



Reflection in Professional Practice

vorgelegt von

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Chapter 1

General introduction

Workplace learning theories and research are concerned with understanding, elaborating, advancing and supporting professionals' learning through and for work in order to effectively meet or respond to ongoing changes to work and workplace affordances. Although usually perceived as unwelcome, workplace changes provide a rich source of learning experiences. They affect professionals' daily work practices, increase uncertainty and heighten the risk of errors. Workplace changes allow professionals to engage in learning as they adapt to new demands, generate new knowledge and skills, refine work routines and develop and integrate new work processes. This requires professionals' active engagement in learning activities that mostly include necessary cooperation and coordination with peers and supervisors. The richness and depth of learning from and through workplace changes will likely be premised upon the interplay between individual attitudes, practiced behaviours and work environment characteristics (Billett, 2004, 2012).

From an educational perspective, investigating professionals' learning within the context of workplace changes intends to focus on how the learning affordances induced through a workplace change are individually perceived, how professionals actively engage with these affordances by initiating learning activities, and how they actually modify their daily work practice and behaviours in response to this learning. Given that, in general, professionals' workplaces will be continuously affected by various changes in work tasks and processes as well as in working conditions, it is important that effective means for learning from and through changes are enacted in workplaces.

This thesis focuses on the value of reflective practice in individual and collective learning from workplace experiences, such as those that occur during workplace changes. Workplace changes often awake professionals' experience of uncertainty and failure. The research presented in this thesis first intended to investigate how professionals perceive a particular far-reaching workplace change and the involved opportunities for learning, and which factors support or constrain change-related informal learning. Based on these findings, the research further aimed to gain an understanding of how relevant personal and work-environment characteristics impact professionals' reflective practice—as a means of learning through workplace experiences—against the backdrop of workplace changes. In light of the reported results, theoretical and practical implications were derived to provide direction and guidance for professionals' effective learning through reflective practice.

The present chapter introduces and defines the concept of reflective practice. It also gives a short introduction to the assumptions made in this thesis about how

particular personal and work-environment characteristics may serve as relevant antecedents to professionals' reflective practices. Finally, an overview of the studies that aimed to empirically examine these assumptions is provided.

Reflection in professional practice

Reflection is defined as a future-oriented but retrospective process that involves a review of incidents and experiences, a critical analysis of their causes and effects that leads to new understandings and appreciations, and the drawing of conclusions that guide future action and behaviour (Boud, 2001). Reflection represents an activity pursued with intent and consciousness; emotions and cognition are closely interrelated and interactive. Yet, reflective practice goes beyond just thinking or awareness of experiences, thoughts or feelings. Individuals must call on certain cognitive and affective skills to effectively perform a reflection process. These skills include self-awareness and the ability to describe thoughts and feelings, critically analyse situations one experiences (including an analysis of existing knowledge), and integrate new knowledge and develop new perspectives (Atkins & Murphy, 1993).

Reflection is unlikely to occur in familiar situations that allow professionals to automatically apply routine work practices. In contrast, situations that are new, unexpected or challenging trigger reflective learning processes because they afford professionals the chance to acquire adequate new knowledge and skills for the situation (Mann et al., 2009). Thus, reflective practice enables individuals to exploit learning opportunities in the workplace, fosters the acquisition of experiential knowledge and facilitates the improvement of work performance and the development of professional competencies (Fejes & Andersson, 2009; Gartmeier et al., 2008; Høyrup, 2004; Korthagen & Vasalos, 2005).

Building on Hinett (2002), it is proposed here that the concept of reflection in professional practice can be basically described through four approaches: (1) individual, (2) contextual, (3) social-relational and (4) developmental. The first approach underlines an individual perspective by emphasising that learning through reflective practice is personal; all individuals have their own kinds of workplace experiences to reflect upon (Hinett, 2002). According to Boud, Keogh and Walker (1985, p. 19), "reflection is an important human activity in which people recapture their experience, think about it, mull it over and evaluate it. It is this working with experience that is important in learning". Reflection on workplace experiences can be described as a cyclical process including three main stages: the first is awareness, articulation and review of an

experience, feeling or thought; second comes a critical cause-and-effect analysis and re-evaluation of the experience, feeling or thought; and third is the development of a new or revised perspective and the generation of alternative strategies for action or work behaviour (Atkins & Murphy, 1993; Boud, 2001; Scott, 2010). Although the stages are represented linearly, a reflection process does not necessarily follow this path. The stages are not independent of each other, and individuals can move back and forth in the process during reflection. However, the final stage of a successful reflection process should involve a decision on new ways to act or behave in the future (Daudelin, 1996).

The second approach conceives reflection as a practice of learning from workplace experiences as inherently related to the context in which it occurs: It is the work context that provides both the workplace experiences professionals reflect upon and the conditions that can be either supportive or inhibitive of this reflective learning. Workplace experiences, in general, serve as valuable opportunities for learning and professional development. Numerous theoretical and empirical contributions in the literature emphasise the important role of the work environment in stimulating, supporting and reinforcing experience-based learning in the workplace (for an overview, see Tynjälä, 2013).

The third approach underlines a social-relational perspective. A reflective practice can be embedded in social interactions and negotiations between professionals and their peers as well as their supervisors. These reflective dialogues help professionals make sense of new information and feedback within the context of their own experiences (Hinett, 2002). In addition, engaging in collective reflection processes enables professionals to make meaning of their own or others' workplace experiences, and to relate new information to existing knowledge and experiences. Bruno et al. (2011) noted that reflection as a process of knowledge construction encourages social and communication skills that enable cooperative negotiation and effective communication. Hence, reflective practices in group settings can be understood as intra- and interpersonal behaviour taking place in the form of social exchange and negotiation processes (Bauer & Mulder, 2007; Van Woerkom, 2004). Through a shared and collaborative approach, an individual can look on own and others' experiences from multiple perspectives and multiple sources (Mann et al., 2009). In this sense, learning from experience through reflective practices results from invisible, individual mental activity and active behaviour within social interactions. Regarding this perspective, Van Woerkom (2004, p. 182) argued that "reflection as individual behaviour is often less effective than reflection in a social interaction".

The fourth approach describes reflective practice as developmental: The outcome of a reflection process guides professionals' future actions and behaviours. Thus, reflection has both a retrospective and a future orientation. Based on new understandings and appreciations attained through a reflection process that comprises a retrospective cause-and-effect analysis of what was experienced in the workplace, professionals can make informed choices about how to act in the future and experiment with these action strategies. Consequently, effective learning through reflective practice results in changed knowledge, actions and behaviours; and this process implies intentionality and consciousness (Hinett, 2002). Hence, reflective practice is both an essential component of professional learning and the representation of that learning. In all, reflection can be described as an individual, contextual, social-relational and developmental practice that is embedded in everyday work.

Although the relevance of reflection for learning and development in occupational settings is often discussed in the literature, at this point empirical evidence on conditions that facilitate professionals' learning through reflective practice, especially against the backdrop of workplace changes, is scarce. This thesis aims to address this gap by investigating personal and work-environment characteristics that supposedly serve as antecedents to reflection.

Antecedents to reflective practice

Bauer and Gruber (2007) emphasised that two major kinds of situations stimulate individual and collective learning in the workplace: workplace changes that result in changed work tasks and action patterns, and the occurrence of errors. But neither automatically leads to learning. Rather, the participation in learning activities and the quality of this learning depend on an individual's attitudes and work behaviours, as well as characteristics of the work environment that either support or constrain this learning (Billett, 2004; Van Daal et al., 2013). This general approach to factors that influence and determine effective learning in the workplace can be transferred to the concept of learning through reflective practice.

Despite the importance of reflection for learning in workplace settings, its antecedents are not well understood. Thus, the main purpose of this thesis is to investigate individual orientations, work behaviour and work-environment conditions that are—based on theoretical considerations—assumed to serve as antecedents to reflective practice. From a workplace learning point of view, it is supposed that relevant antecedents to professionals' effective use of learning opportunities—induced through a

workplace change or the occurrence of errors—for their reflective practice involve (a) the individual's awareness of the learning opportunity and its interpretation as such; (b) positive attitudes towards change or error-related work challenges and towards one's own capabilities to cope with these challenges; (c) the individual's proactive involvement and the decision to engage in the learning opportunity; and (d) a work environment that provides support for this learning.

Orientations

This thesis assumes that engaging in learning activities after experiencing new and challenging situations at work—such as workplace changes or errors—afford professionals' positive attitudes and strengthened beliefs in their capabilities to cope with such situations, as well as their willingness to transform those attitudes and beliefs into observable action and learning behaviours.

Professionals have often been described as passive and resistant towards work changes and the ensuing affordances for work and learning (Frese & Fay, 2001). For example, people with conservative attitudes towards change prefer to stick to established work routines (Fay & Frese, 2001). This thesis assumes that professionals with positive attitudes towards workplace changes will be more likely to approach the opportunities for learning and modify work routines proactively and persistently; these individuals are also expected to be more likely to engage in reflective practice. To examine an individual's change orientation, one can refer to Frese and Plüddemann's (1993) concept of 'readiness to change', which is defined as an attitude that implies the willingness to change one's own work behaviours and work routines, and to generate new knowledge and skills. Previous studies found readiness to change to be a driving force behind professionals' proactive engagement in work and learning affordances (Fay & Frese, 2001; Frese & Fay, 2001).

Moreover, this thesis assumes that professionals with strong beliefs in their abilities to cope with whatever challenges arise in their workplaces more willingly initiate learning activities such as reflective practice. Professionals' perception of their self-efficacy seems especially to have an important motivational impact on their action and performance in new and ambiguous work situations (Bandura, 2012). For example, self-efficacy was found to determine the initial decision to perform an action or behaviour, the expended effort on that performance and the perseverance in the face of barriers and setbacks (Speier & Frese, 1997). Thus, it seems to serve as a crucial motivational

driver for successful performance of work and learning activities (Elias et al., 2013; Van Daal et al., 2013).

Often, challenging work situations also incite the occurrence of errors. Although errors are usually undesirable incidents that interrupt work processes and pose personal and work-related challenges to the person responsible, they also provide rich learning opportunities. Reflective practice serves as a means to effectively exploit the worth of such error experiences in the workplace. This thesis aims to analyse the theoretically assumed effects of individuals' positive attitudes towards errors on their engagement in reflective practices that increase the likelihood of effectively learning from errors. For example, professionals who have confidence in their abilities to deal with errors are expected to engage in reflection processes to learn about the error's roots and to develop strategies to avoid the error's reoccurrence. Previous studies within healthcare professions revealed that individuals who believe that an error is a valuable learning opportunity will more likely participate in reflective and socially shared learning activities (Bauer & Mulder, 2013; Leicher et al., 2013). This thesis will examine whether the relationship between individuals' attitudes towards errors and their reflective practices may be mediated by a social climate within the work environment that is perceived as safe and supportive. The assumed relevance of the work climate for professionals' reflective practice will be returned to in more detail later in this section.

Work behaviour

Facing workplace changes usually increases uncertainty among workers. Reducing this uncertainty requires an individual to take an active approach to work and workplace learning to identify and engage with present tasks and relevant learning affordances. Personal initiative is one form an active approach might take, as it is characterised by "its self-starting and proactive nature and by overcoming difficulties that arise in the pursuit of a goal" (Fay & Frese, 2001, p. 98). Taking initiative implies leaving old work routines, developing new strategies, pursuing self-set goals and proactively searching for opportunities to learn and develop professionally. In these ways, an individual accepts responsibility for all of these actions (Bledow & Frese, 2009; Fay & Frese, 2001; Frese et al., 1996).

In the context of workplace change and workplace learning, personal initiative represents helpful work behaviour. Thus, this thesis intends to empirically examine whether personal initiative serves as a relevant antecedent to reflective practice in professional work. Based on theoretical considerations, it is assumed here that

professionals' levels of personal initiative in the workplace influence their decisions to participate in change-related learning affordances through reflective learning activities.

Work environment

Apart from cognitive resources, learning requires motivational forces (Zhao, 2011). The purpose of this thesis is to investigate motivational work-environment characteristics that supposedly drive and direct professionals' learning through reflective practice. First, a work environment that provides professionals with opportunities to satisfy their basic needs to experience autonomy, competence and social relatedness is necessary for professionals to be self-determined at work. These three basic characteristics seem to serve as motivational forces determining the quality of professionals' work behaviours and work performance (Baard et al., 2004; Ryan & Deci, 2000). Studies in occupational and educational settings have provided evidence that self-determination has an important impact on motivation and learning behaviour (Harteis et al., 2004; Minnaert et al., 2011). Thus, this thesis assumes that experienced self-determination in the workplace will exert positive effects on professionals' learning through reflective practice.

Second, this thesis theoretically assumes a safe work climate—characterised by mutual trust, respect and supportive cooperation and communication—to effectively stimulate and facilitate reflective practice. Recent research in various occupational settings provides empirical evidence for the relevance of a safe and supportive work environment to learning activities, especially after the occurrence of errors (Bauer & Mulder, 2013; Edmondson, 1999; Seifried & Höpfer, 2013). Often, an individual's fear of punishment, blame or embarrassment hinders error reporting within organisations (Zhao & Olivera, 2006). Thus, a work environment that is perceived as safe and supportive around the handling of errors is expected to facilitate error reporting, interpersonal exchange and even collective reflections about error-related experiences.

Moon (1999) introduced four main qualities of environments that seem to support individuals' reflective practice: a good social climate; a feeling of safety for taking risks in cognitive explorations; an understanding of the emotional concomitants of reflection; and help for those who have difficulties with their reflective practices. In line with Moon's arguments on environmental qualities, this thesis focuses on the relevance of perceived psychological safety within a work environment for professionals' engagement in reflective practice. On the basis of Edmondson's (1999) concept, psychological safety is defined as the individual perception of the work environment as

safe for interpersonal risk taking, such as bringing up critical problems or openly admitting to errors, without the fear of negative consequences such as embarrassment or rejection. It is proposed that trustful and supportive behaviour among peers and appropriate leadership from the supervisor constitute psychological safety within a work group. This thesis aims to analyse whether and to what extent these two variables of psychological safety influence professionals' reflective practice.

To conclude, the main purpose of this thesis is to investigate individual orientations towards workplace changes and the ensuing challenges, such as the occurrence of errors, individuals' beliefs in their abilities to cope with such challenges, and individuals' self-starting and proactive approaches towards work and learning. The thesis will also examine motivational work-environment characteristics, such as a safe work climate and perceived self-determination, as crucial preconditions for reflection as a practice to support experience-based learning. The following section gives an overview of the contributions involved in this thesis, especially the research that provided empirical evidence for the theoretical assumptions introduced in this section.

Overview of the dissertation

The following chapters present two studies—a semi-structured interview study and a questionnaire study—that contribute to the research on workplace change-related learning. The aim of the initial interview study (chapter 2) was to gain an understanding of how professionals experienced workplace change, the involved learning affordances, and conditions in the workplace that supported or constrained their change-related learning. Building on the findings of this study, it is argued that reflective practice serves as a crucial means to support learning from workplace change-related experiences. The purpose of the research presented in chapters 3 to 5 is to examine—by means of questionnaire instruments—relevant personal and work-environment characteristics that supposedly serve as antecedents to reflective practice.

The studies involved different groups of banking professionals whose workplaces were, at the time, recently affected by a major change process. The banking sector provided a valuable field of study, as it comprises a dynamic occupational field in which change is a permanent work condition affording ongoing learning and professional development. Thus, research that focused on bank professionals provided a rich opportunity to understand the relationship between workplace changes and individuals' engagement in work and learning. The findings gained through the initial interview study

on the consequences of workplace changes for professionals' work and change-related learning proved helpful for the development of the quantitative study. Questionnaire measures mapped participants' orientations (e.g., readiness to change, attitudes towards errors, self-efficacy beliefs), work behaviours (e.g., personal initiative), work environments (e.g., perceived safety of the work climate, self-determination) and reflective practices.

It must be emphasised that the participants of the interview study were not included in the questionnaire study.

The following chapters, each of which presents research results, can stand alone. However, some repetition is unavoidable. Chapters two through four are published in international, peer-reviewed journals, and chapter five has been submitted for publication.

Chapter 2: The interplay between change and learning at the workplace

This chapter advances an educational micro perspective on how workplace changes affect professionals' work and learning. Investigating the effects of workplace change means looking at the extent to which every worker actually modifies daily work practice and behaviours, generates and integrates new knowledge and skills, shifts his own views and attitudes on the job and participates in improving the work environment. In this sense, workplace changes provide measureable outcomes of learning processes.

Chapter 2 describes a semi-structured interview study that aimed to understand how a specific workplace change affected individuals' work practice, how it was perceived as a learning opportunity, and how and with what effort individuals actively engaged with the learning affordances involved—such as through their readiness and active participation in the learning process and the kinds of learning activities they engage with. As workplaces comprise both individuals' participation in work and learning and the contribution of the work environment, this study further intended to investigate what kinds of conditions provided through the workplace facilitated or hindered professionals' change-related learning.

The following research questions were stated: How did employees perceive a far-reaching workplace change and the resulting requirements for learning? Which factors were perceived as supportive or inhibitive for learning in the context of workplace change?

The study participants' statements in the semi-structured interviews were analysed by the use of a framework adapted from Billett (2006) that allowed the statements to be allocated into categories of workplace activities and workplace interdependencies.

Chapter 3: Error orientation and reflection at work

Workplace changes increase uncertainty among workers and heighten the risk of errors during adaptation to changed work requirements. New and challenging work situations are regarded as particularly error-prone because established work routines become obsolete and workers lack knowledge and skills for the new requirements (Keith, 2012). Although errors are undesirable, they provide important learning opportunities and the possibility for improvement.

However, the occurrence of errors does not automatically lead to learning. This chapter proposes that positive attitudes towards errors, and a work climate that is perceived as safe for interpersonal risk taking such as reporting the occurrence of an error, shapes learning through reflection.

It was assumed that individuals' positive interpretations of errors as rich learning experiences stimulate active participation in learning activities, such as learning through reflection on error-related workplace experiences. A safe work climate—characterised by peers' and supervisors' supportive and non-punitive behaviours—was assumed to facilitate collaboration and interaction among professionals and their peers and supervisors. Reflection processes would be initiated based on one's confidence in experiencing trust, support and respect within the work group.

The research presented in chapter 3 examines, by means of questionnaires, the effects of attitudes towards errors (i.e., error orientation) on professionals' reflective practice. It was assumed that a safe work climate serves as a mediator on the relationship between error orientation and reflection. For the purpose of the study, an instrument was developed to measure the perception of a safe work climate among peers (i.e., psychological safety of colleagues) and the supervisors (i.e., psychological safety of supervisors). Attitudes towards errors were examined via the error orientation questionnaire developed by Rybowskiak et al. (1999).

This study hypothesises that four aspects of error orientation influence reflective practice: error competence (positive), learning from errors (positive), error strain (negative) and error risk-taking (positive). In addition, the hypothesised effects of error orientation on reflection are assumed to be mediated by a sense of psychological safety facilitated by both colleagues and supervisors.

These hypotheses were examined through correlation analysis and multiple regression analysis. The hypothesised mediating effects of the psychological safety variables were analysed using Sobel tests.

Chapter 4: Change at work and professional learning: how readiness to change, self-determination and personal initiative affect individual learning through reflection

The research presented in chapter 4 is based on the theoretical assumption that, for learning through reflective practice at work to succeed—especially within the context of workplace changes—relevant preconditions include a positive attitude towards changes (i.e., readiness to change at work) and motivational work characteristics (i.e., self-determination). Professionals' proactive work behaviour (i.e., personal initiative) was assumed to provide mediating effects. Self-determination was conceptualised as the individual's experience of autonomy, competence and social integration in the workplace. Readiness to change was defined as an attitude that implies an individual's willingness to change own work behaviours and work routines, and to generate new knowledge and skills (Frese & Plüddemann, 1993). Furthermore, it was assumed that the effects of readiness to change and self-determination on reflection would be mediated by personal initiative—a work behaviour that is characterised through a self-starting and proactive approach that includes persistence in overcoming difficulties and setbacks potentially arising in the pursuit of a goal (Fay & Frese, 2001).

It was hypothesised that readiness to change would have a positive impact on reflective practice. It was also hypothesised that reflective practice is positively influenced by the three variables of self-determination: experience of autonomy, competence and social integration. In addition, two hypotheses were stated involving the effects of readiness to change and self-determination on reflective practice as mediated by personal initiative.

To examine these hypotheses, correlation analysis and multiple regression analysis were performed. Moreover, Sobel tests were calculated with the aim of analysing the mediating effects of personal initiative.

Chapter 5: Using workplace changes as learning opportunities: Antecedents to reflective practice in professional work

This chapter emphasises that effectively utilising the potential worth of workplace changes as learning opportunities requires professionals' strong beliefs in their

capabilities to cope with and proactively engage with challenges in their workplaces. This confidence is born of self-efficacy, which refers to the belief in one's capabilities to cope with difficult demands and challenging situations through organising and executing courses of action to attain the required performance and achieve the desired results (Bandura, 2012).

Although self-efficacy beliefs have proven relevant in numerous domains and activities, research on how professionals' beliefs in their efficacy allow them to cope with challenging demands and influence their reflective practice is scarce, especially in occupational fields where individuals frequently and increasingly are confronted with various workplace changes that involve uncertainty and the risk of errors. The research presented in chapter 5 aims to address this gap by examining generalised self-efficacy as an antecedent to the reflective practices of frontline service employees within the occupational field of banking. As referenced above, chapters 3 and 4 present research that aimed at examining—amongst other things—potential mediating effects of personal initiative and psychological safety on the relationship between professionals' work orientations and reflective practices. The research in chapter 5 investigates how personal characteristics such as self-efficacy beliefs and personal initiative, as well as work-environment characteristics such as a safe work climate among peers (i.e., psychological safety of colleagues) and concerning supervisor behaviour (i.e., psychological safety of supervisors), directly impacts reflective practice.

It was hypothesised that personal characteristics—self-efficacy and personal initiative—exert positive effects on reflective practice. Furthermore, the hypotheses stated that reflective practice is positively affected by supportive work-environment characteristics, such as the psychological safety of colleagues and the psychological safety of supervisors.

The hypotheses were examined by correlation analysis and hierarchical regression analysis. A hierarchical regression model was applied to investigate the relevance of personal characteristics in relation to work-environment characteristics for professionals' reflective practice.

The final chapter of this thesis—chapter 6—presents a general discussion of the main findings and develops a model of antecedents to reflection in professional practice. Based on these findings, practical implications and directions for future research are provided.

Chapter 2

The interplay between change and learning at the workplace*

Abstract

Purpose - The purpose of this paper is to analyse employees' perception of a change at their workplaces and the requirements for learning, and factors supporting or inhibiting learning in the context of this change.

Design/methodology/approach - Data collection included personal face-to-face semi-structured interviews with ten client advisors in the retail-banking department of a German bank. The interviews took place during a time when the participants' workplaces were affected by a drastic change, namely the implementation of an integrated consulting concept. The data were analysed by a qualitative, content analysis approach, adapting Billett's framework for analysing workplace changes.

Findings - Challenges and requirements for learning as a consequence of the workplace change were analysed. The results show that the employees realised many affordances of the modification of work routines, especially concerning work performance, professional knowledge, and professional role. Thus, employees recognised the change as an opportunity for the acquisition of knowledge and competence development.

Originality/value - This paper contributes to the understanding of workplace change's effect on employees' knowledge, work routines and professional development.

Keywords Professional education, Performance management, Workplace learning

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Workplace changes are an omnipresent phenomenon in contemporary work environments, and thus continue to raise the interest of researchers with psychological (Oreg, 2006; Wanberg & Banas, 2000; Van Dam et al., 2008) and educational backgrounds (Billett, 2006; Reardon, 2004; Watkins & Marsick, 1993). From different perspectives, scholars from the field of workplace learning analyse the mutual relationship between change in the workplace and individual or organisational learning (Bauer & Gruber, 2007; Doornbos & Krak, 2006; Simons & Ruijters, 2004). The acquisition of knowledge and the development of professional competencies emerge alongside workplace reorganisation. Because of ongoing workplace changes, employees' professional competencies and knowledge, once acquired, are no longer considered stable and secure throughout a professional career. Instead, educational theorists assume that employees are urged to permanently adapt their knowledge, skills and work routines to meet new requirements resulting from organisational changes (Billett, 2008a; Fenwick, 2001; Raelin, 2007). Learning to cope with new requirements means employees must modify existing work routines or establish new ones (Becker, 2004; Becker et al., 2005; Hoeve & Nieuwenhuis, 2006). In this way, changes in the workplace can foster learning and professional development (Gartmeier et al., 2008; Raehalme, 1999).

However, effective learning in change situations does not occur automatically, mainly due to the tension between needing to keep up the pace and ensure job performance efficiency on one hand, and time-consuming learning activities on the other (Eraut, 2004). Due to the additional workload often induced by change processes, employees sometimes may seek a quick fix to problems rather than spend time on individual or collective reflection and cause analysis (Cressey, 2006; Ellström, 2006; Nyhan, 2006). As a consequence, organisational and individual learning remains superficial (Tucker et al., 2002). Moreover, due to financial or time restrictions or because of the sheer rapidity of change, organisations often are unable to meet the requirements for learning with formal training programs (Füchtenkort & Harteis, 2007). Therefore, informal learning processes become more and more important (Marsick & Watkins, 1990; Reardon, 2004; Rößer, 2007). This leads to workplaces becoming learning environments requiring employees' active participation (Billett, 2004, 2008a; Ellinger & Cseh, 2007; Hager, 2004). Existing theorisation has argued that employees' openness and commitment or resistance to workplace change shapes their reactions, and, eventually, the degree to which they manage to master learning requirements (Cunningham et al., 2002; Docherty et al., 2006). For instance, a critical factor for open-

mindfulness towards change seems to be the degree to which an individual can participate in decision-making processes and thus influence the design of a change process (Wanberg & Banas, 2000). Yet, empirical evidence is still missing for the role different factors play with regard to employees' engagement in learning activities induced through workplace changes. Thus, we take a further step in this paper in analysing:

- how employees perceive a change at their workplaces and the requirements for learning; and
- which factors support or inhibit learning in the context of this change.

For this purpose, we conducted a semi-structured interview study in the banking sector, where organisational changes are frequent and often drastic.

A workplace learning perspective on workplace changes

When seeking to analyse changes in the workplace from a workplace-learning point of view, two issues are prominent. On one hand, a change provides opportunities for every employee to modify work routines and to acquire knowledge and skills. For an educational analysis, this individual perspective is most important. On the other hand, organisational changes shape the way in which individuals engage in their work in multiple ways.

The individual perspective

From an individual perspective on the effects of workplace changes, arguments derived from constructivist theorisation help to extend existing analyses and yield a pedagogically fruitful position. In their theoretical analysis of the interplay between workplace learning and workplace changes, Bauer and Gruber (2007) conclude that a focus on a micro perspective is crucial for investigating how daily work changes affect knowledge and skills on the individual or group level. General trends such as globalisation or post-Taylorism from a macro perspective are helpful in understanding why workplace learning is becoming important, but the investigation of actual change processes and how they affect workers and work environments requires a focus on individuals, teams or units. When engaging in a micro perspective view and drawing constructivist theorisation into account, one has to conclude that the individual perception of reality and subsequent actions are highly subjective and idiosyncratic (Billett, 2008a, 2008b). Therefore, changes are not only relevant as “objective”

processes; here, the main focus is upon their subjective, individual perception and interpretation (Cunningham, 2006). Without this perspective, it is difficult to explain why people do or do not interpret changes as opportunities for learning in the workplace.

These statements reveal an important insight: from an educational micro perspective, investigating the effects of change means looking at the extent to which every employee:

- actually modifies his or her daily working behaviour;
- updates knowledge and skills; and
- shifts his or her views and attitudes on the job.

In this sense, workplace changes are closely related to measurable outcomes of learning processes.

In this respect, the critical question is whether the three components of individual learning emerge simultaneously as a result of actual changes. In a study by Doornbos and Krak (2006), police officers were asked to talk about their job-related learning. Initially, they were hardly able to report any learning outcomes or processes. Yet, when the question was modified to ask what the policemen had changed in terms of their competencies and work practices, the subjects brought up numerous examples and realised that they had learned a lot without necessarily calling it “learning”. Thus, to engage in an exploration of changes in the workplace, the most fruitful focus is on concrete behaviours, working methods or tasks being modified.

The individual from a contextual perspective

To evaluate and understand why employees develop at work, we must take contextual factors into account. Employees are embedded within institutional structures in which economic, political or other restrictions exist. Individual learning thus takes place under external influences and in cooperation and interaction with colleagues or supervisors (Ellinger & Cseh, 2007; Hodkinson et al., 2008). To investigate the consequences and outcomes of workplace change, it is helpful to focus on a particular change program or process as we did in our study, where we examine the implementation of an integrated consulting concept in retail banking. This aims to provide a frame of reference for the interview questions as well as clues for interpreting the research participants’ statements.

We must take two critical factors into account. First, a change program is a complex and multifaceted phenomenon itself. Second, despite each individual’s different reaction towards change, some individual orientations revealed themselves as

decisive for coping with change in the workplace: employees' readiness for change (Armenakis et al., 1993; Cunningham et al., 2002), their openness towards change (consisting of, for example, change acceptance and a positive view of changes) and personal resilience (made up of self-esteem, optimism and perceived control) (Wanberg & Banas, 2000).

Thus, when investigating a concrete workplace change, we must bear in mind that contextual factors do not automatically result in development on the concrete level of individual performance. Instead, the employees' perceptions and reactions are of great importance (Chawla & Kelloway, 2004; Chen & Wang, 2007).

Conclusions for a study on workplace changes and workplace learning

These theoretical considerations lead to conclusions that form the basis of a qualitative study investigating the interrelation between change in the workplace and workplace learning.

- Inquiry should focus on a concrete change process that affects the research participants' workplaces. The aim or characteristics of the change process itself may not reveal much about employees' learning. But grounding the inquiry in a concrete phenomenon allows structuring of the individuals' reports about their perceptions of the change, which can guide their reflections and result in better understanding of their answers.
- An investigated change might be implemented as a consequence of a management decision. Yet, from an educational perspective, research participants' perceptions of the externally imposed change—such as how it relates to their own goals, attitudes and skills—can be analysed.
- Moreover, how individuals evaluate the direct and indirect effects of the change on their work situation, their learning activities and their work products and processes can become the focus of analysis.

Change context of the study

The present interview study was conducted in the retail-banking department of a German bank. In spring 2007, the bank's management introduced a new concept for client advising called the Integrated Consulting Concept (ICC). This concept urged client advisors to give up their existing specialisation in a limited number of products as they were expected to sell a larger number of products. Further, they had to adopt standardised procedures in customer conversations. Hence, they had to confront each

customer with a detailed set of fixed questions meant to obtain information such as the client's wishes and objectives in several areas of life. Information collected through the scheme concerned the client's:

- financial situation, including financial investments, insurances and pension schemes;
- private situation and occupation, including career, current and anticipated family status, real estate, retirement plans, health and lifestyle.

Along with this standardised set of questions, the management introduced guidelines for client conversations. The ICC can be considered a drastic change for several reasons.

- Client advisors had to adapt a new work process by following standardised schemes in client conversations. Before the change, they individually developed and applied a structure for consultancy according to the premises of the client and their own product specialisations. Client advisors could easily modify this structure according to the dynamic of the resulting conversation. The ICC's implementation gave the advisors only a little space for modification, as every part of the scheme had to be discussed with the customer.
- The range of products each client advisor had to sell increased after the change. Beforehand, each client advisor specialised in selling a few specific products. This change signified a drastic increase in the amount of knowledge required.
- Before the ICC's implementation, client advisors have not served a specific number of clients. Further, there was no specified frequency with which each client had to be invited for a counselling interview. With the ICC's implementation, management classified customers according to their economic situation and their family status. These groups of clients were distributed to the client advisors, so that each advisor then had to serve a fixed group of around 200 clients. Moreover, the ICC demanded that each advisor contact and, if possible, meet each of the 200 clients on a predetermined, frequent basis.
- The ICC included the implementation of a new software program for the calculation of financial products and investment models as well as the generation of product offers. This program replaced previously used

computer tools. In addition to the software, the bank's management required all client advisors to use specific paper worksheets for client conversations.

The implementation of the ICC affected employees in different ways, which are interesting from an educational perspective: the client advisors needed to modify existing work routines and to acquire extensive new knowledge.

Research questions

In the subsequent section on methodology, we describe the conceptualisation and accomplishment of our interview study addressing the following research questions:

- RQ1. How did the employees perceive the change (implementation of the ICC) and what were the resulting requirements for learning?
- RQ2. Which factors were perceived as supportive or inhibitive for learning in the context of the change?

Method

Sample

We conducted semi-structured interviews with ten client advisors in the retail-banking department of a German bank. The following criteria guided our selection of research participants:

- each participant had to have the same exposure to the change;
- all participants had to work on the same functional area;
- all participants had to have at least five years of work experience in retail banking.

This was due to the assumption that individuals with less work experience may not have built up stable work routines, and thus, would possibly not perceive the change as incisive. For this study, it was important to include participants who we assumed possessed stable work routines, as the investigated change demanded new ways of problem solving.

In line with these selection criteria, the managers of the retail-banking department asked the eligible staff for voluntary participation in the study in the name of the researchers. From 14 persons addressed, 10 (four women, six men) agreed to participate. As displayed in Table 1, the participants' age ranged from 28 to 54 years ($M=40.10$ years; $SD=7.75$ years). Their work experience in retail banking varied from

five to 30 years ($M=16.20$ years; $SD=7.27$ years). Eight participants held a German high school diploma, of which six entered retail banking after finishing their academic studies. Two participants held secondary school diplomas. These two, as well as two holding high school diplomas, completed a three-year vocational training (apprenticeship) at the beginning of their careers in retail banking. The participants attended six to eight product-specific trainings per year. The length of these trainings ranged from half-a-day to two days, depending on the complexity of the product. In addition, once a year each participant attended a half-day or one-day general training session on selling skills.

Table 1. Research participants

Participant	Gender	Age	Work experience (years)	School education	Vocational education
No. 1	Female	36	14	High school	Apprenticeship
No. 2	Male	31	5	High school	Academic studies
No. 3	Female	54	30	High school	Academic studies
No. 4	Female	42	20	High school	Apprenticeship
No. 5	Male	47	15	High school	Academic studies
No. 6	Male	36	10	High school	Academic studies
No. 7	Male	28	10	Secondary school	Apprenticeship
No. 8	Female	43	23	Secondary school	Apprenticeship
No. 9	Male	45	20	High school	Academic studies
No. 10	Male	39	15	High school	Academic studies

Instrument

We designed semi-structured interview guidelines based on a framework developed by Billett (2006). We adapted it to the premises of the study with the intent to analyse the employees' perception of the change and of factors that supported or inhibited their learning. According to Billett (2006), the framework “provides a way of considering (...) changes through the perspectives of the activities in workplaces that are directed towards the continuity of the work practice and those continuities that individual employees are attempting to secure through their engagement in work” (p. 237). Billet originally developed the framework to describe and illustrate the requirements for work

practice comprising categories of workplace activities and interdependencies. These are covered by 10 dimensions: routineness, discretion, intensity, multiplicity, complexity, accessibility, homogeneity, working with others, status of employment, and artefacts and external tools. Table 2 shows the study's interview framework. It illustrates the 10 dimensions by means of the themes discussed with the research participants during the interviews.

Table 2. Interview framework for analysing the characteristics of workplace activities and inter-dependencies

Workplace activities

Activities within work practice can be described in terms of their ...

Routineness	The subjects were asked to describe the extent to which the investigated workplace change made it necessary to acquire knowledge and to establish new or to modify existing courses of action (work routines) for the accomplishment of work tasks.
Discretion	The subjects were asked to describe activities after the change that required a broader or narrower range of decision-making and more or less autonomous practice. Further it was asked how far the subjects were allowed to participate in the decision-making process and the implementation process of the change.
Intensity	The subjects were asked to describe the extent to which the intensity of work tasks increased or decreased after the change.
Multiplicity	The subjects were asked to describe the extent to which work activities increased or decreased after the change.
Complexity	The subjects were asked to describe to what extent the complexity of work activities increased or decreased after the change.
Accessibility	The subjects were asked to describe the extent to which knowledge required for the adaptation to the workplace change was accessible.

Workplace interdependencies

Interdependencies within work practice are held to be describable under ...

Homogeneity	The subjects were asked to describe the extent to which all employees were affected by the workplace change, and how it affected work practices.
Working with others	The subjects were asked to describe the extent to which the change had an impact on the interactions with others, especially with colleagues.
Status of employment	The subjects were asked to describe their employment status, their professional role, and how status and role were affected by the workplace change.
Artefacts and external tools	The subjects were asked to describe new physical artefacts and tools that were used for the accomplishment of work tasks.

Source: Billett (2006, modified)

Procedure

The study was conducted in spring 2007, shortly after the ICC had been implemented at the participants' workplaces. As data collection started, employees already had begun to work with this new concept. Hence, the study can be considered "real-time researching work" (Paloniemi, 2006; Reardon, 2004). We conducted interviews at participants' workplaces over a two-week period. On average, an interview lasted about one hour.

Data analysis

The primary researcher audiotaped the interviews and then literally transcribed, reviewed, and edited them, followed by a second researcher's review of the protocols. A coding framework was constructed based on the categories developed by Billett (2006). The coding followed an analytic structuring approach for computer-assisted content analysis (Bauer, 2003). Units of analysis that were allocated to the appropriate dimension were parts of sentences, full sentences or several sentences. Two researchers independently conducted the coding process. The inter-coder reliability (Cohen's Kappa) was $k=.87$. All cases of disagreement were discussed and resolved unanimously.

Results

The analysis yielded a total of 410 statements which were allocated to the 10 categories as follows: routineness (19 per cent), discretion (13 per cent), intensity (11 per cent), multiplicity (9 per cent), complexity (10 per cent), accessibility (9 per cent), homogeneity (5 per cent), working with others (14 per cent), status of employment (4 per cent), artefacts and external tools (6 per cent).

RQ1. How did the employees perceive the change (implementation of the ICC) and the resulting requirements for learning?

We found the most substantial statements representing the employees' perception of the change process and the resulting requirements for learning in the categories routineness, intensity, multiplicity, complexity, and artefacts and external tools. The results, including exemplary quotations, are elaborated in Table 3.

Routineness. The participants stressed that, due to the changed requirements, they had to acquire knowledge about many new products. Along with that, they had to learn to explain these new products to customers and make complex product combinations. Most of the participants perceived the required adaptation as difficult, especially because it had to occur quickly. Two further issues were expressed. First, the ICC required the application of a completely new structure in client conversations. Second, most of the participants perceived it difficult to ask so many detailed questions, such as those about clients' entire financial situation, including finances kept in other banks and insurance institutes. Some participants experienced this as advantageous, as it allowed them to gain more customer information and thus develop more adequate product offers. Considering the requirements for learning processes, the acquisition of knowledge was perceived as time-consuming and as an obligation rather than an opportunity for professional development. Only one participant explicitly described the new requirements as a chance for personal development.

Intensity. As a consequence of the ICC's implementation, work processes were perceived as being more time consuming. The participants emphasised that the length and frequency of client conversations increased. Besides that, more than one appointment with the client was required to conclude the sales process. Additionally, all participants pointed out that the preparation and wrap-up processes required more time now.

Multiplicity. The participants perceived the change as an increase in multiplicity of work due to the expansion of the product range and the increased number of customers each client advisor is in charge of.

Complexity. The participants pointed out that the sales conversations now had to follow extensively structured advisory schemes. They perceived this as a completely different structure that made their work more complex and more demanding. Furthermore, they described the complexity and the diversity of work having increased due to the product range being extended. As another consequence of the ICC implementation, participants stressed that getting a lot more detailed information from the customers resulted in higher complexity of work, as these data had to be evaluated and interpreted.

Artefacts and external tools. The clients perceived the software program implemented with the ICC as challenging. Although user manuals were provided on the bank's intranet and the participants visited short seminars, they found it difficult to get an appropriate understanding of the new program. Only three participants perceived the structured advisory sheets provided by the management as helpful. The other participants found it difficult to modify their conversational habits and stick to the ordered points on the sheet during conversation.

Table 3. Participants' perception of change

Categories	Perceptions of the change	Exemplary quotations
<i>Workplace activities</i>		
Routineness	Acquisition of knowledge about new products – necessary and time-consuming	“In the past one had to have information about a specific financial product. But now, one has to know everything.” “To acquire all that knowledge is really time-consuming, but I have to do it.”
	Modification of client conversation structures, preparation and wrap-up process necessary	“It’s a completely different structure, <i>completely</i> different, but the clients like it.”
	Asking for the client’s whole financial situation – difficult but advantageous	“It feels rather unusual to ask the clients how much money they have at other banks.” “The customer tells you a lot more, so you can react completely different compared to the past.”
	Shift in the work process that has to be learned from scratch – to arouse the client’s curiosity Adaptation process – fast and difficult	“This we had to learn: to arouse the client’s curiosity; that is important. We all have to become salespeople.” “The adaptation was fast: one or two months, then it had to work. That was quite difficult for me.”
Intensity	Work processes became more time-consuming, due to increased length and frequency of consultancies, preparation and wrap-up processes	“Tremendously more time is needed.” “Each of them now lasts at least one hour.” “You spend a lot more time on preparation and follow-ups.”

Multiplicity	Expansion of product range every client advisor has to sell and increased number of clients each advisor is in charge of	“In the past, a client advisor had to sell one kind of product, such as savings contracts. But now, one has to sell all kinds of products.” “Two hundred clients, that is a lot. Think, every day you have to meet at least one of them.”
Complexity	Extensively structured advisory scheme leads to more complexity and diversity at work as more customer information is gained and the product range is expanded	“You gain a lot more data from the client. (...) All that has to be analysed in-depth. At the same time, you have to keep in mind all the new possible products for the client.”
<i>Workplace interdependencies</i>		
Artefacts and external tools	Understanding new software programs and using new worksheets for advisory – difficult	“You know, the program was completely different from the one we had before.” “To complete all these points on the sheet is challenging.” “I often forget to stick to this paper, although it is helpful to have.”

RQ2. Which factors were perceived as supportive or inhibitive for learning in the context of the change?

The data analysis revealed a number of factors that the participants perceived as supportive or inhibitive for learning in the context of the change. They mainly occurred in the categories of discretion, accessibility, homogeneity, working with others, and status of employment. The results, including exemplary quotations, are displayed in Table 4.

Discretion. The participants stated that they had not been involved in the decision-making process leading up to the ICC implementation. Thus, they didn't feel they "had a voice" prior to the change. Within the new working conditions, seven employees stressed that they perceived the allowance of some autonomy to modify the structure, the length and the timing of the client conversations.

Accessibility. The participants mentioned that they acquired some relevant knowledge in the one-day seminars as well as through the provision of help tools and additional information on the bank's intranet. The participants perceived these measures as supportive for their learning process, although they were still insufficient. Clearly, the change required substantial additional informal learning. Some examples of additional learning activities were communication with colleagues to seek help and advice, trial-and-error strategies and error-related learning. Being asked by the researcher about knowledge that was perceived as inaccessible, the participants explained that existing communication techniques were no longer sufficient. The change afforded the establishment of competence in selling.

Homogeneity. Client advisors perceived the fact that they were all affected by the change as beneficial for adaptation and implementation of the ICC. As illustrated above, the participants perceived their colleagues to be pulling in the same direction to master the new situation.

Working with others. The participants stressed that competition within the team increased, because management urged employees to increase their sales. This resulted in higher pressure at work, as supervisors constantly monitored each client advisor's sales volume. Moreover, the management used comparative measures for evaluating each employee's performance. As a consequence, some participants described conflict. On one hand, client advisors tried to help each other, but on the other hand, mutual support was limited by comparisons within the team. If their colleagues made more sales, the client advisors also had to sell more so they wouldn't be outdistanced by their

teammates. Despite increased competitiveness, participants reported that the work climate and cooperation within the team was good.

Status of employment. Participants pointed out that they received neither a salary increase nor an enhancement of their position and status within the organisation after the change.

Table 4. Factors supporting or inhibiting learning

Categories	Supportive (+) / inhibitive (-) factors	Exemplary quotations
<i>Workplace activities</i>		
Discretion	No involvement in the decision-making process (-), thus the change was perceived as coming too fast (-) and learning became an obligation (-)	“That was [all] decided from above ...” “One couldn’t do anything.” “Literally, from one day to the next they brought in this new concept and this new software program.” “It’s sink or swim!”
	Autonomy for slight modifications of the structure, the length and the timing of the client conversations (+)	“I can decide a little bit how I’ll deal with the client.” “When I want to sell a building saving contract, then I lead the customer in this direction.”
Accessibility	Provision of one-day seminars (+)	“That was good that they gave us these seminars.” ”Yes, one-day seminars helped, but they could have been longer!”
	Provision of help tools and information on the bank’s intranet (+)	“On our intranet they put a lot of additional information. There is also a help section for this new computer program. Not bad!”
	Informal learning activities (+), e.g. communication with colleagues, trial-and error strategies, reflection on errors	“I talk more often with my colleagues, asking how they are doing with this new concept.” “Sometimes we talk about our experiences with mistakes we’ve made.”
	No provision of knowledge for necessary new communication techniques (-)	“Sensitive contact is the most important; otherwise you won’t get any information from the client.”

Workplace interdependencies

Homogeneity	All client advisors in the bank were affected by the change (+)	“Thank God that we all were involved in this new concept!” “Yes, all colleagues – the old and the young – have to work with these new things. That was a good feeling; my colleague who is ten years older has to do this, too.”
Working with others	Competition within the team increased (-), work pressure increased (-)	“The competitiveness increased. How many sales conversions did my colleague make? How many have I done?” “In the past it was less competitive.” “Now, one is permanently under pressure.”
Status of employment	No salary increase (-) No promotion in the bank’s hierarchy (-)	“I expected to get more money!” “That would have been a good occasion for a promotion.”

Discussion

Our study confirmed that the micro perspective is valuable in revealing why employees experience workplace change as both challenging and promising. Participants had to modify work routines, to gain knowledge quickly, and to engage in cooperative problem solving and reflection in a short amount of time. According to Billett (2008a), individuals' intention to engage in workplace learning is determined by their interpretations of the situation. They then navigate and negotiate between learning opportunities, the organisational context and their personal dispositions to complete learning. When applying this to the situation in the bank's workplaces, it seems the most urgent problems guided professional engagement. Thus, the participants often felt like fire fighters; one participant noted, *"Often, I feel like I'm always running around trying to put out the flames where they burn brightest to keep the house from tumbling down."* This is in line with Ellinger and Cseh's (2006) study results on contextual factors that influence the facilitation of others' learning. They found that employee's attitudes, fast-paced change and lack of time to adjust to workloads were factors inhibiting individuals' learning and the facilitation of others' learning. Our results revealed that the change especially affected employees regarding:

- work performance
- professional knowledge; and
- professional role.

Work performance

Even though the ICC was decided and implemented by the bank's management, actual different work procedures had to be performed in the workplaces of individual employees. Modifying established work routines such as conversation structures, range of products, preparatory and follow-up processes for the conversations or working with new tools such as the software programs and standardised conversation sheets challenged the employees and constrained successful work performance. In addition to reinterpreting and extending their professional knowledge, client advisors also had to apply the updated knowledge in ways that would satisfy both the customers' needs and the bank's requirements.

Füchtenkort and Harteis (2007) stressed four characteristics of a learning organisation that can be transferred to organisations implementing workplace changes:

- (1) degrees of freedom and range of tasks;
- (2) workers' responsibility for their own performance;

- (3) challenging work tasks including problem-solving; and
- (4) employees' participation in the workplace.

Our findings showed that, first, the scope of the employees' tasks increased through the change, whereby the degree of freedom decreased through the implementation of standardised work procedures. Second, the change led to an increase in responsibilities for a broader spectrum of products, a larger number of clients and an increase in sales targets. Third, after the change, the client advisors were confronted with more challenging tasks, such as combining a wide range of products to find creative solutions for extensive customer preferences. Fourth, employees had no opportunity to participate in the decision-making process of the change, but had to execute management's new guidelines. Thus, the adaptation to the change required the employees' active participation. Scholars argue that employees' involvement during change is critical for success as it increases commitment and performance, and reduces resistance to change (Chawla & Kelloway, 2004; Lines, 2004). The participants indicated that they were aware of the affordance to actively participate in the implementation process. The speed of the change, however, led them to perceive it as an obligation rather than an opportunity for professional development.

Professional knowledge

Despite the provision of one-day seminars on the basic principles of the ICC, the employees perceived not having all relevant knowledge at hand when the change occurred. They had to find out themselves how the change actually affected their daily practice and how they could adapt their knowledge, skill, work processes and work behaviours. The interviews showed that to accomplish this adaptation, a variety of informal learning processes took place, such as, communication with colleagues, trial-and-error strategies and the exchange of error-related work experiences. The subjects perceived the increased competitiveness among team members as constraining such informal learning processes. Because of the competitive atmosphere, the probability of other colleagues' facilitating learning through informal exchange processes decreased; despite the fact that participants said those processes were an important learning strategy. This finding confirms the assumption made by Wanberg and Banas (2004) that social support from peers is an important factor helping individuals to cope with change that had an impact on their daily work.

Professional role

The client advisors' professional roles changed with the increased responsibilities for a broader spectrum of products and a larger number of customers that were directly assigned to them. Through the intensified contact with customers, the client advisors felt they became stronger representatives of the bank, becoming each client's personal advisor in financial matters as they gained more detailed insight into the customer's life and plans.

The change amplified one particular professional role conflict: on the one hand, a client advisor is a sales person who is increasingly required to achieve high sales volumes. On the other hand, the client advisor becomes more and more responsible for building up customer relationships characterised through high customer satisfaction and long-term loyalty, which is considered a crucial factor of a bank's economic success (Johnston, 1997). Durkin and Bennett (1999) argue that the role of employees as enablers and facilitators in relationship-oriented retail banking is of great importance. Participants were challenged to find a balance between the two dynamic forces of customer orientation and sales orientation. This requirement increased work-related pressure and strain. Almost all participants perceived learning as necessary to redefine their role and cope with the increased pressure. This is in line with Durkin and Bennett's (1999) impression that the role of bank employees changes "from teller to seller".

Limitations of the study

Despite the richness of the data, there are some limitations associated with this research. First, the findings cannot easily be generalised because they are based on a small sample of individuals who are client advisors in retail banking. Second, the focus of the study was on employee perspectives, and the study is therefore limited in that it looks at a specific workplace change through the employees' eyes only. Other perspectives, such as those of employers, managers and supervisors, were not investigated. A respective extension in a future study on workplace change and workplace learning is advisable. Third, the study addressed only the perceptions of experienced employees with at least five years of work experience, because it focussed on modifications to existing work routines and processes. It might be interesting to investigate young professionals who do not yet have stable work routines. Fourth, the design of our study is not suitable for analysing the speed of learning, as self-report measures do not yield valid information about the pace with which a person learns. A longitudinal design that involves some form of objective measure, such as performance outcome tests, is more appropriate to

address such questions. Nevertheless, our results contribute to a better understanding of the effects of workplace changes on employees, and how organisational contextual factors shape learning processes in the context of change.

Conclusions and implications for practice and future research

As theoretically assumed, the change fostered individual learning processes as the employees were urged to adapt their knowledge, skills and work routines to meet the new work requirements. Although the occasions for learning were perceived rather as obligations than as opportunities for professional development, all employees described individual ways of coping with the situation and thus exploring the learning potential. The study revealed factors that supported or constrained learning processes. These factors are subjective to the individuals and to the place and practice in which they work, but they show how adults' conceptual and practical learning is affected by the characteristics of the work they are doing and the environment they are working in.

Implications for practice

Our findings have numerous implications for human resource development professionals, managers, supervisors and others who are concerned with organisational change processes. A management decision imposed the most drastic changes on employees. This implies that the employees were not involved in the decision-making process. Instead, the top management level decided the change and then communicated it downwards to the employees. As learning at work is based on negotiations between the individual and the social context (Billett, 2008a), a communication strategy is recommended that explains to the employees the learning requirements involved and the resulting individual benefits, such as professional development, rather than just the necessity and reasons for change. Researchers stressed three important factors influencing employees' attitudes towards change: information, social influence, and trust in management (Chawla & Kelloway, 2004; Oreg, 2006; Van Dam, 2008). Hence, workplace learning can be fostered through clear communication of what has to be learned to facilitate adaptation to the new working conditions, and communication of what support the organisation is able and willing to give, such as adequate time frames for learning, access to learning tools, appropriate electronic resources, and e-learning media. The importance of informal learning activities in adapting to new working conditions should be acknowledged and facilitated by all parties involved in a change process. First, all employees should be ensured of access to supervisors or exemplary

senior peers who can provide ongoing day-to-day support. Second, open informal interaction among peers (for questioning, observing and discussing) and formal exchange with peers should be encouraged; this can be done by holding team meetings on a regular basis. This allows colleagues to function as facilitators for learning and ensures that learning does not have to occur in isolation (Ellinger & Cseh, 2007). Facilitators can help their colleagues' learning through feedback and support of reflective processes on work experiences, such as open communication about errors. Since these behaviours require that employees possess communication skills such as listening, observing, asking questions and giving feedback, appropriate training approaches are recommended as an exemplary measure toward developing these behaviours. Third, we suggest building a communicative and cooperative culture within work teams where members perceive themselves as team players, maximising support of other members and allowing the development of creative and innovative solutions for work-related challenges. Collective reflection should especially be promoted in times of change, as it provides ways to structure experiences. These measures can transform experiences into the establishment and stability of work routines, and reduces the probability of errors' reoccurrences.

Implications for future research

This study contributes to research on the understanding of how individuals learn at work and how such learning can be supported through activities in workplace settings. We hope this study will stimulate future research on change-related learning from a micro perspective. Others can take some lessons from our study for such research. First, we suggest investigating representatives of all parties involved in a change process. Studying the perspective of employers, managers, supervisors and human resource development practitioners would give a more objective picture of the learning affordances for employees involved in change. The findings of such studies could enrich the conceptualisation and application of change-specific learning models. Second, we recommend conducting further research into different occupational fields. This would help to generalise employees' perceptions of workplace changes concerning factors supporting and inhibiting learning. Third, it could be promising to conduct studies based on group comparisons specifically between (1) novices and experts, and (2) employees working on different levels of the hierarchy in an organisation. We assume that employees with no experience or only a few years of work experience (novices) perceive workplace changes differently from experienced employees (experts). Also, a

study based on the comparison of employees on different hierarchical levels would be promising, as the degree of autonomy at work, the range of decision-making power and responsibility all increase with each level. We assume these factors might influence employees' perceptions, learning processes and coping strategies in the context of change.

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Chapter 3

Error orientation and reflection at work*

Abstract

Reflection on events at work, including errors is often as a means to learn effectively through work. In a cross-sectional field study in the banking sector, we investigated attitudes towards workplace errors (i.e. error orientation) as predictors of reflective activity. We assumed the organisational climate for psychological safety to have a mediating effect. The study participants were 84 client advisors from the retail banking departments in branches of a German bank. The client advisors' were being affected by a range of changes in their workplaces at the time of the data collection. This situation afforded these workers opportunity for learning but also involved the risk of error by these staff. Regression analyses identified that error competence and learning from errors were significant predictors of reflection. The results confirmed the mediating role of psychological safety on the association between attitudes towards errors and reflective working behaviour.

Keywords Error orientation, Psychological safety, Reflection, Retail banking, Workplace change

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In the course of growing interest in how employees manage to update and develop their skills and knowledge through workplace learning, scholars have stressed the importance of reflection at work (Boud, Cressey, & Docherty, 2006; Ellström, 2006; Van Woerkom, 2003). Reflection is basically described as a cognitive activity that individuals perform to examine retrospectively incidents encountered or activities performed (Boud, Keogh, & Walker, 1985). More specifically, studies have found that reflection relates directly to the development of employees' competence (Gartmeier, Kipfmüller, Gruber, & Heid, 2008; Strasser & Gruber, 2005), job satisfaction (Berg & Hallberg, 2001) and career success (Marienau, 1999).

Although reflection in general is a well-researched concept, little is known about the predictive quality of individuals' attitudes about using errors for reflection for learning at work. Errors at work are incidents that interrupt the workflow, cause stress, and pose challenges to employees' competencies. Nevertheless, scholars emphasise that errors can serve as opportunities for learning and, thus, foster development of competence and organisational innovation (Bauer & Mulder, 2007; Cannon & Edmondson, 2005). Drawing upon existing theoretical accounts, attitudes towards errors ("error orientation") forms a central concept in this respect: "If a company has a more positive attitude towards errors, it can be more action-oriented, innovative, and experimental" (Rybowiak, Garst, Frese, & Batinic, 1999, p. 528). To illuminate and critically appraise the mechanism behind the beneficial effects of positive attitudes towards errors, here we investigate the association of attitudes towards errors with reflection at work.

Because this association is investigated in a workplace setting, it is proposed that this relationship also needs to be understood from a social perspective, otherwise, crucial consequences of employees working mainly in collaboration would be neglected (Billett, 2001). For instance, good relationships between colleagues facilitate opinion sharing, critical discussions, and the development of problem-solving strategies are likely to influence this association (Edmondson, 1999). The quality of social relations at work thus may affect individuals' capacity for and willingness to engage in reflection. In addition, employees' attitudes towards errors may constitute a model in the social work environment as to how errors are treated. Thus, we expect social contextual factors to mediate the association between individuals' attitudes towards errors and reflective working behaviour.

To understand this association, we conducted a study in the retail banking departments in branches of a German bank. The banking sector provides a helpful field for study, as it nowadays comprises a dynamic field in which change is a permanent

condition of work and this situation involves the risk of error (Raehalme, 1999). Consistent with this concern, the workplaces of our study participants were affected by significant changes that had a range of consequences for their everyday work. The workplace changes pressed employees to adapt to new standards and tools for customer consulting and, thereby, to modify their work routines. In detail, the advisory concept was fundamentally modified, accompanied by the implementation of new advisory software. These changes brought about new work tasks and called for proactive work behaviour and participation. The employees had to develop new work processes in cooperation with their colleagues as well as in coordination with their supervisors. In order to cope successfully with the requirements made by these changes, the employees had to beware of emerging situations likely to cause errors as well as competencies for coping with such errors. Hence, a study of bank workers provides a rich opportunity to understand the relationship amongst changes at work and individuals' engagement in work and learning.

Reflection in the workplace

Educational scientists in the field of workplace learning aim to identify effective strategies for individuals to meet the changing requirements of contemporary work. Therefore, many scholars emphasise the importance of reflection at work for individual and organisational learning (Boud et al., 2006; Høyrup, 2004).

Reflection is characterised as an introspective process that includes reviewing experienced phenomena, analysing causes and effects, and drawing conclusions for future actions (Boud et al., 1989; Van Woerkom, 2003). Reflection represents an activity pursued with intent; emotions and cognition are closely interrelated and interactive (Boud & Walker, 1991). Thus, reflection is an activity that allows individuals to exploit the learning potential of work-specific situations. It can foster the acquisition of experiential knowledge and the development of professional competencies (Gartmeier et al., 2008), which is important for both learning and sustaining the ability to become and remain a competent worker. One reason these outcomes are realised is that reflection leads to a deeper understanding of incidents and experiences. It can also contribute to successful mastering of new tasks and more informed appreciations of them. Accordingly, evidence shows that reflective activity is a key factor that supports learning from errors at work (Harteis, Bauer, & Haltia, 2007). Bauer and Mulder (2007) developed a framework of error-related learning activities based on the experiential learning theory. The framework includes three phases: i) cause analysis, ii) the development of new work

processes and strategies to avoid reoccurrence of the error, and iii) implementation of the new processes and strategies within the work context. Such a framework is useful for highlighting the multipart process that comprises learning through errors. As discussed below, attitudes towards errors relate closely to these error-related learning activities.

Some scholars regard reflection primarily as an individual cognitive process that is only marginally influenced by the social environment (Moon, 1999). Others argue in favour of a shared and collaborative approach (Høyrup & Elkjaer, 2006; Kim & Lee, 2002). These scholars consider reflection an activity-oriented concept that comprises a strong social perspective. This perspective seems especially relevant in workplace settings. As cooperation and discussion are integral parts of everyday work, collective reflection is an important concept in today's working world (Nyhan, 2006). If understood and practised in this way, reflection can potentially be a fruitful approach to workplace learning. It can lead to increased awareness of the surrounding conditions. Thus, it potentially can shape employees' daily work and learning. Relevant workplace conditions to promote such reflection likely include social relationships at work, leadership behaviour, and the usefulness of the services or products provided by the organisation (Anderson & Thorpe, 2004).

It follows from the above that both the individual perspective and the social perspective are relevant to understanding the potential of reflection at work. On the one hand, reflection cannot be thought of without considering an individual's cognition. On the other hand, neglecting the influence imposed by the social environment upon individuals' reflection would provide an incomplete picture. Thus, our investigation of reflection at work focuses on the interplay between contextual factors (i.e. psychological safety) and individual factors (i.e. reflection, attitude towards errors).

Attitude towards errors and reflection at work

Positive attitudes towards errors are important preconditions for effective reflection at work. To illustrate this proposition, it is necessary to consider the role that errors at work play within the discourse on workplace learning. Errors are defined as negative deviations from desired goals resulting from individual actions or decisions (Cannon & Edmondson, 2005; Zhao & Olivera, 2006). Hence, whether something is an error is seldom an objective feature of the phenomenon itself, but depends upon norms and criteria applied in the respective socio-cultural environment. For example, in a rather restrictive and bureaucratic culture, it might be seen as a severe interpersonal mistake to

arrive 30 minutes late for a scheduled meeting, yet the same conduct might be judged totally differently in a more flexible, entrepreneurial workplace environment (Bauer, 2008; Reason, 1990). So, the situational variables have to be included.

Thus, a first prerequisite to learn from an error is to recognise it as an incident that deviates from expectations, intentions or standards. Although errors at work are undesirable and are aimed to be avoided, they possess a high potential for effective professional learning (Bauer, 2008). Reflection plays an important role in this respect: Errors are described as situations that provide opportunities to look back and think about the error's cause and consequences. Researchers have highlighted the importance of thorough, reflective error analysis as a means to avoid re-occurrence of an error (Tjosvold, Yu, & Hui, 2004). Yet a more relevant question here is to what extent lessons learned from an error can be useful for avoiding similar errors through learning from those errors. One possible assumption is that a deep reflective analysis of an error leads to a fundamental understanding of their cause and source. Such a fundamental understanding about how an error occurred can be transferred to other error-critical situations in a workplace more effectively than measures based on an unreflective response to an error.

However, the nature of reflective analysis is assumed to be influenced by an individual's attitudes. Positive attitudes towards errors may encourage individuals to be more experimental and innovative (Rybowiak et al., 1999). Thus, attitudes towards errors are crucial for an individual's decision to accomplish reflective activities.

The concept of error orientation (Rybowiak et al., 1999) is of particular interest for the assessment of attitudes towards errors. The error orientation construct comprises eight facets. As these do not represent a self-contained theoretical construct (Bauer, 2008), we undertook a selection of the facets suited to the heuristic goals of our study. The facets investigated here are: i) error competence, ii) learning from errors, iii) error strain, and iv) error risk taking. These facets are now discussed in turn, as well as the respective hypotheses concerning their influence on reflection.

- (1) *Error competence* refers to individuals' persuasion that they have active knowledge and the capability to cope immediately with errors, involving a reduction in the adverse consequences of errors. Rybowiak et al. (1999) found positive correlations between error competence and action orientation after failure. Therefore, we expect that error competence has a positive impact on reflection at work.

- (2) The basic difference between error competence and learning from errors lies in the time-frame of the two constructs: Error competence refers to a short-term perspective of coping with errors immediately, whereas learning from errors addresses long-term learning effects, such as well-directed improvements of work processes (Rybowiak et al., 1999). Such a long-term perspective on learning focuses on the estimation that error-related learning experiences are episodes that may be beneficial for improving skills, knowledge and work practices (Bauer, 2008). This attitude was found to be positively related to action orientation after failure (Rybowiak et al., 1999). Thus, we expect that learning from errors exerts a positive impact on reflection at work, and vice versa.
- (3) *Error strain* is characterised by a generalised fear of committing an error and by negative emotional reactions (Rybowiak et al., 1999). Scholars agree that errors are associated with negative emotions, such as anger, shame, guilt and fear (Cannon & Edmondson, 2001; Keith & Frese, 2005; Zhao & Olivera, 2006). However, the impact of such negative emotions on cognition and learning activities is conceptually ambiguous – both fostering and inhibiting effects have been found (Bauer, 2008; Cannon & Edmondson, 2005). Negative emotions related to errors can create stress and reluctance to change. Consequently, these emotions can cause individuals to avoid action-oriented behaviour and interfere with the accomplishment of cognitive processes, such as reflection (Edmondson, 1999; Keith & Frese, 2005). For example, Rybowiak et al. (1999) reported negative correlations of error strain to action orientation and initiative after an error. As there is a strong basis for assuming that error-related negative emotions inhibit cognition and productive learning, we hypothesise that error strain exerts a negative impact on reflection at work.
- (4) *Error risk taking* is an attitude that implies general flexibility and openness towards errors. For instance, it might indicate whether individuals are willing to adjust to new conditions at work and to take responsibility despite the potential for negative consequences. There are positive relations between this attitude and readiness for change and initiative (Rybowiak et al., 1999), whereas the individual's interpretation of error as a threat, and, therefore, the tendency to cover up errors, can have inhibiting effects on the engagement in reflective activities (Bauer, 2008). Thus, we hypothesise that error risk taking is positively related to reflection at work.

Psychological safety as mediator between attitude towards errors and reflection

Evaluative norms specific to the particular socio-cultural environment determine whether an action is regarded as an error. This also applies to how an error is treated. The way in which colleagues and supervisors deal with errors does not only depend upon how they perceive errors, because they also take into account what is regarded as being common practice in their respective work environments. Hence, it can be assumed that a local, socially constructed and shared understanding exists of how to handle errors (Bauer, 2008). This viewpoint is expressed in the concept of “psychological safety”, which is defined here as an individual’s perception of the work team being a safe environment for interpersonal risk taking – for example, openly admitting an error and seeking advice from team mates – without having to fear negative consequences (Baer & Frese, 2003; Edmondson, 1999). A safe team climate, characterised by interpersonal trust, mutual respect and supportive cooperation, is expected to increase the probability that team members engage in collaborative learning activities that also involve reflective processes on the collective and individual level (Edmondson, 1999; Tjosvold et al., 2004). Those reflective activities involve discussions about the conditions that led to an error and how to improve suboptimal work processes (Nyhan, 2006). Accordingly, a supportive team leader who manages to create such a safe team climate can contribute to reducing errors by stimulating those reflective activities (Cannon & Edmondson, 2001; Edmondson, 1999; Tjosvold et al., 2004).

Regarding the mediation model to be investigated here, it is necessary to substantiate (i) how the investigated attitudes towards errors influence the individual’s perception of psychological safety and (ii) how this perception, in turn, is associated with reflection at work.

- (i) “Team members may be unwilling to draw attention to errors that could help the team make subsequent changes because they are concerned about being seen as incompetent” (Edmondson, 1999, p. 355). Drawing upon this observation, we assume that employees’ attitudes towards errors influence the reactions they expect from their work environment and – accordingly – the perceived psychological safety of the work environment. For instance, employees’ trust in their own capabilities to deal with errors is expected to influence positively their perception of psychological safety. This is because error-competent employees themselves may be better able to support colleagues when errors occur and, thus, contribute to a safe team climate (Tjosvold et al., 2004).

- (ii) In terms of how psychological safety affects reflection at work, we emphasise that a safe team climate stimulates collaboration and interaction among individuals. Therefore, it is proposed that psychological safety shapes how team members reflect on their performance, discover cause and effect relationships and address critical issues. Through identifying weaknesses and strengths in their own efforts they gain insight into their own behaviour (Nyhan, 2006; Tjosvold et al., 2004). Each employee becomes familiar with different perspectives and interpretations that in turn may stimulate reflective processes on the individual level (Van Woerkom, 2003).

Method

Aims and hypotheses

The primary aim of the study was to analyse the effects of attitude towards errors on reflection at work (Aim A). Furthermore, we examined the extent to which the working climate within the team (i.e. psychological safety-colleagues) as well as with regard to supervisors (i.e. psychological safety-supervisors) has a mediating effect on this relationship (Aim B). Based on theoretical considerations, we stated the following hypotheses:

Aim (A): Impact of error orientation on reflection

Hypothesis (A1): Error competence has a positive effect on reflection.

Hypothesis (A2): Learning from errors has a positive effect on reflection.

Hypothesis (A3): Error strain has a negative effect on reflection.

Hypothesis (A4): Error risk taking has a positive effect on reflection.

Aim (B): Mediating effect of working climate on the relationship between error orientation and reflection

Hypothesis (B1): The hypothesised effects of error orientation on reflection at work (A1–A4) are mediated by psychological safety-colleagues.

Hypothesis (B2): The hypothesised effects of error orientation on reflection at work (A1–A4) are mediated by psychological safety-supervisor.

Participants

The participants in this study were 84 client advisors (50 per cent female, 45 per cent male, 5 per cent not reported) in the retail banking departments of a German bank. The professional experience varied from one to 43 years ($M=15.8$, $SD=12.7$); age ranged from 18 to 60 years ($M=36.5$, $SD=13.0$). The participants worked in different branch offices of the bank and all specialised in retail banking. The completion of the questionnaires was the first topic on the agenda of a general staff meeting, at which 87 per cent of the client advisors working in the investigated bank were present.

Instruments

All scales applied in the study (error orientation, reflection, and psychological safety) used a six-point Likert scale ranging from 1 = *totally agree* to 6 = *totally disagree*.

Error orientation. Attitudes towards errors at work were assessed by applying the German version of the error orientation questionnaire (EOQ; Rybowski et al., 1999). Four out of the eight sub-scales were used: Error competence (four items, $\alpha=.80$, $M=2.06$, $SD=0.58$; item example: *When I have made a mistake, I know immediately how to correct it*; factor loadings ranged from .67 to .97), learning from errors (four items, $\alpha=.86$, $M=2.36$, $SD=0.78$; item example: *Mistakes assist me to improve my work*; factor loadings ranged from .80 to .88), error strain (five items, $\alpha=.63$, $M=4.17$, $SD=0.74$; item example: *I am often afraid of making mistakes*; factor loadings ranged from .69 to .82), and error risk taking (four items, $\alpha=.77$, $M=2.77$, $SD=0.83$; item example: *If one wants to achieve success at work, one has to risk making mistakes*; factor loadings ranged from .79 to .83).

Reflection. We applied a Kauffeld, Grote and Henschel (2007) instrument for self-assessment of reflection at work. The questionnaire scale refers to the evaluation of own work processes and behaviour. It consists of four items, $\alpha=.84$, $M=2.33$, $SD=0.63$. A sample item is: *After a project is finished, I reflect upon how problems and difficulties could be solved in a better way next time*. Factor loadings ranged from .79 to .85.

Psychological safety. To measure the perceived working climate (i.e. psychological safety), we adapted items of established instruments (Edmondson, 1999; Tjosvold et al., 2004; Van Dyck, Frese, Baer, & Sonnentag, 2005). To be used in a German workplace, some items had to be translated from English. In a first step, the paper's first and second author independently translated the items. Next, all authors discussed the

individual solutions and agreed on a most appropriate version. The final solution was translated back to English by a native English speaker. Deviances between translated and original items were discussed with the translator. On this basis, we decided on the final wording. Two four-item scales were built to assess psychological safety with regard to (1) colleagues (sample item: *In our team, problems and critical issues can be addressed anytime*) and (2) supervisors (sample item: *I can talk openly with my supervisor about errors I have made*).

We tested the scales with a sample of 49 employees working for a financial services company. The test yielded good reliability indices for both scales (psychological safety-colleagues: $\alpha=.72$; psychological safety-supervisors: $\alpha=.81$). In the present study, we calculated the following indices: psychological safety-colleagues: $\alpha=.78$, $M=2.44$, $SD=0.70$; psychological safety-supervisors: $\alpha=.73$, $M=2.41$, $SD=0.64$. Moreover, we conducted factor analyses: Factor loadings for psychological safety-colleagues ranged from .65 to .85; for psychological safety-supervisors from .66 to .83. The translation and adaptation of the instrument for assessing psychological safety in the study thus proved to be of sufficient quality.

Procedure

The bank's supervisors and the personnel board advised employees about the questionnaire in spring 2007. At the time the survey began, the investigators held a 10-minute introductory presentation during which they explained the aims of the study to the participants. Further, they were advised that the anonymity and confidentiality of the data was assured. In summer 2007, data collection was conducted during a general staff meeting in the bank. Completing the questionnaires took around 20 minutes. To ensure anonymity, the researchers collected the questionnaires directly after the participants completed them.

Analysis

The effects of error orientation on reflection at work were assessed by calculating correlation and multivariate regression analyses. The mediating role of psychological safety was analysed by calculating bivariate regression analyses and Sobel tests (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

Results

Table 1 shows the results of correlation analyses including all applied scales. Significant interrelations were found between reflection and three facets of error orientation: Significant positive correlations were found between reflection and error competence ($r=.55$; $p<.01$), as well as learning from errors ($r=.32$; $p<.01$). A significant negative correlation was found between reflection and error strain ($r=-.29$; $p<.01$). Furthermore, we found interrelations between the sub-scales of error orientation: Learning from errors positively correlated with error competence ($r=.41$; $p<.01$) and error risk taking ($r=.50$; $p<.01$). Significant negative correlations were found between error strain and error competence ($r=-.28$; $p<.01$). In their magnitude and tendency, the calculated interrelations between the error orientation sub-scales are similar to those reported by Rybowskiak et al. (1999).

Regarding psychological safety-colleagues, significant positive correlations were found with reflection ($r=.58$; $p<.01$), error competence ($r=.50$; $p<.01$), and learning from errors ($r=.52$; $p<.01$). Significant positive interrelations were identified between psychological safety-supervisors and reflection ($r=.42$; $p<.01$), error competence ($r=.40$; $p<.01$), and learning from errors ($r=.30$; $p<.01$).

Table 1. Correlation analysis of all applied variables

Variable	1	2	3	4	5	6	7
1 Reflection	-						
2 Error competence	.55**	-					
3 Learning from errors	.32**	.41**	-				
4 Error risk taking	-.00	.16	.50**	-			
5 Error strain	-.29**	-.28**	-.02	-.03	-		
6 Psychological safety– colleagues	.58**	.50**	.52**	.18	-.17	-	
7 Psychological safety– supervisors	.42**	.40**	.30**	.19	-.13	.44**	-

Note. **= $p<.01$ (two-tailed)

Aim (A): Impact of error orientation on reflection

To assess the impact of error orientation on reflection, we conducted a multivariate regression analysis. All four sub-scales of error orientation were simultaneously included

as predictors. We took measures for the prevention and control of multi-collinearity, as the correlations between error orientation sub-scales were substantial (Table 1). First, the analyses were conducted with centralised predictors (Cohen, Cohen, West, & Aiken, 2003). Second, variance inflation factors (VIF) were calculated for all predictors. VIF values above 10 ($VIF > 10$) are indicators for multi-collinearity of the predictors in the regression model (Hocking, 2003).

As shown in Table 2, the regression analysis identified error competence and learning from errors as the strongest predictors of reflection. These two facets account for 34 per cent of variance. As all calculated variance inflation factors were lower than 10 ($VIF=1.10$ up to 1.60), there is no reason to believe that the results were affected by multi-collinearity.

In light of the reported results, we can confirm hypotheses A1 and A2, but we have to reject hypotheses A3 and A4.

Table 2. Multivariate regression analysis with error orientation as predictor for reflection

<i>Criterion: Reflection</i>				
<i>Predictor</i>	<i>B</i>	<i>SE B</i>	β	<i>VIF</i>
Error competence	.48	.11	.44**	1.34
Learning from errors	.19	.09	.23*	1.60
Error risk taking	-.15	.08	-.19	1.35
Error strain	-.15	.08	-.17	1.10

Notes. $R^2_{adj}=.34$. *B*=regression coefficient; *SE B*=standard error of regression coefficient; β =standardised regression coefficient; * $p<.05$, ** $p<.01$; *VIF*=variance inflation factors.

Aim (B): Mediating effect of psychological safety on the relation between error orientation and reflection

With the aim of assessing whether psychological safety functions as a mediator, a three-step analysis was conducted. First, the predictive role of attitudes towards errors on psychological safety-colleagues and psychological safety-supervisors was tested using bivariate regression analyses (Table 3, “bivariate regression 1”). Second, bivariate regression analyses with psychological safety (colleagues/supervisors) were calculated as a predictor for reflection at work (Table 3, “bivariate regression 2”). It is necessary to calculate these two regression analyses to confirm significant effects, which are prerequisites for a mediation model. Thirdly, to test directly for mediation, we calculated

Sobel tests (Baron & Kenny, 1986; MacKinnon et al., 2002) to examine the significance of mediator effects (Table 3, “Sobel test”).

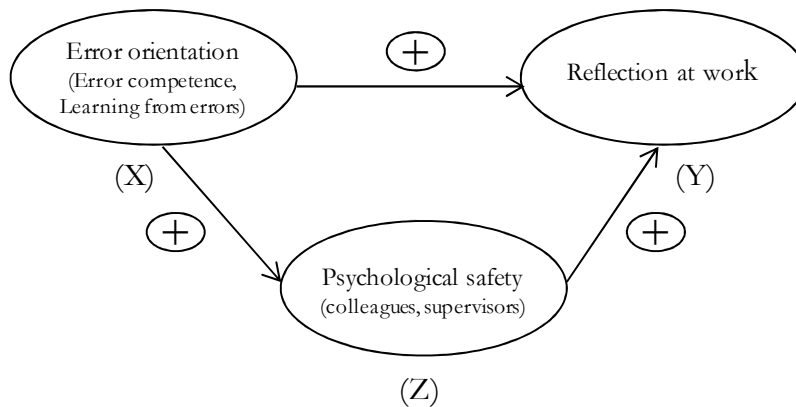
Table 3. Regression analysis for assessing the mediating role of psychological safety

Criterion (Y): Reflection		Bivariate regression 1				Bivariate regression 2				Sobel test
Predictor (X)	Mediator (Z)	a) X → Z				b) Z → Y				z
		R ²				R ²				
		B	SE	β	adj.	B	SE	β	adj.	
CPT		.55	.11	.50**	.25					3.92**
LRN	PS-	.43	.08	.52**	.27					4.10**
RSK	colleagues	.14	.09	.18	.03	.57	.09	.58*	.33	1.51
STR		-.15	.09	-.17	.03					-1.61
CPT		.49	.12	.40**	.16					2.94**
LRN	PS-	.27	.10	.30**	.09					2.27**
RSK	supervisors	.16	.09	.19	.04	.38	.09	.42**	.17	1.64
STR		-.12	.10	-.13	.02					-1.15

Notes. R^2_{adj} = R^2 adjusted; *B*=regression coefficient; *SE* (*B*)=standard error of regression coefficient; β =Beta-value; z=z-value attained from the Sobel test; CPT=error competence; LRN=learning from errors; RSK=error risk taking; STR=error strain; PS=psychological safety; * $p < .05$, ** $p < .01$.

The results identified that both psychological safety-colleagues and psychological safety-supervisors mediate the influence that error competence and learning from errors have on reflection at work (Table 3). Hence, we can confirm hypotheses B1 and B2 for these two error orientation sub scales. Concerning error strain and error risk taking, we have to reject hypotheses B1 and B2. Figure 1 shows the identified mediating effect.

Figure 1. Model for the identified mediating role of psychological safety



Prospects of learning through errors

Researching reflection at work needs to account for both individual and contextual factors, such as attitudes towards errors and perceived psychological safety. Among the attitudes towards errors we investigated, learning from errors and error competence were the strongest predictors for reflective working behaviour. The predictive quality of error competence refers to an individual's estimation of whether there are worthwhile benefits from engaging in reflection on errors. Employees who are not persuaded that they have the knowledge and capabilities to cope with errors immediately might see no real benefit in reflection – they assume that they are unable to fix the error anyway, regardless of how deeply they have understood it. Thus, to make effective use of failure, organisations should support employees in building up a strong attitude towards their abilities to deal with errors successfully (Cannon & Edmondson, 2005).

The role of learning from errors for predicting employees' reflection is also plausible in that employees tend to reflect upon errors more strongly when they expect it will yield helpful and relevant results for their future work (Harteis et al., 2007). Consistent with that proposition, recent research indicates that the estimation of an error as a chance for learning positively predicts individuals' engagement in social learning activities, such as reflection (Bauer, 2008). Hence, reflective activity – which is fostered by the persuasion that an error is a valuable opportunity to learn – leads to a better understanding of the error's probable cause and the development of strategies to avoid such errors in the future (Bauer & Mulder, 2007). Thus, the individual employee is able to have a feeling of being capable to contribute valuably to a cooperative error-related learning process. This, in turn, increases the possibility that the employee will

participate in that process (Cannon & Edmondson, 2001; Nyhan, 2006; Van Dyck et al., 2005).

Error risk taking and error strain did not contribute significantly to an increase in explained variance in the regression model. This finding is in line with Bauer (2008) who reported that, in contrast to theory-based expectations, error strain did not significantly predict engagement in social learning activities, such as cause analysis and development of new strategies. However, our results did identify a negative correlation between error strain and reflection at work. Willingness to learn from failure through the accomplishment of reflective activities decreases the more individuals perceive errors as unfavourable and react with negative emotions. Further, the identified negative interrelation between error strain and error competence indicates that the more individuals fear the occurrence of errors the less they trust in their capability and knowledge to deal with them. The perceived psychological safety within the team and with regard to supervisors could play an important role in this context. Workmates and supervisors can contribute to reduce the fear of committing errors through supportive behaviour and cooperative communication (Tjosvold et al., 2004). Thus, learning processes are facilitated that prevent future error occurrences and error-related stress situations (Edmondson, 1999).

Psychological safety as mediator

The results confirm the mediating effect of psychological safety on the relationship between attitudes towards errors (error competence and learning from errors) and reflective working behaviour. Both constructs, psychological safety-colleagues and psychological safety-supervisors, are of significant relevance. The individual's belief in being able to cope successfully with error-related problems and challenges at work influences their perception of a climate in which the team provides support. Thereby, for example, they are more ready to put forward new ideas for work improvement (Tjosvold et al., 2004). Edmondson (1999) also found strong support for an association between perceived psychological safety and learning behaviour within a team.

The organisational conditions in the workplaces of the client advisors who participated in our study can help to explain the results. The client advisors basically work together in small teams located in the bank's branch offices. Hence, their daily work is carried out within a small group of team members. This organisational structure obviously supports informal learning processes when errors occur. Further, it can be

assumed that each branch office provides space for the accomplishment of work actions that support reflective activities within a cooperative framework.

Concerning the mediating effect of psychological safety-supervisors, our results stress the important role of supervisors in error-related learning processes. “Good” supervisors support both short-term, error-induced corrections of work processes and long-term work improvements resulting from errors. The results indicate that reflective working behaviour as part of error-related learning processes in general is fostered both through a safe team climate and through appropriate leadership behaviour. Cannon and Edmondson (2005) stressed that leaders are required to have strong interpersonal skills for handling error situations. Public embarrassment through finger-pointing or name-calling discourages employees from identifying and analysing failures. Further, it inhibits constructive discussions through which individual and collective learning occurs.

In summary, our results strongly indicate that a working climate based on mutual trust, helpful co-operation and constructive communication supports the beneficial effects on reflection that are derived from employees’ positive attitudes towards errors.

Learning through errors

Instead of viewing changes at work and errors arising through work as being wholly unwelcome, it is proposed here that these events can potentially provide the basis for rich and ongoing learning as part of working life. Such events require responses from both workers and workplaces. The responses from workers constitutes, in part, learning arising from and through these events. Necessarily, engaging with change generates new knowledge, adapting what is known and refining further what individuals do in and through their work. Equally, errors provide opportunities for engaging in learning from these deviations of what was anticipated or expected. Yet, the richness and the depth of this learning will likely be premised upon the kinds of capacities and dispositions possessed by the learners, on the one hand, and how the workplace affords support for and reacts to these changes and the making of errors. What was found in this study is that individuals are most likely to be productive learners when confronting changes and also when dealing with errors when they are prepared through active reflection on errors, thus reducing error strain at work. Yet, it was also found that workplaces need to provide a safe working climate, both concerning the work relations with peers and the leadership of supervisors. In all, given that change in the requirements for work will be ongoing and likely to increase in both frequency and scope that learning through change will become as inevitable as these changes themselves. Hence, it is important that

effective means for learning through and from changes are enacted in workplaces. Also, although usually undesirable, errors will occur, and with the predicted frequency and scope of change likely more often in the future. Hence, these incidents need to be maximised as effective learning experiences to reduce the prospect of them reoccurring and to exploit their worth as learning opportunities.

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Chapter 4

Change at work and professional learning: how readiness to change, self-determination and personal initiative affect individual learning through reflection*

Abstract

Reflection offers an important means to learn effectively from changes induced by the workplace. The authors examined readiness to change and work-related self-determination as preconditions for reflection at work and expected personal initiative—defined as self-starting and proactive behaviour—to have a mediating effect. The study tested these relations using a questionnaire with 84 client advisors working in retail banking departments. These client advisors were about to undergo a range of changes in their workplaces at the time of the data collection. The changes—most importantly the implementation of a new advisory concept accompanied by new advisory software—afforded these individuals the opportunity to learn. Further, the study conceptualised self-determination as an individual's experience of autonomy, competence and social integration at work. Regression analyses revealed that social integration and perceived competence exert positive effects on reflection. The results indicate that personal initiative mediates the relationship between readiness to change and reflection as well as the relationship between all facets of self-determination and reflection. This paper discusses these findings in terms of their theoretical contribution to the literature on workplace learning and in relation to the practical importance of developing positive attitudes toward changes at work and active work behaviours for change-related learning activities such as reflection to succeed.

Keywords Personal initiative, Readiness to change, Reflection, Retail banking, Self-determination, Workplace change

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A multitude of ongoing workplace changes challenge individuals to keep pace in today's working world. Change at work—although often seen as wholly unwelcome—can potentially provide the basis for rich and ongoing learning (Bauer & Gruber, 2007; Billett, 2004; Fenwick, 2001; Hetzner et al., 2009). Changes produce disruptions in work processes, increase the risk of errors and impose learning requirements on individuals; they must acquire new knowledge and skills, modify work routines and develop and implement new work processes (Hetzner et al., 2011). This requires the active participation of the individual and a response through the workplace (Billett, 2008c; Hetzner et al., 2009). Yet, the richness and the depth of learning through change are likely to be premised upon three variables that interact to either foster or constrain learning processes: the conditions at a specific workplace, an individual's interpretation of these conditions, and the individual's attitudes (Bauer & Gruber, 2007; Hetzner et al., 2009). Some individuals' decisive attitudes lead to successful learning through change at work; they include: readiness to change, openness toward change (e.g. change acceptance and a positive view of change) and personal resilience (made up of self-esteem, optimism and perceived control) (Cunningham et al., 2002; Frese & Plüddemann, 1993; Wanberg & Banas, 2000). These positive attitudes toward change shape individuals' perceptions and reactions and the degree to which they manage to manoeuvre change-related learning requirements successfully. In addition to positive attitudes toward change, individuals need the ability and willingness to go beyond narrow task requirements and to approach work proactively, for example by showing personal initiative and by actively pursuing learning (Den Hartog & Belschak, 2007; Frese & Fay, 2001; Frese et al., 1996).

In the literature on work-related learning, informal ways of learning have become increasingly common (e.g. de Groot et al., 2011). In this paper, the authors highlight the importance of reflection as a key learning activity for individual and organisational learning—especially when unexpected challenges such as workplace changes or errors occur (Hetzner et al., 2011). Reflection, in the context of learning, is often described as a cognitive process, comprising intellectual and affective activities in which an examination of actions performed or incidents encountered occurs to lead to new understandings and appreciations (Boud, 2001). Reflection allows individuals to exploit the learning potential of work-specific situations (Høyrup, 2004), the acquisition of experiential knowledge (Fejes & Andersson, 2009) and the development of professional competencies and work behaviour (Goldie et al., 2007; Korthagen & Vasalos, 2005). Furthermore, it facilitates individuals' learning through critical incidents such as work-

related errors (Hetzner et al., 2011). Hence, reflection represents a crucial and integral part of workplace learning.

This study aims to assess individual attitudes, work characteristics, and work behaviour supposed to have an impact on reflection to improve learning induced through changes at work. We argue that for learning through reflection at work to succeed—especially within the context of workplace changes—relevant preconditions include a positive attitude toward changes (e.g. readiness to change at work), motivational work characteristics (e.g. self-determination) and proactive behaviour (e.g. personal initiative). Consequently, we expect that readiness to change and self-determination exert a main impact on reflection as an activity for learning through change. We conceptualise self-determination as the individual's experience of autonomy, competence and social integration at work. Furthermore, we assume that the effects of readiness to change and self-determination on reflection will be mediated through personal initiative defined as self-starting and proactive behaviour.

To examine our assumptions, we conducted a questionnaire study in the retail banking departments in branches of a German bank, where workplace changes—sometimes drastic—occur frequently. The banking sector provides a helpful field for study because of its dynamic nature as a field that involves change as a permanent condition of work (Hetzner et al., 2009). The participants in our study had recently confronted significant workplace changes with various consequences for their everyday work. More specifically, the advisory concept was fundamentally modified, accompanied by the implementation of new advisory software aimed at supporting this new concept. These changes resulted in new work tasks and called for proactive behaviour and participation in the change process. As a consequence, the workers had to modify work routines and to develop new work processes in cooperation with their co-workers as well as in coordination with their supervisors. Hence, studying the behaviour of bank advisors provides a rich opportunity to understand the relationship between changes at work and individual engagement in work and learning.

Reflection as learning activity at work

The learning process taking place in one's daily employment connects inseparably to the process of working. Learning continuously evolves from the interaction between the individual and the situation (Billett, 2008c). Hence, one's daily work-related experiences strongly influence learning, constituted by the learner's engagement in the learning situation, the learner's intention to learn and the learner's perception of what happens to

him or her (Billett, 2008c). Although we might not have consciousness of learning from work experiences, the cognitive approach refers to it as a conscious process that includes reflection; an experiential learning cycle includes (1) encountering a concrete experience (e.g. change or error), (2) reflection aiming at (3) the development of a revised strategy for action and (4) experimenting and evaluating the strategy (Bauer & Gruber, 2007). Boud (2001) identified reflection as a key to learning from experience: a process of internally examining and exploring an issue of concern triggered by an experience resulting in a changed conceptual perspective.

Many educational researchers (e.g. Atkins & Murphy, 1993; Boud, 2001; Scott, 2010) have described reflection as a cyclical process including basically three main stages: (1) awareness and review of an experience, feeling or thought; (2) critical analysis and re-evaluation of the experience, feeling or thought and (3) development of a new or revised perspective and new strategies for action. Thus, a reflection process, either as an individual or collaborative process, has both a retrospective and a future orientation. Most reflection scholars agree that the outcome of a reflection process should involve a new understanding and appreciation, a new or revised interpretation of an experience or the development of new perspectives, which may lead to changes in behaviour. Daudelin (1996) described the reflection process in four stages. In the first stage, the individual articulates a problem or challenge by defining the issue of concern on which to reflect. In the second stage, the individual makes an analysis involving a search of possible reasons for the defined issue and asks and answers questions about the situation, thereby intensively reviewing past behaviour. In the third stage, the individual formulates and tests a theory to solve the problem or to take the challenge; he or she generates alternatives. The final stage involves a decision on new ways to act in the future. Although the stages are represented linearly, a reflection process does not necessarily follow this path. The stages are not independent of each other and during reflection individuals can move back and forth in the process.

Reflection goes beyond just thinking or awareness of thoughts or feelings. One must call on certain cognitive and affective skills to accomplish reflection. These skills include, for example, self-awareness and the ability to 1) describe thoughts and feelings, 2) critically analyse situations one experiences (including an analysis of existing knowledge) and 3) integrate new knowledge and develop new perspectives (Atkins & Murphy, 1993). Especially novel, unexpected or challenging situations trigger reflection as individuals have not acquired the adequate knowledge and skills for the particular situation (Mann et al., 2009). However, individuals acting within a routine also ought to form a habit of conscious reflection focused on daily work practices, and this also leads to the transformation of

perspectives and to the improvement of one's work (Korthagen & Vasalos, 2005; Verdonshot, 2006).

We can approach a study of reflection from either an individualistic or social perspective. Both the individual's cognitive processes as well as interactions with others in the workplace provide important sources of learning (Billett, 2008c). Therefore, we take both perspectives into account in this investigation of learning through reflection at work. Learning from experience through reflection results from invisible cognitive processes and active behaviour within social interactions (e.g. discussing what happens in one's daily practice with peers). Feedback from co-workers proves particularly valuable for learning and can potentially lead to work improvement (Renn & Fedor, 2001). Feedback and open dialogue enhance reflection as they stimulate people toward alternative ways of thinking and behaving at work (de Groot et al., 2011; Raelin, 2007).

Readiness to change and reflection at work

In the working world, individuals must increasingly possess adaptability, versatility and tolerance in the face of uncertainty. They have to react quickly and flexibly to changes in work tasks and processes (Frese & Fay, 2001; Harteis et al., 2008). Moreover, workers need to adapt to new demands, acquire new knowledge and skills or cope with modifications in the company's social structure. Often, when workplace changes happen, management or supervisors offer little or no structure or support for workers relative to the transformations taking place. In an interview study on change-related learning within banking, Hetzner et al. (2009) found that workers felt isolated and stressed when trying to understand how the changes actually affected their daily work practice and how to adapt their knowledge, skills, work processes and behaviours. To accomplish this adaptation, the workers performed a variety of informal learning processes including socially shared reflection.

Facing workplace change increases uncertainty among workers. Reducing this uncertainty calls for an active approach to one's work to identify present tasks and relevant learning requirements. Moreover, working one's way through the change process requires a positive reaction from the worker and commitment and willingness to learn. From an educational micro perspective, change always takes a unique path and form requiring individual learning. It happens through a worker's perception of external demands, individual interpretation, related emotions and identification and the transformation of these perceptions into mental and physical reactions (Hetzner et al., 2009).

In the face of changes at work, individuals can take on a variety of roles, from active to passive and constructive to indolent. Individuals with conservative attitudes regarding changes prefer to do things in the usual and familiar way by sticking to established work routines. Therefore, they likely feel more threatened and less ready to change at work (Fay & Frese, 2001). In the literature on organisational change, two concepts of change readiness among professionals are discussed. First, readiness for change is defined as the extent to which workers hold positive views about the need for organisational change (i.e. change acceptance), as well as the extent to which workers believe that such changes are likely to have positive implications for themselves and the wider organisation (Cunningham et al., 2002). Other approaches to the study of readiness for change have focused on whether workers perceive their organisation and its members as ready to take on large-scale change initiatives (Jones et al., 2005). Second, readiness to change is defined as an attitude that implies the individuals' willingness to change their own work behaviours and work routines and to generate new knowledge and skills (Frese & Plüddemann, 1993). From a workplace learning perspective, we find the latter concept more applicable as it refers to personality attributes and individuals' learning. We expect that readiness to change at work is an important prerequisite for active learning techniques such as reflection. Therefore, we hypothesise that readiness to change predicts reflection at work.

Hypothesis (A1): Readiness to change will have a positive effect on reflection.

Self-determination and reflection at work

Most recent studies about the role of perceived self-determination at work derive from the work of Deci and Ryan (e.g. Deci et al., 1989; Ryan & Deci, 2000). According to their theory, three factors in workplace conditions distinctly affect work motivation and motivation for learning, namely experiences of autonomy, competence and social integration. Together with self-esteem, they represent fundamental psychological needs necessary to feel an ongoing sense of integrity and well-being (Ryan & Deci, 2000; Sheldon et al., 2001). They affect an individual's intrinsic motivation for learning, persistent work behaviour and successful work performance (Baard et al., 2004; Ryan & Deci, 2000). Therefore, we assume that self-determination positively influences one's willingness to accomplish reflective activities at work.

Experience of autonomy refers to the extent to which professionals perceive freedom in accomplishing their work tasks. As autonomy at work increases, individuals tend to consider their work product as a function of their own decisions and effort.

Consequently, they perceive themselves as initiators and feel more personal responsibility for their work results. Fuller et al. (2006) stressed that those workers who feel more responsible for their work product experience greater intrinsic motivation and greater concern for the quality of their work. Workers, who get the opportunity to act autonomously, experience the feeling of having a choice. In contrast, feeling controlled leads to the experience of feeling stress and of being forced to engage in work actions (Gagné & Deci, 2005). Autonomy at work fosters feelings of responsibility for current and future actions. Those individuals who assume responsibility for their actions will more likely learn from failure. A feeling of responsibility can prompt one to look back on past events or behaviours one has experienced (Fuller et al., 2006). Since reflection involves actively observing and evaluating one's own work performance and encountered events, we expect the following.

Hypothesis (A2): Autonomy will have a positive effect on reflection.

The experience of *competence* assesses the degree to which workers consider themselves capable of successfully accomplishing work tasks and of learning from those tasks. Encountering challenging situations at work, mastering them successfully and the resultant perception of progress offer an intrinsic motivation by satisfying an individual's need to feel efficient and competent (Gagné & Deci, 2005). The experience of competence plays an important role in the accomplishment of new work tasks and the re-evaluation of work routines; developing new work behaviours minus a feeling of competence in performing new tasks can lead to poor motivation and dissatisfaction. A task can serve as a platform for testing one's own competence; lack of challenging tasks can discourage one just as much as tasks too complicated to accomplish (Korthagen & Vasalos, 2005). Feeling competent when performing work actions links closely to a perception of being socially integrated in the work environment: both need the social context to induce a basis from which to exercise reflection (Clouder, 2000). Hetzner et al. (2011) found that the persuasion to have sufficient active knowledge and capabilities to cope with work-related challenges such as errors predicted individual reflection. Thus, we assume the following.

Hypothesis (A3): Competence will have a positive effect on reflection.

Experience of social integration refers to the extent to which an individual feels acknowledged by colleagues and superiors, feels socially integrated in the work

community and experiences satisfying communication with others in the workplace. Collaborative work activities should strengthen individual reflective behaviour. Working with colleagues augments critical thinking and enhances reflection processes, either concerning one's own actions or another person's behaviour (de Groot et al., 2011; Tigelaar et al., 2008). As a result, social support from peers serves an important role in helping individuals to cope with changes that affect their daily work and learning (Hetzner et al., 2009; Wanberg & Banas, 2000). Although learning through reflection can occur solely as an intra-individual cognitive process, it frequently occurs interactively since most work activities entail contact with others (Raelin, 2007). As such, it is plausible to assume the following.

Hypothesis (A4): Social integration will have a positive effect on reflection.

Personal initiative as mediator

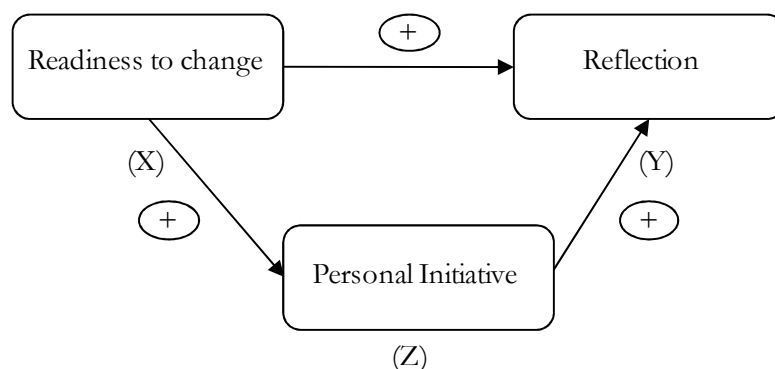
To learn successfully through changes at work requires positive orientation toward changes that result in proactive behaviour and an active approach to deal with change-related problems. Personal initiative, a work behaviour defined as self-starting and proactive, includes persistence in overcoming barriers to achieve a goal (Frese & Fay, 2001; Frese et al., 1996). Since personal initiative interrupts work routines and includes an active search for learning opportunities and engagement in learning activities (Frese et al., 1996), it offers a very interesting concept from a workplace learning point of view. Theorisation in this tradition focuses on challenging workplaces that do not allow individuals to stick solely to routines but demand their modification and re-conceptualisation in the face of a developing work environment. The personal initiative concept helps in understanding how people can change the situation in which they work and how they determine changes in work, processes and products and in the company's social structure (Frese et al., 2007; Lantz, 2011). Personal initiative implies an individual's willingness to acquire necessary new knowledge and skills to modify work routines (Fay & Frese, 2001). Thus, personal initiative represents an important working behaviour when dealing with change at work. Workers involved in the process of change have often been described as being resistant to change and having a passive approach to work. Frese and Fay (2001, p. 3) characterise a passive approach to work by the following features: "Doing what one is told to, giving up in the face of difficulties, not developing plans to deal with future challenges and re-acting to environmental demands".

A model of antecedents of personal initiative proposed by Frese and Fay (2001) includes (1) work characteristics (e.g. control at work); (2) knowledge, skills and abilities; (3) personality (e.g. proactive personality) and (4) orientations (e.g. error orientation, change orientation). Ohly and Fritz (2007) investigated forms of work motivation as antecedents of personal initiative. Den Hartog and Belschak (2007) revealed positive associations between commitment and personal initiative. The role of work characteristics and orientations as predictors of personal initiative has special interest for the present study.

We expect that readiness to change as a positive orientation toward change is a precondition for personal initiative. This assumption falls in line with Frese and Plüddemann (1993), who found that active change orientation increases the likelihood of exhibiting personal initiative behaviour. As one of its basic features, personal initiative seeds responsibility and brings about change, for example, through the evaluation of one's performance (Fuller et al., 2006; Thompson, 2005). Drawing on Frese and Fay (2001), who found personal initiative positively associated with better performance and responsibility taking, we expect that it positively influences individual reflection at work. Figure 1 depicts a model of the assumed mediating effect of personal initiative between readiness to change and reflection.

Hypothesis (B1): The effect of readiness to change on reflection at work (A1) will be mediated by personal initiative.

Figure 1. Model including personal initiative as mediator between readiness to change and reflection

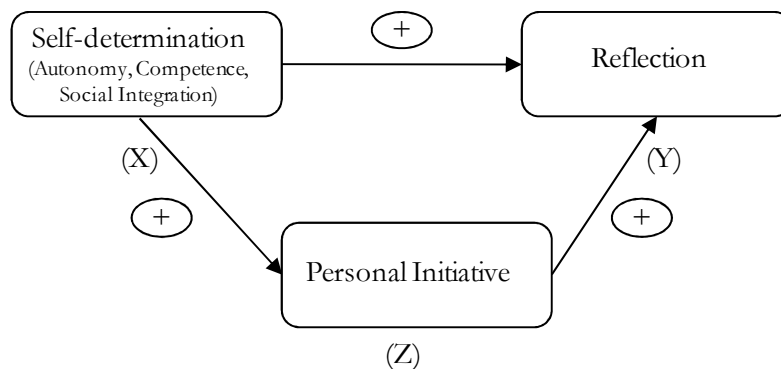


As proposed in Frese and Fay's (2001) model of antecedents, work characteristics affect individual attitudes and behaviours. Work characteristics that influence the development of proactive behaviours (such as personal initiative) include job autonomy, control at work, complexity at work, work stressors, and support from peers and supervisors (Den

Hartog & Belschak, 2007; Frese et al., 2007). Thus, we assume that the experience of autonomy, competence, and social integration at work as facets of self-determination positively influence individual initiative behaviour. Our assumptions follow those of Ryan and Deci (2000), who stress that perceived self-determination affects ongoing persistence, leads to enhanced performance and fosters proactive behaviours. Individuals who experience self-determination at work not only will put in more effort but also will apply this effort in proactive ways (Fuller et al., 2006). Hence, we propose that self-determination exerts a positive effect on personal initiative, which, in turn, influences reflection positively. Figure 2 shows a model of the assumed mediating effect of personal initiative between self-determination and reflection.

Hypothesis (B2): The effect of self-determination on reflection (A2-A4) will be mediated by personal initiative.

Figure 2. Model including personal initiative as mediator between self-determination and reflection



Method

Participants

The study involved 84 client advisors (50 per cent female, 45 per cent male, 5 per cent not reported) from the retail banking departments of a German bank. Their work experience varied from 1 to 43 years ($M=15.8$, $SD=12.7$); age ranged from 18 to 60 years ($M=36.5$, $SD=13.0$). The participants worked in different branch offices of the bank and all specialised in retail banking. Filling in the questionnaires was the first agenda item at a general staff meeting of the retail banking department, and 87 per cent of the client advisors attended the meeting and completed the questionnaire.

Measures

To measure readiness to change at work, self-determination, personal initiative and reflection, we used well-established questionnaire scales and applied a six-type Likert scale ranging from *1=strongly agree* to *6=strongly disagree*. All items were in German.

Personal initiative. We assessed personal initiative by using the German version of the personal initiative scale (Frese et al., 1997). It consists of seven items, $\alpha=.82$, $M=2.42$, $SD=0.69$.

Readiness to change at work. The readiness to change at work scale (Frese & Plüddemann, 1993) measures an individual's preference for jobs that allow a change in work routines and readiness to train for qualifications. The scale consists of five items, $\alpha=.83$, $M=2.80$, $SD=0.86$.

Self-determination. Based on Deci and Ryan (Deci et al., 1989; Ryan & Deci, 2000), we applied a Harteis et al. (2004) instrument that assessed perceived self-determination with regard to autonomy (four items, $\alpha=.64$, $M=2.74$, $SD=0.72$), competence (four items, $\alpha=.70$, $M=2.13$, $SD=0.67$) and social integration (five items, $\alpha=.86$, $M=1.98$, $SD=0.68$).

Reflection. We applied a Kauffeld et al. (2007) instrument for the self-assessment of reflection at work. The questionnaire scale refers to the evaluation of one's own work processes and behaviour. It consists of four items, $\alpha=.84$, $M=2.33$, $SD=0.63$.

Procedure

The survey was approved by the bank's board of management, the staff council, the human resources department and the chief of the retail banking department. We held a 10-minute introductory presentation during which we explained the study's objectives very broadly to the respective participants. We communicated neither the contents nor the direction of our hypotheses. Participation in this study was voluntary; anonymity and confidentiality of data was assured. The data collection was conducted during a general staff meeting of the bank's retail banking department. Filling in the questionnaires took approximately 20 minutes. We collected the questionnaires directly afterwards.

Analysis

We conducted correlation and multiple regression analyses to investigate the effects of readiness to change and self-determination on reflection. The mediating role of personal

initiative was analysed by calculating bivariate regression analyses and using Sobel tests (MacKinnon et al., 2002).

Results

As shown in Table 1, correlation analyses revealed a significant positive relation between readiness to change and reflection ($r=.22$). All three facets of self-determination showed significant positive correlations with reflection: autonomy ($r=.33$), competence ($r=.46$) and social integration ($r=.41$). Further, we found personal initiative significantly positively related with reflection ($r=.61$). In line with our expectations, readiness to change showed a significant positive correlation with personal initiative ($r=.44$). No significant correlations were found between readiness to change and self-determination. Personal initiative had significant positive correlations with all facets of self-determination: autonomy ($r=.30$), competence ($r=.32$) and social integration ($r=.25$).

Table 1. Results of the correlation analysis

<i>Scale</i>	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(4)</i>	<i>(5)</i>
(1) Personal initiative	-				
(2) Readiness to change	.44**	-			
(3) Autonomy	.30**	.11	-		
(4) Competence	.32**	.19	.52**	-	
(5) Social integration	.26*	.09	.25*	.43**	-
(6) Reflection	.61**	.22*	.33**	.46**	.41**

Notes. $N=84$; * $p<.05$; ** $p<.01$ (two-tailed).

The impact of readiness to change and self-determination on reflection

With the aim of assessing the effects of readiness to change and self-determination (autonomy, competence and social integration) on reflection, we conducted a multiple regression analysis. Table 2 shows all four predictors simultaneously included. In addition, we took measures for the prevention and control of multi-collinearity by calculating variance inflation factors (VIF) for all predictors. VIF values above 10 ($VIF > 10$) are indicators for the multi-collinearity of the predictors in the regression model (Hocking, 2003). The regression analysis identified perceived social integration and competence as the strongest predictors of reflection at work, accounting for 26 per cent of the variance. Readiness to change and autonomy did not significantly contribute to an increase in explained variance in the regression model. Hence, we can confirm

Hypotheses A3 and A4, but we have to reject Hypotheses A1 and A2. As all calculated variance inflation factors were lower than 10 (VIF=1.04 up to 1.61), we have no reason to believe that multi-collinearity affected the results.

Table 2. Results of the multiple regression analysis

<i>Predictor</i>	<i>B</i>	<i>SE</i>	β	<i>VIF</i>
Competence	.25	.11	.27*	1.61
Social integration	.23	.10	.26*	1.23
Autonomy	.11	.10	.12	1.37
Readiness to change	.10	.07	.13	1.04

Notes. $N=84$. $R^2_{adj}=.26$; B =Non-standardised regression coefficient; SE =Standard error of regression coefficient; β =Standardised regression coefficient; VIF =Variance inflation factor; $R^2_{adj}=R^2$ adjusted; $*p<.05$.

The mediating effect of personal initiative

With the aim of testing whether personal initiative functions as a mediator, we conducted a three-step analysis. First, we tested the predictive role of readiness to change and self-determination on personal initiative using bivariate regression analyses (Table 3, “bivariate regression 1”). Second, we calculated a bivariate regression analysis with personal initiative as predictor of reflection at work (Table 3, “bivariate regression 2”). It is necessary to calculate these two regression analyses to confirm significant effects, which are prerequisites for a mediation model. Third, to test directly for mediation, we calculated Sobel tests to examine the significance of mediator effects (Table 3, “Sobel test”). The results revealed that personal initiative mediates the influence that readiness to change and all facets of self-determination have on reflection at work (Table 3). Hence, we can confirm hypotheses B1 and B2.

Table 3. Results of the analysed mediating effects of personal initiative

Criterion (Y): Reflection		Bivariate regression 1				Bivariate regression 2				Sobel test
Predictor (X)	Mediator (Z)	a) $X \rightarrow Z$				b) $Z \rightarrow Y$				z
		B	SE	β	$R^2_{adj.}$	B	SE	β	$R^2_{adj.}$	
Readiness to change	Personal initiative	.37	.08	.44**	.18					4.46**
Autonomy		.30	.11	.30**	.08	.53	.08	.61**	.36	2.57*
Competence		.35	.11	.32**	.09					2.72**
Social integration		.27	.11	.26*	.06					2.26*

Notes. $R^2_{adj.}$ = R^2 adjusted; B=Non-standardised regression coefficient; SE=Standard error of regression coefficient; β =Standardised regression coefficient; z=z-value (Sobel test); * $p<.05$, ** $p<.01$.

Discussion

The present study exams change-related orientation, motivational work characteristics and proactive behaviour that supposedly affect individual reflective practice: readiness to change, perceived self-determination and personal initiative appeared as promising concepts for improving the practice of learning through reflection at work.

We first aimed to analyse the impact of readiness to change and self-determination (autonomy, competence, social integration) on reflection. Results revealed all facets of self-determination as well as readiness to change as positively correlated with reflection. However, in the regression equation including all of these variables, perceived competence and social integration had a stronger relationship with reflection than perceived autonomy and readiness to change.

The result of social integration as an important predictor of reflection strengthens Van Woerkom's (2004, p. 182) argument that "Reflection as individual behaviour is often less effective than reflection in a social interaction". Theories on workplace learning and professional development have stressed the role of social exchange in professional learning (Bauer & Gruber, 2007; Billett, 2004). Engagement in social learning activities (such as collaborative reflection) facilitates the development of shared knowledge and an increased shared understanding of professional thinking and skills. Furthermore, it supports the development of solutions and strategies to deal with changes, errors and critical situations in general (Bauer & Gruber, 2007). Communication and exchange within work groups have reciprocal effects. Others' perspectives can transform one's own perspective. Peers can profit from an individual

experience that encourages taking responsibility for one's own learning, and such interaction enables the team as a whole to change its routines.

Several factors highlight the enhancement of reflection through collaboration; working in a group advances the exchange of ideas, engagement in discussion and the development of critical thinking (de Groot et al., 2011; Van Woerkom, 2004). Research done by Fejes and Andersson (2009) showed valuable effects of shared reflection that allow the articulation of reflected experiences. Den Hartog and Belschak (2007) stressed that individuals high on group belongingness showed more cooperation and helping behaviours.

The revealed predictive quality of social integration and perceived competence on reflection is plausible, since these facets of self-determination narrowly intertwine; talking to colleagues or supervisors about one's own work experiences, feelings and thoughts fosters the individual's experience of competence through a better understanding of one's own work performance and professional skills (Schaub-de Jong et al., 2009). In the context in which we carried out our study, the experience of being socially integrated seemed a crucial factor supporting workers in their reflection processes, especially when substantial workplace changes took place. We have evidence to assume that a supportive work climate within the team enhances an individual's experience of work-related competence. The feeling of integration in a safe social network in the company seems associated with an enhanced perception of competence. Individuals who experience trust in their relationships with co-workers will likely gain confidence in their own abilities. Moreover, if individuals believe their peers support them, they will likely feel more open to change (Parker et al., 2006). Research conducted by Hetzner et al. (2011) revealed that a safe team climate facilitates individual reflective learning at work as it mediates the association between feeling competent in dealing with challenges (e.g. errors) and individual reflection processes. Our results indicate that individuals who believe in their capabilities to successfully cope with challenging situations at work have an increased willingness to accomplish reflective activities.

Personal initiative as mediator

The results of the study revealed that readiness to change facilitates an individual's reflection via its effects on personal initiative. This indicates that individuals willing to change their own behaviour and work routines and to participate in learning (readiness to change) will more likely initiate self-starting processes and proactive behaviour (personal initiative) with regard to coping with new requirements induced through

changes at work. In turn, individuals willing to show personal initiative behaviour will more likely perform reflection processes. We found the positive correlation between readiness to change and personal initiative consistent with Fay and Frese (2001), who also reported a positive relationship between these two variables ($r=.51$). This indicates that individuals will more willingly show personal initiative at work when they possess a high degree of readiness to change. Frese and Fay (2001) showed that individuals who perceive changes at work as negative, who fear making errors and who question whether they can deal with challenges effectively will less likely exhibit personal initiative behaviour.

Our analyses further identified personal initiative as a mediator between all facets of self-determination and reflection. Workers who experience autonomy, competence and social integration at work will more willingly show personal initiative, which, in turn, predicts reflective activity. Our results fall in line with Ohly et al. (2006) who found that workers' feelings of self-determination promote personal initiative.

The more workers experience the three aspects of self-determination the more personal initiative they show and the stronger the learning effects through reflective activities. First, we argued that perceived autonomy influences reflection positively via the mediator personal initiative. Our results do support this expectation. Research done by Frese et al. (1996, 2007) and Parker et al. (2006) identified job autonomy as an important determinant of proactive behaviour such as personal initiative. This result supports Fuller's (2006) assumption that more proactive behaviour is only possible when job autonomy is high. For example, without autonomy at work, one has little opportunity to experiment with new strategies—developed by the individual learner participating in a workplace change—intended to improve work. Our results correlate with Frese et al. (1996, 2007), who found that workers who have control over working procedures feel more responsible for their work and develop a more active approach to work. Thus, these workers will likely reflect more about their work, come up with new ideas, solve problems autonomously and implement new working procedures. It has a reciprocal effect. For example, superiors may give those workers more responsibilities, more complex work tasks and a higher degree of autonomy in accomplishing those tasks (Frese et al. 2007).

Second, regarding the experience of competence, our results indicate that one's belief in one's own skills and competencies motivates to show personal initiative, which, in turn, facilitates engagement in reflective activities at work. Learning through reflection again has an effect on perceived self-determination, as it leads to the

experience of progress and thus increases the experience of competence. Parker (2000) considered a belief in one's own competency and control of a situation as a prerequisite for behaving proactively.

Third, our results revealed the mediating effect of personal initiative between social integration and reflection. This result agrees with Thompson (2005), who found that social support relates to individuals' initiative taking and that initiative taking mediates the relationship between social support and performance. Experiencing social support encourages proactive individuals to pursue initiatives that go beyond their formal job expectations. In this way, social support serves as a basis on which individuals can pursue proactive behaviours within the organisation. For example, Parker et al. (2006) identified co-worker trust as positively associated with proactive behaviour. Referring to our field of study, we can imagine the following: in light of the described changes concerning the new advisory concept and the implementation of new advisory software, a worker could show personal initiative by documenting own experiences with the necessary new work processes (in the form of flow charts or check lists, for example) and distribute it to colleagues via the bank's intranet.

Prospects of learning through change

Given that the frequency and scope of workplace changes will likely increase in the future, learning through change becomes as inevitable as the changes themselves. In many domains, the workplaces demand continuing professional development and learning. Today's jobs require individuals who actively participate in learning to keep pace with fast developing requirements in knowledge and skills. The need for continuous development and maintenance of expertise also applies to professionals working in the banking sector (Antonacopoulou, 2000). Hence, we consider it important that workplaces implement effective means for learning through change. Reflection may offer the potential for coping with learning requirements induced through change by helping to orientate and re-orientate professional action.

Workplace changes provide effective learning experiences. Our study gives evidence that the prerequisites for maximising those learning opportunities include individuals' readiness to change and personal initiative taking, as well as an appropriate degree of self-determination. In this context, the initiative concept seems very interesting as it shares a central argument with recent learning theories on learning as an active process. So instead of speaking of "adaptation to change", one should perhaps rather speak of "individual creation of change". This requires workers who approach

work proactively by initiative taking and actively pursuing learning: “People who just react to obvious situational cues or who only follow orders will be unable to actively carry changes forward” (Frese et al., 2007, p. 1085). Moreover, we need to find methods that enhance the reflective behaviour of workers to trace their learning processes, especially while coping with change-related work requirements. Besides the importance of training individual reflective skills, we must develop reflective skills through interaction with others.

As with any study, this one has both strengths and limitations. Its major limitation is that it relies on self-report data only. Future research should address measurement of variables through multi-source data, for example, using both supervisor and self-ratings. However, measuring proactive behaviour from other sources, such as supervisors or co-workers, has its own disadvantages, including egocentric bias as a means of impression management and observational bias. As proactive behaviour can involve challenging established standards and practices in an organisation, supervisors or co-workers may not always welcome it and/or may assess it negatively (Frese et al., 1997). We opted, therefore, to use self-report measures. Another limitation of this study involves the fact that we drew our sample from a single bank. Thus, the findings are necessarily specific to the context in which we conducted the study. More studies in different institutions in banking or in other work fields will help to assess generalisability.

We can put forward several practical implications based on our findings. We propose two strategies for obtaining a workforce characterised as proactive and change-oriented with a high degree of reflective skills: first, recruiting high-initiative people and individuals with high readiness to change, and, second, changing organisational practices (e.g. social network building, reflective skills training). In this respect, we emphasise the importance of encouraging cross-functional exchange and supporting a work climate that values collaboration, open communication, discovery and experimentation. If organisations succeed in creating such a work climate, workers will feel safe to reveal their personal reflective thoughts and to share their experiences, insights, critical questions, and even errors with supportive co-workers and supervisors. Small groups in which the group members regularly engage in structured reflection processes may prove useful (e.g. Daudelin, 1996; Lantz, 2011; Mann et al., 2009; Raelin, 2002). For example, Daudelin (1996) recommended using a question technique as this is one of the most basic and powerful means to structure and enhance reflection processes such as the four-stage reflection process she proposed. Depending on the stage of the reflection process, she recommended “what” questions during the awareness and articulation stage

(e.g. “What occurred?”), “why” questions during the analysis stage (e.g. “Why do you think it happened?”), “how” questions during the stage of theory formulation (e.g. “How is this situation similar and different from others?”), and “what” questions during the action stage (e.g. “What are the implications of all this for future action?”). A qualified facilitator may lead the individual or the group through the reflection process by asking the reflective questions. Research done by Daudelin (1996) revealed that using these questions within a reflection process significantly increases the learning from the reflected experience.

To sum up, to inspire their workers to reflect regularly, organisations must turn to appropriate guidance and supervision. We recommend providing tools and training activities intended to stimulate reflection and to develop reflective skills. Workers could be introduced to reflective activities that can be done either individually or in a group, such as reflective journal writing, learning portfolios, reflective note taking, reflective question posing, peer-group reflection in structured sessions and ‘stop and reflect’ episodes held during or at the end of meetings, after the conclusion of daily work processes, or after experiencing challenges at work (Boud, 2001; Bruno et al., 2011; Daudelin, 1996; Raelin, 2002; Scott, 2010). These powerful tools can provoke new learning and understanding by producing valuable insights during the reflection process. They encourage workers to take responsibility for their own learning and to increase their active engagement in learning.

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Chapter 5

Using workplace changes as learning opportunities: Antecedents to reflective practice in professional work^{*}

Abstract

Purpose – Reflective practice is a means to exploit the worth of workplace changes as learning opportunities. The purpose of this study is to examine personal and work-environment characteristics that are assumed to be relevant antecedents to professionals' change-related learning through reflective practice, involving initiative-taking work behaviour and self-efficacy, as well as a perceived safe work climate with regard to peer support and supervisor behaviour.

Design/methodology/approach – A sample of 84 client advisors from workplaces in retail banking, who had recently been affected by a major workplace change, participated. They completed a questionnaire consisting of instruments to map their self-reported personal initiative, self-efficacy beliefs and their perceived safe work climate with regard to peer support and supervisor behaviour. The data were analysed through correlation analysis and hierarchical regression analyses.

Findings – The results revealed that both personal initiative and self-efficacy strongly and positively affected professionals' reflective practice. The individual perception of a safe work climate among peers positively predicted engagement in reflection.

Originality/value – The paper enriches the research on reflection as a practice that enables professionals to turn change-related work experiences into learning. This is done by emphasising the power of individuals' proactive role and initiative-taking work behaviour, their positive beliefs in their own capabilities, for example, to handle the various opportunities afforded through workplace changes, and the existence of a work environment that is characterised by mutual trust, supportive cooperation and respectful communication.

Keywords Personal initiative, Psychological safety, Reflective practice, Self-efficacy, Workplace change, Workplace learning

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Change and adaptation to change are central to considerations of work and workplace learning. From an educational perspective, workplace changes constitute novel situations that challenge professionals' work-related learning by requiring these individuals to adapt to new work tasks, modify work routines, develop new work processes and integrate new knowledge and skills. In a study on the interplay of workplace changes and workplace learning within banking, Hetzner et al. (2009) provided evidence to suggest that workplace changes affect professionals' work performance, professional knowledge, and professional role, and afford them the chance to engage in various informal learning activities. Thus, workplace changes are regarded as providing fruitful learning opportunities that enable professional development. However, the occurrence of a workplace change does not automatically lead to learning. Although employees are expected to use the potential learning opportunities afforded through the workplace change, this cannot be taken for granted. Rather, the participation in learning activities in the workplace, and the quality of this learning, depends on the individual's attitudes and work behaviours, as well as the characteristics of the work environment that either support or constrain this learning (Billett, 2004; Van Daal et al., 2013).

From a workplace learning perspective, it is important that effective means for maximising the worth of workplace changes as learning opportunities are provided. In this paper, we emphasise that reflective practice serves as such a means because it has a valuable role to play in individual and collective learning from work experiences, such as the occurrence of various and challenging consequences of workplace changes.

Reflection is predominantly defined as a cognitive process, involving intellectual and affective activities, in which an examination of actions performed, or incidents encountered, occurs, in order to lead to new understandings and appreciations (Boud, 2001). That is, reflection means letting future behaviour be guided by a systematic and critical cause-and-effect analysis of (one's own or others') actions and experiences and their consequences (Driessen et al., 2008). Therefore, it is a practice of turning experience into learning by reviewing, evaluating, interpreting and making sense of what is encountered in the workplace, and drawing conclusions that guide future work practice and behaviour (Boud, 2001; Raelin, 2002). Reflective practice implies intentionality and consciousness, and requires the use of an individual's mental abilities and cognitive skills, such as self-awareness and the ability to describe thoughts and feelings (Hetzner et al., 2012). It can be performed individually, as a personal, cognitive-affective process, or can be embedded in social interaction. The latter refers to reflection

as a socially shared process that involves working with relevant others (peers, supervisors, mentors etc.) on experiences, actions, thoughts, emotions and even failures, which are collectively recaptured and evaluated (Raelin, 2002). Therefore, reflective practice is an essential learning activity that facilitates the integration of new learning with existing knowledge and skills, and thereby aims at continuous professional development and improvement of work performance (e.g. Mann et al., 2009).

Although the significance of reflective practice has often been discussed in the literature, especially within the occupational fields of healthcare and teaching (e.g. Bruno et al., 2011; Mann et al., 2009), further empirical research that explores the conditions that shape professionals' learning through reflection, particularly against the backdrop of workplace changes, is required. Therefore, the purpose of the present study was to examine characteristics of the individual and the work environment that are assumed to serve as antecedents to professionals' reflective practice. More specifically, we investigated the effect of individuals' personal initiative and self-efficacy, as well as the perceived safety of the work environment, on reflection. We conducted an empirical study at workplaces that had recently been affected by a major change that had various and challenging consequences for the employees' daily work. The participants were client advisors from retail banking departments in branches of a German bank. The occupational field of banking is, by its very nature, dynamic because work requirements are continuously being transformed by new products, technologies and regulations that afford new work practices and behaviour (Hetzner et al., 2009). Thus, it provides a valuable field of study as it comprises change and uncertainty as a permanent condition of work. The client advisors involved in our study had recently confronted a significant workplace change, caused by a far-reaching modification of the advisory concept and the implementation of new advisory software. As the bank's management provided only limited support through formal training sessions, the client advisors had to actively engage in informal learning activities. In order to cope successfully with the changed work requirements, they had to develop new work processes and acquire extensive new knowledge and skills that afforded cooperation and coordination with peers and supervisors. Therefore, our study provided a rich opportunity to gain an understanding of factors that have an impact on reflection as a practice to exploit the worth of workplace changes as learning opportunities.

Antecedents to learning through reflection in professional practice

In their daily work routine, professionals experience workplace changes that are primarily externally driven, and which occur as a consequence of decisions made by a higher level of hierarchy within the organisation. These changes constitute situations in which their existing knowledge and skills are mainly inadequate, and afford professionals' active participation in the change process through learning, developing and integrating new knowledge, perspectives and work practices (Hetzner et al., 2009). We propose that, from a workplace learning point of view, relevant preconditions for professionals' successful use of the learning opportunities afforded through a workplace change involve the following: Firstly, the individual's awareness of the learning opportunity and its interpretation as such; secondly, positive attitudes towards change-related work challenges and towards one's own capabilities to cope with these challenges; thirdly, the individual's proactive participation in the change process and decision to engage in the learning opportunities involved; and fourthly, a work environment that provides support for this learning (Hetzner et al., 2012). In order to investigate how professionals maximise the use of workplace changes as learning opportunities, we examined personal and work-environment factors that are assumed to shape change-related learning through reflective practice, involving self-efficacy beliefs and personal initiative, as well as the perceived safety of the work climate among peers and with regard to supervisor support.

Self-efficacy

The concept of self-efficacy refers to the belief in one's capabilities to successfully cope with difficult demands and challenging situations through organising and executing courses of action to attain the required performance and achieve the desired results (Bandura, 2012). Individuals' perceived self-efficacy has an important impact on human action and performance, especially in new and ambiguous situations, as it determines the initial decision to perform an action or behaviour, the amount of effort expended on that performance, the persistence in the face of difficulties and obstacles, and the degree of success in performing (Speier & Frese, 1997). Individuals' self-efficacy beliefs influence whether they think in self-enabling ways, and, thus, how well they motivate themselves and persevere in the face of difficulties (Bandura, 2012). Consequently, self-efficacy plays a major role in how people approach work-related goals, tasks and challenges, and influences choice, effort, coping behaviour and persistence. Therefore, it is commonly considered as an important motivational tool leading to various work-

related outcome variables. Numerous studies in a range of occupational settings (e.g. clinical, educational and organisational) have provided empirical evidence that self-efficacy predicts and improves work performance, behaviour and learning (Elias et al., 2013; Sousa et al., 2012). Research conducted in work settings, and in the context of workplace learning, has shown that self-efficacy serves as a precondition for work-related learning (Elias et al., 2013). This relationship is plausible because of the motivational aspects of self-efficacy: Many work settings afford employees the opportunity to take responsibility for their own learning and for the acquisition of new knowledge and skills. Elias et al. (2013) reported that professionals with high self-efficacy tend to perform better on tasks that require the acquisition of knowledge and skills than people with low self-efficacy. Therefore, professionals who strongly believe in their capabilities will more likely be motivated to succeed at learning, and to expend a higher amount of effort and persistence in pursuing learning activities. Van Daal et al. (2013) provided empirical evidence to show that self-efficacy positively predicts professionals' participation in learning activities in the workplace, such as informal interaction with colleagues, self-regulation of practice and experimentation.

However, although self-efficacy beliefs are relevant in numerous domains and activities, research on how professionals' beliefs in their self-efficacy influence their reflective practice, especially in occupational fields where employees are frequently and increasingly confronted with various workplace changes that involve uncertainty and the risk of error-making, is scarce. Therefore, the present study aims to address this gap by examining self-efficacy as an antecedent to reflective practice within the occupational field of banking.

Self-efficacy beliefs are conceptualised and assessed either as general or domain-specific. Whereas domain-specific self-efficacy is chiefly related to given matters, themes or particular situations of functioning (Elias et al., 2013), a general sense of self-efficacy refers to a "global confidence in one's coping ability across a wide range of demanding or novel situations" (Schwarzer et al. 1997, p. 71). As our study participants were afforded the opportunity to handle a variety of new and challenging situations resulting from the workplace change, we opted to apply the generalised self-efficacy concept. We hypothesised that professionals' generalised self-efficacy positively predicts engagement in reflective practice:

H1: Generalised self-efficacy has a positive effect on reflection.

Personal initiative

Reflection is unlikely to occur in familiar situations that allow professionals to automatically apply routine work practices. In contrast, situations that are new, unexpected or challenging, trigger informal learning activities, such as reflective practice, because they afford professionals the opportunity to acquire adequate new knowledge and skills to suit the particular situation (Mann et al., 2009). We propose that the way in which individuals choose to participate in learning opportunities and, thus, to engage in reflective practices, depends on the existence of work behaviour that is proactive and initiative-taking. In this context, we refer to the concept of personal initiative; a work behaviour that is defined as self-starting and proactive, involving persistence in overcoming the difficulties and setbacks that arise in the pursuit of a goal (Fay & Frese, 2001). Personal initiative is particularly important in situations of change: Professionals who show a high level of initiative are more likely to participate in workplace changes, proactively acquire new knowledge and skills, abandon old work routines despite the increased likelihood of making errors, develop new strategies and actively and persistently solve problems (Baer & Frese, 2003; Fay & Frese, 2001). Through its proactive, self-starting approach towards work and work performance, personal initiative aims to improve work methods and procedures and develop personal prerequisites for meeting future work demands and challenges (Den Hartog & Belschak, 2007; Searle, 2008). Therefore, personal initiative implies an active search for learning opportunities and the willingness to engage in learning activities in the workplace.

From a workplace learning perspective, it is a concept that contributes to the understanding of how professionals actively approach work and learning, involve themselves in the opportunities provided by a workplace change, and deal with uncertainties, obstacles and setbacks. Through that, employees make their own contributions to a change process, thereby taking responsibility for their own work performance, learning and professional development. In this study, we assumed that personal initiative serves as an important antecedent to professionals' reflective practice. Consequently, we hypothesised the following:

H2: Personal initiative has a positive effect on reflection.

Safe work climate

Reflection as a practice of learning from workplace experiences is inherently related to the context in which it occurs: It is the work context that provides various learning

opportunities that invite individuals to engage in reflective learning that is either individually performed or is carried out via interaction and collaboration with peers and supervisors. Moreover, this context determines how the individual or the work group responds to these invitations by providing working conditions that are either facilitating or inhibiting (Billett, 2004). In this paper, we propose that reflective learning is shaped by the quality of the support the individual receives from the work environment. As an aspect of this quality, we focused on the individual's perception of a safe work climate.

In order to investigate the role of a safe work climate for change-related learning through reflective practice, we referred to the concept of psychological safety. This is defined here as individual perception of the work team being a safe environment for interpersonal risk taking, for example, raising critical problems or openly admitting an error, without the fear of negative consequences such as being embarrassed, rejected or punished (Edmondson, 1999). A safe work climate within a team, characterised by interpersonal trust, mutual respect and supportive cooperation, has been found to affect learning behaviour (Edmondson, 1999; Seifried & Höpfer, 2013). It may contribute to motivating and initiating reflective learning because professionals feel safe in taking the risk of openly discussing, sharing and negotiating work-related experiences or reflective learning outcomes. Therefore, the willingness to interact and negotiate with peers and supervisors for reflection purposes, for example, seeking help in reflecting error-related work experiences, is likely to depend on the perceived psychological safety among peers and concerning supervisor behaviour. Consequently, we addressed the following hypotheses:

H3a: Perceived safe work climate among peers (i.e. psychological safety of colleagues) exerts a positive effect on reflection.

H3b: Perceived safe work climate concerning supervisor behaviour (i.e. psychological safety of supervisors) exerts a positive effect on reflection.

Method

Participants and procedure

We used a sample of $N=84$ client advisors who specialised in private customer consulting (50 per cent female, 45 per cent male and 5 per cent not reported) and worked in retail banking departments in branches of a German bank. Their work experience within banking varied from 1 to 43 years ($M=15.8$, $SD=12.7$), and their ages ranged from 18 to 60 years ($M=36.5$, $SD=13.0$). The survey was approved by the bank's

management, human resources department and staff council. We collected data, and assured participant anonymity and confidentiality, as the first agenda item at a general staff meeting of the bank's retail banking division; participation was voluntary. A total of 87 per cent of the bank's client advisors attended the meeting and completed the 20-minute questionnaire. We were present at the meeting and distributed the questionnaires to the participants. We collected the questionnaires directly after completion.

Measures

Participants responded to questionnaire items on a Likert-type response scale ranging from 1 (strongly agree) to 6 (strongly disagree). Our analysis of internal consistency showed that Cronbach's alpha of all the questionnaire scales was above .70. This indicates good reliability of the measures.

Reflection. We used a Kauffeld et al. (2007) instrument to measure participants' self-reported reflection at work. The four-item questionnaire scale refers to the evaluation of own work practices and work behaviour. The scale's internal consistency was $\alpha=.84$.

Initiative work behaviour. In order to measure participant's self-reported personal initiative in the workplace, we used a seven-item scale developed by Frese et al. (1997). The scale's internal consistency was $\alpha=.82$.

Self-efficacy. The measure of generalised self-efficacy contained ten items developed by Schwarzer et al. (1997). The scale's internal consistency was $\alpha=.89$.

Psychological safety. In order to assess perceived psychological safety, we adapted established instruments (Edmondson, 1999; Van Dyck et al., 2005): Two four-item scales were constructed to measure the individual perception of a safe work climate among peers ('psychological safety-colleagues') and concerning supervisor behaviour ('psychological safety-supervisors'). We pre-tested the questionnaire with a sample of 49 client advisors working within a financial services institution. The test yielded good reliability indices for both scales (psychological safety colleagues: $\alpha=.72$; psychological safety supervisors: $\alpha=.81$). The internal consistency estimates calculated in the present study were also satisfactory: psychological safety-colleagues: $\alpha=.78$; psychological safety-supervisors: $\alpha=.73$. Furthermore, we conducted a confirmatory factor analysis to assess the reliability and validity of the items and the factor structure for the two psychological safety constructs. The results revealed factor loadings for 'psychological safety-colleagues' ranging from .65 to .85; for 'psychological safety-supervisors' from .66 to .83. Hence, the measures proved to be of good quality.

Analysis

We first calculated means, standard deviations, Cronbach's alpha and correlations of all study variables. Secondly, we tested our hypotheses through hierarchical regression analysis. We predetermined the level of entry of each group of predictors to examine the unique contribution of personal and work-environment factors in predicting reflection. In addition, we computed variance inflation factors to test for multicollinearity among the data.

Results

Table 1 depicts means, standard deviations and correlations of all study variables. We found that personal initiative was significantly positively correlated with reflection ($r=.61$). Generalised self-efficacy also showed a significant positive correlation with reflection ($r=.59$). The results further revealed significant positive associations between reflection and both psychological safety variables: psychological safety-colleagues ($r=.58$) and psychological safety-supervisors ($r=.42$).

Table 1. Means (M), standard deviations (SD), and correlations of all study variables.

	M	SD	1	2	3	4	5
1 Reflection	2.33	0.63	-				
2 Personal initiative	2.42	0.69	.61**	-			
3 Self-efficacy	2.40	0.58	.59**	.62**	-		
4 Psychological safety-colleagues	2.44	0.70	.58**	.57**	.52**	-	
5 Psychological safety-supervisor	2.41	0.64	.42**	.34**	.43**	.44**	-

Notes: $N=84$; ** $p<.01$ (two-tailed).

We performed hierarchical regression analysis to test our hypotheses (see Table 2). In the first step, individual predictor variables—personal initiative and self-efficacy—were block entered, providing the variance in reflection accounted for in this group of predictors (see ‘step 1 model’ in Table 2). In the second step, the work environment predictor variables, psychological safety of colleagues and supervisors, were block entered into the step 1 model in order to verify the amount of variance explained by these variables after controlling for the effects of personal initiative and self-efficacy (see ‘step 2 model’ in Table 2).

The results of the first step indicated that the variance accounted for (R^2) with the first two predictors equalled .45. Both personal initiative and self-efficacy proved to be strong significant predictors of reflection, which supported hypotheses 1 and 2. The results of the second step revealed that the change in explained variance (ΔR^2) was equal to .05, which was a statistically significant increase in variance accounted for over the step 1 model ($p < .05$). Psychological safety of colleagues proved to be a significant predictor lending support for hypothesis 3a. Psychological safety of supervisors did not significantly contribute to an increase in explained variance in this regression model. Overall, personal initiative, self-efficacy, and psychological safety of colleagues explained approximately 50 per cent of the variance in reflection in our model. In light of the reported results, we can confirm hypotheses 1, 2 and 3a, but must reject hypothesis 3b. Since our analysis revealed a positive correlation between psychological safety of supervisors and reflection, we considered it necessary to perform additional analyses to understand its missing explanatory power in our model. Therefore, we estimated a regression model with only the two psychological safety variables as predictors of reflection. We found both predictors statistically significant when other variables were not controlled for (psychological safety of colleagues: $B = .48, \beta = .49, SE = .09, p < .01$; psychological safety of supervisors: $B = .18, \beta = .20, SE = .09, p < .05$). This indicates that, as an effect of shared variance among the predictors, psychological safety of supervisors has too little unique predictive power in our hierarchical regression model (Table 2).

Data are generally thought to be affected by collinearity in the case of predictor variables being highly correlated with coefficients above .70 (e.g. Elias et al., 2013), which we did not observe in our data. Furthermore, the calculated variance inflation factors ranged between 1.34 and 1.91, which is well below the accepted value of 10. This indicates that our results were not affected by collinearity.

Table 2. Summary of hierarchical regression analysis for variables predicting reflection at work

<i>Variable</i>	<i>Step 1 model</i>			<i>Step 2 model</i>			
	<i>B</i>	<i>SE B</i>	β	<i>B</i>	<i>SE B</i>	β	<i>VIF</i>
<i>Step 1:</i>							
Personal initiative	0.34	0.09	.39**	0.24	0.09	.28*	1.91
Self-efficacy	0.38	0.12	.35**	0.27	0.12	.25*	1.87
<i>Step 2:</i>							
Psychological safety-colleagues				0.24	0.10	.24*	1.71
Psychological safety-supervisor				0.10	0.08	.11	1.34
R^2		.45			.50		
ΔR^2					.05		

Notes. $N=84$; ΔR^2 =increase in R^2 ; B =regression coefficient; $SE B$ =standard error of regression coefficient; β =standardised regression coefficient; VIF =variance inflation factors; * $p<.05$; ** $p<.01$.

Discussion

The purpose of this study was to investigate those personal and work-environment characteristics, namely, personal initiative, self-efficacy and psychological safety, which are assumed to serve as antecedents to reflective practice. With regard to personal characteristics, the results substantiated our expectations by revealing that both personal initiative and self-efficacy are strong predictors of reflection; together they explained 45 per cent of the variance. With regard to the perceived safe work climate, results provided support for the significant positive impact of psychological safety of colleagues, accounting for a 5 per cent increase in explained variance. The high amount of variance explained by personal characteristics is in accordance with the results obtained by Kwakman (2003), who found that individual factors have a greater influence on participation in workplace learning activities than do work-environment factors (e.g. support of colleagues). We subsequently discuss our findings in detail.

Firstly, the positive effect of self-efficacy on reflection indicates that professionals who have strong beliefs in their capabilities to successfully cope with challenging situations at work, such as the occurrence of a workplace change, are relatively more engaged in reflection. For example, employees who feel capable of handling change situations might see a real benefit in reflecting change-related work experiences. The

findings conform with previous research showing that self-efficacy serves as a precondition for work-related learning (Elias et al., 2013), and was found to predict professionals' participation in learning activities in the workplace (Van Daal et al., 2013). Van Woerkom (2006) provided empirical evidence of the strong positive impact of self-efficacy on all dimensions of critically reflective working behaviour. She explained her findings by arguing that, for engagement in critically reflective working behaviour, people must show a form of risk-taking behaviour: They need to have "courage to withstand social pressure and be critical, to take a vulnerable position and ask for feedback, to take a close look at one's performance and one's future career, and to experiment instead of walk the beaten track" (Van Woerkom, 2006, p. 305). She argued that the more people feel confidence in their abilities, the sooner they will be prepared to take such 'risks'.

Secondly, our findings support the assumed positive impact of personal initiative on reflection, indicating that professionals who are willing to take the initiative will more likely engage in reflection intended to improve work practices and performance. This reasoning is in accordance with the results of previous studies that found that personal initiative was related to various individual and organisational level outcomes, such as performance, innovation and goal achievement (Baer & Frese, 2003; Frese & Fay, 2001). Professionals who feel responsible for their work performance and proactively approach work and learning will more likely reflect on their work, come up with new ideas, solve problems autonomously and implement new working procedures (Frese & Fay, 2001). Therefore, personal initiative represents important work behaviour, especially in new and challenging (change) situations that involve a range of learning opportunities. For example, Hetzner et al. (2012) provided empirical evidence to show that initiative-taking work behaviour serves as a mediator between professionals' willingness to participate in workplace change opportunities (i.e. readiness to change) and their engagement in change-related reflective learning activities. Furthermore, our results revealed a positive relationship between personal initiative and self-efficacy. This conforms to previous studies that also reported positive associations between these two variables (e.g. Bledow & Frese, 2009; Fay & Frese, 2001). Bledow and Frese (2009) noted that professionals with high self-efficacy will tend to attach a higher likelihood of success to their initiative-taking. According to Fay and Frese (2001, p. 106), "a person needs to believe in his or her ability to do things competently to show initiative. People who do not believe that they can do a certain action will not attempt to do this action."

Thirdly, our results indicate that a safe work climate—particularly feeling safe in interactions with peers—facilitates professionals’ reflective practice. The finding that psychological safety of colleagues significantly predicted reflection in our equation model, whereas psychological safety of supervisors did not, indicates that the perceived safety of the work environment among peers is of higher relevance than supervisor support when it comes to reflection. This might be explained by an argument made by Den Hartog and Belschak (2007) that the typically frequent and intense contact among members of a work group increases familiarity and, thus, serves as a basis for mutual respect, trust and caring. Hetzner et al. (2009) found that particularly supportive behaviours of peers were mentioned by study participants as facilitators of individuals’ adaptation to workplace changes.

It follows that a work environment in which professionals feel safe to reveal their personal reflective thoughts and to share their experiences, insights and even failures, with their supportive peers without having to fear blame, punishment or retaliation, encourages professionals to pursue reflective learning activities in the workplace. In this sense, social support serves as a basis on which professionals engage in reflective practice. Hetzner et al. (2012) provided empirical evidence to suggest that the experience of social relatedness within the work group plays an important role in supporting reflection processes. Raelin (2002) argued that reflective practice tends to flourish in supportive and collaborative working environments. In this context, he associated reflection with learning dialogues as, in the safe presence of trusting peers, experiences, interpretations and evaluations are brought to the surface and subjected to the review of others. Learning outcomes of these reflective dialogues may be validation of knowledge, assumptions, plans and actions.

Limitations and directions for future research

The present study has some limitations. Firstly, our measures are based on self-reports. The problem with self-report questionnaires is that they tend to measure self-concepts that do not necessarily reflect real behaviour (Bledow & Frese, 2009). Nonetheless, with respect to restrictions imposed by the bank’s management that did not allow time-consuming research, we opted for a 20-minute questionnaire survey that enabled explicit hypothesis testing. Combining self-report measures with more objective measures (e.g. interviews, observation, reflective journals and peer and supervisor ratings) would have offered additional strength in testing our hypotheses and represents a recommendation for future research. Secondly, the study was based on a relatively small sample size and

investigations focused on a particular work field. Consequently, the results might be domain-specific and may have limited transferable value for work settings other than banking. There is a need for replication studies in other work domains, eventually comprising a larger sample size, to confirm and generalise the results. Despite these limitations, we suggest that continued study of personal and contextual antecedents to reflective practice is important and worthwhile. Future studies should focus on examining additional factors that supposedly serve as antecedents, for example, reflective skills and attitudes towards reflective practices, learning orientation and motivation, commitment, openness to experience and help-seeking behaviour.

Conclusion and practical implications

Workplace changes provide opportunities that invite professionals to engage in learning activities, such as reflective practice, which are intended to enhance work performance and professional development. Reflection is a technique that both improves the awareness of a learning opportunity and enables professionals to respond to it. In this paper, we provided empirical evidence that professionals' effective use of workplace changes as learning opportunities through reflective practice is stimulated and guided by both personal and work-environment characteristics, involving personal initiative, self-efficacy and a safe work climate especially among peers. On the basis of our findings, we can derive several practical implications for organisations, intended to support and improve employees' experience-based learning through reflection.

Firstly, since work performance that provides positive mastery experiences, as well as experiences in overcoming obstacles, raises professionals' beliefs in their self-efficacy, we propose that a successful reflection process, leading to new appreciations and decisions on future work practices and behaviour, provides for such mastery experiences and, thus, may positively stimulate self-efficacy beliefs. This, in turn, has a reciprocal effect: The stronger an individual's self-efficacy, the more likely that individual is to engage in reflective practice. According to Speier and Frese (1997), high self-efficacy beliefs increase the probability of performing difficult actions, as well as the effort and persistence to pursue these actions, whereas employees with low self-efficacy more likely avoid challenging situations and give up in the face of obstacles. Consequently, we can put forward the argument that self-efficacy not only influences individuals' perceived capability, motivation and decision to enter a reflective learning process, but also directs their performance and persistence in this process. Therefore,

self-efficacy can be conceptualised as a crucial precondition, facilitator and outcome of reflection.

In order to exploit the worth of this reinforcing cycle between self-efficacy and reflective practice, we recommend the provision of tools and training on activities that stimulate and sustain reflective practice. Professionals may be introduced to reflective journal-writing, keeping learning portfolios or critical incident journals, indulging in 'stop and reflect' episodes and attending formal one-on-one or peer-group reflection guided by qualified facilitators (Hetzner et al., 2012). In a study on the use of the smartphone as a mobile reflection tool for learning in the workplace, Koenings et al. (2013) recently provided evidence that modern mobile technology can stimulate reflective practice: A 'reflection app' aimed at registering learning moments during work as short texts, voice recordings, pictures or videos proved useful in stimulating and facilitating reflection processes, increased awareness of learning opportunities, and, thus, supported informal learning. All these powerful tools and activities allow for the fact that reflection becomes a structured process, producing evidence of the reflection process itself and its learning outcomes.

Secondly, a widespread use of reflective practice within workforces affords employees' proactive and self-starting participation in this learning technique in their daily work. Therefore, organisations can benefit from taking professionals' personal initiative and self-efficacy into account when making recruitment decisions (Elias et al., 2013; Sousa et al., 2012). Furthermore, facilitating work conditions that appreciate and reinforce professionals' initiative-taking work behaviour by, for example, personal initiative training sessions and promotion systems, as well as appreciations and support from supervisors and top management, could pay off for organisations (Bledow & Frese, 2009; Searle, 2008).

Thirdly, considering the crucial role of the work environment, paying explicit attention to the establishment of reflective cultures within work groups is recommended. Characteristics of a reflective culture involve (1) reflective learning habits and structured reflection, (2) protected time and (3) a safe work environment (Driessen et al., 2008). Firstly, as professionals do not adopt reflective learning habits intuitively and automatically, a routine of guided and structured reflective practice implemented within workgroups may prove useful to develop these habits (Driessen et al., 2008; Edwards and Nicoll, 2006). For example, question techniques are one of the most basic and powerful means of structuring reflection processes, and bringing into consciousness one's own reasoning and learning processes. Qualified facilitators may guide

professionals in one-on-one or peer-group sessions through a routine reflection process, by applying such a question technique (Hetzner et al., 2012). Secondly, professionals require sufficient time for individual and/or socially shared reflective practice. Thus, organisations can benefit from valuing and providing protected time-frames. For example, work groups could meet regularly for reflection purposes. Thirdly, reflective practice is facilitated by a safe and open work environment. Professionals will only engage in reflection or reveal their reflection outcomes when they do not have to worry that their reflective thoughts will be used against them (Driessen et al., 2008).

Drawing on Bandura (2012), who distinguished between three types of work environments, namely, imposed, selected and constructed, we emphasise that a shared belief of the psychological safety within a work group is constructed through every work group member's contribution, by showing behaviour that either supports or inhibits the creation of a safe work environment. The more every individual provides support to peers, and cares about, identifies with and feels involved in the work environment, the more the whole work team is perceived as a safe place to take interpersonal risks without the fear of embarrassment, rejection or punishment (Den Hartog & Belschak, 2007). In addition to peers, supervisors also contribute the perceived psychological safety within the work team, for example, appropriate leadership behaviour that does not allow blame and punishment, is receptive to open discourse and provides support, feedback and advice to subordinates (Seifried & Höpfer, 2013). The quality of the relationship between supervisors and their subordinates facilitates open and trustful interactions and influences individuals' work performance and learning. Seifried and Höpfer (2013) reported three features that are crucial in establishing a safe work environment; involving the support of peers and supervisors in problematic situations, an intact information flow that facilitates critical discussions, and supervisors' reactions to problems and failures.

To conclude, reflection as a practice that "involves looking at what is, in order to see what might be" (Edwards & Nicoll, 2006, p. 123), enables professionals to consciously make meaning of (change-related) work experiences, to identify learning needs and understand their own learning processes, to recognise the learning that results and to improve reflective learning abilities. Professionals may take better advantage of reflective learning when they believe in their own capabilities, take the initiative and operate within a safe and supportive work environment that values and reinforces reflective learning activities. Occupational fields that are continuously affected by

workplace changes need professionals who are capable of dealing with change situations and uncertainty, proactively engage in learning activities, handle obstacles persistently, prepare to avoid errors and continuously improve their work performance and work environment. Such workers actively carry workplace changes forward.

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Chapter 6

General discussion and conclusions

This thesis contains four contributions that—based on qualitative and quantitative research approaches—aim to gain an understanding of professionals’ learning through reflective practice against the backdrop of workplace changes and errors. The first contribution investigated how professionals perceived workplace changes and the associated learning affordances by means of a semi-structured interview study. Conditions that supported or inhibited professionals’ successful participation in these learning affordances were revealed. Building on the understandings gained in the initial study, the three subsequent contributions examined personal and work-environment characteristics that supposedly serve as antecedents to professionals’ learning from workplace experiences through reflective practice. The studies were conducted at workplaces that are continuously affected by workplace changes such as the implementation of new products, new work processes or standards, new regulations by law or by management, or new information and technology systems. From an educational perspective, these changes challenge professionals’ learning processes by requiring them to adapt to new work tasks, modify existing work routines, and develop new work processes. The acquisition of knowledge and skills is essential. The study participants’ workplaces are characterised by frequent changes that require them to cope with new, complex demands, unfamiliar job requirements and potential failures. In such work environments, problems, ambiguity and uncertainty are common.

This chapter discusses the main findings about the previously mentioned contributions and develops and presents a model of antecedents to reflection in professional practice. In light of these findings, directions for future research and implications for practice are provided.

Main findings

The educational micro perspective on workplace changes that was advanced in this thesis proved valuable for understanding the interplay between workplace changes and learning. In investigating a specific, major workplace change that affected client advisors at a German bank, semi-structured interviews assessed how this specific change situation and the ensuing learning affordances were perceived by the participating client advisors (chapter 2). It was found that a workplace change particularly affects professionals’ work performance, professional knowledge and professional roles. The modification of work routines, the acquisition of knowledge and skills and the engagement in cooperative problem solving afforded various informal learning activities, which involved individual and collective reflective practice.

The framework that was adapted from Billett (2006) proved to be highly relevant in examining how workplace change affects professionals' workplace activities and affords learning behaviour, as well as how conditions provided by the work environment shape learning processes in the context of the change. The study participants experienced the workplace change as both challenging and promising; affordances for learning were considered necessary to redefine their professional roles, to gain necessary new knowledge, and to adapt and improve their work performance. These learning processes required employees' positive attitudes, proactive participation and informal interaction with colleagues and supervisors.

This initial study contributed to research on the understanding of how individuals learn through and from workplace changes, and how such learning can be supported through workplace affordances. Building on this research, a questionnaire study was developed and conducted to examine individual and work-environment prerequisites for professionals' reflective learning from different angles. The findings allow modelling of relevant antecedents to reflective practice, which is the aim of the following section.

Modelling antecedents to reflection in professional practice

Based on the contributions presented in this thesis, a model of antecedents to reflection in professional practice was derived and will be discussed subsequently. The model is based on four main dimensions: (1) orientations, (2) work behaviour, (3) work environment and (4) reflective skills. This thesis found that a dynamic interplay among these dimensions shapes professionals' experience-based learning through reflective practice. Figure 1 depicts the model of antecedents to reflection in professional practice. It is discussed step by step below, starting with orientations.

Orientations

This thesis provides empirical evidence that professionals' orientations towards actively coping with workplace changes and errors—namely change orientation, error orientation and self-efficacy beliefs—are significantly relevant to facilitating professionals' reflective learning at work. This indicates that professionals' engagement in reflection on change- and error-related work experiences is motivated through their readiness to engage with the learning affordance provided by a workplace change, their positive attitudes towards errors and their positive beliefs in their own abilities to cope with the challenges involved in workplace change.

Readiness to change. Workplace changes invite professionals to engage in work and learning activities (Billett, 2012). This engagement happens through a professional's perception of external demands, his individual interpretation of those demands, his related emotions and identifications and, finally, the transformation of these into mental and physical reactions. In the face of workplace changes, professionals can take a variety of roles, from active to passive and from constructive to indolent (Fay & Frese, 2001). Positive attitudes towards change shape individuals' perception and reactions and the degree to which they manage to manoeuvre change-related learning requirements successfully.

This thesis found professionals' positive attitudes towards change (i.e., readiness to change) to be positively related to reflection (chapter 4). Although it had too little unique predictive power in a regression model where it was simultaneously controlled for together with self-determination variables as predictors of reflection, it was found to affect individuals' reflective practice via its effects on personal initiative. This indicates that individuals who are willing to change their work behaviours and work routines, and to generate new knowledge and skills (i.e., readiness to change), will more likely initiate self-starting processes and proactive behaviours (i.e., personal initiative) with regard to coping with new requirements and challenges induced through workplace changes. In turn, individuals who show personal initiative tend to be relatively more engaged in reflection. The positive effect of readiness to change on personal initiative conformed to findings by Fay and Frese (2001) as well as by Frese and Plüddemann (1993), who also reported positive relationships between these two variables. Thus, professionals will more willingly show personal initiative at work when they possess a high degree of readiness to change intended to result in action. In contrast, those individuals who perceive workplace changes as negative, who question whether they can cope effectively with the challenges involved, and who fear making errors will be less likely to exhibit personal initiative behaviour (Frese & Fay, 2001) and, thus, will be less likely to engage in reflective learning from change-related workplace experiences.

Error orientation. Workplace changes provide new situations that increase uncertainty and the risk of errors. This thesis proposed that professionals' positive attitudes towards errors facilitated their engagement in reflective practice. To examine attitudes towards errors, the concept of error orientation developed by Rybowskiak et al. (1999) was applied (chapter 3). Aspects of error orientation investigated in this thesis included individuals' error competence, learning from errors, error strain and error risk-taking. These four variables were simultaneously included in a regression model predicting professionals'

reflection. Learning from errors and error competence were revealed as the strongest predictors.

The predictive quality of error competence refers to an individual's estimation of whether reflecting on error experiences is worthwhile. Professionals who do not believe to have sufficient knowledge or capabilities to cope with errors might not immediately see any real benefit in reflection—they assume they are unable to fix the error, regardless of how deeply they understand it. The role of learning from errors—as another aspect of error orientation—in predicting reflective practice is also plausible in that professionals tend to reflect upon errors more strongly when they expect it to yield helpful and relevant results for their future work (Harteis et al., 2007). Consistent with that proposition, recent research indicates that the estimation of an error as a chance for learning predicts individuals' engagement in error-related learning activities (Bauer, 2008; Bauer & Mulder, 2007; Leicher, Mulder, & Bauer, 2013). Hence, reflective practice—which is fostered by the persuasion that an error is a valuable opportunity to learn—leads to a better understanding of the error's probable cause and the development of strategies to avoid such errors in the future. Thus, the individual feels capable of contributing to an error-related learning process. This, in turn, increases the possibility that the individual will participate in this process (Cannon & Edmondson, 2001; Van Dyck et al., 2005). Building on Zhao (2011), it is proposed here that learning from errors through reflective practice involves (a) being aware of an error as a learning opportunity, (b) critically analysing and locating the error's root causes, (c) developing knowledge about action-outcome relationships and their effects on the work environment, and (d) integrating this knowledge to improve work practice and work behaviours, thereby preventing the error's reoccurrence.

Self-efficacy. Individuals' perceived self-efficacy has an important impact on human action and performance—especially in new and ambiguous situations—as it determines the initial decision to perform an action or behaviour, the amount of effort expended on that performance, persistence in the face of difficulties and obstacles, and the likelihood of success (Bandura, 2012; Speier & Frese, 1997). Individuals' self-efficacy beliefs influence whether they think in self-enabling ways, and, thus, how well they motivate themselves and persevere against difficulties (Bandura, 2012). Thus, self-efficacy determines how professionals approach work-related goals, tasks and challenges, and it influences choice, effort, coping behaviour and persistence.

This thesis provided empirical evidence that generalised self-efficacy positively affects reflective practice (chapter 5), indicating that professionals who have strong

beliefs in their capabilities to successfully cope with challenging situations, such as a workplace change, are relatively more engaged in reflective learning. For example, individuals who feel competent in dealing with change situations might see a real benefit in reflecting upon change-related work experiences. Strong self-efficacy beliefs motivate professionals to initiate reflective learning activities, potentially leading to increased effort and persistence in pursuing those activities, and, thus, to stronger learning effects. These findings are in line with previous research showing that self-efficacy predicts participation in learning activities, such as informal interaction with colleagues, self-regulation and experimentation in the workplace (Elias et al., 2013; Van Daal et al., 2013). In this context, self-efficacy was found to have a strong positive impact on all dimensions of critically reflective working behaviour, indicating that the more professionals believe in their abilities, the sooner they will be prepared to take risks while engaging in critically reflective working behaviour involving the “courage to withstand social pressure and be critical, to take a vulnerable position and ask for feedback, to take a close look at one’s performance and one’s future career, and to experiment instead of walk the beaten track” (Van Woerkom, 2006, p. 305). To conclude, it can be assumed that self-efficacy not only influences individuals’ perceived capability, motivation and decision to enter a reflective learning process, but also directs their performance and persistence within that process.

Work behaviour

Personal initiative. This thesis proposed that personal initiative represents important work behaviour—particularly in new and challenging (change) situations that involve a range of learning affordances: Professionals who show a high level of personal initiative are more likely to participate in workplace changes, proactively acquire new knowledge and skills, abandon old work routines despite the increased likelihood of making errors, develop new strategies and actively and persistently solve problems (Baer & Frese, 2003; Fay & Frese, 2001). Personal initiative implies a proactive, self-starting approach towards work and work performance, including persistence in overcoming difficulties and setbacks (Fay & Frese, 2001). It also comprises an active search for learning opportunities.

This thesis found that personal initiative impacts learning through reflective practice through two main effects: First, personal initiative proved to have strong and positive direct effects on reflection (chapter 5). Second, results provided support for the mediating effects of personal initiative on the relationships between (a) readiness to

change and reflection and (b) self-determination and reflection (chapter 4), which will be discussed in detail in the following section.

The assumed positive impact of personal initiative on reflection indicates that professionals who take initiative will more likely engage in reflection intended to improve work practice and performance. This reasoning is in line with previous studies that found personal initiative to be related to various individual- and organisational-level outcomes such as performance, innovation and goal achievement (Baer & Frese, 2003; Frese & Fay, 2001). Professionals who feel responsible for their work performance and proactively approach work and learning will more likely reflect about their work, come up with new ideas, solve problems autonomously, and implement new work procedures (Frese & Fay, 2001). Through engaging with the learning affordances implicit to workplace change and actively pursuing learning, professionals are likely to experience problems, barriers and setbacks. High-initiative people are more prepared and willing to proactively and persistently deal with these problems and not give up quickly in the face of barriers (Baer & Frese, 2003). Strong beliefs in one's own capability to deal with challenging situations at work (i.e., self-efficacy), the willingness to change one's own work behaviours and to generate new knowledge and skills (i.e., readiness to change), and a positive attitude towards errors (i.e., error orientation) reduce uncertainty and relate to professionals' initiative taking (see chapters 4 and 5 in this thesis; Gartmeier et al., 2009).

Work environment

Regarding the work environment dimension of the model (Figure 1), this thesis proposed that motivational work-environment characteristics, such as a safe work climate and self-determination at work, positively influence professionals' reflective practice.

Self-determination. A work environment that provides professionals with opportunities to satisfy their basic needs for autonomy, competence and social integration is a necessary condition for professionals to be self-determined, which, in turn, affects the quality of their work performance. This thesis assumed that self-determination serves as a motivational driver for engagement in reflective practice. Results revealed that professionals' perceived social integration in the workplace and perceived competence serve as significant predictors of reflection. Although perceived autonomy at work had too little unique predictive power in the multiple-regression model, evidence was provided that it affects professionals' reflective practice via the mediator of personal

initiative. The revealed predictive quality of social integration and competence is plausible, since these facets of self-determination narrowly intertwine; talking to colleagues or supervisors about work experiences, feelings and thoughts fosters an individual's experience of competence through a better understanding of his own work performance and professional skills (Schaub-de Jong et al., 2009). Individuals who experience trust in their relationships with peers will likely gain confidence in their own abilities. Moreover, if individuals believe their peers support them, they will feel more open to change (Parker et al., 2006). In the context in which the present research was conducted, the experience of being socially integrated seemed a crucial factor supporting professionals in their reflective practice, especially when substantial workplace changes arose.

Furthermore, results revealed that the relationship between self-determination and reflection is mediated by personal initiative, indicating that professionals who experience autonomy, competence and social integration in the workplace are more likely to show personal initiative, which, in turn, predicts their engagement in reflective practice. Job autonomy was found in previous studies to serve as an important determinant of proactive work behaviour (e.g., Parker et al., 2006). Professionals who experience a sufficient degree of autonomy at work and have control over working procedures feel more responsible for their work and develop a more active approach to it (Frese et al., 1996, 2007). These workers tend to reflect more about their work practice, come up with new ideas, solve problems autonomously and implement new working procedures. This has a reciprocal effect, as superiors may give these workers more responsibilities, more complex work tasks and a higher degree of autonomy in accomplishing those tasks (Frese et al., 2007). Furthermore, workplace opportunities that satisfy an individual's need to feel competent and socially integrated within the work group encourage professionals to engage in proactive and self-starting behaviours, and to pursue initiatives that involve reflective practice. This is in line with Thompson (2005), who found that social support relates to individuals' initiative-taking which, in turn, mediates the relationship between social support and work performance.

Safe work climate. This thesis assumed that professionals' willingness to interact and negotiate with peers and supervisors for reflection purposes, such as seeking help in reflecting upon error-related work experiences, was dependent on the supportive and trusting behaviour of their peers and supervisors. Building on Edmondson (1999), two facets of psychological safety—which is defined here as an individual perception of the work team as a safe environment for interpersonal risk-taking—were constructed,

namely the psychological safety of colleagues and the psychological safety of supervisors. The impact of these variables on professionals' reflective practice was examined. What was empirically found is that psychological safety facilitates professionals' reflective practice through direct and mediating effects: First, evidence was provided that particularly a safe work climate among peers (i.e., psychological safety of colleagues) positively predicts reflective practice (chapter 5). Second, results revealed that both psychological safety variables mediate the relationship among facets of error orientation and reflective practice (chapter 3).

Concerning the impact of psychological safety on reflective practice, it was found that the perceived safety of the work climate among peers seems to be of higher relevance than supervisor support when it comes to reflection. It follows that a work environment where professionals feel safe to reveal their personal reflective thoughts—and to share their experiences, insights and errors with supportive colleagues without fearing blame, punishment or retaliation—encourages professionals to pursue reflective learning activities in the workplace. In the interview study presented in this thesis (chapter 2), study participants mentioned peers' supportive behaviours as particularly important facilitators of their coping with the various affordances induced through workplace change.

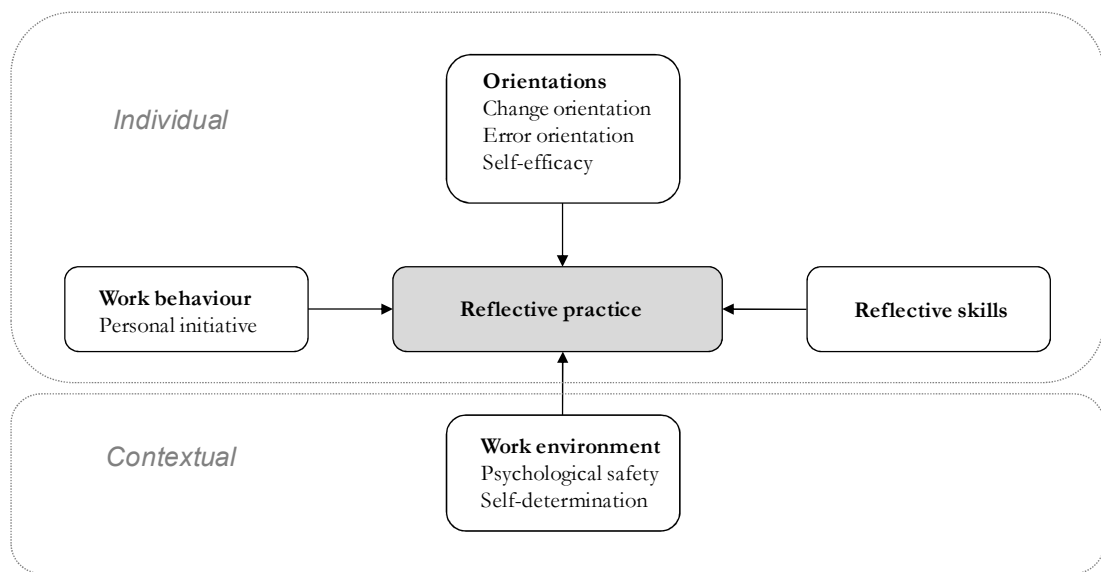
In this sense, social support serves as a basis on which professionals engage in reflecting upon workplace experiences. This conforms with Bauer and Gruber's (2007) finding that an individual perception of a safe and supportive work climate within the work team is related to readiness to engage in socially oriented learning activities, such as seeking help and advice from experienced colleagues and jointly analysing possible causes and effects of actions and experiences. The research presented in this thesis provides further empirical evidence that, in particular, the experience of social integration within the work group plays an important role in motivating, initiating and enhancing reflection processes (chapter 4).

Regarding the mediating effect of psychological safety on the relationship between attitudes towards errors and reflective practice, both psychological safety variables are significant (chapter 3). More specifically, the psychological safety of colleagues and the psychological safety of supervisors mediated the relationship between two facets of error orientation—error competence and learning from errors—and reflection. This indicates that both a safe work climate among peers and appropriate leadership behaviour from supervisors foster reflective practice as a crucial part of error-related learning. Putz et al. (2012) also provided empirical evidence on the impact of colleagues'

and supervisors' behaviours on whether error-related learning activities succeed. To conclude, a work climate based on mutual trust, helpful cooperation and respectful communication supports the beneficial effects on reflective practice that are derived from professionals' positive attitudes towards errors.

Reflective skills. Participants' reflective skills were not empirically investigated in this thesis. However, the literature provided strong support for the relevance and importance of reflective skills on professionals' effective learning through reflection. Not all professionals find it easy to practice reflection, as it necessitates cognitive and affective skills involving, for example, self-awareness and the ability to describe thoughts and feelings, to critically analyse situations one experiences (including an analysis of existing knowledge) and to integrate new knowledge and develop new perspectives (Atkins & Murphy, 1993). Duke and Appleton (2000, p. 1557) emphasised "that the ability to reflect is developmental and that some reflective skills are harder to achieve than others". According to them, key reflective skills involve the ability to describe an experience, identify salient features of the experience, analyse the feelings evoked by the experience, analyse the experience with respect to different sources of knowledge, analyse the contextual factors that might have influenced the experience, synthesise existing knowledge with the new knowledge gained from the reflection, evaluate the experience and the learning achieved, and raise implications for future practice and plan actions (Duke & Appleton, 2000). Measuring professionals' reflective skills and investigating how they can be developed over time demands further research, as it shows promise for gaining a deeper understanding of the differences in the quality of individuals' reflective practice and the resulting learning outcomes.

Figure 1. Model of antecedents to reflective practice in professional work



To conclude, this thesis provided empirical evidence that antecedents to professionals’ reflective practice—against the backdrop of workplace changes and the involved risk of errors—are a dynamic interplay between personal orientations, the degree of professionals’ initiative behaviour and work-environment conditions that provide professionals with opportunities to experience self-determination and psychological safety within their work settings. In light of the results presented in this thesis, modelling the antecedents to reflective practice in the workplace is worthwhile, and should be the focus of future studies on professionals’ reflective learning. The following section provides implications for future research.

Directions for further research

This thesis contributes to research on the understanding of conditions that facilitate professionals’ reflective learning from workplace experiences such as workplace changes or work-related errors. The study’s main contribution concerns the findings that active orientations towards challenges at work (i.e., readiness to change, error orientation and self-efficacy), personal initiative, and motivational work-environment characteristics (i.e., psychological safety and self-determination) seem to be effective in supporting professionals’ experience-based learning through reflective practice. The findings hold several implications for future research on reflection in professional practice, which were presented in detail in the four contributions of this thesis. The main implications will be presented subsequently.

At first, it must be noted that the instruments that were used within this thesis to measure the study variables were based on self-reports. This was due to restrictions imposed by the bank's management that did not allow time-consuming research. As self-report questionnaires tend to measure self-concepts that do not necessarily reflect actual behaviour (Bledow & Frese, 2009), future research should focus on combining self-report measures with more objective measures, such as multi-source ratings involving peers and supervisors and qualitative research techniques (e.g., interviews, observations, critical incidents) that offer additional strengths to the examination of the study's hypotheses. This would also help overcome the effect of the social desirability bias.

Second, participants in the studies presented in this thesis were frontline service employees, comprising client advisors specialising in retail banking. Consequently, results might be domain-specific, with limited transferable value in work settings other than banking. Replication studies in other occupational fields or in different financial institutions within the banking sector would allow for better generalisation of the results.

Third, although the findings of this thesis might be specific to the work context in which the research was conducted, continued study of personal and work-environment characteristics that are assumed to be effective in supporting professionals' learning through reflective practice offers an interesting area for future research. More studies are needed to assess additional factors that supposedly serve as antecedents to reflective practice, such as cognitive ability, reflective skills, attitudes towards reflective practices, locus of control, learning orientation and motivation, commitment, openness to experience, and help- and feedback-seeking behaviour. First focusing on professionals' reflective skills is recommended, as this was theoretically found to be an important element in the model. Hopefully, this thesis will stimulate future research on change- and error-related learning through reflective practice.

Practical implications

In addition to directions for further research, several practical implications can be derived from the findings of this thesis. For a widespread use of reflective practice within workforces, organisations must first turn to appropriate guidance and supervision. The provision of tools and training on activities that stimulate and sustain reflective practice and develop reflective skills is recommended. Professionals may be introduced to reflective learning activities that can be performed either individually or in

a group, such as reflective journal writing, keeping learning portfolios or critical incident journals, posing reflective questions, participating in structured collaborative reflection sessions, indulging in ‘stop and reflect’ episodes, engaging in reflective skills training, and attending formal one-on-one or peer-group reflection guided by qualified facilitators (Boud, 2001; Bruno et al., 2011; Daudelin, 1996; Hinett, 2002; Raelin, 2002; Scott, 2010). Recently, Koenings et al. (2013) provided empirical evidence that modern mobile technology can stimulate reflective practice: A so-called ‘reflection app’ aimed at registering learning moments during work as short texts, voice recordings, pictures or videos proved useful in stimulating and facilitating reflection processes, increased awareness of learning moments, and, thus, supported informal learning. All these powerful tools for facilitating reflective learning produce evidence of the reflection process itself and its learning outcomes. They encourage professionals to take responsibility for their own learning and potentially lead to an increased engagement in reflective learning.

Second, as this thesis showed, particular orientations and work behaviours affect professionals’ engagement in reflective practice in their daily work. Hence, organisations can benefit from taking professionals’ proactive work behaviour and active orientations towards workplace changes and errors into account when making recruitment decisions. Furthermore, facilitating work conditions that appreciate and reinforce professionals’ proactive work behaviour, such as personal initiative trainings and promotion systems, as well as appreciation and support from supervisors and top management, could pay off for organisations (Bledow & Frese, 2009; Searle, 2008).

Third, for reflective practice to work in a particular workplace, paying explicit attention to the establishment of reflective cultures within work groups is recommended. Characteristics of a reflective culture involve reflective learning habits, protected time and a safe work environment (Driessen et al., 2008). As professionals do not adopt reflective learning habits intuitively and automatically, a routine of guided and structured reflective practice implemented within workgroups may prove useful to developing those habits (Daudelin, 1996; Driessen et al., 2008; Edwards & Nicoll, 2006; Mann et al., 2009; Raelin, 2002). For example, questions are one of the most basic and powerful means of stimulating and structuring reflection processes, and bringing into consciousness one’s own reasoning and learning processes. Daudelin (1996) provided empirical evidence that applying a question technique within a reflection process significantly increases the learning from the reflected experience. Her question technique guides professionals through a four-stage reflection process involving ‘what’

questions (e.g., “What occurred?”), ‘why’ questions (e.g., “Why do you think it happened?”), and ‘how’ questions (e.g., “How is this situation similar to and different from others?”). Finally, ‘what’ questions are applied again during the last stage of the reflection process, which involves making a decision on new ways to act in the future (e.g., “What are the implications of all this for future action?”). Qualified facilitators may guide professionals in one-on-one or peer-group sessions through a routine reflection process by applying such a question technique. It is thus proposed that structured reflective practice training should become embedded within the curricula of professional development within banking.

Fourth, professional work inevitably involves error making. Errors can occur because established work routines become inadequate, especially in situations such as the occurrence of workplace changes, in which individuals are required to master novel work tasks or to deal with changed work requirements (Bauer & Mulder, 2007; Keith, 2012). Despite all efforts to avoid them, errors are ubiquitous—but they also play potentially positive roles in learning and professional development: They provide feedback about where knowledge, skills and capabilities need to be improved (Billett, 2012; Keith, 2012).

To effectively use errors in organisations, the beneficial effects of errors for learning, performance improvement and innovation must be acknowledged. Organisations are recommended to provide support for professionals in building up a strong attitude towards their abilities to deal with errors successfully (Billett, 2012; Cannon and Edmondson, 2005; Keith, 2012). For example, error management trainings proved to be useful in promoting a positive attitude towards errors, and they enabled professionals to effectively deal with error situations in their daily work. They also better prepare professionals to cope with changes in the workplace (Keith, 2012). According to Putz et al. (2012), error-related learning should address four stages involving error detection, error attribution and emotional coping, error analysis and correction, and dissemination of error knowledge. The behaviours of supervisors and colleagues, and the quality of involved error-related reflection processes, influence the effectiveness of each of these learning stages. To produce optimal conditions for individual and collective learning from errors, establishing a learning-oriented, error-friendly culture—characterised, for example, by open and trusting communication about errors, shared error knowledge, coordinated and effective error handling, and mutual help in error situations—within organisations is recommended (Bauer et al., 2012; Seifried & Höpfer, 2013). According to Bauer, Gartmeier and Harteis (2012, p. 165), establishing such a

culture “requires a participatory strategy in which staff and management jointly negotiate common values and goals regarding errors, and common strategies for error prevention, error management and learning from errors.” It is proposed here that strategies for learning from errors should include structured reflective practice around error experiences.

Engagement in learning activities such as reflective practice after the occurrence of an error cannot be taken for granted. Previous studies show that the interpretation of an error as an opportunity to learn and the perception of a safe work climate within work groups are particularly relevant for individual and collective learning from errors (Cannon & Edmondson, 2001; Edmondson, 1999; Seifried & Höpfer, 2013). For example, a safe work environment fosters supportive communication and interpersonal exchange regarding error-related work experiences. Based on this, the outcomes of individual reflective learning from errors become available to others in the workplace (Putz et al., 2012). Billett (2012) emphasised that professionals’ learning from errors is shaped both by the degree to which the work environment is tolerant of errors, and the kinds of support the workplace in which the error situation occurred provides. Therefore, facilitating error-related reflective learning in workplaces necessitates creating a safe and error-friendly work environment. Seifried and Höpfer (2013) emphasised that psychological safety within work groups is a fundamental part of an error-friendly culture. Individuals will only engage in reflective learning from error experiences when they do not fear that they will be embarrassed, rejected or punished as a result of reporting an error or revealing their reflective thoughts (Driessen et al., 2008; Seifried & Höpfer, 2013). If organisations succeed in creating a work climate that values collaboration, open communication, discovery and experimentation, professionals feel safe to reveal their personal reflective thoughts and to share their experiences, insights, critical questions and even errors with their colleagues and supervisors. The more every individual provides support and knowledge to peers, and cares about, identifies with and feels involved in the work environment, the more the whole work team is perceived as a safe place to take interpersonal risks (e.g., Den Hartog & Belschak, 2007). Mutual trust, support and respect within the work group increase each individual’s confidence that nobody will be embarrassed, rejected or punished (Seifried & Höpfer, 2013). In addition to peers, supervisors also contribute to the perceived psychological safety within the work team, through, for example, appropriate leadership behaviour that does not allow blame or punishment, is receptive to open discourse and provides support, feedback and advice (e.g., Seifried & Höpfer, 2013). The quality of the relationship between

supervisors and their subordinates facilitates open and trusting interactions and influences individuals' work performances and learning. Seifried and Höpfer (2013) reported three aspects as crucial in establishing a safe work climate: the support of peers and supervisors in problematic situations; an intact information flow that facilitates critical discussions; and supervisors' reactions to problems and failures.

To conclude, reflective practices encourage professionals to take responsibility for their own learning through consciously recapturing work experiences, identifying learning needs, understanding their learning processes, and recognising learning outcomes. All professionals have their own set of knowledge and experiences, reflective skills, work-related orientations and work behaviours operating within a specific work setting; those personal and work-environment characteristics are either supportive or inhibitive of reflective learning. This thesis provides evidence that professionals may take better advantage of reflective learning when they believe strongly in their own capabilities to successfully deal with the challenges provided by change and error situations in the workplace, take a proactive and self-starting approach towards work and learning, and operate within a work environment that provides them with opportunities to be self-determined and to feel safe to take interpersonal risks. Occupational fields where workplace change is a frequent and demanding phenomenon need professionals who are capable of dealing with change situations, uncertainty and errors, proactively engage in work and learning activities, handle obstacles and setbacks persistently, prepare to avoid errors or an error's reoccurrence, and continuously improve their work performance and work environment. Hopefully, this thesis will provide inspiration and prompt further debate about the prerequisites for professionals' learning from workplace experiences through reflective practice.

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Summary

The purpose of this thesis is to contribute to the research on professional learning through reflective practice. The main goal is to examine—against the backdrop of workplace changes and errors—individual and contextual factors that are theoretically assumed to influence reflection in the context of professional work.

Reflective practice is defined as a retrospective but future- and goal-oriented cognitive-affective process that basically involves (a) the awareness and review of incidents and experiences encountered in the workplace and related emotions, (b) an evaluation and analysis of their causes and effects that leads to new understandings and appreciations, and (c) the drawing of conclusions and decisions that guide future action and work behaviour (Boud, 2001; Driessen et al., 2008). Reflection represents an activity pursued with intent and consciousness contributing to the integration of new knowledge and to the improvement of work processes and work behaviour.

Reflective practice is unlikely to occur in familiar situations that allow professionals to automatically apply routine work practices. In contrast, learning opportunities provided by new, unexpected or challenging work situations, such as the occurrence of workplace changes and errors, trigger reflection.

This thesis comprises four empirical contributions based on qualitative and quantitative research methods. The first contribution (chapter 2) uses an interview study to investigate how professionals perceive the occurrence of a particular far-reaching workplace change and the involved learning opportunities, as well as how personal and work-environment conditions facilitate or inhibit change-related informal learning. The following three contributions (chapters 3 to 5) focus on examining—by means of a quantitative research approach—theoretically relevant antecedents to professionals' informal and explicit learning through reflective practice in the workplace. It is assumed that reflective practice is shaped by individuals' (1) orientations and (2) work behaviour, as well as (3) motivational conditions of the work environment.

On the subject of individual orientations, the research examines the impact of change orientation, error orientation and self-efficacy on professionals' reflective practice. Personal initiative is assumed to be important work behaviour that positively affects reflective practice and provides a mediating effect. Regarding work-environment conditions, it is assumed that a perceived safe work climate, as well as self-determination in the workplace, facilitates reflective practice.

The participants in the present studies were different groups of client advisors in a German bank who all specialised in retail banking. A significant change process—

caused by a far-reaching modification of the bank's advisory concept and the implementation of new advisory software—was affecting these client advisors at the time the research was conducted. This situation afforded these employees opportunities for learning and professional development, but also involved the risk of errors.

This thesis advances an educational micro perspective on the effects of workplace changes on professionals' work and learning. Investigating the effects of workplace changes means looking at the extent to which every worker actually modifies daily work practices and behaviour, generates and integrates new knowledge and skills, shifts his own views and attitudes on the job, and participates in the change process and in the improvement of workplace conditions.

The purpose of the initial interview study (chapter 2) was to analyse the following research questions: How did employees perceive a far-reaching workplace change and the resulting requirements for learning? Which factors were perceived as supportive or inhibitive for learning in the context of this workplace change? Building on the work of Billett (2006), a framework was developed that allowed the categorisation and analysis of participants' interview statements. The results of this interview study show that the participants realised many requirements for learning especially concerning their work performance, professional knowledge and professional roles. The participants emphasised that the workplace change demanded informal learning activities, involving individual and collective reflection processes, to redefine their professional roles, gain necessary new knowledge and skills, and improve their work processes. Factors that facilitate those learning and adaptation processes involved professionals' positive attitudes towards change and errors, initiative-taking work behaviour, and informal interaction and supportive collaboration with colleagues and supervisors.

Chapter 3 presents quantitative research that investigates the effects of professionals' attitudes towards errors (i.e., error orientation) on reflective practice. Furthermore, it is assumed that a safe work climate (i.e., psychological safety) serves as a mediator on the relationship between error orientation and reflection. The results revealed significant positive effects of two aspects of error orientation on reflection: error competence and learning from errors. This indicates that a professional's persuasion to have sufficient knowledge and ability to cope with errors and to reduce the adverse consequences of errors affects the engagement in reflection. Furthermore, professionals more likely initiate reflection processes when they estimate that error-related learning experiences may be beneficial for improving their own skills, knowledge and work processes. Regarding the assumed mediating effect of perceived psychological

safety on the relationship between error orientation and reflection, both a perceived safe work climate among peers (i.e., psychological safety-colleagues) and the concerning supervisor's behaviour (i.e., psychological safety-supervisors) is of significant relevance. This indicates that an individual's belief in his ability to cope successfully with error-related experiences and challenges at work influences his perception of a work climate in which peers and supervisors provide support. In accordance with these results, it seems that reflective practice, as a vehicle for error-related learning, is fostered both through a safe work climate among peers and through appropriate supervisor behaviour. In summary, the results strongly indicate that a working climate based on mutual trust, helpful cooperation and constructive communication supports the beneficial effects of reflection that are derived from professionals' positive attitudes towards errors.

The research presented in chapter 4 investigates the impact of a positive attitude towards changes at work (i.e., readiness to change) and self-determination (i.e., perceived autonomy, competence and social integration) on professionals' learning through reflective practice, particularly within the context of workplace change. Individuals' proactive and self-starting work behaviour (i.e., personal initiative) is assumed to provide mediating effects. The results reveal that two aspects of self-determination have a strong impact on reflective practice: namely, professionals' experiences of social integration and competence. Readiness to change and the experience of autonomy influence reflective practice via their effects on personal initiative. These results indicate that professionals' willingness to change their own behaviour and work routines and to participate in learning (i.e., readiness to change) and their perceived autonomy at work will most likely initiate self-starting and proactive behaviours. In turn, high-initiative professionals tend to be relatively more engaged in reflection processes.

The fourth contribution of this thesis (chapter 5) investigates how personal characteristics, namely self-efficacy and personal initiative, as well as work-environment characteristics—a safe work climate among peers and the concerning supervisor—directly impact reflective practice. The relevance of personal characteristics and work-environment characteristics for professionals' reflective practice were investigated using hierarchical regression analyses. The analyses revealed that personal variables are particularly significant predictors of reflection, which explain a high level of variance. Regarding work-environment characteristics, only the psychological safety of colleagues contributes significantly to an increase in explained variance in the regression model.

The results indicate that professionals who strongly believe in their capabilities to successfully cope with challenging situations at work, and who are willing to take

initiative, are relatively more engaged in reflection processes. Strong self-efficacy beliefs potentially lead to increased effort and persistence in pursuing reflective learning activities, and, thus, to stronger learning effects. Professionals who feel responsible for their work performance and proactively approach work and learning will more likely reflect on their work to improve work processes and work routines, to develop new ideas and to solve problems autonomously. Regarding the effects of psychological safety on reflective practice, the results indicate that the perceived safety of the work climate among peers seems to be of higher importance than supervisor support when it comes to reflection. This seems plausible, as employees typically have more frequent and intense contact with colleagues than with their supervisors in their daily work. This increases familiarity and, thus, serves as a basis for mutual respect, trust and caring.

Based on the four contributions of this thesis, directions for further research and practical implications are derived. For future research, recommendations for enhanced research methodologies and suggestions for advancing the model of antecedents to reflective practice are provided, as well as an acknowledgment of the need for replication studies. On overview of practical implications focuses on recommendations for stimulating and reinforcing the widespread use of reflective practice within organisations, and for establishing a reflective and error-friendly culture within work groups, which requires a safe work climate based on supportive behaviour from peers and supervisors.

Zusammenfassung

Die vorliegende Dissertation leistet einen Beitrag zur wissenschaftlichen Erforschung des professionellen Lernens durch Reflexion. Primäres Ziel der Arbeit ist die empirische Untersuchung von individuellen und arbeitskontextbezogenen Faktoren, die einen positiven Einfluss auf Reflexion ausüben – insbesondere vor dem Hintergrund von Veränderungsprozessen und Fehlern im betrieblichen Arbeitsalltag.

Reflexion ist sowohl ein retrospektivischer als auch ein zukunfts- und zielorientierter, kognitiv-affektiver Prozess, der folgende Elemente enthält: Im Kontext beruflicher Arbeit erfolgt in einem Reflexionsprozess (a) die bewusste Wahrnehmung oder Erinnerung arbeitsbezogener, häufig kritischer Ereignisse und Erfahrungen sowie der damit verbundenen Emotionen, (b) deren Bewertung, Beurteilung und Analyse, sowie (c) Schlussfolgerungen und Entscheidungen, die richtungweisend für zukünftige Handlungsabläufe und zukünftiges Arbeitsverhalten sind (Boud, 2001; Driessen et al., 2008). Ein Reflexionsprozess stößt dadurch in der Regel die Erweiterung von Wissensbeständen sowie die Verbesserung von Arbeitsprozessen und des Arbeitsverhaltens an.

Gewohnte und vertraute Situationen im betrieblichen Arbeitsalltag, die den Beschäftigten die Anwendung bestehender Arbeitsroutinen ermöglichen, stellen in der Regel keinen Auslöser für Reflexion dar. Reflexionsprozesse werden insbesondere dann initiiert, wenn Beschäftigte mit Situationen konfrontiert sind, die als neuartig, unerwartet oder kritisch bewertet werden – dazu gehören zum Beispiel das Auftreten von maßgeblichen Veränderungen oder von Fehlern.

Die vorliegende Dissertation umfasst vier empirische, auf quantitativen und qualitativen Methoden basierende Forschungsbeiträge.

Ziel des ersten Beitrags (Kapitel 2) ist es, mittels einer Interviewstudie zu untersuchen, wie Beschäftigte auf eine maßgebliche Veränderung in ihrem Arbeitsalltag reagieren und die damit einhergehenden Lernanforderungen wahrnehmen. Darüber hinaus wird untersucht, inwiefern individuelle und arbeitskontextbezogene Faktoren informelles Lernen in Zusammenhang mit solch einer Veränderung fördern oder hemmen.

Ziel der darauffolgenden drei Beiträge (Kapitel 3 bis 5) ist es, anhand quantitativer Methoden relevante Einflussfaktoren auf informelles und explizites Lernen durch Reflexion von Beschäftigten zu untersuchen – insbesondere vor dem Hintergrund des in der Interviewstudie explorierten betrieblichen Veränderungsprozesses. Es wurde

angenommen, dass die Einstellung und das Arbeitsverhalten von Beschäftigten sowie die motivationalen Arbeitsplatzbedingungen derartige Einflussfaktoren darstellen. Hinsichtlich der individuellen Einstellung konzentriert sich die vorliegende Forschungsarbeit auf die Untersuchung der Auswirkung von Veränderungsbereitschaft, Fehlerorientierung und Selbstwirksamkeit auf Reflexion. Im Hinblick auf den Aspekt des Arbeitsverhaltens wird vermutet, dass die Eigeninitiative Beschäftigter einen positiven Einfluss auf Reflexion ausübt sowie Mediatoreffekte aufweist. Vor dem Hintergrund der Arbeitsplatzbedingungen wird die Annahme aufgestellt, dass ein sicheres Arbeitsklima (d.h. Psychological Safety) in Bezug auf Kollegen und Vorgesetzte sowie das Erleben von Selbstbestimmung professionelles Lernen durch Reflexion positiv beeinflussen.

Teilnehmer der in dieser Arbeit enthaltenen empirischen Studien sind verschiedene Gruppen von Kundenberatern im Geschäftsbereich „Privatkunden“ einer deutschen Bank. Zum Zeitpunkt der Durchführung der Studien waren diese Privatkundenberater von einem maßgeblichen betrieblichen Veränderungsprozess betroffen, der auf der Einführung eines neuartigen Beratungskonzepts und einer innovativen Beratungssoftware basierte. Diese weitreichenden Veränderungen führten zu anspruchsvollen Lerngelegenheiten und Möglichkeiten zur beruflichen Weiterentwicklung, bargen aber auch ein erhöhtes Fehlerrisiko.

Diese Dissertation fokussiert eine pädagogische Mikroperspektive auf betriebliche Veränderungsprozesse und deren Auswirkung auf das berufliche Arbeiten und Lernen von Beschäftigten. Gegenstand dieser Perspektive ist generell die Fragestellung, inwiefern Arbeitnehmer in der Konsequenz eines Veränderungsprozesses in ihrem Arbeitsalltag ihre Handlungsabläufe und ihr Arbeitsverhalten modifizieren, neue Wissensbestände und Fähigkeiten generieren und integrieren, eigene Sichtweisen und Einstellungen in Bezug auf ihre Arbeit verändern sowie an der Gestaltung des Veränderungsprozesses und der Arbeitsplatzbedingungen mitwirken.

Zu Beginn der Forschungsarbeit wurde eine Interviewstudie (Kapitel 2) durchgeführt, die zum Ziel hatte, zwei primäre Fragen zu untersuchen: Erstens, wie nehmen Beschäftigte einen spezifischen maßgeblichen Veränderungsprozess in ihrem Arbeitsalltag und die daraus resultierenden Lernanforderungen wahr? Zweitens, welche Faktoren zeigen sich in diesem Zusammenhang als lernfördernd oder lernhemmend? Zur Analyse der Interviews und Beantwortung der Forschungsfragen wurde ein Kategoriensystem in Anlehnung an Billett (2006) entwickelt. Die Ergebnisse dieser Interviewstudie zeigen, dass die Teilnehmer vielfältige Lernanforderungen aus dem

erlebten Veränderungsprozess ableiten, insbesondere hinsichtlich ihrer Arbeitsleistung, ihrer beruflichen Kenntnisse und ihrer beruflichen Rolle. Die Teilnehmer betonten die Notwendigkeit informeller Lernaktivitäten – zum Beispiel auch individuelle und kollektive Reflexionsprozesse –, um ihre berufliche Rolle neu zu definieren, neue Wissensbestände aufzubauen, sich neue Fähigkeiten anzueignen und Arbeitsprozesse zu verbessern. Eine positive Einstellung der Beschäftigten gegenüber Veränderungen und Fehlern, proaktives und eigenverantwortliches Handeln sowie informeller Austausch und unterstützende Zusammenarbeit mit Kollegen und Vorgesetzten stellen dabei hilfreiche Voraussetzungen dar.

Ziel der in Kapitel 3 präsentierten Forschungsarbeit ist es, anhand einer Fragebogenstudie den Einfluss der individuellen Einstellung gegenüber Fehlern (d.h. Fehlerorientierung) auf Reflexion zu untersuchen. Zudem werden Mediatoreffekte des sicheren Arbeitsklimas (d.h. Psychological Safety) im Einfluss von Fehlerorientierung auf Reflexion analysiert. Die Ergebnisse zeigen signifikant positive Effekte von zwei Aspekten der Fehlerorientierung auf Reflexion, nämlich Fehlerkompetenz und Lernen aus Fehlern. Dies zeigt, dass die individuelle Überzeugung von Beschäftigten, aufgrund eigener Wissensbestände und Fähigkeiten auftretende Fehler bewältigen und etwaige nachteilige Konsequenzen reduzieren zu können, einen positiven Einfluss auf Reflexion ausübt. Zudem wirkt sich auch die individuelle Überzeugung, dass Fehler eine Gelegenheit darstellen, die eigenen Fähigkeiten, Wissensbestände und Arbeitsprozesse zu verbessern, positiv auf das Reflexionsverhalten aus. Bezüglich der vermuteten Mediatoreffekte von Psychological Safety auf den Zusammenhang zwischen Fehlerorientierung und Reflexion zeigen die Ergebnisse, dass sowohl Psychological Safety in Bezug auf Kollegen als auch auf Vorgesetzte von bedeutender Relevanz ist. Die individuelle Überzeugung, erfolgreich mit Erfahrungen und Herausforderungen, die in Zusammenhang mit Fehlern im Arbeitsalltag stehen, umgehen zu können, scheint dabei einen positiven Einfluss auf die wahrgenommene Unterstützung durch Kollegen und Vorgesetzte auszuüben. Die Ergebnisse weisen darauf hin, dass sich ein als sicher empfundenes, positives Arbeitsklima innerhalb der Kollegenschaft und in Bezug auf Vorgesetzte förderlich auf das berufliche Lernen aus Fehlern durch Reflexion auswirkt. Ein betriebliches Arbeitsklima, das auf gegenseitigem Vertrauen, kollegialer Zusammenarbeit und konstruktiver Kommunikation basiert, unterstützt somit die Effekte einer positiven Haltung gegenüber Fehlern auf Reflexionsprozesse.

Ziel der in Kapitel 4 präsentierten Forschungsarbeit ist es, vor dem Hintergrund eines betrieblichen Veränderungsprozesses den Einfluss einer positiven Einstellung

gegenüber Veränderungen (d.h. Veränderungsbereitschaft) und von wahrgenommener Selbstbestimmung im Arbeitsalltag (d.h. Autonomieerleben, Kompetenzunterstützung und soziale Einbindung) auf Reflexion zu untersuchen. Zudem werden die theoretisch vermuteten Mediatoreffekte von Eigeninitiative analysiert. Die Ergebnisse zeigen, dass zwei Aspekte der Selbstbestimmung einen signifikanten Effekt auf Reflexion ausüben, nämlich wahrgenommene soziale Einbindung und Kompetenzunterstützung. Veränderungsbereitschaft und Autonomieerleben weisen keinen direkten Einfluss auf Reflexion auf. Signifikante Effekte zeigen sich jedoch über den Mediator Eigeninitiative. Dies deutet darauf hin, dass Beschäftigte, die bereit sind, eigenes Verhalten und eigene Arbeitsroutinen zu verändern und Lernprozesse anzustoßen (d.h. Veränderungsbereitschaft zu zeigen), und zudem einen angemessenen Handlungsspielraum erleben, verstärkt proaktiv und eigenverantwortlich handeln. Und die Beschäftigten, die eine hohe Eigeninitiative aufweisen, initiieren wiederum verstärkt Reflexionsprozesse.

Ziel der in Kapitel 5 präsentierten Forschungsarbeit ist es, die Bedeutung (a) individueller Faktoren – wie Selbstwirksamkeit und Eigeninitiative – sowie (b) arbeitskontextbezogener Faktoren – wie ein sicheres Arbeitsklima in Bezug auf die Kollegen und Vorgesetzte – für Reflexion zu untersuchen. Mittels hierarchischer Regressionsanalysen werden in zwei Analyseschritten die Effekte von individuellen sowie kontextbezogenen Faktoren auf Reflexion untersucht. Es zeigt sich, dass vor allem die individuellen Faktoren einen signifikant positiven Einfluss auf Reflexion ausüben und zu einer hohen Varianzaufklärung beitragen. Innerhalb der kontextbezogenen Faktoren kann lediglich das sichere Arbeitsklima in Bezug auf Kollegen zu einer weiteren Varianzaufklärung beitragen.

Diese, wie auch bisherige Forschungsarbeiten zum Konzept der Selbstwirksamkeit deuten darauf hin, dass Beschäftigte mit hoher Selbstwirksamkeitserwartung Reflexionsprozesse ausdauernder und zielgerichteter verfolgen, wodurch wiederum eine höhere Qualität des Lernens und damit bessere Lernergebnisse erzielt werden können. Die Beschäftigten, die in ihrem Arbeitsalltag eigenverantwortlich und proaktiv handeln sowie Verantwortung für ihre Arbeitsleistung und ihr berufliches Lernen übernehmen, tendieren offensichtlich stärker dazu, über ihre Arbeit zu reflektieren. So können sie bestehende Arbeitsprozesse und -routinen verbessern, neue Ideen entwickeln und Probleme leichter selbstständig lösen. Bezüglich der Einflüsse eines als sicher empfundenen Arbeitsklimas auf Reflexion deuten die Ergebnisse darauf hin, dass die Kollegen von größerer Bedeutung für das Reflexionsgeschehen sind als die Vorgesetzten. Dieses Ergebnis ist plausibel, da im betrieblichen Arbeitsalltag in der

Regel ein häufigerer und intensiverer Kontakt mit Kollegen als mit Vorgesetzten stattfindet, welcher eine größere Vertrautheit entstehen lässt, die wiederum als Basis für gegenseitigen Respekt, Vertrauen und Unterstützung dient.

Basierend auf den vier Beiträgen dieser Arbeit werden Implikationen für die weitere Forschung aufgezeigt, die sich auf zukünftige Forschungsmethodik, Replikationsstudien und die Untersuchung weiterer Einflussfaktoren auf das Lernen durch Reflexion im beruflichen Arbeitsalltag beziehen. Der Fokus der Implikationen für die Praxis liegt auf reflexionsunterstützenden Maßnahmen, der Etablierung einer Reflexions- und Fehlerkultur in Arbeitsgruppen und der Bedeutung eines positiven und sicheren Arbeitsklimas, das insbesondere auf gegenseitigem Respekt und Vertrauen sowie auf unterstützendem Verhalten von Vorgesetzten und Kollegen beruht.

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