive leader, than on transferring teamwork skills. No one took his skill of connecting with the team as an example. Kahneman (2011), points to the risks of habits of thinking in terms of cognitive biases (misreading the situation because we see what we expect to see). In this case the surgeon saw confirmation of his conviction every day. Thus, even good habits, can have their limitations, resulting in limited adaptability and transformation in the larger system. They can become “bad habits” in terms of McCAw (2023). These bad habits are often acquired in a long process of education and socialising into a profession (Lingard et al., 2002; Witman et al., 2010). Precisely this interactive social

aspect of acquiring bad habits, offers at the same time the opportunity for acquiring new good habits as a team.

We saw in Chapter 4 and 6 how the team learning of new good habits, or mindful routines, evolved in an interactive process. The daily happenstance experiential learning on the job was often combined with a change in assumptions. When participants discovered that other participants appreciated help, because they were still struggling to acquire some skills, they rejected their assumption that they will be offended by help. When nurses experienced the appreciation of parents when they used the poster in preparing them for the visit, they rejected their assumption that just telling them without visual support is enough. And when nurses and ward physicians shared their time management considerations, nurses rejected their assumption that ward physicians take too much time for the medical visits and accepted late treatment plans. Many of these small incremental improvements and learnings over a larger group of participants, led in the end to transforming their ward round practice into new good habits or mindful routines.

Yet, we also concluded in chapter 6 that, although it is possible to develop mindful routines and organise the opportunities for learning, learning itself can never become a routine, since we defined it as "the on-going and relational adapting through the enactment of small and large perturbations in which both agent(s) and environment change and co-evolve towards enlargement of the space for possible action" (Snoeren et al., 2013). We conclude that having learned something is usually appreciated, but the learning itself requires the effort of a perturbation and breaching with a habit. As creatures of habit (Dewey, 1922; Duhigg, 2012), it seems unavoidable that in most participants, including the action researcher, there is reluctance to learn and change.

Thus, from the findings in Part II we must firstly conclude that *adjusting* an existing routine requires more or less the same effort as *installing* a new routine or *unlearning* an old routine. It is all experienced as a breach of habit and thus a serious time-consuming effort. Mindful routines are not only a matter of cueing and repetition, but also of learning. Secondly, we conclude that it is possible to establish small incremental learnings and develop mindful routines as a ward, that foster sustained good practice, but it is not possible to learn and develop habitually.

The Drives Behind the Creation of Mindful Routines

In part I we concluded that time (priorities) was often at the centre of tensions between the professions at the OR. This was not different at the paediatric ward and also noted in other studies (Espin & Lingard, 2001). We also noted in both settings that these issues of time were connected to desires for belonging and authority or professional pride (Chapter 2, 4, 6). For example, we concluded that speed was part of the surgical professional pride and to motivate surgeons for the briefing it helped to connect the briefing with saving

time. We also concluded that having to wait a lot for the physicians and parents made them feel more like carers than nurses and they were motivated for a different method and order of the medical visit because it generated nursing professional pride and more nursing leadership. Therefore, we concluded: connect the strive for mindful routines to preoccupations, desires or drives, then one enlarges the chance that it becomes prioritised. We used the word desires or drives to discern them from motivations or goals. Drives are usually unconscious or semi-conscious, they drive us whether we like it or not (Jackson & Mazzei, 2022; Verhaeghe, 2011).

We discerned two basic main drives: belonging and authority (Chapter 5). These drives are inherent to us being group animals. Yet, other scholars discerned other more or less primordial drives which we can recognise in the results as well. Graves discerns eight drives (Ferreira, 2023; Graves, 1970); four drives which are oriented at "we": traditional customs, structures and order, community and care, holistic life system (spiritual) and four oriented at "I": survival, power and energy, results and success, synergy and learning and experimentation.

We recognise the community and care drive of nurses and the results and success drive of the physicians in Chapters 2, 4 and 6.

- OR nurses, being careful not to breach the relation.
- Surgeons saying, "They walk the extra mile for you if they like you."
- Ward nurses saying, "If we stick our head above the parapet, they [our colleague nurses] cut it off."
- Paediatrician saying, "And then it's something that takes everybody's time, while we don't see that concrete improvement."
- Paediatrician speaking of "this project at the cost of my project" while nurses speak about "our project."

These findings are in line with the literature (Makary et al., 2006; Sexton et al., 2006) in which "nurses often describe good collaboration as having their input respected whereas physicians often described good collaboration as having nurses who anticipate their needs and follow instructions." (Sexton et al., 2006, p. p881). We might say, that nurses have to show different behaviour to realise belonging and authority in their own peer group than physicians. Nurses must invest in relations where physicians must invest in results.

Given the dominant drive for individual results and success, we can understand that in the culture of physicians there is a focus on patient outcome and physician's skills when speaking about quality and safety. They see teamwork and good relations as a means, whereas for nurses it is a goal in itself. From these drives we can also understand their preference for research and clinical excellence instead of interprofessional quality improvement. The latter usually contributes little to their professional pride and status.

This focus was seen in chapters 2, 3, 4 and 6 but also in several other studies analysing why physicians are usually less inclined to participate in -interprofessional- quality and safety initiatives (Sexton et al., 2006; Taitz et al., 2012; Travaglia et al., 2012).

Participants in the workplace are usually not aware of drives nor of the differences in drives, and we saw most clearly in chapter 4 and 6 how this led to mismatching assumptions and expectations. The nurses, feeling that the physicians were not any longer with them on the project, felt not recognised and appreciated. They named this feeling as a threat for continuation after closure of the research.

Concluding that these differences in drives between physicians and nurses are widespread, it helps interprofessional teams to become aware of these differences because then participants can check whether (parts of) this general pattern applies to them as well, question their assumptions, change perspectives and address how to work together. This contributes to the persistence of their efforts

Since drives are unconscious, the facilitator or action researcher can fulfil a relevant role by bringing them into consciousness to support mutual understanding. To do so the action researcher needs awareness of their own desires and be able to sympathise with all different drives.

Transformative Learning in the Forerunners, Sparking Incremental Learning on the Job

Transformative learning is difficult to define, but all attempts to do so include the element of perspective change or changing one's assumptions (Newman, 2012; van Woezik et al., 2023) and they include an element of radical or impactful change. Mezirow introduces the start of transformative learning as an disorienting experience that in the end becomes reintegrated into one's life (Mezirow, 1997; Mezirow & Taylor, 2009)

We noted above that the small incremental learning on the job, often required revision of assumptions and led in the end to transformation. Examples were learning to cross monitor and offer mutual help, to structure information sharing, to prepare parents for the medical visit with a visual aid, etc. The examples concern quick learnings, or fast thinking (Kahneman, 2011), without much conscious reflection leading to immediate action and in the end the development of mindful routines. This pattern is aptly described in Snoeren's (2013) definition of workplace learning: "the on-going and relational adapting through the enactment of small and large perturbations in which both agent(s) and environment change and co-evolve towards enlargement of the space for possible action". More space for possible action means more individual agency. The small perturbations in one-to-one interactions, as well as the mindful routines within the larger team, were instigated by the action research team.

We compared daily workplace learning with the learning in the action research team, which demanded deliberate reflection, or "slow thinking" (Kahneman, 2011), leading to shifts in their habitual ways of thinking. Examples of such habitual thought patterns are the following:

- Nurses tended to believe that physicians undervalue their contributions and improvement efforts, leaving most of the work to them. Conversely, physicians typically assumed that the success of a ward round or surgical procedure depended primarily on the performance of a competent physician. Both assumptions began to shift over the course of the research.
- The action research team shifted their attention from the practical improvements to understanding how learning and change at the ward comes about – e.g. asking the right questions, interacting about the work– and they realised that if one knows how to learn on the job they can apply this knowledge or skill to many concrete improvement goals, without the need to install another project team.
- They also reconceptualised the relevance and impact of the changes, understanding that changes in norms (e.g.: we can engage in interprofessional education with each other) are less visible but not necessarily less impactful.
- And finally, they learned the relevance of addressing relational tensions and recognised the relevance of the action researcher for muddling through in difficult phases when they were occupied by workload and relational issues.

We consider the fast learning by slow thinking in the action research team as transformative, as opposed to the slow learning by fast thinking in the workplace. Both are necessary for transforming the practice in the workplace. Figure 2 pictures the differences between the learning in the larger team and the transformative learning in the action research team.

Figure. 2: The left side represents the daily learning in the larger team by fast thinking and acting. It requires repetition (many circular movements), small perturbations and slowly spreading the learnings in socialising processes. This learning is supported by the reflective learning loops (few circular movements) of the action research team, requiring slow thinking and generating fast learning in the action research team. This way an ongoing lemniscate oscillates passing the liminal square) of larger perturbations and periods of not knowing, each time a leap is made.

Learning in the larger team

- Fast thinking
- Developing slowly good habbits through small incremental changes on the job
- Daily happenstance, while acting
- Change of assumptions about others' experiences (in interaction with patients)
- Game
- First order

Transformative learning in the research team

- Slow thinking
- Developing fast by enduring the liminal phase of not knowing and by creating agency through addressing conflicting assumptions and priorities
- Reflecting on a longer timespan
- Change of assumptions about learning and improving
- Play
- Second order

We also saw in chapter 6, the relevance of the "outsider" when part of the team was preoccupied by team and group dynamics and workload and had little bandwidth left (Mullainathan & Shafir, 2013). They saw no relevance anymore in the goals they had formulated, stating that they already did very well on time management and feedback (projecting their own performance on their colleagues). However, a few weeks later, they could connect the goals again to the situation at the ward and their own preoccupations and saw the relevance of the goals again; reformulating feedback as giving compliments and mutual help. It was the outsider, introducing another perspective, stressing the

relevance of learning to learn on the job, and encouraging them to find a relevant goal, that seduced them to go on with the research and to put effort in it.

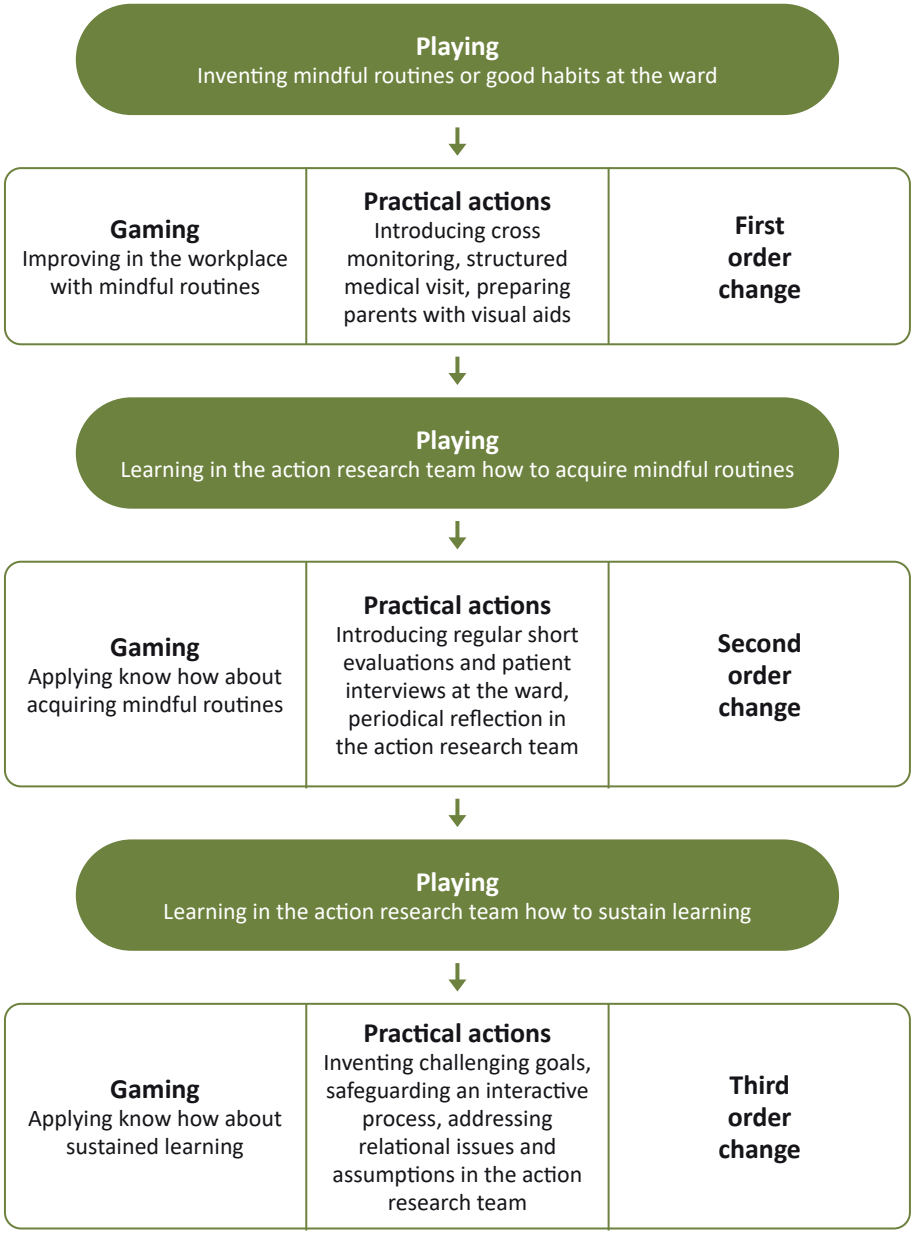
Most of the barriers the action research team had to overcome in their transformative learning are also recognised in other studies (Jeffs et al., 2013), including time constraints, difficulty engaging physicians in these projects, limited skills in managing conflicting priorities, hierarchical structures, and the absence of a coach or mentor to facilitate reflection and connect participants. Less recognised, however, is the transformative process in which participants in the action research team seek to avoid the liminal space of uncertainty yet inevitably enter it. The lemniscate process of transformative learning, in which one needs tolerance for uncertainty during the liminal phase, is described as alternating “game” and “play” by Abma (2000).

In "gaming," individuals work to improve themselves within the existing rules. In contrast, "playing" involves experimenting with and reshaping the rules until the game itself changes—a concept akin to first-order and second-order change (Argyris & Schon, 1974). First order change is defined as one that occurs within the existing framework, rules, and assumptions of a system. It involves adjustments or modifications to improve performance or address specific problems without questioning the underlying structure or values whereas second order change does question them and shifts the way problems are understood and addressed. In Figure 3 we sketched the subsequent phases of game and play and the next order learnings.

The phase of "play", in which the unwritten rules are challenged, is a liminal stage that induces a disorienting experience (Mezirow, 1997), drawing participants into a space of indeterminacy and not-knowing. For healthcare professionals, accustomed to making quick decisions and continuously evaluating outcomes, this phase can be particularly unsettling.

As demonstrated in Chapter 6, experiencing this transformative phase in the first study did not make it any easier in the second study. The team still had to navigate the discomfort of the liminal phase to achieve the next transformation, which felt just as challenging as before.

Figure 3. The process of transformative learning at the ward



What is also less recognised is the how the barrier to find time is linked to the underlying unconscious drives for authority and belonging and to group dynamics. We gained a deeper understanding of the drives and of the role of the action researcher addressing

the underlying drives. The action researcher is not in control but can influence the system like a starling in the swarm by seizing the occasion with their embodied knowledge, by connecting perspectives as a postillion d'amour and addressing the underlying drives.

These insights are relevant in the light of a disruptive changing environment that requires healthcare to adapt in a way that gains support of citizens and other stakeholders. This type of change requires playing with the rules of the game. In the next paragraph we will illuminate PAR as the process for transformation in teams, and, possibly in a next step, in organisations and networks of organisations.

PAR as a Structured Context for Transforming Beyond Quality and Safety of Care

The research of this thesis spanned a period of 10 years. During that time, new themes emerged, and new improvement initiatives were developed. Where initially the shock of avoidable harm in hospitals dominated the discourse, more attention is now being paid to staff shortages, overworked and undervalued personnel, health prevention (e.g. a large percentage of cancer cases can be prevented through healthy lifestyles), the environmental impact of healthcare (especially waste and medication in water), the influence of environmental quality (pesticides and air pollution), and the rise in healthcare demand and costs. These latter issues have increased more than expected from population ageing alone, driven by expensive medications and increased treatment options.

Most studies on the quality of care and patient safety, like this one, begin by highlighting the large numbers of avoidable harm. In light of the aforementioned developments, this rationale is no longer sufficient. If the relevance is the prevention of avoidable harm (approximately 1,000 deaths per year In the Netherlands, 0,03% of all hospital admissions), research should also focus on preventable diseases (an estimated 12,000 deaths per year, 0,07% of all inhabitants) due to air quality (Longfonds), 19,000 per year due to smoking (National Drugmonitor), preventable healthcare demand, and preventable overburdening of healthcare professionals (Allen & Mellor, 2002; Bakker et al., 2001; DeCaporale-Ryan et al., 2017). Bauman (2011) notes a decreasing acceptance of uncertainty, fate, chance, and risk. The more we have, the more afraid we are of losing it. We then seek safety within our own gated communities, where we belong, are valued, and life is predictable.

In the light of these larger developments, we see the value of this research just as much in its observed effects on job satisfaction and the reduction of time pressure than in the reduction of avoidable harm—however personally impactful avoidable harm may be for both patients and healthcare professionals.

We also see the value of our research in that it shows the value of PAR for influencing transformation in complex systems. The study found repeatedly that for transformation and adaptation it is important to facilitate equal interaction between participants from

different silos within the system as was noted in Chapter 4 and 6. Equal interaction (epistemic justice and emancipation) is inherent to PAR (Abma, 2020).

While participatory action research (PAR) does not necessarily imply a complexity perspective on reality, in part II we observed parallels between the theory of development in social complex adaptive systems (SCAS) and participatory action research, as outlined in the table below. A key difference is that SCAS is descriptive, whereas PAR is activist.

Table 1. Principles of transformation in Social Complex Adaptive Systems and Participatory Action Research

Development in SCAS	Investigating through change in PAR
Pluriformity	All stakeholders are involved
Neighbouring interaction	Bringing stakeholders into conversation
Decentralised control	Involved actors determine for themselves what is important, what to investigate, and what to improve.
Interactions are steered by sensemaking Seeking for belonging and authority determines with whom, how often and about what is interacted.	The facilitator seeks epistemic justice and emancipation (belonging and authority for all) A liminal space is created to search and learn without knowing the endpoints, thus acceptance of indeterminacy

The notion that interactions are largely driven by the basic motivations of belonging and hierarchy is our own addition, though supported by behavioural scientists (Jackson & Mazzei, 2022; Verhaeghe, 2011; Waal, 1989). This notion clarifies that it is not so easy to cross silos. it requires participants to make themselves visibly vulnerable to the risk of rejection or failure. Risk-taking in interrelating is inherent to crossing silos.

As we pictured in figure 2 additional efforts from the action research team and the facilitator were required to realise the capacity for transformation. They must endure periods of not knowing and the feeling of going nowhere. These are the periods of play, in which one is for example no longer satisfied by perfectioning the cross monitoring and preparing parents but aims for a larger challenging goal without knowing which goal and how to get there. Here the PAR offered a structured context for the action research team encouraging them to persist. For the facilitator this meant working with Fortuna, by attending mindfully and seizing the occasions to inter-vene. In this case the action research team realised the skill of transforming and adapting. A skill that can be directed at the ward round but just as much at any other subject.

The combined concepts of SCAS and PAR makes clear that transformation in complex systems always involves change at the first-person, second-person and third-person level (Chapter 5); the personal, the group and the larger system in which one partakes inevitably influence each other. PAR automatically provides the conditions for positive development in social complex systems, including tolerance for the liminal zone, necessary

for transgressing to the next stage as is shown in figure 3. Therefore, it should likely be a preferred methodology for many studies on change in complex systems. Knowing that systems do not transform from central control but decentralised control, projects with myriads of local action research projects or participative change projects, might be promising (Bradbury, 2024; Bradbury et al., 2019).

7.4 CONCLUSION

We conclude from all our sub-studies on quality improvement in hospitals that time pressure is co-created in the team and can endanger teamwork. However, the desire to prevent or mitigate time pressure often has side effects of fostering team work as well. Both require situational awareness. Furthermore, we conclude that issues of time are often related to issues of belonging and authority: Who dares to address the conflict? Who is the fastest? Who must wait for who?

We sought for ways in which reducing time pressure and improving teamwork, mediating quality and safety, could work to the benefit of both. We conclude that it is possible to ingrain daily mindful routines that, by definition, persist under pressure and do not create time pressure. Mindfulness ensures that these habits are not performed blindly but are executed with good situational awareness within the team, thereby contributing to teamwork, quality and safety and the reduction of time pressure. For example, teams developed the habit of cross-monitoring and gained more insight into how to manage time effectively and avoid frustrations related to it.

However, although the mindful routine is insensitive to time pressure, ingraining the mindful routine is not. We initially considered daily learning as a mindful routine that will not request time of participants, but this view became outdated in the final study where we saw that learning is always a breach of routine. Although daily learning and improving on the job to develop mindful routines do not take much clock time (Chronos), they do require attention and the right timing (Kairos). Furthermore "on-the-job" interprofessional learning requires stimulation from an interprofessional research team, project group, or committee—it does not develop informally and spontaneously by itself. Meeting interdisciplinary with colleagues remains a challenge.

Our conclusion is that daily learning on the job requires several participants, including the action researcher, to participate in an interprofessional committee, that continues organising the opportunities for interactive learning and improving to spark the incremental daily learning in the unit. The committee will engage in transformative learning and endure periods of indeterminacy and liminality. Here they have to walk on the many lingering paths or “cromme pade menich foude” leading through dark woods, sometimes entering

dead end paths, and only seeing in hindsight what they have achieved. These liminal phases, or periods of “play” are experienced as time consuming.

Action research appeared to be an approach that fosters transformative learning in teams, sustained adaptability and quality improvement in hospital teams, and more job satisfaction.

Sustained quality improvement in a team can be structured, requiring minimal clock time and producing many benefits for all, but the time and effort will still be perceived as significant.

7.5 STRENGTHS AND LIMITATIONS

Since the research question was formulated at team level, all studies of this research were conducted at team level and reach for improvement goals that laid within their circle of influence.

We suggested that PAR might prove to be the logical intervention for change in complex systems at a larger scale. Scholars departing from social complexity theory claim, that local action is the place to start large scale transitions (Homan, 2023; Rotmans & Verheijden, 2021). However as Dixon-Woods (Dixon-Woods & Martin, 2016) advocates, to change a sector, there is needed more than just local initiatives and more than just action research. Yet, PAR at a larger level can be part of the puzzle. Only when departments or organisations work together, they can solve problems of the overall system like waiting lists. Sharing knowledge and collaborative learning across local initiatives seems a fruitful approach to be further explored (Schuurman et al., 2024). ‘Productive interactions’ are key for knowledge infrastructures and policy transformations (Oortwijn et al., 2024).

A limitations of case studies is that they provide local contextual knowledge, which is not always easy to transfer to other settings. However, the strength lies in the possibility to develop deeper insights into the case. In naturalistic case studies, the emphasis is more on naturalistic or situated generalisation than on transferability (Flyvbjerg, 2006; Simons, 2015; Stake, 1995). In situated generalisation the reader, as an active agent, connects the findings—depicted through rich descriptions—to their own context and tacit, situated understanding thereby creating a vicarious experience (Abma & Stake, 2014). This way knowledge is developed that is valuable and practical for participants within systems.

Moreover, when findings pertain to deeply personal aspects, such as desires for belonging and hierarchy, they are often the most universal (Simons, 2014, 2015) because they are intrinsic to the human condition. Nonetheless, the specific manifestations of these desires will vary across different teams and contexts.

7.6 PRACTICAL IMPLICATIONS

In Chapter 6, we referenced the concerns of scholars in the field of quality improvement (Dixon-Woods & Martin, 2016; Hollnagel, 2014; Junghans, 2018; Lucas, 2016; Sujan, 2018; Vogus & Hilligoss, 2016). These scholars point out that the healthcare landscape is rapidly changing and becoming more complex, while the ability to adapt is not keeping pace. Dixon-Woods & Martin (2016) argue that this requires different types of interventions at different levels. At the sector level, things should be arranged and standardised, such as technical and ergonomic conventions—alarms, labelling conventions, dashboard layouts, etc. At the organisational level, there should be less focus on interventions and more on strengthening the organisation. They also advocate for broader testing and preparation programmes, as well as consolidating expertise and research and development.

From our research, we support the need for organisational strengthening at team level. The role of the facilitator fostering the transformational learning process emerged as a crucial condition. The specific roles the facilitator must fulfil will vary by team and change over the course of a project. However, having long-term support, combined with the transfer of knowledge and skills, is essential when a department or team wants to develop mindful routines, tolerance for ambiguity and the skill to address group dynamics. This requires organisations to set up this kind of support. After all, action research is not an intervention that can simply be scaled up. Action research is like dancing: it is learned through practice, not by watching or reading about it. Developing these skills is not automatic in every hospital, let alone on every ward. Imitation is successful since this enables students to observe and gather tacit knowledge.

This also demands something from the health / hospital sector as a whole. An initial exploration of training opportunities for this role in the Netherlands reveals that the sector has few to no such training programmes, and existing (master's) programmes that do develop similar skills primarily train policymakers, not facilitators or action researchers. It requires joint efforts from industry organisations, educational institutions, and hospitals to ensure that the right training is available and that enough people participate. Previous attempts have failed due to low enrolment.

7.7 FURTHER RESEARCH

In the introduction to Part II, we referenced researchers advocating for a different quality and safety paradigm: the complexity paradigm. In this study, we explored at the team level how insights from this paradigm could be integrated into our approach. We found that action research as a method of change fits well with a complexity perspective on complex organisations and a complexity perspective on learning and improvement. In our study, we saw that by increasing situational awareness (SA) in the interprofessional ward round

team, multiple themes could be addressed simultaneously: medication safety, parent participation, preparation for home care, efficiency, etc.

Recently, a Dutch hospital (Jeroen Bosch Ziekenhuis) initiative made the national news. Physicians from different disciplines met regularly to coordinate treatment plans for their geriatric complex patients. It was presented as a solution to an increasingly complex healthcare demand within a more complex system (greater specialisation and part-time work). Similar solutions have been applied in oncology care for some time. However, if we envision implementing such meetings for all categories of complex patients, the system will become gridlocked, like a traffic jam. The proposed solution may serve as an intermediate step toward solutions aligned with complexity theory.

We therefore advocate further research into the application of SCAS theory in cross-departmental care for complex patients. This approach centres on self-organisation and exchange. We may discover how to facilitate exchanges across silo boundaries without fixed structures, fixed times, or fixed content. The creation of a liminal space is key for transformative learning in guiding actors.

Furthermore, this study focused on improving quality and patient safety within the team's own sphere of influence. However, not all desirable improvements can be achieved at this level. It would be interesting to explore the applicability of insights from social complex adaptive systems, habit formation, and drives at the organisational level rather than at the team level.

REFERENCES

Abma, T. (2020). Ethics work for good participatory action research: Engaging in a commitment to epistemic justice. *Beleidsonderzoek online*(6). https://doi.org/10.5553/BO/221335502020000006001

Abma, T. A. (2000). Fostering learning-in-organizing through narration: Questioning myths and stimulating multiplicity in two performing art schools. *European Journal of Work and Organizational Psychology*, *9*(2), 211-231. https://doi.org/10.1080/135943200397950

Abma, T. A., & Stake, R. E. (2014). Science of the Particular: An Advocacy of Naturalistic Case Study in Health Research. *Qualitative Health Research*, *24*(8), 1150-1161. https://doi.org/10.1177/1049732314543196

Allen, J., & Mellor, D. (2002). Work context, personal control, and burnout amongst nurses. *Western Journal of Nursing Research*, *24*(8), 905-917. https://pubmed.ncbi.nlm.nih.gov/12469726/

Argyris, C., & Schon, D. A. (1974). *Theory in practice: Increasing professional effectiveness*. Jossey-bass.

Bakker, A. B., Schaufeli, W. B., Sixma, H. J., et al. (2001). Burnout contagion among general practitioners. *Journal of Social and Clinical Psychology*, *20*(1), 82-98.

Bauman, Z., & De Valk, J. M. M. (2011). *Vloeibare tijden: leven in een eeuw van onzekerheid*. Klement / Pelckmans.

Bradbury, H. (2024). Methodology for a time of eco-social planetary crisis: Action research helping transformations happen. *Action Research*, *22*(2), 107-113. https://doi.org/10.1177/14767503241255488

Bradbury, H., Waddell, S., O' Brien, K., et al. (2019). A call to Action Research for Transformations: The times demand it. *Action research (London, England)*, *17*(1), 3-10. https://doi.org/10.1177/1476750319829633

Davis, B., & Sumara, D. J. (2005). Complexity science and educational action research: toward a pragmatics of transformation. *Educational action research*, *13*(3), 453-466. https://doi.org/10.1080/09650790500200291

DeCaporale-Ryan, L., Sakran, J., Grant, S., et al. (2017). The Undiagnosed Pandemic: Burnout and Depression Within the Surgical Community. *Current Problems in Surgery*. https://doi.org/http://dx.doi.org/10.1067/j.cpsurg.2017.07.001

Dewey, J. (1922). *Human nature and conduct: an introduction to social psychology.* Henry Holt and Company.

Dixon-Woods, M., & Martin, G. P. (2016). Does quality improvement improve quality? *Future Hospital Journal*, *3*(3), 191-194. https://doi.org/10.7861/futurehosp.3-3-191

Duhigg, C. (2012). *The power of habit: Why we do what we do in life and business*. Random House.

Espin, S. L., & Lingard, L. A. (2001). Time as a Catalyst for Tension in Nurse-Surgeon Communication. *Aorn Journal*, *74*(5), 672,681-679,682. https://doi.org/10.1016/S0001-2092(06)61766-3

Ferreira, A. (2023). Dilemmas, Conflicts, and Worldview Diversity: Exploring the Relevance of Clare Grave's Legacy for Planning Practice and Education. *Journal of planning education and research*, *43*(3), 697-708. https://doi.org/10.1177/0739456X20940797

Finn, R. (2008). The language of teamwork: Reproducing professional divisions in the operating theatre. *Human Relations*, *61*(1), 103-130. https://doi.org/10.1177/0018726707085947

Flyvbjerg, B. (2006). Five Misunderstandings About Case-Study Research. *Qualitative Inquiry*, *12*(2), 219-245. https://doi.org/10.1177/1077800405284363

Ghaferi, A. A., Birkmeyer, J. D., & Dimick, J. B. (2009). Variation in Hospital Mortality Associated with Inpatient Surgery. *New England Journal of Medicine*, *361*(14), 1368-1375. https://doi.org/10.1056/NEJMsa0903048

Graves, C. W. (1970). Levels of Existence: an Open System Theory of Values. *The Journal of humanistic psychology*, *10*(2), 131-155. https://doi.org/10.1177/002216787001000205

Hollnagel, E. (2014). *Safety-I and safety-II: the past and future of safety management* (1 ed.). Farnham: Ashgate Publishing Ltd. https://doi.org/10.1201/9781315607511

Homan, T. R. W. (2023). *Wat nu!?* (1 ed.). Boom.

Jackson, A. Y., & Mazzei, L. A. (2022). *Thinking with theory in qualitative research* (Second Edition ed.). Routledge.

Jeffs, L., Abramovich, I. A., Hayes, C., et al. (2013). Implementing an interprofessional patient safety learning initiative: insights from participants, project leads and steering committee members. *BMJ Quality & Safety*, *22*(11), 923-930. https://doi.org/10.1136/bmjqs-2012-001720

Junghans, T. (2018). "Don't Mind the Gap!" Reflections on Improvement Science as a Paradigm. *Health Care Analysis 26*(2), 124-139. https://doi.org/10.1007/s10728-017-0353-7

Kaber, D. B., & Endsley, M. R. (2004). Team situation awareness for process control safety and performance. *Process Safety Progress*, *17*(1), 43-48. https://doi.org/10.1002/prs.680170110

Kahneman, D. (2011). *Fast and slow thinking*. Allen Lane and Penguin Books.

Lally, P., van Jaarsveld, C. H. M., Potts, H. W. W., et al. (2010). How are habits formed: Modelling habit formation in the real world. *European Journal of Social Psychology*, *40*(6), 998-1009. https://doi.org/10.1002/ejsp.674

Lamers, H. (2021). *The Right Moment; Essays Offered to Barbara Baert, Laureate of the 2016 Francqui Prize in Human Sciences, on the Occasion of the Celebratory Symposium at the Francqui Foundation, Brussels, 18-19 October 2018* (S. Heremans & L. Tack, Eds. Vol. 20). Peeters Publishers. https://doi.org/10.2307/j.ctv2crj26f

Lingard, L., Reznick, R., DeVito, I., et al. (2002). Forming professional identities on the health care team: discursive constructions of the 'other' in the operating room. *Medical Education*, *36*(8), 728-734. https://www.ncbi.nlm.nih.gov/pubmed/12191055

Lucas, B. (2016). Getting the improvement habit. *BMJ Quality & Safety*, *25*(6), 400-403. https://doi.org/10.1136/bmjqs-2015-005086

Makary, M. A., Sexton, J. B., Freischlag, J. A., et al. (2006). Operating room teamwork among physicians and nurses: teamwork in the eye of the beholder. *Journal of the American College of Surgeons*, *202*(5), 746-752.

McCaw, D. (2023). Habit. *Performance research*, *28*(6), 14-22. https://doi.org/10.1080/13528165.2023.2334613

Mezirow, J. (1997). Transformative Learning: Theory to Practice. *New Directions for Adult and Continuing Education*, *1997*(74), 5-12. https://doi.org/https://doi.org/10.1002/ace.7401

Mezirow, J. D., & Taylor, E. W. (2009). *Transformative learning in practice: insights from community, workplace, and higher education*. John Wiley & Sons

Morris, M., Mulhall, C., Murphy, P. J., et al. (2023). Interdisciplinary collaborative working on surgical ward rounds: reality or rhetoric? A systematic review. *Journal of Interprofessional Care*, *37*(4), 674-688. https://doi.org/10.1080/13561820.2022.2115023

Mullainathan, S., & Shafir, E. (2013). *Scarcity: why having too little means so much*. Allen Lane.

Neal, D. T., Wood, W., Labrecque, J. S., et al. (2012). How do habits guide behavior? Perceived and actual triggers of habits in daily life. *Journal of Experimental Social Psychology*, *48*(2), 492-498. https://doi.org/https://doi.org/10.1016/j.jesp.2011.10.011.

Newman, M. (2012). Calling transformative learning into question: Some mutinous thoughts. *Adult education quarterly*, *62*(1), 36-55. https://doi.org/10.1177/0741713610392768

Oortwijn, W., Reijmerink, W., & Bussemaker, J. (2024). How to strengthen societal impact of research and innovation? Lessons learned from an explanatory research-on-research study on participatory knowledge infrastructures funded by the Netherlands Organization for Health Research and Development. *Health Research Policy and Systems*, *22*(1), 81. https://doi.org/10.1186/s12961-024-01175-x

Polanyi, M. (2009). The tacit dimension. In L. Prusak (Ed.), *Knowledge in organisations* (pp. 135-146). Routledge.

Rotmans, J., & Verheijden, M. (2021). *Omarm de chaos* (Derde ed.). De Geus.

Schoten, S. v., Eikenhorst, L. van, Schouten, B., Baartmans, M., Bruijne, M. de, Jong, L. de, Waals, M., Asscheman, H., Wagner, C. . (2022). *Monitor Zorggerelateerde Schade 2019: dossieronderzoek bij overleden patiënten in Nederlandse ziekenhuizen*. https://www.nivel.nl/nl/publicatie/monitor-zorggerelateerde-schade-2019-dossieronderzoek-bij-overleden-patienten

Schuurman, M., Groot, B., & Abma, T. (2024). Opening up creative resources: towards age-friendly communities through rhizomatic thinking and doing. *Educational action research*, *33*(1), 1-26 https://doi.org/10.1080/09650792.2024.2370277

Sexton, J B., Makary, Martin A., Tersigni, Anthony R., et al. (2006). Teamwork in the Operating Room: Frontline Perspectives among Hospitals and Operating Room Personnel. *Anesthesiology*, *105*(5), 877-884. https://doi.org/10.1097/00000542-200611000-00006

Simons, H. (2014). Case study research: In-depth understanding in context. In P. Leavy (Ed.), *The Oxford handbook of qualitative research* (pp. 455-470). https://doi.org/10.1093/oxfordhb/9780199811755.013.005

Simons, H. (2015). Interpret in context: Generalizing from the single case in evaluation. *Evaluation*, *21*(2), 173-188. https://doi.org/10.1177/1356389015577512

Snoeren, M. M., Niessen, T. J., & Abma, T. A. (2013). Beyond dichotomies: Towards a more encompassing view of learning. *Management Learning*, *46*(2), 137-155. https://doi.org/10.1177/1350507613504344

Stake, R. E. (1995). *The Art of Case Study Research*. SAGE Publications. https://books.google.nl/books?id=ApGdBx76b9kC

Sujan, M. (2018). A Safety-II Perspective on Organisational Learning in Healthcare Organisations Comment on "False Dawns and New Horizons in Patient Safety Research and Practice". *International Journal of Health Policy and Management*, *7*(7), 662-666. https://doi.org/10.15171/ijhpm.2018.16

Taitz, J. M., Lee, T. H., & Sequist, T. D. (2012). A framework for engaging physicians in quality and safety. *BMJ Quality & Safety*, *21*(9), 722-728. https://doi.org/10.1136/bmjqs-2011-000167

Travaglia, J. F., Nugus, P. I., Greenfield, D., et al. (2012). Visualising differences in professionals' perspectives on quality and safety. *BMJ Quality & Safety*, *21*(9), 778. https://doi.org/10.1136/bmjqs-2011-051755

van Woezik, T. E., Stap, T. B., van der Wilt, G. J., et al. (2023). Seeing the other: how residents expand their perspective by learning with the arts. *Journal of Graduate Medical Education*, *15*(1), 50-58.

Varela, F. J. (1999). *Ethical know-how: Action, wisdom, and cognition*. Stanford University Press.

Verhaeghe, P. (2011). *Love in a Time of Loneliness: Three Essays on Drive and Desire* (First ed.). Karnac Books. https://doi.org/10.4324/9780429476921

Vogus, T. J., & Hilligoss, B. (2016). The underappreciated role of habit in highly reliable healthcare. *BMJ Quality & Safety*, *25*(3), 141-146.

Waal, F. d. (1989). *Chimpanzee politics : power and sex among apes*. Johns Hopkins University Press.

Weick, K. E., & Roberts, K. H. (1993). Collective Mind in Organizations: Heedful Interrelating on Flight Decks. *Administrative Science Quarterly*, *38*(3), 357-381. https://doi.org/10.2307/2393372

Weick, K. E., & Sutcliffe, K. M. (2007). *Managing the unexpected: resilient performance in an age of uncertainty* (2nd ed.). Wiley.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (1999). Organizing for high reliability: Processes of collective mindfulness. *Research in Organizational Behavior*, *21*, 81-123.

Weller, J., Boyd, M., & Cumin, D. (2014). Teams, tribes and patient safety: overcoming barriers to effective teamwork in healthcare. *Postgraduate Medical Journal*, *90*(1061), 149-154.

Witman, Y., Smid, G. A. C., Meurs, P. L., et al. (2010). Doctor in the lead: balancing between two worlds. *Organization*, *18*(4), 477-495. https://doi.org/10.1177/1350508410380762

Xu, X., Chen, R., Jiang, L., et al. (2023). Emotional or utilitarian? Exploring the malleability in time perceptions. *Current Psychology*, *42*(34), 29735-29744. https://doi.org/10.1007/s12144-023-04519-y