



# Between Trust and Ambivalence: How Does Trainee Teachers' Perception of the Relationship With Their Mentors Explain How Trainee Teachers Experience Their Work?

Elisabeth Maué<sup>1</sup> · Michael Goller<sup>2</sup> · Caroline Bonnes<sup>3</sup> · Tobias Kärner<sup>4</sup>

Received: 12 April 2023 / Accepted: 14 October 2023 / Published online: 23 November 2023  
© The Author(s) 2023

## Abstract

The study aims to identify profiles of trainee teachers in terms of their stress and work experiences and to uncover profile differences in regard to dropout intentions and perceived relationships between trainee teachers and their mentors. Based on data from 1,756 German trainee teachers, three distinct stress and work experience profiles could be identified. Trainee teachers with high levels of stress and negative work experiences exhibit higher dropout intentions and experience their relationship with their mentors as less transparent, fair and trusting, and more ambivalent compared to trainee teachers with low levels of stress and positive work experiences. The results underline the importance of the relationship between mentors and trainee teachers for the professional development of future teachers.

**Keywords** Trainee teachers · Mentors · Professional relationship · Stress · Work experience · Teacher induction

---

✉ Michael Goller  
michael.goller@uni-kassel.de

Elisabeth Maué  
elisabeth.maue@uni-konstanz.de

Caroline Bonnes  
caroline.bonnes@uni-konstanz.de

Tobias Kärner  
tobias.kaerner@uni-hohenheim.de

- <sup>1</sup> Working Group of Empirical Educational Research, University of Konstanz, Universitätsstr. 10, 78464 Constance, Baden-Württemberg, Germany
- <sup>2</sup> Department of Vocational and Business Education, University of Kassel, Henschelstr. 2, 34127 Kassel, Hessen, Germany
- <sup>3</sup> Chair of Human Resource Development, University of Konstanz, Universitätsstr. 10, Constance, Baden-Württemberg, Germany
- <sup>4</sup> Chair of Economic and Business Education (560A), University of Hohenheim, Fruwirthstr. 47, 70599 Stuttgart, Baden-Württemberg, Germany

## Introduction

Shortages of qualified teachers in primary and secondary education is a relevant phenomenon in many countries that is often accompanied by negative consequences for the quality of student learning opportunities (Admiraal, 2022; Federičová, 2021). Reasons for such shortages are considered to be the lack of young talents as well as premature leaving of the profession by in-service teachers due to status, low social recognition, excessive job demands, and dissatisfaction (e.g., Admiraal, 2022). Particularly alarming is that a large share of trainee teachers or young teachers leave the profession immediately after their first teaching job or within the first five years (Federičová, 2021). In fact, research shows that entering the teaching profession is a major challenge for new teachers, which is often experienced as a shock that can lead to emotional exhaustion and burnout (Ballantyne & Retell, 2020; Dicke et al., 2016; Voss & Kunter, 2020). Reasons for this '*praxis shock*' – as it is sometimes called – include a lack of preparation for teaching practice, differences between expectations and occupational reality, a lack of social support at school and the high workload (Ballantyne, 2007).

Since stress and its manifestations negatively affect teachers' job satisfaction as well as job engagement (Admiraal, 2022; Hakanen et al., 2006), which in turn can lead to turnover intention (Skaalvik & Skaalvik, 2011, 2016; Struyven & Vanthournout, 2014), a sound professional teacher training is critical. If teachers are prepared in a way that fits with future working conditions in terms of school type or student characteristics, the likelihood of staying in the teaching profession is increased (Goldhaber et al., 2022). Consequently, the aim of teacher training should be to cover the entire range of teachers' tasks, such as parent meetings or faculty discussion, to support trainee teachers both in understanding the wider context in which teaching is embedded as well as to develop the competences to adequately deal with the broad challenges of being a teacher (Darling-Hammond, 2014).

Mentorial support from more experienced teachers can be a valuable resource for this purpose (Pomaki et al., 2010). In fact, mentors have a special role to play, as they can guide trainee teachers through their first teaching experiences, provide them with important practical knowledge and support, and introduce them to in-school procedures and values. In this way, they represent a protective factor as well as a source of resilience, emotional involvement in and commitment to their work (Beltman et al., 2011; Hennissen et al., 2011; Ingersoll & Strong, 2011; Wang, 2019).

Previous research on mentoring in teacher training shows a relatively large body of evidence on specific mentor behaviours (e.g., support, counselling, instruction, feedback, mentoring styles) and corresponding effects on stress and well-being (e.g., Burger et al., 2021; Voss & Kunter, 2020). Furthermore, it is known that the professional relationship between mentors and trainee teachers generally plays a central role in the professional development of beginning teachers (Carver & Katz, 2004; Ellis et al., 2020; Harrison et al., 2006; Hudson, 2016). However, very little is known about the qualitative characteristics of the professional relationship

between trainee teachers and their mentors and the impact of different relationship facets on the work-related stress and work experience of the beginning teachers during their teacher induction phase (e.g., Kärner et al., 2021a; 2022).

Against this background, this article aims to identify specific profiles of trainee teachers with regard to their stress and work experiences and to make profile differences visible with regard to dropout intentions and the perceived relationships between trainee teachers and their mentors. Since we draw on data from teachers in Germany to answer these questions, we first describe the context of German teacher training (Sect. 2). In Sect. 3 we take a closer look at how teachers experience teaching at the beginning of their careers with regard to stress, well-being, job-satisfaction, and job engagement. Then, the professional relationship between trainee teachers and their mentors will be described in more detail regarding different facets of the relationship of interest as well as their potential connection to stress and other indicators of work experience (Sect. 4). The research questions and hypotheses are derived from these explanations in Sect. 5. The description of the method (Sect. 6) is followed by the presentation of the findings (Sect. 7) and their discussion (Sect. 8).

## The Context of German Teacher Training

Teacher training in Germany is organised in two main phases and is supported by different actors and institutions (Cramer, 2020; Howe, 2006; Terhart, 2020). Due to the federal structure, it differs from state to state and from university to university. Nevertheless, fundamental commonalities can be identified: One can distinguish a four-to-five-year teacher training at university (first phase) and a one-to-two-year traineeship after university studies (second phase). The *first phase* of teacher training is usually completed with a first state examination or a Masters of Education (with previous Bachelor's degree) at a university. Students shall acquire professional knowledge on educational science, on their future teaching subjects, and how to teach these subjects (Terhart, 2000). Students are trained in usually two subjects that they will later teach at school (e.g., Mathematics, Physical Education, English). In addition, they attend subject specific didactic courses to learn how to teach the content of their subjects. Another part is formed by courses on pedagogical and educational science content for the "big picture" as well as some practical phases / internships in schools. During their studies, students already specialise specifically in teaching at elementary schools, at the lower secondary level, at grammar schools with upper secondary level, at special education schools, or at vocational schools. The *second phase* of teacher training resembles a paid traineeship (the so-called *Referendariat*) and takes place at two learning sites: trainees (a) already teach at a regular school and (b) receive additional training at a teacher training college (the so-called *Studienseminar*). The overarching goal of this designated induction phase after the initial teacher training at university is to deepen and expand the knowledge, skills and experience acquired in the first phase, and to promote competencies in practical teaching. Depending on the federal state, there can be different regulations for training duration (12 to 24 months) or how the traineeship is designed (Krüger, 2014; Schulte, 2008). In general, in the beginning of their traineeship, trainees

have the chance to observe lessons from other teachers and then gradually plan and conduct their own independent teaching. So, they already work as teachers, after a certain time also as class teachers, with all the tasks that go with it. However, in this phase they still earn less than fully trained teachers. During the traineeship, the trainees receive support from experienced teachers at school. Their school principals have managerial authority, are involved in classroom visits and the final examination, and cooperate with the mentors of the teacher training colleges. In addition, at the teacher training colleges, pedagogical and subject-related content is taught, building on the studies of the first phase. The traineeship is successfully completed after different practice-based and theoretical examinations (e.g., observed and graded lessons) with the second state examination.<sup>1</sup>

## **Work-related Stress and Work Experience During the First Years of Teaching**

In this section we will discuss how stress during the first years of teaching can be conceptualised, how and why it develops, and what is known about individual differences in regard to experiencing stress and well-being during practice-based teacher training.

### **Conceptualising Trainee Teachers' Stress and Work Experience**

Teaching is a profession that has often been associated with high workload and a range of serious stress factors. In fact, many studies suggest that teachers face, together with other social professions, an above-average level of work-related stress (García-Carmona et al., 2019; Kieschke & Schaarschmidt, 2008; Liu & Onwuegbuzie, 2012; Zurlo et al., 2007). This is not only the case for more experienced teachers but also trainees that have just started their teaching career (e.g., Gardner, 2010; Harmsen et al., 2018). Typical stressors for teacher trainees can be grouped into working conditions, social conditions and training-related aspects (Kärner et al., 2022). Working conditions comprise factors like constant workload and time pressure through preparations, performance, reflections of teaching, large class sizes or blurring boundaries between private and work life. Social conditions are related to heterogeneous classes that require teachers to adapt to a range of different prerequisites in dealing with students as well as constant disciplinary problems caused by students or also conflicts with leaders, teaching staff or parents. And lastly, training-related aspects describe all stressors directly related to the traineeship, such as

---

<sup>1</sup> The German way of teacher education with its two separate phases of university training and an institutionalised consequent induction phase is not unique on an international level. In fact, several countries exhibit similar structures with a more theory-based university training as the first phase and a separated practical second phase with reduced teaching load, mentoring, and an additional training curriculum. However, the structures are difficult to compare as they differ in length, personnel responsible for induction, specific role of mentors, providers of training etc. (e.g., Courtney et al., 2023; Darling-Hammond, 2017).

uncertainty about performance evaluation, fear of failure, feelings of being under constant observation or regular performance assessments (Chaplain, 2008, Kärner et al., 2021a, 2022; Sappa et al., 2019).

Stressors do not automatically translate into stress symptoms or negative working experience. Based on the transactional stress model (Lazarus, 1966) – that has been adapted for the teaching context (Kyriacou & Sutcliffe, 1978) – potential stressors first undergo a subjective appraisal. The affected individual assesses them as irrelevant, challenging or threatening. In situations where a potential stressor is assessed as a threat and the associated strain eventually depletes all available coping resources, it becomes stress as such (Lazarus, 1966). This stress can then manifest itself in different symptoms, which are either physical (e.g., headaches, digestion problems, nausea) or psychological (e.g., anger, sadness, anxiety, emotional exhaustion, reduced general well-being) in nature (Kärner et al., 2021b). On a short-term scale, such stress symptoms are primarily experienced as unpleasant by affected individuals. On a long-term scale, however, ongoing stress symptoms that are due to work-related stressors can lead to decreasing job satisfaction and job engagement, as well as burnout and intentions to leave the profession (Admiraal, 2022; Hakanen et al., 2006; Hong, 2012; Skaalvik & Skaalvik, 2011, 2016; Van Droogenbroeck & Spruyt, 2016). In this context, job satisfaction describes an overall judgement of an individual's job that ranges from positive to negative (Judge et al., 2020). Job engagement can be defined as 'a positive, fulfilling, work-related state of mind' (Schaufeli & Bakker, 2004b, p. 295) that is often connected to high levels of energy experienced at work (*vigour*) as well as a sense of significance and enthusiasm in regard to one's own work (*dedication*) (see also Saks & Gruman, 2021). Burnout is an occupational phenomenon that includes 'feelings of energy depletion or exhaustion', 'increased mental distance from one's job, or feelings of negativism or cynicism related to one's job' and 'a sense of ineffectiveness and lack of accomplishment' (WHO, 2022).

Although work-related stressors also affect well experienced teachers, they might be more straining for less experienced ones. Trainee teachers, in particular, have not yet accumulated sufficient expertise, coping strategies or social networks to adequately deal with the stressors that await them in school contexts (Hong, 2012; Kärner et al., 2022). Furthermore, many trainee teachers experience feelings of unpleasant surprise due to a mismatch between the reality of being a young teacher and their prior expectations (Ballantyne & Retell, 2020). Taken together, the potential stressors at work as well as trainee teachers' lack of coping strategies make them prone to experiencing stress and reduced well-being during their first teaching years. As foreshadowed, this phenomenon is sometimes referred to as 'praxis shock' (Ballantyne, 2007).

### **Findings On Trainee Teachers' Stress and Work Experience Profiles Based On Person-centred Approaches**

Research on (trainee) teachers' stress and well-being has recently increased the usage of the typological, person-centred approach, enabling conclusions regarding individuals' stress and coping profiles as a whole (e.g., Collie & Mansfield, 2022; Darius et al., 2021; Zimmermann et al., 2012). Several profiles among teachers

can be shown across countries, with differences in terms of the number of profiles. Despite all the differences, the following picture emerges: A small group of teachers with little stress and good coping contrasts with a small group of highly stressed teachers. The majority of teachers are located between the two extreme groups and exhibit a medium level of stress with regard to only individual or several aspects (e.g., workload stress or student behaviour stress; Collie & Mansfield, 2022; Collie et al., 2021; Herman et al., 2018; Hwang, 2022). The profiles vary not only in the extent of the stress, but also in the occupational commitment – a correlate of job satisfaction, job engagement and turnover intention (Judge et al., 2020; Lee et al., 2000; Saks & Gruman, 2021) – which is highest in the profiles with low stress and lowest in the profiles with high stress.

Comparable findings are evident for trainee teachers<sup>2</sup>: Already at the beginning of their careers, about one-third to half of teachers experience a high level of mental stress and show symptoms of burnout (Darius et al., 2021; Zimmermann et al., 2012). Zimmermann et al. (2012) found that four profiles of dealing with the challenges of the teaching profession can be distinguished: Only a little more than a quarter of trainee teachers show a healthy attitude towards work, meaning they are able to distance themselves from the job strain and are satisfied with both their job and their lives (profile ‘healthy-ambitious’). This compares with 17% who have a (too) high level of engagement while maintaining a low emotional distance from work, reduced mental resilience and low satisfaction with their job and their lives (profile ‘excessively ambitious’) and nearly one-quarter with low levels of job involvement, disengagement, mental health, job and life satisfaction, and high levels of resignation (profile ‘exhausted/resigned’). The remaining one-third of trainee teachers are unambitious, unmotivated, and emotionally distant from their work (low level of job satisfaction) but relatively satisfied with their lives (profile ‘unambitious’). Darius et al. (2021) arrive at very similar magnitudes of profiles in their study. They further show that trainee teachers with impaired mental health primarily belong to the two risk profiles ‘excessively ambitious’ and ‘exhausted/resigned’. In these profiles, moreover, the proportion of teachers with some symptoms of burnout is comparatively high. In summary, it can be stated across countries that a considerable proportion of teachers and trainee teachers experience their profession as rather stressful and are not very satisfied with their work.

---

<sup>2</sup> In addition, drawing on analogous clustering analytic procedures, several stress coping profiles could also be identified for school principals. However, for this group, it is their understanding of leadership that plays an important role in profile identification: School principals who see themselves as team leaders or pedagogical leaders feel less stressed and more satisfied than school principals that can be classified as generalist, supervisor, or teacher with administrative duties, also controlling for school type and school size. In contrast, school principals of the latter two types show comparatively unfavourable stress profiles (e.g., Warwas, 2012). At the same time, stress profiles can be identified in regard to how school principals deal with crisis situations like the Covid-19 pandemic. According to a study in Finland, 41% of school principals can be assigned to the high stress profile, 36% to the altered stress profile and 23% to the low stress profile. In addition, protective (e.g., work engagement) and stressful factors (e.g., workload) can be identified (e.g., Upadaya et al., 2021).

## Mentors and Their Impact On Trainee Teachers' Stress and Work Experience

In light of the importance of mentorial support for trainee teachers (e.g., Pomaki et al., 2010), we will take a closer look at the degree to which mentors and their relationship with trainee teachers can contribute to the extent to which stress arises or can be prevented in teacher training.

### The Role of the Mentor in Teacher Education

In Germany, trainee teachers are supervised by professional teacher educators which – depending on the federal state – are referred to under varying names, e.g., ‘internship teachers’, ‘training teachers’ or ‘mentors’ (Krüger, 2014). In the following, we will refer to them as mentors.<sup>3</sup> Taking into account the federal structure in Germany and the resulting differences in the concrete educational organisational structures of the individual federal states, it can be summarised that the mentors are employed full-time or part-time by the teacher training college and are responsible for the training of the trainee teachers.

Mentoring takes place in a variety of manifestations with different target groups, goals and focuses in different contexts. In ‘classic’ mentoring, an experienced person (mentor) promotes the personal, professional or career development of a less experienced person (mentee) over a longer period of time in a personal, often one-to-one relationship by sharing knowledge, experience and networks (e.g., Alston & Hansman, 2021). To fulfil their role, mentors need professional knowledge, experience, preparation for and awareness of the activity, the target group, their role(s) (e.g., advisor, confidant) and challenges, as well as training and support (Hudson & Hudson, 2010; Lesham, 2012; Manning & Hobson, 2017; Rhodes et al., 2009; Richter et al., 2013; Wang, 2019).

This also applies to experienced teachers as mentors of trainee teachers. However, there are also special features, such as the fact that it is often not common for teachers to give each other feedback or to evaluate each other’s work in ‘the traditional culture of teaching where colleagues do not tell each other what to do’ (Carver & Katz, 2004, p. 460). In addition, school mentoring often involves discussing with trainee teachers whether they are suited for the teaching profession or not (Hudson & Hudson, 2010; Ingersoll & Smith, 2004; Le Maistre et al., 2006). Due to their instructional support, emotional support, and role modelling (Richter et al., 2013), the mentors of trainee teachers are considered to be of great importance during the traineeship with regard

---

<sup>3</sup> All in all, the second phase of teacher training in Germany is similar to induction ‘as the entire system of policy, resources, professional development opportunities, guidance, and support provided to beginning teachers’ (Langdon et al., 2014, p. 93) in other countries (see also Courtney et al., 2023). Mentoring as guidance and support is part of induction. Therefore, we use the terms ‘mentor’ and ‘mentoring’ to refer to the special relationship between a trainee teacher and an experienced teacher explicitly responsible for trainee teachers within the induction phase.



to the professional and personal development of their mentees (Carver & Katz, 2004; Kärner et al., 2021c; Krüger, 2014; Wang, 2019).

When looking at the various tasks and functions of these mentors during traineeship, their *dual role* becomes clear: On the one hand, mentors have supervisory and advisory functions, such as teaching the trainees on subject didactics and pedagogics, visiting them in their classroom, supervising them on subject-related issues and supporting their professionalisation process. On the other hand, they are involved in the high-stake assessment of the trainee teachers at their second state examination. In other words, part of the final grade of the trainee teachers is determined by the assessment of these mentors. Thus, mentors are an evaluating authority with potentially significant professional consequences for the trainee teachers (Chambers, 2013; Howe, 2006; Hudson & Hudson, 2010; Le Maistre et al., 2006; Manning & Hobson, 2017; Munderloh, 2018; Warwas et al., 2016). This dual or even ambiguous role is reflected in the relationship between mentors and trainee teachers, described in more detail in the following.

### **Characterising the Professional Relationship Between Trainee Teachers and Their Mentors and Implications for the Trainee Teachers' Stress and Work-experience**

The professional activities of mentors are determined by structurally conditioned contradictions, which in turn can have an impact on the relationship between mentors and trainee teachers. Helsper (2004) defined several of such contradictions, or 'antinomies', as he calls them, which are constitutive for the teaching profession, that serve here as a theoretical frame for the professional pedagogical relationship between trainee teachers and their mentors. Within a field of tension between closeness and distance ('closeness antinomy'), a continuous creation of a basis of trust is necessary under conditions that are not necessarily conducive to trust ('trust antinomy'). The superior position of mentors in terms of their knowledge and experience, but also due to their formal power – for example, through their involvement in the grading of trainee teachers – requires fairness and transparency in dealing with trainee teachers who are formally positioned lower in the hierarchy ('power antinomy'). Furthermore, the relationship between mentors and trainee teachers is characterised by the simultaneity of both symmetrical and asymmetrical forms of interaction. Trainee teachers are supposed to learn to act autonomously in the training (e.g., in preparing and conducting lessons), but at the same time their autonomy is restricted by the formal regulations of the traineeship or by the mentor ('autonomy antinomy') (Helsper, 2004; Helsper & Hummerich, 2014). These antinomies are not only constitutive of the teaching profession, but also frame how teachers and mentors shape their professional pedagogical relationship. Against the background of the described antinomies, this relationship can be further characterised by the following four facets: trust, fairness, transparency, and ambivalence (Kärner et al., 2021a, 2022).

#### **Trust**

Mutual trust is an important component for a positive relationship between mentor and mentee and provides the basis for a good learning environment (Hudson, 2016;



Platz, 2021). A trusting relationship is characterised by authenticity, mutual appreciation, and empathy (Hudson & Hudson, 2010; Rippon & Martin, 2006). Problematic and thus stressful pedagogical relationships are characterised in particular by low trust and an associated experience of dependency as well as a lack of reciprocity (e.g., Kiper, 2014). Since trust can be understood as a social and personal resource (Schweer et al., 2017), a high level of trust is likely to have a positive effect on well-being and job-satisfaction, as well as on stress reduction during the traineeship (Helliwell et al., 2009). Empirical evidence shows, for example, that perceived trust in pedagogical relationships is associated with less anxiety among learners (Schweer, 2008). In addition, higher levels of trust between student and teacher have shown to be important for academic motivation and performance (Lee, 2007).

### Fairness

Within the relationship between trainee teachers and mentors, the experience of fairness is of central importance. In general, perception of fairness – e.g., with regard to feedback – is positively associated with job satisfaction and negatively related to job depression and turnover intentions (Sparr & Sonnentag, 2008). Research on teacher–student relationships showed that students list fairness as one of the central qualities they expect from their teachers and teachers themselves find it important to act fairly, justly, and respectfully towards their students (Donat et al., 2017; Schweer et al., 2017). A feeling of fairness is most likely created when trainee teachers are allowed to participate in decisions concerning their training, if they are treated with dignity and respect, as well as if their work is appreciated and adequately rewarded (Colquitt, 2001; Maier et al., 2007; Rippon & Martin, 2006). Criticism from mentors or instructors that seems unjustified and unfair is usually perceived as irritating, hurtful, or demeaning by the feedback receiver and can therefore cause stress, anger or even job-related depression and turnover intentions (Chory et al., 2017; Rhodes et al., 2009; Rippon & Martin, 2006; Sparr & Sonnentag, 2008).

### Transparency

Transparency is yet another characteristic of professional pedagogical relationships. It describes whether mentors are open to questions and criticism as well as whether performance assessments are perceived as being plausible by mentees (Abs et al., 2009; Hudson & Hudson, 2010; Munderloh, 2018; Warwas et al., 2016; Zsargo & Palmer, 2019). A necessary condition for transparency is that performance expectations and assessment criteria are binding and that they are clearly as well as comprehensively communicated. Kärner et al., (2019) could show that transparent and openly communicated performance expectations and assessment criteria, as well as feedback on performance that is conducive to learning, go hand in hand with higher satisfaction and a lower experience of stress during the teacher traineeship. It follows that a high level of transparency during mentoring takes the role of a psychological resource during the traineeship (Horstmeyer, 2018). Resources can be understood as ‘those entities that either are centrally valued in their own right (e.g., self-esteem, close attachments, health, and inner peace) or act as a means to obtain centrally

valued ends (e.g., money, social support, and credit)' (Hobfoll, 2002, p. 307). At the same time, if trainee teachers do not perceive their mentors as transparent, they tend to experience their assessment and evaluation as rather unfair, arbitrary, and unsatisfactory (Munderloh, 2018; Schubarth et al., 2007).

## Ambivalence

Mentors of trainee teachers often incorporate a dual role of being a supportive peer, focusing on giving advice that helps the mentee to make further progress in their professional development, as well as an assessor that grades the mentee's performance during the traineeship (Le Maistre et al., 2006; Tillema et al., 2011; Zsargo & Palmer, 2019). If those two roles are not adequately separated from each other, or if inconsistent behaviour is shown with regard to the respective role behaviour, the relationship between mentor and mentee can be experienced as ambivalent. Ambivalence is understood as a simultaneous presence of emotions, cognitions or intentions that are perceived as incompatible by a person (Ziegler, 2010). Relationships are experienced as ambivalent if both harmful and appreciative interaction occur with one and the same interaction partner (Prenzel, 2019). Trainee teachers must be able to rely on the fact that mentors are able to separate training situations from assessment situations and that, for example, there are no unjustified or unannounced assessment situations (Schubarth et al., 2007). If such separation is missing or is not consistently maintained and openly communicated, this can in turn inhibit or prevent the development of a trusting relationship due to the system-related unequal distribution of power and the associated asymmetrical relationship structure (Le Maistre et al., 2006; Manning & Hobson, 2017; Rippon & Martin, 2006) and the trainee teachers' "vulnerable position with many pressing needs" (Carver & Katz, 2004, p. 450). Feelings of vulnerability can result in stress and dissatisfaction (Gray et al., 2017). Experienced ambivalence can have straining effects on the relationship that might even affect the well-being or the long-term development of trainee teachers (Chambers, 2013; Hobson & Malderez, 2013; Hudson & Hudson, 2010; Manning & Hobson, 2017; Rippon & Martin, 2006).

## Associations Between the Relationship Quality and Trainee Teachers' Stress and Work-experience

The presence of a mentor does not per se have positive effects on trainee teachers' stress and work experience. Rather, the quality of the relationship is decisive. For example, constructivist-oriented mentoring, in which mentors trustfully allow trainee teachers a degree of freedom and autonomy, can mitigate the emotional exhaustion typically connected to the early days as a teacher (Burger et al., 2021; Voss & Kunter, 2020). Taken together, a relationship that is trusting, transparent, fair, and low in ambivalence with their mentors can help trainee teachers to deal with stressors at work, but in case of a relationship that is ambivalent and less trusting, transparent and fair it can also become a stressor itself (Kärner et al., 2022). At the same time, studies show the protective effects of a high-quality relationship between mentors and trainee teachers with regard to their job satisfaction (Berliner, 2004;

Richter et al., 2013) and their experience of stress (e.g., Braun, 2017; Horstmeyer, 2018; Richter et al., 2013; Wang, 2019; Warwas et al., 2016). Further, mentoring programmes are critical not only to trainee teachers' satisfaction with the teaching profession, but also to their retention in the teaching profession (e.g., Hong, 2012). According to Berliner (2004), teacher mentoring and coaching can reduce 50% of dropouts in the first three years of teaching. In contrast, the relationship between the mentor and the trainee teacher, which is characterised by asymmetry, strong hierarchies, involuntariness, and time restrictions (Hudson & Hudson, 2010; Košinar, 2013; Looser, 2019; Munderloh, 2018; Schweer, 2008), can additionally strengthen the effect of potential stressful situations or become a stress factor itself (Kärner et al, 2022a).

## Current Study

Being a trainee can be considered to be a demanding time in a teacher's career. Prior research shows that some teachers, however, manage to deal better with work-related stressors during this time than others. While most teachers experience medium to large levels of stress, a minority of teachers seem largely not to be affected by stressors. The first aim of this study is to investigate whether the finding of qualitatively different profiles concerning stress and work experience can also be found in a larger sample of trainee teachers in Germany (Sects. 3.1 and 3.2). The first research question and the affiliated hypothesis therefore are:

1. How do trainee teachers experience their work during their first years of teaching practice with regard to job stress and work experience?

*H1:* Trainee teachers can be separated into several profiles that differ significantly in terms of stress, well-being, job satisfaction, and job engagement.

Furthermore, not much is known yet on how individual differences in work-related experience profiles explain whether trainee teachers intend to prematurely leave the teaching profession. Based on the adversarial effects of stress, low well-being, low job satisfaction, and low job engagement, it is assumed that trainee teachers that exhibit high-stress and negative work experience show dropout intentions more often than their counterparts exhibiting lower stress and more positive work experience (Sects. 3 and 4). The second research question and its hypothesis therefore are:

2. How are different experience profiles of trainee teachers related to dropout intentions?

*H2:* Trainee teachers in high-stress and negative work experience profiles have a significantly higher dropout intention compared to trainee teachers in low-stress and positive work experience profiles.

Mentoring plays an important role for the professional development of trainee teachers during their traineeship. However, not much is known yet about how the professional relationship between trainee teachers and their mentors explains how trainee teachers experience their traineeship in terms of stress, well-being, job satisfaction, and job engagement. Based on our theoretical framework, it is assumed that trainee teachers who maintain a high-quality relationship with their mentors exhibit lower stress and more positive work experience (Sect. 4). The third research question and the affiliated hypothesis therefore are:

3. How is the perceived relationship between trainee teachers and their mentors related to stress and work experience?

H3: Trainee teachers in high-stress and negative work experience profiles experience the relationship with their mentors as less transparent, fair and trusting, as well as more ambivalent compared to trainee teachers in the low-stress and positive work experience profiles.

## Method

### Study Design and Sample

To answer the research questions and to test the hypotheses, a cross-sectional study of German trainee teachers completing the second phase of their teacher training was conducted. Study participants were invited to take part in an online survey via different social networks (e.g., Facebook, Twitter), newsletters of teacher trade unions, and direct contacts of the authors. Altogether, 1,953 trainee teachers from all over Germany took up this invitation. Out of these participants, 197 cases had to be removed due to missing values on more than 30% of all variables in the data set. Thus, the data of 1,756 trainee teachers could be used for further analyses. The majority of the study participants is female (82%) and their mean age is 28.3 years ( $SD = 3.81$ ). In the sample, trainee teachers from all types of schools in Germany are represented (primary schools:  $n = 402$ , general secondary schools:  $n = 1,084$ , vocational schools:  $n = 167$ , special education schools:  $n = 150$ ; multiple answers were possible). About 43% of the study participants indicated to be in the first half of their traineeship.

### Measures

#### Stress Symptoms and Well-being

Data on how stressful trainee teachers experience their traineeship were collected using five scales measuring different stress symptoms with four to six items each (physical symptoms, anger, sadness, anxiety: all adapted from Lohaus et al., 2018; emotional exhaustion: adapted from Maslach & Jackson, 1981) as well as one scale

measuring general well-being with four items (also adapted from Lohaus et al., 2018). Participants were asked how often they experienced these symptoms during teacher training using a 5-point Likert scale (1 = 'never', 2 = 'seldom', 3 = 'sometimes', 4 = 'often', and 5 = 'very often'). The number of items, an example item, as well as  $\omega$  as a measure of congeneric reliability of each scale can be found in Table 1.

## Work Satisfaction and Job Engagement

To further describe how teacher training was experienced by the trainee teachers they were asked about their job satisfaction and job engagement. The three items measuring job satisfaction were adapted from Affolter (2019), Sann (2003), Van der Doef and Maes (1999), and Westermann et al. (1996), and job engagement was measured using an adapted version of the two scales vigour (a feeling of high level of energy and resilience) and dedication (a sense of purpose provided by one's work) with three items each provided by Schaufeli and Bakker (2004a). All items of the three scales could be answered on a 4-point Likert scale (1 = 'strongly disagree', 2 = 'disagree', 3 = 'agree', and 4 = 'strongly agree'). More information on the scales can be found in Table 2.

## Dropout Intention

The intention to drop out of their teacher training programme was collected using a single-item measure, asking 'Do you or did you consider dropping out of teacher training?' The participants could answer this item with either yes (coded as 1) or no (coded as 0).

## Perceived Relationship Between Trainee Teacher and Mentor

Data on the perceived quality of the relationship between trainee teachers and mentors from the perspective of the trainee teachers were collected using scales with four items each measuring the four relationship facets explained in Sect. 4.2: transparency, fairness, trust, and ambivalence. The items were measured on a 6-point

**Table 1** Measurement of stress symptoms and well-being

Scale	No. of items	Example item (During teacher training, ...)	$\omega$
Physical symptoms	6	... I suffer from headaches	.83
Anger	4	... I am angry	.88
Sadness	4	... I am miserable	.86
Anxiety	4	... I am nervous	.84
Emotional exhaustion	4	... I feel emotionally exhausted	.83
Well-being	4	... I am happy	.93

$\omega$  = congeneric reliability; 5-point Likert scale: 1 = 'never' to 5 = 'very often'. Items adapted from Lohaus et al. (2018) and Maslach and Jackson (1981)

**Table 2** Measurement of work satisfaction and job engagement

Scale	No. of items	Example item (During teacher training, ...)	$\omega$
Job satisfaction	5	... I feel delighted in what I am doing	.87
Vigour	3	... I feel strong and vigorous	.77
Dedication	3	... I am proud of the work that I do	.77

$\omega$  = congeneric reliability; 4-point Likert scale: 1 = 'strongly disagree' to 4 = 'strongly agree'. Items adapted from Westermann et al. (1996), Van der Doef and Maes (1999), Sann (2003), Affolter (2019) as well as Schaufeli and Bakker (2004a)

Likert scale ranging from 1 = 'does not apply', 2 = 'does predominantly not apply', 3 = 'does rather not apply', 4 = 'does rather apply', 5 = 'does predominantly apply', and 6 = 'does fully apply'. Table 3 presents the number of items, an example item, and  $\omega$  for each of the four scales.

### Assessment of the Measurement Model

The psychometric quality of the measurement model was assessed using confirmatory factor analysis. For this purpose, a robust maximum likelihood estimator with Satorra-Bentler correction (Satorra & Bentler, 1994) and robust standard errors and scaled fit indices were estimated with R lavaan (R Core Team, 2021; Rosseel, 2012). For evaluating the model fit, the following cut-off values were used as criteria (Bowen & Guo, 2012; Hair et al., 2018; Tabachnick & Fidell, 2007):  $CFI > 0.90$ ,  $RMSEA < 0.07$ , and  $SRMR < 0.08$ . In addition, congeneric reliabilities  $\omega$  were estimated to examine the scales' internal consistency (Tables 1, 2 and 3).

The overarching theoretical measurement model described in Sects. 6.2.1 to 6.2.4 exhibits a good global fit:  $\chi_{SB}^2(1287) = 4012.30$ ,  $p < 0.001$ ,  $CFI = 0.947$ ,  $RMSEA = 0.035$  ( $CI_{.90} = 0.034-0.37$ ),  $SRMR = 0.038$ . Factor loadings range between 0.48 and 0.92, while the majority of loadings are above 0.70 (62.5%). Almost all congeneric reliabilities are above 0.70 except ambivalence ( $\omega = 0.64$ ). Based on this assessment the measurement model can be used for further analyses.

**Table 3** Measurement of the perceived quality of the relationship between trainee teacher and mentor

Scale	No. of items	Example item	$\omega$
Transparency	4	My mentor clearly communicates what competencies I need to master	.86
Fairness	4	My mentor treats me fairly	.87
Trust	4	I can admit to my mentor that I did not understand something	.84
Ambivalence <sup>a</sup>	4	I am happy when my mentor supports me, but at the same time I am annoyed that I am dependent on her/him	.64

$\omega$  = congeneric reliability; 6-point Likert scale: 1 = 'does not apply' to 6 = 'does fully apply'. Items are developed by Kärner et al., (2021a)

<sup>a</sup>According to the definition of experienced ambivalence (Sect. 4.2.4), contradictions in relation to opposing behavioural tendencies as well as affective states are taken into account in the respective items (Michels et al., 2011)

## Statistical Analyses

To answer the first research question, a person-centred analysis approach is used. The aim is to identify distinguishable homogeneous subgroups of trainee teachers that have been experiencing their teacher training in a similar way. For this purpose, latent profile analysis (LPA) was employed. LPA is a new-generation clustering method that (a) allows to recover hidden subgroups in data and (b) assigns each study participant a probability to belong to one of these groups (Ferguson et al., 2020; Spurk et al., 2020). In the context of this study, these subgroups are based upon a priori estimated and extracted latent factor scores of the stress symptoms, well-being, as well as work satisfaction and job engagement (see Kam et al., 2016 and Wang & Wang, 2012 for information on the modelling procedure).

The most adequate number of subgroups (also called profiles in the context of LPA) to extract can be determined using statistical fit indices and statistical tests (Ferguson et al., 2020; Wang & Wang, 2012). The fit indices Akaike's Information Criterion (*AIC*), Bayesian Information Criterion (*BIC*), and Adjusted Bayesian Information Criterion (*aBIC*) are supposed to be as small as possible. In contrast, *Entropy* as yet another fit index is supposed to be as close to 1.0 as possible, but at least 0.80 in size (higher values indicate lower classification uncertainty; Ferguson et al., 2020). In addition, Vuong–Lo–Mendell–Rubin likelihood ratio test and Lo–Mendell–Rubin adjusted likelihood ratio test (VLMRT, aLMRT: Lo et al., 2001), as well as parametric bootstrapped likelihood ratio test (PBLRT: McLachlan, 1987) can be used to determine whether a model with  $k$  extracted profiles significantly fits the data better than a model with  $k-1$  profiles (Ferguson et al., 2020). Besides these statistical measures, the interpretability of the profiles and profile size (number of participants assigned to a profile) should also be taken into account when deciding how many profiles should be extracted (Wang & Wang, 2012). LPA was conducted using Mplus 8.2 (Muthén & Muthén, 2011).

The reliability of the extracted profile solution was checked employing a cross-validation strategy (e.g., Fu & Perry, 2020). The full sample was randomly divided into two subsamples. For each of these subsamples, the final LPA solution of the main sample was estimated again. This allows us to check whether the profile assignment based on the full sample matches the profile assignment in the two subsamples. For this purpose, a  $\chi^2$  test on the different profile assignments with Cramer's  $V$  as well as the percentage of identical assignments as two effect sizes will be calculated using R and the effectsize 0.4.5 package (Ben-Shachar et al., 2020).

To answer the second and the third research questions, LPA was employed using Mplus' automatic BCH approach for estimating and testing mean differences across latent classes (Asparouhov & Muthén, 2014, 2021). This approach allows us to test whether the estimated profile affiliation explains variance in the dropout intention as well as in the reported quality of the relationship between trainee teachers and their mentors. In this way, information is obtained regarding whether (a) the profile affiliation explains dropout intentions and whether (b) the relationship quality explains how teaching practice is experienced by teacher trainees during their traineeship. We decided against a (multinomial) logistic regression based on Mplus' 3-Step Procedure as three of the four relationship facets are highly correlated. The regression weights



would have been biased due to multicollinearity. To complement the equality tests of means across profiles, effect sizes  $\eta^2$  (and Cohen's  $d$  for post hoc tests) are estimated using the R package *effectsize*. The same package is used to estimate Cramer's  $V$  as an effect size concerning the relationship between the extracted profiles and dropout intention. In addition, the results of the LPAs estimated with the two subsamples in the cross-validation strategy will be used to check whether the estimated profile affiliation robustly explains variance in dropout intention and the four relationship facets.

## Results

### Descriptives and Correlations Among Variables

Table 4 shows the means, standard deviations, and Bravais–Pearson correlations of all variables included in any further analysis. As can be seen, neither floor nor ceiling effects are present. In addition, the standard deviations indicate sufficient variance in the variables. All stress symptoms are positively related to each other ( $r_{xy}=0.60\text{--}0.84$ , large effects) and negatively to well-being ( $r_{xy}=-0.51\text{--}-0.74$ , large effects). The scales measuring job satisfaction and job engagement (vigour and dedication) are all positively correlated ( $r_{xy}=0.91\text{--}0.94$ , large effects). Very strong correlations can be found between the three positive facets of the relationship between trainee teacher and their mentor (transparency, fairness and trust:  $r_{xy}=0.89\text{--}0.94$ , large effects). These three relationship facets are all negatively related to the fourth facet, ambivalence ( $r_{xy}=-0.58\text{--}-0.69$ , large effects). All stress symptoms are negatively correlated with job satisfaction, job engagement and well-being ( $r_{xy}=-0.35\text{--}-0.74$ , medium to large effects). Transparency, fairness and trust are all negatively correlated to each of the stress symptoms ( $r_{xy}=-0.26\text{--}-0.46$ , small to medium effects) and positively to job satisfaction, job engagement and well-being ( $r_{xy}=0.31\text{--}0.44$ , medium effects). Conversely, ambivalence is positively correlated to each of the stress symptoms ( $r_{xy}=0.40\text{--}0.46$ , medium effects) and negatively to job satisfaction, job engagement and well-being ( $r_{xy}=-0.31\text{--}-0.37$ , medium effects). Dropout intention is positively correlated to all stress symptoms ( $r_{xy}=0.34\text{--}0.53$ , medium to large effects) and ambivalence ( $r_{xy}=0.27$ , small effect), as well as negatively related to job satisfaction, job engagement and well-being ( $r_{xy}=-0.47\text{--}-0.53$ , medium to large effects) as well as transparency, fairness and trust ( $r_{xy}=-0.28\text{--}-0.30$ , small to medium effects). All of these correlations are significant on the 1% level (two-tailed tests). Some of the correlations between the stress symptoms, work experience, the characteristics of the professional relationship, dropout intention and the two socio-demographic variables age and time during the traineeship reached significance but were mostly negligible in size ( $r_{xy}=-0.17\text{--}0.15$ , small effects).

### Profile Extraction

The results of the LPA analyses for models with one to five profiles can be found in Table 5. As can be seen,  $AIC$ ,  $BIC$ , and  $aBIC$  decrease monotonically with a higher number of profiles. The highest *Entropy* value can be found for a model with two

**Table 4** Descriptives and latent Bravais–Pearson correlations

Scales	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<i>Job-stress and well-being</i>																		
1 Physical symptoms	2.51	0.84																
2 Anger	3.07	0.91	<b>.60</b>															
3 Sadness	3.04	0.98	<b>.74</b>	<b>.78</b>														
4 Anxiety	3.77	0.81	<b>.71</b>	<b>.64</b>	<b>.78</b>													
5 Emotional exhaustion	3.73	0.87	<b>.71</b>	<b>.68</b>	<b>.84</b>	<b>.79</b>												
6 Well-being	3.36	0.82	<b>-.51</b>	<b>-.54</b>	<b>-.74</b>	<b>-.53</b>	<b>-.66</b>											
<i>Work experience</i>																		
7 Job satisfaction	2.97	0.69	<b>-.39</b>	<b>-.47</b>	<b>-.62</b>	<b>-.43</b>	<b>-.61</b>	<b>.66</b>										
8 Vigour	2.56	0.64	<b>-.48</b>	<b>-.52</b>	<b>-.70</b>	<b>-.56</b>	<b>-.72</b>	<b>.75</b>	<b>.92</b>									
9 Dedication	2.92	0.61	<b>-.35</b>	<b>-.41</b>	<b>-.57</b>	<b>-.42</b>	<b>-.55</b>	<b>.63</b>	<b>.94</b>	<b>.91</b>								
<i>Characteristics of the professional relationship</i>																		
10 Transparency	4.39	1.07	<b>-.33</b>	<b>-.41</b>	<b>-.41</b>	<b>-.26</b>	<b>-.32</b>	<b>.42</b>	<b>.35</b>	<b>.36</b>	<b>.34</b>							
11 Fairness	4.80	1.06	<b>-.39</b>	<b>-.46</b>	<b>-.45</b>	<b>-.28</b>	<b>-.34</b>	<b>.44</b>	<b>.32</b>	<b>.36</b>	<b>.31</b>	<b>.94</b>						
12 Trust	3.96	1.20	<b>-.34</b>	<b>-.40</b>	<b>-.41</b>	<b>-.29</b>	<b>-.34</b>	<b>.42</b>	<b>.34</b>	<b>.37</b>	<b>.34</b>	<b>.94</b>	<b>.89</b>					
13 Ambivalence	3.73	1.05	<b>.40</b>	<b>.45</b>	<b>.46</b>	<b>.41</b>	<b>.42</b>	<b>-.37</b>	<b>-.34</b>	<b>-.35</b>	<b>-.31</b>	<b>-.58</b>	<b>-.61</b>	<b>-.69</b>				
<i>Dropout intention and socio-demographics</i>																		
14 Dropout intention <sup>a</sup>	0.34	0.47	<b>.39</b>	<b>.38</b>	<b>.53</b>	<b>.34</b>	<b>.43</b>	<b>-.47</b>	<b>-.53</b>	<b>-.51</b>	<b>-.48</b>	<b>-.28</b>	<b>-.30</b>	<b>-.29</b>	<b>.27</b>			
15 Age	28.29	3.81	0.3	<b>.07</b>	<b>.08</b>	<b>.06</b>	<b>.09</b>	<b>-.15</b>	<b>-.10</b>	<b>-.08</b>	<b>-.10</b>	<b>-.07</b>	<b>-.07</b>	<b>-.03</b>	<b>-.01</b>	<b>.12</b>		
16 Sex <sup>b</sup>	0.82	0.38	<b>.15</b>	0.1	0.4	<b>.07</b>	0.3	<b>.11</b>	<b>.09</b>	<b>.06</b>	<b>.11</b>	0.4	0.02	0.00	0.02	<b>-.04</b>	<b>-.17</b>	
17 Time during traineeship <sup>c</sup>	0.54	0.50	<b>-.04</b>	0.02	0.1	<b>-.02</b>	<b>-.07</b>	<b>-.01</b>	<b>.07</b>	0.3	0.05	<b>-.03</b>	<b>-.06</b>	<b>-.03</b>	<b>-.01</b>	<b>-.01</b>	<b>.06</b>	<b>-.05</b>

*M* Mean, *SD* Standard deviation. All correlations set in boldface are significant on the 5% level (two-tailed tests). Scales 1–6: 5-point Likert scale; 1 = 'never' to 5 = 'very often'; Scales 7–9: 4-point Likert scale; 1 = 'strongly disagree' to 4 = 'strongly agree'; Scales 10–13: 6-point Likert scale; 1 = 'does not apply' to 6 = 'does fully apply'.

<sup>a</sup>1 = participant has or had considered dropping out; 0 = participant has never considered dropping out

<sup>b</sup>1 = female, 0 = male

<sup>c</sup>1 = second half of the traineeship, 0 = first half of the traineeship (answer categories 'repeating' and 'miscellaneous' discarded).

**Table 5** Profile identification and model fit information

No. of profiles	Free parameters	AIC	BIC	aBIC	Entropy	<i>p</i> values		
						VLMRT	aLMRT	PBLRT
1	18	31,575.1	31,672.8	31,615.6	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>	NA <sup>a</sup>
2	28	23,443.7	23,595.7	23,506.7	0.923	<.001	<.001	<.001
3	38	20,355.9	20,562.2	20,441.4	0.915	0.001	0.001	<.001
4	48	18,870.2	19,130.7	18,978.2	0.906	0.335	0.338	<.001
5	58	17,713.0	18,027.8	17,843.5	0.904	0.077	0.079	<.001

*AIC* Akaike's information criterion, *BIC* Bayesian information criterion, *aBIC* Sample-size adjusted BIC, *VLMRT* Vuong–Lo–Mendell–Rubin likelihood ratio test, *aLMRT* Lo–Mendell–Rubin adjusted likelihood ratio test, *PBLRT* Parametric bootstrap likelihood ratio test. Due to missing values not all of participants of the original sample could be used in the LPA

<sup>a</sup>Not available for models with only one extracted profile

profiles (*Entropy*=0.923) while the model with three profiles exhibits the second highest value (*Entropy*=0.915). The VLMRT and the aLMRT are significant for the models with two and three profiles ( $p < 0.05$ ) but not those with four and five profiles ( $p > 0.05$ ), indicating a best fit of the model with three extracted profiles. PBLRT reaches significance for all models ( $p < 0.001$ ). Based on these criteria as well as interpretability, a decision in favour of the model with three profiles was made.

Figure 1 shows the extracted profiles describing how the three identified subgroups experienced their teacher training in terms of stress symptoms, well-being, job satisfaction, and job engagement. Profile 1 contains trainee teachers that experience strong stress symptoms and low well-being as well as low job satisfaction and job engagement (*high-stress profile*; 32%,  $n_1 = 545$ ). In comparison, Profile 2 contains trainee teachers that experienced comparably less stress symptoms, more well-being as well as more job satisfaction and job engagement (*low-stress profile*; 27%,  $n_2 = 450$ ). Profile 3 contains trainee teachers that experienced their teacher training in terms of these variables on an average level (*average-stress profile*; 41%,  $n_3 = 686$ ).

### Cross Validation of Profile Assignment

As foreshadowed, the main sample was randomly split into two subsamples for cross-validation purposes ( $n_a = n_b = 878$ ). Two LPAs extracting three profiles were estimated using these two samples, respectively. Both estimations resulted in similar profiles as the LPA based on the full sample. The comparison of the robustness of the profile assignment between the LPA based on the full sample and the LPAs based on the two subsamples showed a significant and strong association ( $\chi^2 = 2,736.6$ ,  $df = 4$ ,  $p < 0.001$ , adj. Cramer's  $V = 0.90$ , 99%  $CI = 0.86–0.95$ ). In total, 93% of cases

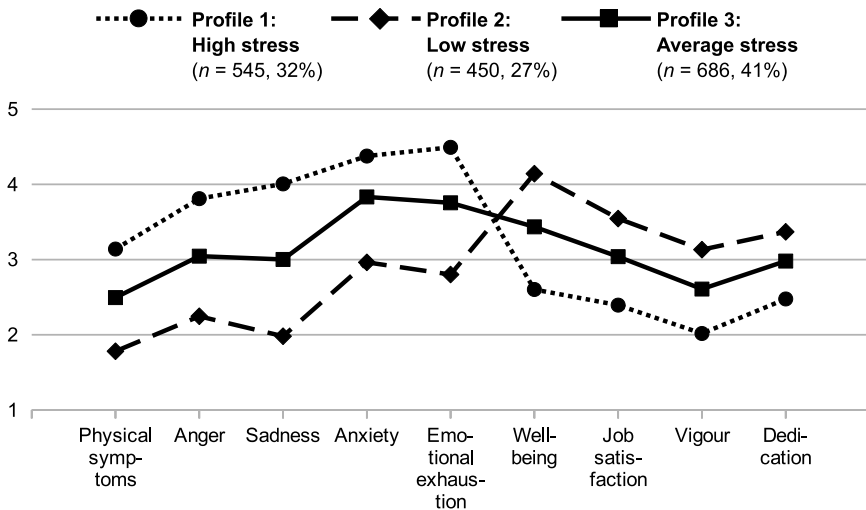


Fig. 1 Profile plots of extracted three-profile solution

were identically assigned to the same profiles in the different samples. In sum, these results indicate adequate stability of the three-profile solution.

### Profile Differences in Dropout Intentions and Experienced Relationship Quality

Based on the LPA latent mean difference analysis, it can be seen from Table 6 that dropout intentions statistically differ between the three profiles ( $p < 0.001$ ). The highest intentions to dropout can be found for participants assigned to the high-stress profile (Profile 1; 72% of the trainee teachers in this profile indicated a dropout intention sometime during their traineeship), while the lowest dropout intentions are reported by participants assigned to the low-stress profile (Profile 2; 6% of trainee teachers in this profile). Cramer's  $V$  indicates a medium-sized effect.

Table 6 also shows how the experienced relationship quality between the trainee teachers and their mentors differ between the three profiles. The highest means for the relationship facets transparency, fairness and trust can be found for the low-stress profile, the second highest for the average-stress profile, and the lowest for the high-stress profile (vice versa for ambivalence). Further analysis shows that the means of all four relationship facets differ significantly between the three profiles ( $p < 0.001$ ). Eta squared indicates large effect sizes ( $\eta^2 = 0.18\text{--}0.27$ ). Post hoc analyses show significant results for all pairwise comparisons ( $p < 0.001$ ). The differences between Profiles 1 and 2 can be characterised as large ( $|\Delta| = 1.06\text{--}1.21$ ), between Profiles 1 and 3 as medium ( $|\Delta| = 0.56\text{--}0.67$ ), and between Profiles 2 and 3 as small to medium in size ( $|\Delta| = 0.48\text{--}0.65$ ).

The cross-validation indicated that all three samples (full, subsample A, subsample B) resulted in the same fundamental mean structure: Dropout intention and ambivalence was always highest in Profile 1 and lowest in Profile 2, while transparency, fairness and trust were always rated highest by participants in Profile 2 and

**Table 6** Mean differences in dropout intentions and experienced relationship quality between profiles

Scales	<i>M (SD)</i>			Mean comparison	
	Profile 1: High stress	Profile 2: Low stress	Profile 3: Average stress	<i>p</i> <sup>a</sup>	Effect size <sup>b</sup>
Dropout intention	0.72 (0.40)	0.06 (0.25)	0.23 (0.55)	< .001	0.55
Transparency	3.84 (1.05)	4.91 (0.76)	4.47 (0.86)	< .001	0.18
Fairness	4.21 (1.05)	5.34 (0.72)	4.89 (0.86)	< .001	0.20
Trust	3.34 (1.12)	4.58 (0.87)	4.03 (0.97)	< .001	0.19
Ambivalence	4.19 (0.61)	3.18 (0.66)	3.73 (0.65)	< .001	0.27

*M* Mean, *SD* Standard deviation

<sup>a</sup>Significance test based on LPA

<sup>b</sup>Effect size estimated based on most likely latent profile membership and extracted factor scores ( $\eta^2$  for the four relationship facets) or the number of individuals reporting dropout intentions (Cramer's *V*)

lowest in Profile 1 (all differences between profiles became significant for all constructs,  $p < 0.001$ ; the same is true for the post hoc tests between all profile pairs for each variable,  $p < 0.001$ ).

## Discussion and Conclusion

### Interpretation of Findings in Light of Our Hypotheses

The aim of this study was to empirically investigate whether specific profiles of trainee teachers during their induction phase with regard to their stress and work experiences can be identified and whether such profiles are related to dropout intentions as well as the perceived relationships between trainee teachers and their mentors. In Hypothesis 1 it has been assumed that several distinguished profiles, that is homogeneous groups of trainee teachers, can be identified that differ with regard to job stress and work experience. This hypothesis can be confirmed. In the first profile, trainee teachers exhibit strong work-related stress symptoms together with unfavourable work experience (high-stress profile). The second profile, in comparison, consists of trainee teachers that experience considerably less stress and that report much more work-related well-being, job satisfaction, and job engagement (low-stress profile). Trainee teachers in the third profile experience their work on an average level in comparison to both other groups (average-stress profile). This finding is in line with prior studies that identify, among other things, a substantial proportion of particularly stressed (trainee) teachers as well as a proportion of teachers that are not particularly stressed and that experience their job as favourable (Collie & Mansfield, 2022; Darius et al., 2021; Herman et al., 2018; Hwang, 2022; Zimmermann et al., 2012). Furthermore, since trainees do not yet have any routines built up at the beginning of their careers, similarities to other school actors in unfamiliar crisis situations become apparent. For example, in their study on the stress experience of school principals under the conditions of the new challenges brought by the

Covid-19 pandemic, Upadyaya et al. (2021) were also able to identify three different stress profiles ranging from low to high stress.

It was then assumed that trainee teachers that are part of the high-stress profile should have significantly higher dropout intentions than their counterparts who experience their work as less stressful and more positive in nature (Hypothesis 2). This hypothesis could be again confirmed by the data. In fact, trainee teachers in the high-stress profile considered dropping out of teacher training on average 12 times more often than trainee teachers in the low-stress profile ( $=0.72 / 0.06$ ; Table 6). This finding emphasises the potential adverse effects of stress and negative work experiences on career-related decisions already discussed in the literature (Hong, 2012; Struyven & Vanthournout, 2014). As such, it underlines the requirement to design teacher training in a way that, on the one hand, gives trainee teachers a realistic picture of the demands of the teaching profession and, on the other hand, helps them to successfully cope with the straining requirements of everyday school life. Not only could this counteract the 'praxis shock' that often occurs at the beginning of the teacher career (Ballantyne & Retell, 2020; Dicke et al., 2016; Voss & Kunter, 2020), but it would also help to keep teachers in the profession in the long run. This is especially important to further approach the pressing issue of teacher shortages that many countries have been experiencing in the last years (e.g., Admiraal, 2022; Federičová, 2021). Besides a higher dropout intention rate, trainee teachers within the high-stress profile might also affect school practice in other ways. For instance, evidence exists that students of teachers in profiles with high stress and unpleasant work experiences show significantly more delinquent behaviour and lower performance than students of teachers in other profiles. In contrast, students of teachers in profiles with low stress perform best in behaviour and achievement (Herman et al., 2018; also Collie & Mansfield, 2022; Collie et al., 2021; Hwang, 2022; Opendakker & Van Damme, 2006). It follows that the affiliation to a certain stress profile might not only affect the trainee teachers themselves but also others, again emphasising the need to adequately support trainee teachers to successfully deal with stress at work.

Such support might be provided by mentors during teacher training. For this purpose, however, mentors need to establish a constructive mentoring relationship with their mentees. It was therefore hypothesised that trainee teachers that experience the relationship with their mentors as transparent, fair, and trusting as well as low in ambivalence, should exhibit fewer stress symptoms and experience their work as more favourable (Hypothesis 3). The data of this study confirms this hypothesis as trainee teachers in the low-stress profile report a much better relationship quality in terms of the four relationship facets with their mentors than trainees in the high-stress profile. While a relationship between mentor and trainee teacher that is characterised by high transparency, fairness, trust, and low ambivalence should act as a resource that helps trainees to cope with straining work conditions, a relationship that lacks those characteristics might be experienced as an additional stressor as such (Kärner et al., 2022). This emphasises that mentors are required to actively build and maintain a relationship with their mentees that constructively deals with structural antinomies and tensions interwoven into teaching practice (Helsper, 2004; Sect. 4.2). Accordingly, mentors must be trained for this task (Sect. 8.3). This finding is relevant as it underlines the mentors' role in putting more effort into a

mentorial relationship that supports teacher trainees in coping with stressors that are typical to their profession instead of only focusing on professional development in terms of how to plan and conduct teaching (also Jaspers et al., 2022). ‘Mentors are to coach novices in their teaching, but first they are to develop a trusting relationship between themselves and their novices’ (Carver & Katz, 2004, p. 458).

Within this study, the role of the relationship between mentors and mentees has been investigated in the context of the induction phase of trainee teachers. One can only speculate how these findings transfer to other professional and vocational education and training settings. However, induction or traineeship settings can always be described as particular kinds of participatory social practices focussing on learning and professional development of novices that are characterised by hierarchies and power relations (e.g., Billett, 2004). A constructive relationship between proficient insiders of a community of practice and the trainee outsiders might therefore always play an important role in how novices learn, develop, and cope with the demands of their professional field – regardless of whether they are beginning teachers, apprentices or prospective skilled workers. On a theoretical level, this seems to be an idea that has yet been underdeveloped in the literature and can therefore be pointed out as an important theoretical contribution of this study. Furthermore, in times of increasing staff shortages in many domains additional effort should be made to avoid premature dropout. The findings of this study give evidence on how to do this.

### **Limitations of the Study and Research Implications**

Limitations of the study include, first, the underlying data. Even though a relatively large sample could be used for analyses, this has to be characterised as not being representative for the different federal German states, each with their own teacher training and school types due to how data were gathered (acquisition via newsletter and social networks, snowball system).

A second limitation relates to the cross-sectional design of the data collection. Although this approach makes it possible to identify correlations between different variables by means of structure-testing procedures, it does not allow statements to be made about (temporal) causal interdependencies. On the one hand, this is not possible because longitudinal data would be required, for example, to map temporal dynamics in the genesis of the professional relationship between the trainee teachers and their mentors over the course of the training. On the other hand, it is not possible because only the trainee teachers’ self-report was used as a data source and no endogenous variables, such as structural information on the concrete institutional training conditions, no performance-related data (e.g., partial or final grades of the teacher traineeship), and no data on the mentors’ external assessment of the relationship under consideration were collected. At the same time, statistical association can be understood as a requirement of causal relationships. In this way, this study could show that a necessary condition for causal interdependencies exists. Future studies should collect more comprehensive data and try to further elaborate whether causality between the variables in this study can be assumed.



The third limitation also relates to the cross-sectional survey design. In this study the relationship between mentors and mentees has been captured only based on a static perspective. However, mentorial relationships typically unfold during time and might qualitatively change between different training phases (Bouquillon et al., 2005; Harrison et al., 2006; Le Maistre et al., 2006). Future studies should therefore employ research designs that help to capture the dynamic nature of mentoring. Diary studies, for instance, would be a good way to approach this research implication (Rausch et al., 2022).

A fourth limitation relates to the nested structure of the data that was not taken into account during data analysis as no information was gathered about participants' school affiliation. Future studies should try to gather data from several trainee teachers within a fixed (and known) set of several schools. This way the particular school climate can be taken into account in profile building as well as in explaining how trainees experience their mentorial relationship. This is important as prior research showed that school climate can, for instance, affect how stress profiles of teachers are distributed (Collie & Mansfield, 2022; Collie et al., 2021). Such research designs might also help to disentangle the impact of school leaders on how mentoring during teacher training is practised (e.g., Langdon et al., 2014).

A fifth limitation relates to the assessment of dropout intentions. These have been asked in a binary and global way. It is conceivable that the dropout intention changes over time during the teacher training. Furthermore, the actual dropouts were not documented. However, intentions to drop out of educational settings and actual dropout are, in fact, related (Davis et al., 2002; Metzner & Bean, 1987).

A sixth limitation relates to the generalisability of the study findings. The study was related in the context of the induction phase of trainee teachers after their university degree in Germany. Induction phases in other countries differ from the German system (e.g., Courtney et al., 2023; Darling-Hammond, 2017). It therefore remains unclear how the findings of this study generalise to other induction systems even so parallel structures might exist between countries. In addition, it was considered that the findings might also be relevant for other kinds of professional and vocational education and training settings. However, these thoughts should be treated as what they are: speculations that are not yet properly backed up by empirical data. Additional research is needed.

## Implications for Teacher Training Practice

Considering the relevance of the professional pedagogical relationship between trainee teachers and their mentors for the stress and work experience resulting from teacher training, the relationship in question should be given greater weight in training practice. Mentors should be prepared for their relationship-related tasks in order to find their role and act accordingly in a professional and reflective manner (e.g., Cain, 2009; Carver & Katz, 2004; Leshem, 2012; Manning & Hobson, 2017; Richter et al., 2013). This also involves mentors becoming aware not only of their dual role vis-à-vis the trainee teachers, but also of their self-referential dual role as teacher and mentor. These two roles influence their actions, both toward the students

and toward the trainee teachers, must in part be reconciled at the same time, and are in part mutually dependent (Jaspers et al., 2014). Because trainee teachers are not only mentees but also colleagues of mentors, mentors must be open to learning and developing together (Ellis et al., 2020; Hudson & Hudson, 2010).

Preparation of mentors can be achieved, for example, through continuing education, in-process supervision, or collegial case consultation. In this context, the aspects of transparency (e.g., with regard to openly communicated and participatively defined evaluation criteria as well as constructive feedback), fairness (e.g., through recognition of performance and respectful interaction) and trust (e.g., through appreciative and empathic interaction) could be taken into account and reflected upon against the background of a potentially ambivalent relationship structure. Corresponding programmes for advanced training and continuing education should be institutionalised. This could be based in particular on further empirical studies on factors that contribute to a particularly good or poor relationship quality in specific cases. This in turn could offer possible starting points for interventions in the relationship work between trainee teachers and their mentors. The preparation of mentors requires not only appropriate training opportunities at the structural level and the willingness of mentors at the individual level to get involved, but also designated time resources that can actually be used for mentoring. The extent to which this is realistic in times of staff shortages at schools and a general scarcity of resources in the education system must be left open at this point.

In addition to mentors, other actors are also involved in the training of teachers, such as school principals. It should have become evident that the ideas brought forward about the relevance and promotion of a high-quality relationship between mentors and their teacher trainees also apply to them. This is also backed up by empirical findings. For instance, it has been found that a higher perceived transparency of assessment during the induction phase negatively correlates with how demanding trainee teachers perceive the relationship with their school principals (Kärner et al., 2018). This not only points to similarities between the findings presented here and the ones generated by Kärner et al, but also to the need to consider all the actors involved during teaching induction and their mutual relationships and dependencies in the design of teacher education as well as in theoretical discussions and empirical studies.

Furthermore, research as well as training programs for mentors should focus on if and why mentors differ in how they shape the relationship with their mentees. Do mentors mostly reproduce the mentoring style they experienced themselves as trainee teachers (Carter & Francis, 2001; Lunsmann et al., 2019)? Do the personalities or subjective theories of the mentors affect how they deal with their mentees in terms of the four different relationship facets (e.g., Caruso & Goller, 2021a, 2021b)? Or do mentors differ in their understanding of their mentoring role and tasks (e.g., coach vs. assessor) that then affects how they handle the daily relationship with their mentees (e.g., Carver & Katz, 2004; Jones, 2001; Le Maître et al., 2006)? These aspects might help to design training courses for mentors that support them in reflecting their own mentoring behaviour more strongly which could also affect the relationship between mentors and trainee teachers.

**Authors' contributions** Elisabeth Maué: Conceptualization, Writing - Original Draft, Writing - Review & Editing, Funding acquisition. Michael Goller: Conceptualization, Methodology, Data curation, Formal analysis, Investigation, Writing - Original Draft, Writing - Review & Editing, Visualization. Caroline Bonnes: Conceptualization, Writing - Original Draft, Writing - Review & Editing. Tobias Kärner: Conceptualization, Methodology, Formal analysis, Writing - Original Draft, Writing -Review & Editing, Supervision, Project administration.

**Funding** Open Access funding enabled and organized by Projekt DEAL. This work was funded by the "Young Scholar Fund within the Excellence Strategy of the University of Konstanz, Germany".

**Availability of Data and Materials** The data will not be shared publicly because of data protection reasons.

## Declarations

**Consent for Publication** All participants provided written, informed consent for publication.

**Competing Interests** None of the authors have any conflict of interests.

**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

## References

- Abs, H. J., Döbrich, P., Gerlach-Jahn, A., & Klieme, E. (2009). *Pädagogische Entwicklungsbilanzen an Studienseminaren (PEB-Sem). Auswahl und statistische Analyse der Erhebungsinstrumente [Pedagogical development measures at study seminars (PDM-Sem). Selection and statistical analysis of the survey instruments]*. DIPF.
- Admiraal, W. (2022). Teachers' job demands, resources and job satisfaction: Secondary analyses of TALIS 2018 data from Flanders and the Netherlands. *European Journal of Education Studies*, 9(2), 25–47. <https://doi.org/10.46827/ejes.v9i2.4141>
- Affolter, B. (2019). *Engagement und Beanspruchung von Lehrpersonen in der Phase des Berufseintritts: Die Bedeutung von Zielorientierungen, Selbstwirksamkeitserwartungen und Persönlichkeitsmerkmalen im JD-R Modell*. [Teacher engagement and demands on teachers in the career entry phase: The importance of goal orientation, self-efficacy expectations and personality traits in the JD-R model]. Julius Klinkhardt.
- Alston, G., & Hansman, C. (2021). Mentoring in adult education: Looking to the past, present, and future. In T. Rocco, M. C. Smith, R. C. Mizzi, L. Merriweather, & J. Hawley (Eds.), *Handbook of adult and continuing education* (pp. 107–115). Stylus Publishing.
- Asparouhov, T., & Muthén, B. (2021). Auxiliary variables in mixture modeling: Using the BCH method in Mplus to estimate a distal outcome model and an arbitrary secondary model. Mplus Web Notes: No. 21 (Version 11). <https://www.statmodel.com/examples/webnotes/webnote21.pdf>.

- Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling: A Multidisciplinary Journal*, 21(3), 329–341. <https://doi.org/10.1080/10705511.2014.915181>
- Ballantyne, J. (2007). Documenting praxis shock in early-career Australian music teachers: The impact of pre-service teacher education. *International Journal of Music Education*, 25(3), 181–191. <https://doi.org/10.1177/0255761407083573>
- Ballantyne, J., & Retell, J. (2020). Teaching careers: Exploring links between well-being, burnout, self-efficacy and praxis shock. *Frontiers in Psychology*, 10, 2255. <https://doi.org/10.3389/fpsyg.2019.02255>
- Beltman, S., Mansfield, C., & Price, A. (2011). Thriving not just surviving: A review of research on teacher resilience. *Educational Research Review*, 6(3), 185–207. <https://doi.org/10.1016/j.edurev.2011.09.001>
- Ben-Shachar, M., Lüdtke, D., & Makowski, D. (2020). effectsize: Estimation of effect size indices and standardized parameters. *Journal of Open Source Software*, 5(56), 2815. <https://doi.org/10.21105/joss.02815>
- Berliner, D. C. (2004). Describing the behavior and documenting the accomplishments of expert teachers. *Bulletin of Science, Technology & Society*, 24(3), 200–212. <https://doi.org/10.1177/0270467604265535>
- Billett, S. (2004). Workplace participatory practices: Conceptualising workplaces as learning environments. *Journal of Workplace Learning*, 16(6), 312–324. <https://doi.org/10.1108/13665620410550295>
- Bouquillon, E. A., Sosik, J. J., & Lee, D. (2005). ‘It’s only a phase’: Examining trust, identification and mentoring functions received across the mentoring phases. *Mentoring & Tutoring: Partnership in Learning*, 13(2), 239–258. <https://doi.org/10.1080/13611260500105808>
- Bowen, N. K., & Guo, S. (2012). *Structural equation modeling*. Oxford University Press.
- Braun, A. (2017). *Erleben Lehrkräfte und Referendare berufsbezogene Belastungen anders? Berufs(phasen)spezifische Präventionsansätze zur Gesundheitsförderung* [Do teachers and trainee teachers experience job-related stress differently? Occupation (phase)-specific prevention approaches for health promotion]. Klinkhardt.
- Burger, J., Bellhäuser, H., & Imhof, M. (2021). Mentoring styles and novice teachers’ well-being: The role of basic need satisfaction. *Teaching and Teacher Education*, 103, 103345. <https://doi.org/10.1016/j.tate.2021.103345>
- Cain, T. (2009). Mentoring trainee teachers: How can mentors use research? *Mentoring & Tutoring: Partnership in Learning*, 17(1), 53–66. <https://doi.org/10.1080/13611260802233498>
- Carter, M., & Francis, R. (2001). Mentoring and beginning teachers’ workplace learning. *Asia-Pacific Journal of Teacher Education*, 29(3), 249–262. <https://doi.org/10.1080/13598660120091856>
- Caruso, C., & Goller, M. (2021a). Aufgaben, Ziele und Betreuungsstrategien von am Praxissemester beteiligten Lehrkräften. Zur Exploration der Perspektive und der Erfahrungen von Mentor\*innen [Tasks, goals, and mentoring strategies of teachers mentoring during long-term internships. An exploration of perspectives and experiences from mentors]. *PFLB - Praxisforschung/Lehrer\*innen Bildung*, 3(1), 104–113. <https://doi.org/10.11576/pflb-4541>
- Caruso, C., & Goller, M. (2021b). Das Praxissemester aus der Perspektive von Mentor\*innen: Aufgaben der Lernorte und wahrgenommene Veränderungsbedarfe [Mentors’ perspectives on long-term school internships: The role of different stakeholders in teacher students’ professional development as well as perceived needs for change]. *Lehrerbildung auf dem Prüfstand*, 14(2), 5–9
- Carver, C. L., & Katz, D. S. (2004). Teaching at the boundary of acceptable practice. What is a new teacher mentor to do? *Journal of Teacher Education*, 55(5), 449–462. <https://doi.org/10.1177/0022487104269524>
- Chambers, G. N. (2013). The target language revisited. *Teaching and Teacher Education*, 36, 44–54. <https://doi.org/10.1016/j.tate.2013.07.003>
- Chaplain, R. P. (2008). Stress and psychological distress among trainee secondary teachers in England. *Educational Psychology*, 28(2), 195–209. <https://doi.org/10.1080/01443410701491858>
- Chory, R. M., Horan, S. M., & Houser, M. L. (2017). Justice in the higher education classroom: Students’ perceptions of unfairness and responses to instructors. *Innovative Higher Education*, 42(4), 321–336. <https://doi.org/10.1007/s10755-017-9388-9>
- Collie, R. J., & Mansfield, C. F. (2022). Teacher and school stress profiles: A multilevel examination and associations with work-related outcomes. *Teaching and Teacher Education*, 116, 103759. <https://doi.org/10.1016/j.tate.2022.103759>

- Collie, R. J., Martin, A. J., Morin, A. J. S., Malmberg, L.-E., & Sammons, P. (2021). A multilevel person-centered examination of teachers' workplace experiences: Replication and extension with links to instructional support and achievement. *Frontiers in Psychology, 12*, 711173. <https://doi.org/10.3389/fpsyg.2021.711173>
- Colquitt, J. A. (2001). On the dimensionality of organizational justice: A construct validation of a measure. *Journal of Applied Psychology, 86*, 386–400. <https://doi.org/10.1037/0021-9010.86.3.386>
- Courtney, S. A., Austin, C. K., & Zolfaghari, M. (2023). International perspectives on teacher induction: A systematic review. *Teaching and Teacher Education, 125*, 104047. <https://doi.org/10.1016/j.tate.2023.104047>
- Cramer, C. (2020). Kohärenz und Relationierung in der Lehrerinnen- und Lehrerbildung [Coherence and relationing in teacher education]. In C. Cramer, M. Rothland, J. König, & S. Blömeke (Eds.), *Handbuch Lehrerinnen- und Lehrerbildung* (pp. 269–279). Klinkhardt. <https://doi.org/10.35468/hblb2020-031>
- Darius, S., Bunzel, K., Ehms-Ciechanowicz, E., & Böckelmann, I. (2021). Psychische Gesundheit bei Referendaren [Mental health among student teachers]. *Prävention Und Gesundheitsförderung, 16*, 215–224. <https://doi.org/10.1007/s11553-020-00809-6>
- Darling-Hammond, L. (2014). Strengthening clinical preparation: The holy grail of teacher education. *Peabody Journal of Education, 89*(4), 547–561. <https://doi.org/10.1080/0161956X.2014.939009>
- Darling-Hammond, L. (2017). Teacher education around the world: What can we learn from international practice? *European Journal of Teacher Education, 40*(3), 291–309. <https://doi.org/10.1080/02619768.2017.1315399>
- Davis, L. E., Ajzen, I., Saunders, J., & Williams, T. (2002). The decision of African American students to complete high school: An application of the theory of planned behavior. *Journal of Educational Psychology, 94*(4), 810–819. <https://doi.org/10.1037/0022-0663.94.4.810>
- Dicke, T., Holzberger, D., Kunina-Habenicht, O., Linninger, C., Schulze-Stocker, F., Seidel, T., Terhart, E., Leutner, D., & Kunter, M. (2016). 'Doppelter Praxischock' auf dem Weg ins Lehramt? Verlauf und potenzielle Einflussfaktoren emotionaler Erschöpfung während des Vorbereitungsdienstes und nach dem Berufseintritt ['Double reality shock' when becoming a teacher? The development and potential influencing factors of emotional exhaustion during teacher induction time, and after having worked as fully licensed teacher]. *Psychologie in Erziehung Und Unterricht, 63*(4), 244–257. <https://doi.org/10.2378/peu2016.art20d>
- Donat, M., Radant, M., & Dalbert, C. (2017). Psychologie der Schülerpersönlichkeit [Psychology of the student personality]. In M. K. W. Schweer (Ed.), *Lehrer-Schüler-Interaktion. Inhaltsfelder, Forschungsperspektiven und methodische Zugänge* (pp. 167–189). Springer. [https://doi.org/10.1007/978-3-658-15083-9\\_7](https://doi.org/10.1007/978-3-658-15083-9_7)
- Ellis, N. J., Alonzo, D., & Nguyen, H. T. M. (2020). Elements of a quality pre-service teacher mentor: A literature review. *Teaching and Teacher Education, 92*, 103072. <https://doi.org/10.1016/j.tate.2020.103072>
- Federičová, M. (2021). Teacher turnover: What can we learn from Europe? *European Journal of Education, 56*(1), 102–116. <https://doi.org/10.1111/ejed.12429>
- Ferguson, S. L., G. Moore, E. W., & Hull, D. M. (2020). Finding latent groups in observed data: A primer on latent profile analysis in Mplus for applied researchers. *International Journal of Behavioral Development, 44*(5), 458–468. <https://doi.org/10.1177/0165025419881721>
- Fu, W., & Perry, P. O. (2020). Estimating the number of clusters using cross-validation. *Journal of Computational and Graphical Statistics, 29*(1), 162–173. <https://doi.org/10.1080/10618600.2019.1647846>
- García-Carmona, M., Marín, M. D., & Aguayo, R. (2019). Burnout syndrome in secondary school teachers: A systematic review and meta-analysis. *Social Psychology of Education, 22*(1), 189–208. <https://doi.org/10.1007/s11218-018-9471-9>
- Gardner, S. (2010). Stress among prospective teachers: A review of the literature. *Australian Journal of Teacher Education, 35*(8), 18–28. <https://doi.org/10.14221/ajte.2010v35n8.2>
- Goldhaber, D., Krieg, J., Theobald, R., & Goggins, M. (2022). Front end to back end: Teacher preparation, workforce entry, and attrition. *Journal of Teacher Education, 73*(3), 253–270. <https://doi.org/10.1177/00224871211030303>
- Gray, C., Wright, P., & Pascoe, R. (2017). There's a lot to learn about being a drama teacher: Pre-service drama teachers' experience of stress and vulnerability during an extended practicum. *Teaching and Teacher Education, 67*, 270–277. <https://doi.org/10.1016/j.tate.2017.06.015>

- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2018). *Multivariate data analysis* (8th ed.). Cengage.
- Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology, 43*(6), 495–513. <https://doi.org/10.1016/j.jsp.2005.11.001>
- Harmsen, R., Helms-Lorenz, M., Maulana, R., & van Veen, K. (2018). The relationship between beginning teachers' stress causes, stress responses, teaching behaviour and attrition. *Teachers and Teaching, 24*(6), 626–643. <https://doi.org/10.1080/13540602.2018.1465404>
- Harrison, J., Dymoke, S., & Pell, T. (2006). Mentoring beginning teachers in secondary schools: An analysis of practice. *Teaching and Teacher Education, 22*(8), 1055–1067. <https://doi.org/10.1016/j.tate.2006.04.021>
- Helliwell, J. F., Huang, H., & Putnam, R. D. (2009). How's the job? Are trust and social capital neglected workplace investments? In V. Bartkus, & J. Davis (Eds.), *Social capital: Reaching out, reaching in* (pp. 87–144). Edward Elgar Publishing. <https://doi.org/10.1016/j.tate.2011.03.009>
- Helsper, W., & Hummerich, M. (2014). Die Lehrer-Schüler-Beziehung [The teacher-student relationship]. In C. Tillack, N. Fischer, D. Raufelder, & J. Fetzer (Eds.), *Beziehungen in Schule und Unterricht. Teil 1. Theoretische Grundlagen und praktische Gestaltungen pädagogischer Beziehungen* (pp. 32–59). Prolog. <https://doi.org/10.2307/j.ctvddzkhc.5>
- Helsper, W. (2004). Antinomien, Widersprüche, Paradoxien: Lehrerarbeit – ein unmögliches Geschäft? Eine strukturtheoretisch-rekonstruktive Perspektive auf das Lehrerhandeln [Antinomies, contradictions, paradoxes: Teacher work – an impossible business? A structural-theoretical-reconstructive perspective on teacher action]. In B. Koch-Priewe, F.-U. Kolbe, & J. Wildt (Eds.), *Grundlagenforschung und mikrodidaktische Reformansätze zur Lehrerbildung* (pp. 49–99). Klinkhardt.
- Hennissen, P., Crasborn, F., Brouwer, N., Korthagen, F., & Bergen, T. (2011). Clarifying pre-service teacher perceptions of mentor teachers' developing use of mentoring skills. *Teaching and Teacher Education, 27*(6), 1049–1058. <https://doi.org/10.1016/j.tate.2011.03.009>
- Herman, K. C., Hickmon-Rosa, J., & Reinke, W. M. (2018). Empirically derived profiles of teacher stress, burnout, self-efficacy, and coping and associated student outcomes. *Journal of Positive Behavior Interventions, 20*(2), 90–100. <https://doi.org/10.1177/1098300717732066>
- Hobfoll, S. E. (2002). Social and Psychological Resources and Adaptation. *Review of General Psychology, 6*(4), 307–324. <https://doi.org/10.1037/1089-2680.6.4.307>
- Hobson, A., & Malderez, A. (2013). Judgementoring and other threats to realizing the potential of school-based mentoring in teacher education. *International Journal of Mentoring and Coaching in Education, 2*(2), 89–108. <https://doi.org/10.1108/IJMCE-03-2013-0019>
- Hong, J. Y. (2012). Why do some beginning teachers leave the school, and others stay? Understanding teacher resilience through psychological lenses. *Teachers and Teaching, 18*(4), 417–444. <https://doi.org/10.1080/13540602.2012.696044>
- Horstmeyer, J. (2018). *Personen- und Organisationsmerkmale als Gelingensbedingungen im pädagogischen Vorbereitungsdienst. Eine Sekundäranalyse auf der Grundlage der Pädagogischen Entwicklungsbilanzen an Studienseminaren (PEB-Sem) in Hessen* [Personal and organizational characteristics as conditions for success in the pedagogical preparatory service. A secondary analysis based on the pedagogical development measures at study seminars (PDM-Sem) in Hesse] [PhD dissertation, Johann Wolfgang Goethe Universität zu Frankfurt am Main]. <http://publikationen.uni-frankfurt.de/frontdoor/index/index/docId/47022>
- Howe, E. R. (2006). Exemplary teacher induction: An international review. *Educational Philosophy and Theory, 38*, 287–297. <https://doi.org/10.1111/j.1469-5812.2006.00195.x>
- Hudson, P. (2016). Forming the mentor-mentee relationship. *Mentoring & Tutoring: Partnership in Learning, 24*(1), 30–43. <https://doi.org/10.1080/13611267.2016.1163637>
- Hudson, P., & Hudson, S. (2010). Mentor educators' understandings of mentoring preservice primary teachers. *The International Journal of Learning, 17*(2), 157–170.
- Hwang, S. (2022). Profiles of mathematics teachers' job satisfaction and stress and their association with dialogic instruction. *Sustainability, 14*, 6925. <https://doi.org/10.3390/su14116925>
- Ingersoll, R. M., & Smith, T. M. (2004). Do teacher induction and mentoring matter? *NASSP Bulletin, 88*(638), 28–40. <https://doi.org/10.1177/019263650408863803>
- Ingersoll, R. M., & Strong, M. (2011). The impact of induction and mentoring programs for beginning teachers: A critical review of the research. *Review of Educational Research, 81*(2), 201–233. <https://doi.org/10.3102/0034654311403323>



- Jaspers, W. M., Prins, F., Meijer, P. C., Mainhard, T., & Wubbels, T. (2022). Mentor teachers' intended intervening during student teachers' lessons: A vignette study in Dutch primary education. *Teaching and Teacher Education*, 103342. <https://doi.org/10.1016/j.tate.2021.103342>
- Jaspers, W. M., Meijer, P. C., Prins, F., & Wubbels, T. (2014). Mentor teachers: Their perceived possibilities and challenges as mentor and teacher. *Teaching and Teacher Education*, 44, 106–116. <https://doi.org/10.1016/j.tate.2014.08.005>
- Jones, M. (2001). Mentors' perceptions of their roles in school-based teacher training in England and Germany. *Journal of Education for Teaching*, 27(1), 75–94. <https://doi.org/10.1080/02607470120042555>
- Judge, T. A., Zhang, S., & Glerum, D. R. (2020). Job satisfaction. In V. I. Sessa, & N. A. Bowling (Eds.), *Essentials of job attitudes and other workplace psychological constructs* (pp. 207–241). Routledge. <https://doi.org/10.4324/9780429325755-11>
- Kam, C., Morin, A. J. S., Meyer, J. P., & Topolnytsky, L. (2016). Are commitment profiles stable and predictable? A latent transition analysis. *Journal of Management*, 42(6), 1462–1490. <https://doi.org/10.1177/0149206313503010>
- Kärner, T., Bonnes, C., & Schölzel, C. (2018). Konstruktives feedback und nachvollziehbare Leistungserwartungen? – Analysen zur wahrgenommenen bewertungstransparenz im referendariat [Constructive feedback and transparent performance expectations? - Analyses of perceived assessment transparency in teacher induction]. *Bildung und Beruf*, 1, 108–114
- Kärner, T., Bonnes, C., & Schölzel, C. (2019). Bewertungstransparenz im Referendariat [Assessment transparency in teacher training]. *Zeitschrift für Pädagogik*, 65(3), 378–400. <https://doi.org/10.25656/01:23948>
- Kärner, T., Weiß, J. K., & Heinrichs, K. (2021c). A social perspective on resilience: social support and dyadic coping in teacher training. *Empirical Research in Vocational Education and Training*, 13(24), 1–26. <https://doi.org/10.1186/s40461-021-00126-y>
- Kärner, T., Bottling, M., Friederichs, E., & Sembill, D. (2021b). Between adaptation and resistance: A study on resilience competencies, stress, and well-being in German VET teachers. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.619912>
- Kärner, T., Bonnes, C., Maué, E., Goller, M., & Schmidt, V. (2021a). Transparenz, Fairness, Vertrauen und Ambivalenz im Vorbereitungsdienst: Entwicklung eines Instruments zur Charakterisierung der professionellen pädagogischen Beziehung zwischen angehenden Lehrpersonen und deren Ausbildungslehrkräften [Transparency, fairness, trust, and ambivalence during teacher induction: Development of an instrument to characterise the professional pedagogical relationship between trainee teachers and their mentors]. In E. Wittmann, D. Frommberger, & U. Weyland (Eds.), *Jahrbuch der berufs- und wirtschaftspädagogischen Forschung 2021* (pp. 85–104). Budrich.
- Kärner, T., Goller, M., Bonnes, C., & Maué, E. (2022). Die professionelle pädagogische Beziehung zwischen Referendar\*innen und ihren Seminarlehrkräften: Belastungsfaktor oder Ressource? [The professional pedagogical relationship between trainee teachers and their mentors: stress factor or resource?]. *Zeitschrift für Erziehungswissenschaft*, 1–33. <https://doi.org/10.1007/s11618-022-01065-4>
- Kieschke, U., & Schaarschmidt, U. (2008). Professional commitment and health among teachers in Germany: A typological approach. *Learning and Instruction*, 18(5), 429–437. <https://doi.org/10.1016/j.learninstruc.2008.06.005>
- Kiper, H. (2014). Beziehungen in Schule und Unterricht [Relationships in school and classroom]. In C. Tillack, N. Fischer, D. Raufelder, & J. Fetzer (Eds.), *Beziehungen in Schule und Unterricht. Teil 1. Theoretische Grundlagen und praktische Gestaltungen pädagogischer Beziehungen* (pp. 11–31). Prolog. <https://doi.org/10.2307/j.ctvddzkhc>
- Košinár, J. (2013). Das Problem asymmetrischer Beziehungen für Kooperation im Referendariat [The problem of asymmetrical relationships for cooperation in the teacher traineeship]. In M. Keller-Schneider, S. Albisser, & J. Wissinger (Eds.), *Professionalität und Kooperation in Schulen. Beiträge zur Diskussion über Schulqualität* (pp. 227–244). Klinkhardt.
- Krüger, J. (2014). *Perspektiven Pädagogischer Professionalisierung: Lehrerbildner/-innen im Vorbereitungsdienst für das Lehramt an beruflichen Schulen* [Perspectives of pedagogical professionalization: Teacher educators in the traineeship for the teaching profession at vocational schools]. Springer VS.
- Kyriacou, C., & Sutcliffe, J. (1978). A model of teacher stress. *Educational Studies*, 4(1), 1–6. <https://doi.org/10.1080/0305569780040101>



- Langdon, F. J., Alexander, P. A., Ryde, A., & Baggetta, P. (2014). A national survey of induction and mentoring: How it is perceived within communities of practice. *Teaching and Teacher Education*, *44*, 92–105. <https://doi.org/10.1016/j.tate.2014.08.004>
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. McGraw-Hill.
- Le Maistre, C., Boudreau, S., & Paré, A. (2006). Mentor or evaluator? Assisting and assessing newcomers to the professions. *Journal of Workplace Learning*, *18*(6), 344–354. <https://doi.org/10.1108/13665620610682071>
- Lee, K., Carswell, J. J., & Allen, N. J. (2000). A meta-analytic review of occupational commitment: Relations with person- and work-related variables. *Journal of Applied Psychology*, *85*(5), 799–811. <https://doi.org/10.1037/0021-9010.85.5.799>
- Lee, S. J. (2007). The relations between the student–teacher trust relationship and school success in the case of Korean middle schools. *Educational Studies*, *33*(2), 209–216. <https://doi.org/10.1080/03055690601068477>
- Leshem, S. (2012). The many faces of mentor–mentee relationships in a pre-service teacher education programme. *Creative Education*, *3*(4), 413–421. <https://doi.org/10.4236/ce.2012.34065>
- Liu, S., & Onwuegbuzie, A. J. (2012). Chinese teachers' work stress and their turnover intention. *International Journal of Educational Research*, *53*, 160–170. <https://doi.org/10.1016/j.ijer.2012.03.006>
- Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the number of components in a normal mixture. *Biometrika*, *88*, 767–778. <https://doi.org/10.1093/biomet/88.3.767>
- Lohaus, A., Eschenbeck, H., Kohlmann, C.-W., & Klein-Heßling, J. (2018). *Fragebogen zur Erhebung von Stress und Stressbewältigung im Kindes- und Jugendalter (SSKJ 3-8)*. Vollständig überarbeitete, erweiterte und neu normierte Auflage [Questionnaire on the survey of stress and stress management in childhood and adolescence (SSKJ 3-8)]. Hogrefe.
- Looser, D. (2019). Die Bedeutung der Lehrer-Schüler-Beziehung für die Lern- und Leistungsmotivation von Schülern. Erziehungskompetente Lehrer aus der Perspektive der Selbstbestimmungs- und Erziehungstiltheorie [The importance of the teacher–student relationship for students' motivation to learn and achieve. Educationally competent teachers from the perspective of self-determination and educational style theory]. In U. Herrmann (Ed.), *Pädagogische Beziehungen: Grundlagen – Praxisformen – Wirkungen* (pp. 100–112). Beltz.
- Lunsmann, C. J., Beck, J. S., Riddle, D. R., Scott, C. E., & Adkins, A. B. (2019). Extending the apprenticeship of observation: How mentee experiences shape mentors. *Mentoring & Tutoring*, *27*(3), 342–363. <https://doi.org/10.1080/13611267.2019.1631004>
- Maier, G. W., Streicher, B., Jonas, E., & Woschéc, R. (2007). Gerechtigkeitseinschätzungen in Organisationen. Die Validität einer deutschsprachigen Fassung des Fragebogens von Colquitt (2001) [Justice assessments in organizations. The validity of a German-language version of Colquitt's questionnaire (2001)]. *Diagnostica*, *53*(2), 97–108. <https://doi.org/10.1026/0012-1924.53.2.97>
- Manning, C., & Hobson, A. J. (2017). Judgemental and developmental mentoring in further education initial teacher education in England: Mentor and mentee perspectives. *Research in Post-Compulsory Education*, *22*(4), 574–595. <https://doi.org/10.1080/13596748.2017.1381377>
- Maslach, C., & Jackson, S. E. (1981). Maslach burnout inventory. *Consulting Psychologists Press*. <https://doi.org/10.1037/t05190-000>
- McLachlan, G. J. (1987). On bootstrapping the likelihood ratio test statistic for the number of components in a normal mixture. *Applied Statistics*, *36*, 318–324. <https://doi.org/10.2307/2347790>
- Metzner, B. S., & Bean, J. P. (1987). The estimation of a conceptual model of nontraditional undergraduate student attrition. *Research in Higher Education*, *27*(1), 15–38. <https://doi.org/10.1007/BF00992303>
- Michels, T., Albert, I., & Ferring, D. (2011). Psychologische Ambivalenz in Eltern-Kind-Beziehungen. Entwicklung und teststatistische Überprüfung eines Instrumentes zur direkten Konstruktabbildung [Psychological ambivalence in parent–child relations: On the development and the psychometric evaluation of a questionnaire for direct assessment]. *Diagnostica*, *57*(1), 39–51. <https://doi.org/10.1026/0012-1924/a000031>
- Munderloh, O. (2018). *Das Referendariat aus der Sicht der Referendar/innen. Eine ländervergleichende Studie der zweiten Phase der Lehrerausbildung an berufsbildenden Schulen* [The teacher traineeship from the perspective of the trainee teachers. A comparative study of the second phase of teacher training at vocational schools in the German federal states]. Beltz.
- Muthén, L. K., & Muthén, B. O. (2011). *Mplus user's guide* (8th ed.). Muthén and Muthén.

- Opdenakker, M.-C., & Van Damme, J. (2006). Teacher characteristics and teaching styles as effectiveness enhancing factors of classroom practice. *Teaching and Teacher Education*, 22(1), 1–21. <https://doi.org/10.1016/j.tate.2005.07.008>
- Platz, M. (2021). Trust between teacher and student in academic education at school. *Journal of Philosophy of Education*, 55(4–5), 688–697. <https://doi.org/10.1111/1467-9752.12560>
- Pomaki, G., DeLongis, A., Frey, D., Short, K., & Woehrl, T. (2010). When the going gets tough: Direct, buffering and indirect effects of social support on turnover intention. *Teaching and Teacher Education*, 26(6), 1340–1346. <https://doi.org/10.1016/j.tate.2010.03.007>
- Prenzel, A. (2019). Pädagogische Beziehungen zwischen Anerkennung, Verletzung und Ambivalenz [Pedagogical relationships between recognition, violation and ambivalence]. Barbara Budrich. <https://doi.org/10.2307/j.ctvdf0dnv>
- R Core Team. (2021). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. <https://www.R-project.org/>.
- Rausch, A., Goller, M., & Steffen, B. (2022). Uncovering informal workplace learning by using diaries. In M. Goller, E. Kyndt, S. Paloniemi, & C. Damşa (Eds.), *Methods for researching professional learning and development: Challenges, applications, and empirical illustrations*. Springer.
- Rhodes, J. E., Liang, B., & Spencer, R. (2009). First do no harm: Ethical principles for youth mentoring relationships. *Professional Psychology: Research and Practice*, 40(5), 452–458. <https://doi.org/10.1037/a0015073>
- Richter, D., Kunter, M., Lüdtke, O., Klusmann, U., Anders, Y., & Baumert, J. (2013). How different mentoring approaches affect beginning teachers' development in the first years of practice. *Teaching and Teacher Education*, 36, 166–177. <https://doi.org/10.1016/j.tate.2013.07.012>
- Rippon, J. H., & Martin, M. (2006). What makes a good induction supporter? *Teaching and Teacher Education*, 22, 84–99. <https://doi.org/10.1016/j.tate.2005.07.004>
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Saks, A. M., & Gruman, J. A. (2021). Employee engagement. In V. I. Sessa, & N. A. Bowling (Eds.), *Essentials of job attitudes and other workplace psychological constructs* (pp. 242–271). Routledge. <https://doi.org/10.4324/9780429325755-12>
- Sann, U. (2003). Job conditions and wellness of German secondary school teachers. *Psychology & Health*, 18(4), 489–500. <https://doi.org/10.1080/0887044031000147210>
- Sappa, V., Boldrini, E., & Barabasch, A. (2019). Teachers' resilience in vocational education and training (VET). In S. McGrath, M. Mulder, J. Papier, & R. Stuart (Eds.), *Handbook of vocational education and training: Developments in the changing world of work* (pp. 1667–1684). Springer. [https://doi.org/10.1007/978-3-319-94532-3\\_28](https://doi.org/10.1007/978-3-319-94532-3_28)
- Satorra, A., & Bentler, P. M. (1994). Corrections to test statistics and standard errors in covariance structure analysis. In A. von Eye & C. C. Clogg (Eds.), *Latent variables analysis: Applications to development research* (pp. 399–419). SAGE Publications.
- Schaufeli, W. B., & Bakker, A. B. (2004a). UWES: Utrecht work engagement scale. Preliminary manual (Vol. 1.1). University of Utrecht. [https://www.wilmarschaufeli.nl/publications/Schaufeli/Test%20Manuals/Test\\_manual\\_UWES\\_English.pdf](https://www.wilmarschaufeli.nl/publications/Schaufeli/Test%20Manuals/Test_manual_UWES_English.pdf).
- Schaufeli, W. B., & Bakker, A. B. (2004b). Job demands, job resources, and their relationship with burn-out and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25(3), 293–315. <https://doi.org/10.1002/job.248>
- Schubarth, W., Speck, K., & Seidel, A. (2007). *Endlich Praxis! Die zweite Phase der Lehrerbildung. Potsdamer Studien zum Referendariat [Practice at last! The second phase of teacher training. Potsdam studies on the teacher traineeship]*. Lang.
- Schulte, M. (2008). *Das Studienseminar. Die Ausbildung im Studienseminar (Gymnasium & Gesamtschule) aus der Perspektive der Referendare [The Studienseminar. Training in the Studienseminar (Gymnasium & Gesamtschule) from the perspective of the trainee teachers]* [PhD dissertation]. Universität Siegen.
- Schweer, M. K. W. (2008). Vertrauen im Klassenzimmer [Trust in the classroom]. In M. K. W. Schweer (Ed.), *Lehrer-Schüler-Interaktion. Inhaltsfelder, Forschungsperspektiven und methodische Zugänge* (pp. 546–564). Springer VS. [https://doi.org/10.1007/978-3-531-91104-5\\_22](https://doi.org/10.1007/978-3-531-91104-5_22)
- Schweer, M. K. W., Thies, B., & Lachner, R. P. (2017). Soziale Wahrnehmungsprozesse und unterrichtliches Handeln. Eine dynamisch transaktionale Perspektive [Social perceptual processes and instructional action. A dynamic transactional perspective]. In M. K. W. Schweer (Ed.), *Lehrer-Schüler*

- Interaktion. Inhaltsfelder, Forschungsperspektiven und methodische Zugänge* (pp. 121–145). Springer VS. [https://doi.org/10.1007/978-3-658-15083-9\\_5](https://doi.org/10.1007/978-3-658-15083-9_5)
- Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education*, 27(6), 1029–1038. <https://doi.org/10.1016/j.tate.2011.04.001>
- Skaalvik, E. M., & Skaalvik, S. (2016). Teacher stress and teacher self-efficacy as predictors of engagement, emotional exhaustion, and motivation to leave the teaching profession. *Creative Education*, 7(13), 1785–1799. <https://doi.org/10.4236/ce.2016.713182>
- Sparr, J. L., & Sonnentag, S. (2008). Fairness perceptions of supervisor feedback, LMX, and employee well-being at work. *European Journal of Work and Organizational Psychology*, 17(2), 198–225. <https://doi.org/10.1080/13594320701743590>
- Spurk, D., Hirschi, A., Wang, M., Valero, D., & Kauffeld, S. (2020). Latent profile analysis: A review and ‘how to’ guide of its application within vocational behavior research. *Journal of Vocational Behavior*, 120, 103445. <https://doi.org/10.1016/j.jvb.2020.103445>
- Struyven, K., & Vanthournout, G. (2014). Teachers’ exit decisions: An investigation into the reasons why newly qualified teachers fail to enter the teaching profession or why those who do enter do not continue teaching. *Teaching and Teacher Education*, 43, 37–45. <https://doi.org/10.1016/j.tate.2014.06.002>
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Pearson.
- Terhart, E. (2000). *Perspektiven der Lehrerbildung in Deutschland: Abschlussbericht der von der Kultusministerkonferenz eingesetzten Kommission* [Prospects for teacher education in Germany: Final report of the commission appointed by the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany]. Beltz.
- Terhart, E. (2020). Lehrerinnen- und Lehrerbildung für die allgemeinbildenden Schulen (schul- und stufenspezifische Lehramtstypen) [Teacher education for general education schools (school- and level-specific types of teachers)]. In C. Cramer, M. Rothland, J. König, & S. Blömeke (Eds.), *Handbuch Lehrerinnen- und Lehrerbildung* (pp. 247–255). Klinkhardt.
- Tillema, H. H., Smith, K., & Leshem, S. (2011). Dual roles – conflicting purposes: A comparative study on perceptions on assessment in mentoring relations during practicum. *European Journal of Teacher Education*, 34(2), 139–159. <https://doi.org/10.1080/02619768.2010.543672>
- Upadaya, K., Toyama, H., & Salmela-Aro, K. (2021). School Principals’ Stress Profiles During COVID-19, Demands, and Resources. *Frontiers in Psychology*, 12, 731929. <https://doi.org/10.3389/fpsyg.2021.731929>
- Van der Doef, M., & Maes, S. (1999). The Leiden Quality of Work Questionnaire: Its construction, factor structure, and psychometric qualities. *Psychological Reports*, 85(3), 954–962. <https://doi.org/10.2466/pr0.1999.85.3.954>
- Van Droogenbroeck, F., & Spruyt, B. (2016). I ain’t gonna make it. Comparing job demands-resources and attrition intention between senior teachers and senior employees of six other occupational categories in Flanders. *The International Journal of Aging and Human Development*, 83(2), 128–155. <https://doi.org/10.1177/0091415016647729>
- Voss, T., & Kunter, M. (2020). ‘Reality shock’ of beginning teachers? Changes in teacher candidates’ emotional exhaustion and constructivist-oriented beliefs. *Journal of Teacher Education*, 71(3), 292–306. <https://doi.org/10.1177/0022487119839700>
- Wang, J. (2019). Teacher mentoring in service of beginning teachers’ learning to teach. Critical review of conceptual and empirical literature. In S. J. Zepeda, & J. A. Ponticell (Eds.), *The Wiley handbook of educational supervision* (pp. 281–306). Wiley Blackwell. <https://doi.org/10.1002/9781119128304.ch12>
- Wang, J., & Wang, X. (2012). *Structural equation modeling: Applications using Mplus*. John Wiley.
- Warwas, J. (2012). *Berufliches Selbstverständnis, Beanspruchung und Bewältigung in der Schulleitung [Professional self-concept, stress and coping in school leadership]*. VS. <https://doi.org/10.1007/978-3-531-19300-7>
- Warwas, J., Neubauer, J., & Panzer, E. (2016). Unterstützung und Beanspruchung im Referendariat aus der Perspektive angehender Berufsschullehrkräfte [Support and stress in the teacher traineeship from the perspective of prospective vocational school teachers]. *Zeitschrift Für Berufs- Und Wirtschaftspädagogik*, 112(2), 294–313.
- Westermann, R., Heise, E., Spies, K., & Trautwein, U. (1996). Identifikation und Erfassung von Komponenten der Studienzufriedenheit [Identification and recording of components of study satisfaction]. *Psychologie in Erziehung Und Unterricht*, 43, 1–22.

- WHO (2022). QD85 Burnout. In WHO (Eds.), *ICD-11 for mortality and morbidity statistics (Version 02/2022)*. World Health Organization. <https://icd.who.int/browse11/l-m/en#/http://id.who.int/icd/entity/129180281>.
- Ziegler, R. (2010). Ambiguität und Ambivalenz in der Psychologie. Begriffsverständnis und Begriffsverwendung [Ambiguity and ambivalence in psychology. Understanding and use of terms]. *Zeitschrift Für Literaturwissenschaft Und Linguistik*, *40*(2), 125–171.
- Zimmermann, L., Unterbrink, T., Pfeifer, R., Wirsching, M., Rose, U., Stöbel, U., Nübling, M., Buhl-Grießhaber, V., Frommhold, M., Schaarschmidt, U., & Bauer, J. (2012). Mental health and patterns of work-related coping behaviour in a German sample of student teachers: A cross-sectional study. *International Archives of Occupational and Environmental Health*, *85*(8), 865–876. <https://doi.org/10.1007/s00420-011-0731-7>
- Zsargo, E., & Palmer, J. F. (2019). Common understanding or 'hodgepodge'? The consistency and accuracy of school-based mentors' assessment of trainee primary teachers in England. *Teacher Education Advancement Network Journal*, *11*(2), 72–81.
- Zurlo, M. C., Pes, D., & Cooper, C. L. (2007). Stress in teaching: A study of occupational stress and its determinants among Italian schoolteachers. *Stress and Health*, *23*(4), 231–241. <https://doi.org/10.1002/smi.1141>

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.