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# The impact of mentor support and high-quality connections on student teachers' psychological safety and engagement during practicum

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**Introduction:** Teaching is a social profession, and learning to become a teacher involves social interactions. Previous research has predominantly focused on the role of mentor support when investigating the social support of student teachers during field experiences in teacher education. Much less attention has been paid to the social interactions that take place outside the mentor pairing between student teachers and other co-workers at practicum schools.

**Methods:** In this study, a longitudinal design was implemented to investigate how the experiences of mentor support and of high-quality connections outside the mentor–mentee pairing contributed to the psychological safety and engagement of 156 German student teachers during their practicum.

**Results:** The results show that social support from mentors predicts the engagement ( $\beta = 0.22$ ) and psychological safety ( $\beta = 0.25$ ) of student teachers to a similar extent. Furthermore, the analyses reveal that experiencing high-quality connections with school colleagues is equally associated with engagement ( $\beta = 0.20$ ). With a larger effect ( $\beta = 0.44$ ), the experience of high-quality connections predicts the psychological safety of student teachers. These findings suggest that creating a secure social foundation for the professional development of student teachers requires not only a dedicated mentor but also active involvement of the school staff.

**Discussion:** This research offers new insights into the impact of social connections within and beyond the mentor-mentee relationship, addressing a notable gap in previous studies that mainly focused on the mentor-mentee connection.

## KEYWORDS

student teacher, psychological safety, engagement, mentoring, high-quality connections, social support, practicum

## 1 Introduction

Practical phases during initial teacher education have gained importance and prevalence in teacher education curricula (Zeichner, 2012). These phases offer a valuable context for the professional development of pre-service teachers for several reasons. Firstly, they provide genuine insights into the intricate dynamics of schools, classrooms, and the teaching profession, grounding theoretical knowledge in practical reality (Cohen et al., 2013; Korthagen et al., 2001). Additionally, practical phases offer fertile ground for student teachers to conduct

systematic observations, assume the role of a teacher, and engage in teaching trials (Evelein et al., 2008). Moreover, these experiences are enriched by the interactions and guidance provided by experienced in-service teachers, which further stimulate student teachers' learning and professional growth (Weimer, 2021).

However, for field experiences to be meaningful and effective, active participation and specific learning behaviors from student teachers are imperative (Dreer, 2022). This paper posits that student teachers' exploratory learning behaviours during practical phases are hinged on two fundamental components. Firstly, there is a need for an environment that is safe, predictable, and controllable for both learning and working purposes (Dreer, 2020). Psychological safety, defined as 'a shared belief that the team is safe for interpersonal risk taking' (Edmondson, 1999, p. 354), encourages open communication, idea-sharing, and a willingness to experiment, all of which are vital for exploring new avenues or problem-solving. When student teachers feel psychologically safe, they are more likely to take risks and explore new ideas and possibilities (Gipe and Richards, 1992). This is because they have confidence that they will not face negative consequences, such as rude criticism or ridicule, for their exploratory actions. Therefore, psychological safety is often seen as an important predictor of collaboration and social learning (Boon et al., 2013; Tschannen-Moran, 2001; Vanmol et al., 2022).

The second important component of student teachers' exploratory learning behaviours during field experiences is engagement, a motivational concept that pertains to the voluntary distribution of one's personal resources towards specific roles and tasks (Christian et al., 2011). Engaged teachers are actively involved and invested in their work and tend to be more curious and motivated to explore and innovate (Konermann, 2012). Engaged student teachers are more likely to invest more effort, seek opportunities for improvement, and proactively explore alternatives to improve their performance (Cai et al., 2022).

Together, psychological safety and engagement create an environment where individuals are not only encouraged to explore but also have the motivation and support to do so. This synergy can lead to increased adaptability and the ability to navigate uncertain or challenging situations effectively, all of which are likely to be required of student teachers during their field experiences (Buckworth, 2017).

To promote both psychological safety and engagement during field experiences, social support plays a pivotal role (Ferrier-Kerr, 2009). It creates a nurturing environment where student teachers feel valued, validated, and secure in expressing themselves and taking risks. This consideration appears particularly important for members of the Generation Z, which includes individuals born from the late 1990s to the mid-2010s who are now undergoing teacher education and will dominate the teaching workforce in the near future (Carter, 2018). Members of this generation exhibit a strong inclination toward building vocational networks, working collaboratively in teams, and forming high-quality professional relationships with colleagues. They tend to value mentorship and peer support, understanding the importance of professional connections for career development and job satisfaction (Waworuntu et al., 2022). Moreover, Generation Z is accustomed to managing extensive networks and engaging in frequent, albeit brief (digital) interactions. Unlike previous generations, they have grown up with social media and digital communication tools, which shape their expectations and habits regarding social and professional interactions. This familiarity with

digital platforms enables them to maintain broader and more dynamic networks, facilitating rapid information exchange and continuous connectivity (Niven et al., 2015).

Although previous research has extensively focused on cooperating teachers and mentors as means to support student and beginning teachers during practical or induction phases, the role of social interactions outside the mentor-mentee pairing remains largely unclear (Clarke et al., 2014; Cohen et al., 2013; Lawson et al., 2015). In fact, it is often overlooked that student teachers establish not only relatively solid connections with mentors but also engage in casual connections with other members of the school staff. However, under specific circumstances, these brief encounters and conversations can be regarded as a source of social support. Therefore, this study investigates how mentoring support and social connections with other school staff contribute to psychological safety and engagement.

## 2 Impact of mentoring

In teacher education, mentoring often entails an experienced teacher – the mentor – and a student or beginning teacher – the mentee or protégé (Lofthouse and Thomas, 2014). Mentors are seen as crucial in bridging the gap between research, policy, and practice by mobilizing, translating, and sharing knowledge (Orland-Barak et al., 2024). According to previous research, mentor support plays an enormous role with regards to several desirable outcomes of student teachers' field experiences. Generally, mentors are seen as important gatekeepers enabling or limiting autonomy, access to resources, and possibilities of self-testing and exploration (Clarke et al., 2014; Valencia et al., 2009). Furthermore, they can support the socialization of future teachers by conveying the norms, standards, and expectations associated with teaching in general and with regards to a particular school (Feiman-Nemser, 2008; Wang and Odell, 2002). Receiving proper mentoring support is connected to certain outcomes of practical learning. For example, mentoring was shown to impact future teachers' professional development (Carter and Francis, 2001; Marable and Raimondi, 2007; Rajuan et al., 2008); knowledge generation (Mena et al., 2016); teaching capabilities, including classroom management skills; and time and workload management abilities (Lindgren, 2005; Malderez et al., 2007; Moor et al., 2005). Moreover, mentors were shown to offer emotional support with regards to self-esteem, confidence, morale, and job satisfaction (Bullough, 2005; Hayes, 2001; Lindgren, 2005; Marable and Raimondi, 2007), which in turn are linked to retention (Ingersoll and Smith, 2004; Johnson et al., 2005). In addition, it was reported that mentoring supports the well-being of beginning teachers, especially in cases of a positive mentor-mentee relationship (Kutsyuruba et al., 2019; Squires, 2019). Moreover, a supportive relationship and constructivist mentoring approaches were found to be predictive of student teachers' thriving during practical phases at schools (Burger et al., 2021; Dreer, 2021).

Mentoring in teacher education does not refer to one single standard practice; rather, it encompasses a range of approaches that vary in scope, responsibility, and impact (Clarke et al., 2014; Mena et al., 2016). At one end of the spectrum, some mentors act as mere classroom placeholders, providing limited guidance and primarily ensuring that student teachers have a space to practice. These mentors may focus on logistical support rather than actively shaping the

mentee's professional growth. On the other end, fully-fledged teacher educators engage in deep, reflective mentorship, fostering pedagogical development, critical thinking, and research-informed teaching practices. They take on the role of co-constructors of knowledge, actively bridging theory and practice to enhance the mentee's professional identity (Orland-Barak and Wang, 2020). Between these extremes, various hybrid models exist, where mentors may offer varying degrees of instructional support, feedback, and collaboration, depending on institutional structures, individual expertise and their motive for engaging in mentoring (Clarke and Mena, 2020).

Building on this spectrum of mentoring practices, it is essential to distinguish between formal and informal mentors in teacher education. While formal mentors are assigned to provide structured guidance based on defined roles, informal mentors emerge naturally, offering support rooted in personal relationships (Desimone et al., 2014). This distinction underscores the value of diverse perspectives in creating a comprehensive support system. Multilayered mentoring brings together these diverse perspectives by incorporating different stakeholders, such as school-based mentors, university supervisors, and peer mentors, each offering unique forms of guidance and support. Rather than relying on a single mentor's approach, multilayered mentoring highlights the importance and power of multiple voices, collaborative learning, and shared expertise in teacher education (Brinia and Psoni, 2018; Craig et al., 2024).

### 3 Impact of other social connections

When it comes to social connections between student teachers and school staff outside the traditional mentoring dyad, research-based knowledge is scarce. This assessment is supported by two comprehensive reviews on practicum research. The fact that preservice teachers' acquaintance with staff and school principals constituted a rare theme in previous research was first highlighted by Cohen et al. (2013) during their extensive review of research on the practicum in preservice teacher education. Accordingly, in a later review, Lawson et al. (2015) noted that no research has yet looked at social interactions outside the mentoring dyad. Ell et al. (2017) sought to identify influences on student teachers' learning during initial teacher education. They discovered that student teachers reported being influenced not only by the students in the classroom and their mentor teacher's beliefs but also by their teacher colleagues and school principals. Even though this study found that mentors are perceived as more influential than other school staff, these findings provide an initial indication of the relevance of school staff outside the mentoring dyad. This insight is further supported by a similar study showing that teaching colleagues at the practicum school are perceived to be very influential to student teachers' learning in teacher education (Ludlow et al., 2017). In contrast to the results uncovered by Ell et al. (2017), Ludlow et al. (2017) found school staff to be perceived as more influential than mentor teachers and pupils.

Although positive work relationships appear to be desirable, they also take time, effort, and leadership support to be built and sustained (Mastroianni and Storberg-Walker, 2014; Vangrieken et al., 2015). Systematic overviews of field experiences in Germany, where this present study took place, show that the duration of field experiences varies between universities, ranging from 40 to 121 days (Gröschner et al., 2015). The longest phase is the semester practicum, which typically

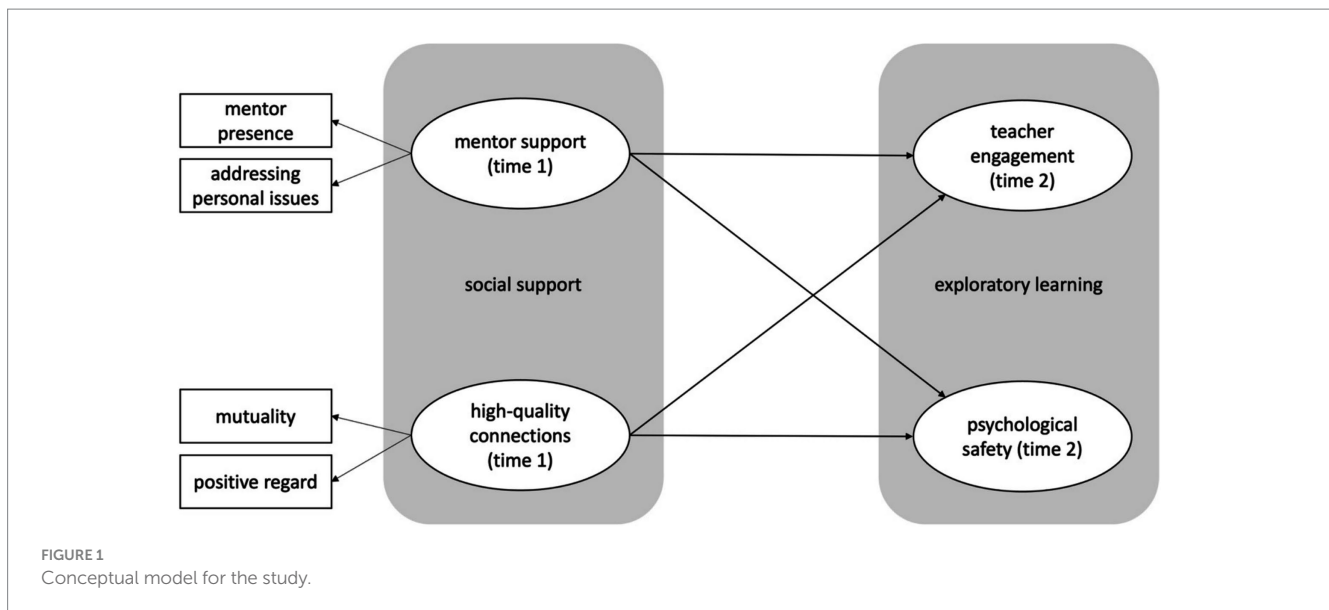
lasts 14–15 weeks (one semester). However, when weekdays are set aside for university courses and holidays are considered, even the longer practicums offer only a limited time frame for forming strong and lasting social connections. Given this limited timeframe, opportunities for informal mentoring or multilayered mentoring are scarce, leaving little room for the development of deeper social connections. Additionally, field experiences are often singular learning opportunities, with both parties aware that their collaboration may not extend beyond the practicum period. Because of this provisional nature and rather short duration of field experiences, student teachers and teaching staff might not always be able or willing to entertain and therefore benefit from long-term work relationships outside of the mentoring dyad. In fact, the complex nature of their experiences and the level of required support could encourage student teachers to focus mainly on their mentors' guidance (Hoffman et al., 2015). This focus highlights the brief interactions student teachers might have with other teaching staff. With the short duration of practicums limiting opportunities for long-term social connections, shorter interactions are far more likely to occur on a daily basis than sustained relationships. Therefore, it is crucial for research to examine their prevalence. Moreover, if these shorter interactions are in fact a common phenomenon during the practicum experience, their potential impact should be explored. Specifically, it could be investigated how they contribute to fulfilling student teachers' need for relatedness (Dreer, 2020) or how they provide support in situations where mentoring quality is lacking (Yuan, 2016).

High-quality connections constitute a special form of workplace interactions defined as 'small moments where both people experience positive regard, a sense of vitality and feel mutually able to participate in the interaction' (Dutton, 2017, p. 111). They have been further described as 'short-term, dyadic positive interactions at work', which are connected to an 'uplift felt when encountering someone who expresses genuine concern for how you are doing' (Stephens et al., 2012, p. 3). In that sense, high-quality connections differ from work relationships, as such connections can exert a positive impact on employees even if the interacting employees have never met before or know each other only briefly. Because it focusses on brief but potentially impactful interactions, the concept of high-quality connections is of interest for research on preservice teachers' field experiences. For the reasons stated above, student teachers are much more likely to experience short interactions with school staff than to form several long-term relationships in addition to their relationship with their mentor.

As to the impact of high-quality connections, research literature has suggested links between experiencing high-quality connections and well-being (Dutton, 2017), collaborative knowledge creation (Aarrestad et al., 2015), job performance (Chhajer and Dutta, 2021), psychological safety, and engaged learning (Carmeli et al., 2009).

### 4 Aims and research questions

As shown by previous research, both mentor support and high-quality connections appear to be connected to psychological safety and engagement. However, these results have been primarily obtained by researchers investigating either mentoring in the context of teacher education (e.g., Marable and Raimondi, 2007) or high-quality connections in the context of corporate settings (e.g., Carmeli et al., 2009). Both factors have not yet been investigated comprehensively



within the context of student teachers' field experiences. The aim of the present study was to address this longstanding research gap and to investigate both factors concurrently within the context of student teachers' field experiences. Based on previous findings, the conceptual model for this study (see Figure 1) posits that both mentor support and high-quality connections contribute to student teachers' engagement and psychological safety during practicum. The goal of this research was to support a better estimation of the differential contributions of both factors. Furthermore, this study aimed at exploring potential compensatory mechanisms with regards to the two sources, as previous research has discovered differential effects of different support sources (Syrotuik and D'Arcy, 1984). Therefore, the following three research questions were investigated:

- 1 How does mentoring support contribute to student teachers' psychological safety and engagement?
- 2 How do high-quality connections with colleagues at school contribute to student teachers' psychological safety and engagement?
- 3 Are there compensatory mechanisms of high-quality connections, such as in cases of poor mentoring support?

## 5 Methods

### 5.1 Participants

This study involved 156 student teachers from one German university (141 females, 15 males; ages 23 to 35,  $M = 24.72$ ,  $SD = 1.66$ ) who were enrolled in a Master of Education program for primary ( $n = 144$ ) or secondary ( $n = 12$ ) teaching. At the time of the study, participants were in their final year of a 2-year master's program, preparing to transition into the second phase (practical induction phase) of initial teacher education. In this last academic year, student teachers must complete a mandatory 15-week practicum in schools. This complex practicum involves working at schools 4 days a week, supplemented by lectures and workshops at the university 1 day a week. Data were

collected at two intervals: the beginning (4 weeks) and end (14 weeks) of the field experience. The data collection occurred as part of the coursework, resulting in a 100% retention rate across both intervals.

Ethics review and approval were not required for this study in accordance with the local legislation and institutional requirements valid at the time of data collection. The student teachers were treated in accordance with the code of ethics of the German Educational Research Association.<sup>1</sup> Additionally, they were informed about the research objectives, after which they provided their voluntary informed consent to participate in the study. The data were treated confidentially, and the anonymity of the participants was preserved at all times.

### 5.2 Instruments

To investigate the research questions, a total of four concepts needed to be operationalized for this study. Table 1 presents all included instruments, along with sample items and descriptive statistics for the sample.

Mentoring support was assessed using an instrument, which was adopted from the field of mentoring in medicine (Heeneman and de Grave, 2019). From the four available subscales, two subscales directly focusing on the perceived support were used: (1) mentor addressing personal issues and (2) mentor presence. This instrument has been effectively adapted and used in previous studies related to teacher education, demonstrating good internal consistency and showing plausible correlations with dimensions of student teacher well-being (e.g., Dreer, 2021). The measurement of high-quality connections drew on the conceptual framework put forth by Dutton and Heaphy (2003), which identifies two subjective experiences that define experiencing high-quality connections: (1) a sense of positive regard and (2) feelings of mutuality. Consequently, the experience of high-quality connections was measured using one subscale assessing positive regard (3 items)

<sup>1</sup> <https://www.dgfe.de/en/about-dgfe-gera/code-of-ethics>



TABLE 1 Overview of applied measurement scales.

Concept	Instrument, subscales (no. of items), <i>item example</i>	t1			t2		
		M	SD	$\alpha$	M	SD	$\alpha$
Mentor support	Dual-purpose questionnaire of mentoring (Heeneman and de Grave, 2019) (16)	3.74	0.74	0.87	3.34	0.76	0.90
	Mentor addressing personal issues (9) <i>The mentor pays attention to my emotional experiences in the workplace.</i>	3.30	0.91	0.82	3.68	0.98	0.82
	Mentor presence (7) <i>The mentor is readily available for contact.</i>	4.34	0.68	0.90	4.46	0.67	0.94
High-quality connections	High-quality connection scale (Carmeli et al., 2009) (7)	4.05	0.66	0.87	4.27	0.65	0.93
	Sense of positive regard (3) <i>I feel that my co-workers at school like me.</i>	3.98	0.67	0.78	4.22	0.72	0.84
	Mutuality (4) <i>There is a sense of empathy among my co-workers and myself.</i>	4.10	0.73	0.89	4.31	0.66	0.90
Psychological safety	Psychological Safety Scale (Edmondson, 1999) (7) <i>It is difficult to ask other teachers at this school for help. (reversed)</i>	4.15	0.56	0.71	4.25	0.56	0.69
Engagement	Engaged Teacher Scale (Klassen et al., 2013) (16)	4.48	0.30	0.79	4.54	0.33	0.86
	Cognitive engagement (4) <i>While teaching, I get absorbed in my work.</i>	4.34	0.43	0.70	4.39	0.44	0.70
	Emotional engagement (4) <i>I really put my heart into teaching.</i>	4.46	0.56	0.81	4.55	0.51	0.88
	Social engagement: students (4) <i>I connect well with my students.</i>	4.51	0.42	0.74	4.59	0.44	0.78
	Social engagement: colleagues (4) <i>I am accessible to my colleagues.</i>	4.60	0.42	0.72	4.63	0.40	0.70

and one subscale assessing mutuality (4 items) originally developed and tested by Carmeli et al. (2009). Psychological safety was assessed using Edmondson's (1999) 7-item psychological safety scale. Teacher engagement was measured using the 16-item and 4-factor engaged teacher scale developed and tested by Klassen et al. (2013).

All scales were translated into German and were adapted to the teaching practicum context. This included minor modifications to item wordings, such as replacing 'at work' with 'at practicum school'. Using the selected scales, two online surveys were created: one to measure mentoring support and high-quality connections during the first interval, and another to assess psychological safety and student teachers' engagement during the second interval. Items were assessed on a 5-point Likert scale ranging from 1 (*does not apply*) to 5 (*applies fully*). The internal consistencies of the scales as used in this study were adequate (see Table 1). Links to the German versions of both online surveys are available from the author upon request.

## 6 Results

### 6.1 Measurement models

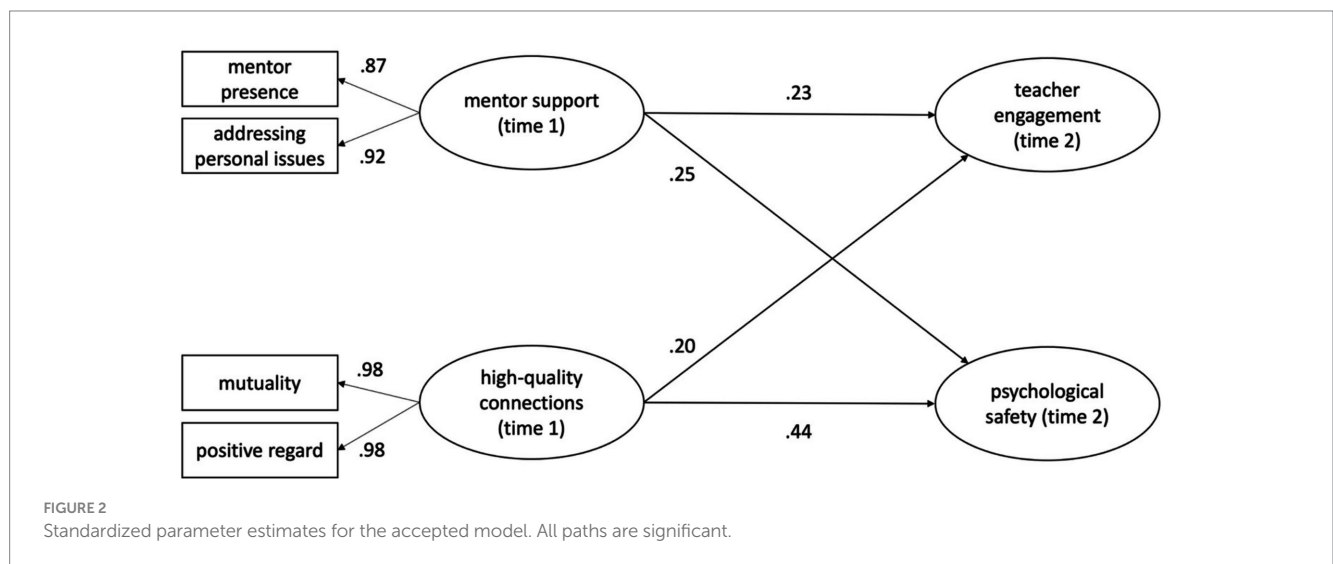
To analyze the data with regards to Research Questions 1 and 2, structural equation modelling was conducted to determine the fit of the hypothesized model. A two-step approach was applied

(Anderson and Gerbing, 1988). In the first step, confirmatory factor analyses (CFAs) were conducted for each latent variable (i.e., mentoring support, high-quality connections, psychological safety, and engagement). The goodness of model fit was assessed according to the guidelines provided by Hair et al. (2022). For mentoring support, CFA confirmed a 2-subfactor model, which in turn loaded on a higher order composite factor [ $\chi^2/df = 1.78$ , CFI = 0.960, RMSEA = 0.043 (CI 0.034–0.049); SRMR = 0.010]. A CFA for high-quality connections confirmed the theoretical structure of 7 items loading on a 2-subfactor model, which in turn loaded on a higher order job crafting factor with adequate model fit [ $\chi^2/df = 1.79$ , CFI = 0.950, RMSEA = 0.074 (CI 0.063–0.081); SRMR = 0.147]. With regards to engagement, CFA confirmed a 4-subfactor model, which in turn loaded on a higher order composite factor [ $\chi^2/df = 2.96$ , CFI = 0.96, RMSEA = 0.079 (CI 0.07–0.09); SRMR = 0.058]. The same applied to psychological safety, for which CFA confirmed a single latent variable with all 5 items with adequate model fit [ $\chi^2/df = 2.34$ , CFI = 0.959, RMSEA = 0.076 (CI 0.06–0.09); SRMR = 0.078]. Finally, within this first step, composite scores for mentoring support (with the subfactors personal mentoring and mentor presence), and high-quality connections (with the subfactors positive regard and mutuality), engagement, and psychological safety were computed. The results of the correlation analyses (see Table 2) indicated that mentor support and high-quality connections can be regarded as separate concepts, as most of their subfactors were only slightly correlated. Conversely, the subfactors belonging

TABLE 2 Correlations of variables at Intervals 1 and 2.

	1	2	3	4	5	6	7	8
01 mentor support composite (t1)	1	0.95**	0.82**	0.30**	0.27**	0.29**	0.30**	0.41**
02 mentor support – personal (t1)		1	0.61**	0.19*	0.17*	0.18**	0.28**	0.32**
03 mentor support – presence (t1)			1	0.43**	0.38**	0.42**	0.27**	0.45**
04 high quality connections composite (t1)				1	0.90**	0.96*	0.29**	0.56**
05 high quality connections – positive regard (t1)					1	0.74**	0.20*	0.45**
06 high quality connections – mutuality (t1)						1	0.31*	0.56**
07 engagement (t2)							1	0.33**
08 psychological safety (t2)								1

\* $p < 0.01$ ; \*\* $p < 0.001$ .



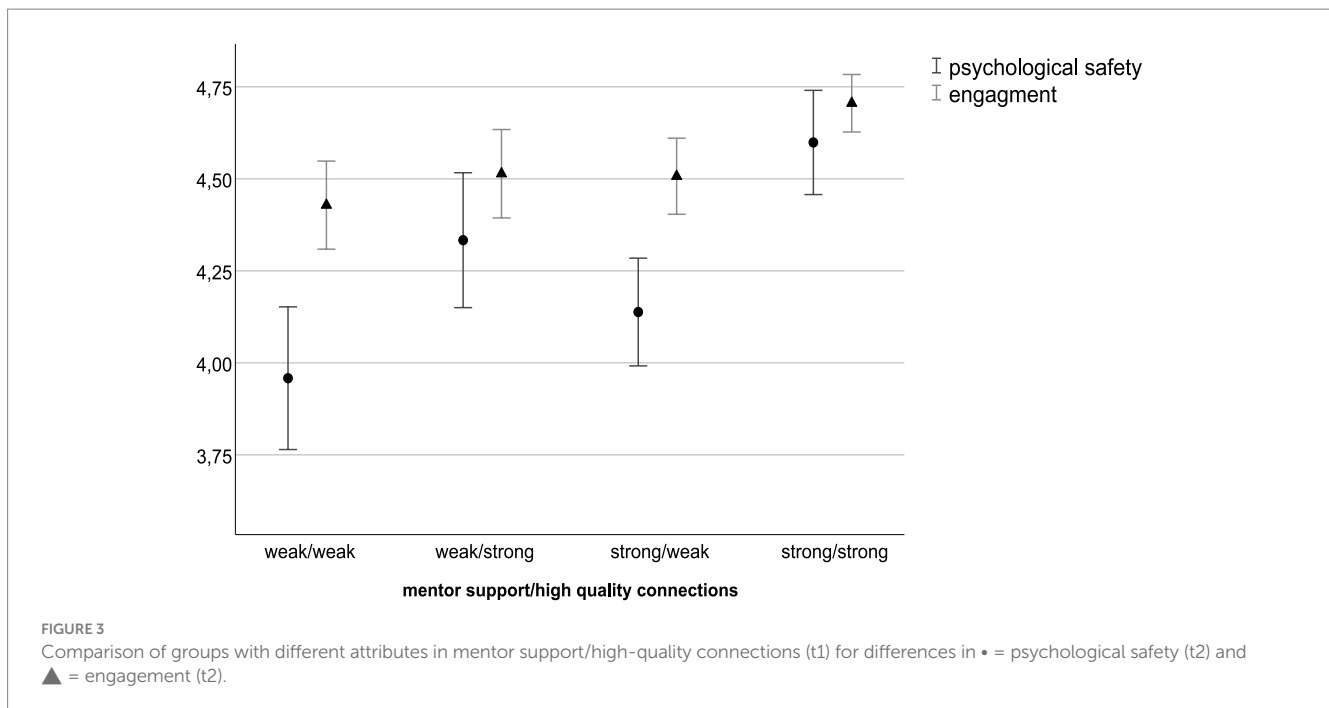
to each of the investigated concepts were interrelated at medium-to-high rates. The dependent variables of psychological safety and engagement showed a medium-sized correlative relationship.

### 6.2 Testing the hypothesized model

In the second step, the hypothesized model was tested. Fit indices demonstrated an adequate fit [ $\chi^2 = 5.70$ , NFI = 0.947; RMSEA = 0.080 (CI 0.05–0.09); SRMR = 0.045]. Figure 2 displays the direct standardized paths between variables. Student teachers’ engagement was predicted by mentor support ( $\beta = 0.23$ ,  $p = 0.003$ ) and high-quality connections outside the mentor pairing ( $\beta = 0.20$ ,  $p = 0.004$ ). Equally, psychological safety was predicted by mentor support ( $\beta = 0.25$ ,  $p = 0.001$ ) and high-quality connections outside the mentor pairing ( $\beta = 0.44$ ,  $p < 0.000$ ). These results suggest that mentor support and high-quality connections are both relevant factors for the psychological safety and engagement of student teachers during field experiences. Interestingly, the contribution of high-quality connections to psychological safety outweighed the contribution of mentoring support (see Figure 2).

### 6.3 Compensatory mechanisms

To investigate potential compensatory mechanisms (Research Question 3), the data were divided into four groups: individuals reporting (1) weak mentor support and weak high-quality connections ( $n = 42$ ), (2) weak mentor support and strong high-quality connections ( $n = 35$ ), (3) strong mentor support and weak high-quality connections ( $n = 36$ ), and (4) strong mentor support and strong high-quality connections ( $n = 43$ ). Cut-offs were determined using the median split procedure (DeCoster et al., 2011). Multivariate analysis of variance was conducted to determine the differences between those groups for engagement and psychological safety. As shown in Figure 3, student teachers in Group 1 displayed the lowest means, and student teachers in Group 4 showed the highest means in engagement ( $d_{4-1} = 0.86$ ) and psychological safety ( $d_{4-1} = 1.1$ ). Student teachers in Groups 2 and 3 showed means above the Group 1 and below the Group 4 thresholds. Interestingly, the group of student teachers reporting weak mentor support and strong high-quality connections (Group 2) had a significant advantage with regards to psychological safety when compared to Group 1 ( $d_{2-1} = 0.71$ ) and Group 3 ( $d_{2-3} = 0.46$ ). However, this pattern was not present with



engagement, where Groups 2 and 3 showed equal means. When conducting the same analyses with groups formed around the theoretical scale mean of  $M = 2.5$ , the overall results were similar. However, the group sizes differed significantly: the strong/strong group was much larger, while the strong/weak, weak/strong, and weak/weak groups were considerably smaller.

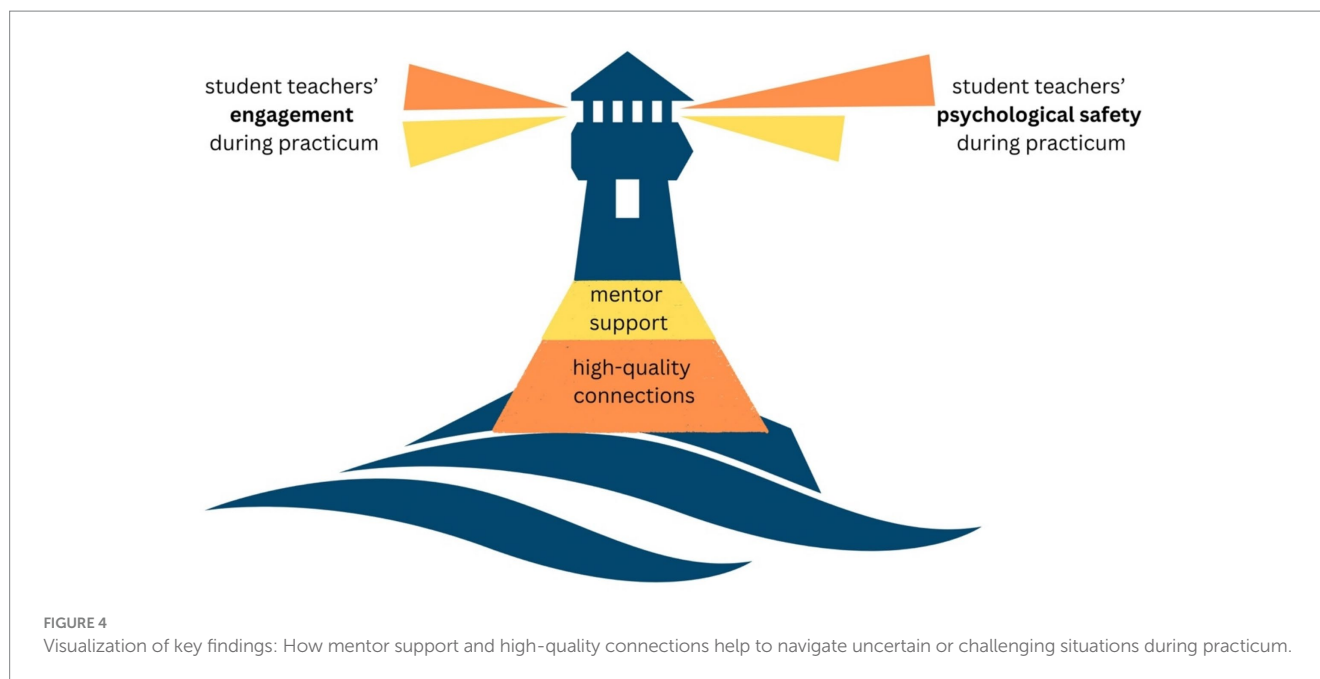
## 7 Discussion

Active behavior is required for student teachers to take advantage of the learning opportunities provided during field experiences (Dreer, 2022). This active behavior depends on student teachers having a secure foundation for their explorations (psychological safety) and the motivation to invest personal time and energy into exploring (engagement). Social support plays a crucial role in both elements, especially for Generation Z, who will be the future teaching workforce and are more accustomed to frequent, albeit often brief, interactions compared to previous generations. Generally, the results of this study show that the social support student teachers receive at the beginning is predictive of their learning behavior in the process of a 15-week practical phase at school. The finding that mentoring support contributes to engagement and psychological safety consolidates pertaining knowledge. Previous studies have established that support provided by mentors has a strong influence on how active and successful student teachers engage and learn in the field (e.g., Chun et al., 2012; Lofthouse and Thomas, 2014; Richter et al., 2013). Meanwhile, the results on high-quality connections considerably add to the pertaining knowledge base, as it was previously unclear, which role social support outside the traditional mentoring dyad plays in supporting student teachers' learning behaviors. In this respect, the outcomes of this study show that short positive interactions between student teachers and school staff contribute to student teachers' engagement as equally as mentor support. Notably, the contributions of high-quality connections with regards to student teachers'

psychological safety even exceeded those of mentor support (see Figure 4). The size of this larger effect appears plausible, as a previous study has reported a comparable effect size for the impact of high-quality connections on psychological safety, albeit with a sample of part-time students who were employed in organizations (Carmeli et al., 2009). In addition to these insights, the findings on compensatory mechanisms suggest that high-quality connections could help compensate for weak mentor support with regards to student teachers' psychological safety.

## 8 Limitations

The findings presented in this study are subject to certain limitations. Firstly, the data used in this study were gathered within the German teacher education system and involved student teachers from two specific school types. Because different collegial structures, work formats, and co-working cultures influence the ways in which connections are made and relationships are cultivated (Vangrieken et al., 2015), mentoring support and high-quality connections might vary with school types. However, in this study the subsample of secondary school student teachers was too small to reliably test these suspected differences. This limitation must be addressed in future research. Additionally, the study used a relatively small sample size overall, underscoring the need for further research to replicate these findings with teacher samples from various school types and countries. This limitation is particularly relevant given that Confirmatory Factor Analysis (CFA) was conducted with a sample of 156 students and a total of 46 items, which falls below the commonly recommended threshold of at least five responses per item. However, findings from Monte Carlo simulation studies (e.g., Ondé and Alvarado, 2020) suggest that CFA can still yield meaningful insights under certain conditions and caution against rigid adherence to conventional sample size rules. Instead, the authors emphasize the importance of considering additional factors such as the strength of



factor loadings and model fit when evaluating the validity of CFA results.

Another limitation arises from the choices made in the research design. In this study, there was a 10-week time gap between the two measurement intervals. Although this could be seen as a way to support the reliability of the findings, it could also be criticized as a period that is too long to accurately estimate realistic effect sizes (Dormann and Griffin, 2015). In defense of the chosen design, one could argue that this duration allows for observing changes over a significant period, which might be necessary to detect the long-term effects of mentoring support and high-quality connections on student teachers. The extended timeframe might also reduce the influence of short-term fluctuations and provide a more stable measure of the impact of mentoring relationships. Conversely, it can be argued that high-quality connections are volatile and may be quickly forgotten, which might lead to an underestimation of their true effects over such a long interval. To address this issue, future studies could increase the frequency of measurements and employ instruments designed to capture specific interactions as they occur. This approach could help better document these situations and provide a more accurate assessment of their impact on psychological safety and engagement among student teachers. By doing so, researchers might also gain deeper insights into the dynamic nature of mentoring relationships and their influence on student teacher development.

Another notable weakness of this study is its exclusive reliance on self-reported data. There might be more reliable methods for assessing most of this study's variables, such as direct observations of mentoring interactions, evaluations of student teacher behavior, or reports from supervisors. These alternative approaches will be incorporated into future research efforts to enhance the accuracy of effect estimation.

Lastly, although the findings indicated statistical significance, the effect sizes were generally modest. This suggests that there may be other pertinent factors to consider when predicting the psychological safety and engagement of student teachers. Future research might address this limitation by employing a more comprehensive design that encompasses additional variables such as

need fulfilment, perceived trust, support from leadership, quality of communication, and feedback.

## 9 Implications

Together, these findings highlight that mentoring alone cannot address all the crucial social needs of student teachers during practicum. To offer a stable social support system for the professional development of student teachers, it appears necessary for school staff to show a certain degree of commitment in addition to providing student teachers with a cooperating teacher or mentor. This conclusion is supported by previous publications that highlight the importance of the school context for the success of mentoring student teachers (Attard Tonna, 2019; Kuhn et al., 2022; Milton et al., 2020). In addition, this sentiment is echoed in the call to embed practical phases in school organizational culture and to get school communities involved in student teacher education (Cohen et al., 2013).

Building on the insights from this study, it is important to further explore the relationships between mentors and other school staff. Research suggests that teachers might engage in mentoring to overcome isolation and integrate better with their colleagues (Tomlinson et al., 2010). This raises the question of how both positive and negative interactions between mentor teachers and other staff might impact the mentoring support and high-quality connections perceived by student teachers. Moreover, this highlights the importance of developing tools to strengthen the professional ties between mentors and their colleagues, enabling mentors to receive the social support they need and, in turn, foster positive connections between their protégés and other school staff.

This study applied high-quality connections to teacher education, given the limited time for personal connections during field experiences. It found that brief interactions with school staff can benefit student teachers as much as more time-intensive mentoring practices. To capitalize on these insights, schools should be made aware of the positive effects of a climate of positive regard and interest



in student teachers. Furthermore, schools should be encouraged to take concrete steps to nurture high-quality connections among their staff. One influential approach is for school leadership to actively underscore the significance of these connections and to serve as models of the corresponding behaviors in their interactions with both staff and students (Dutton, 2017). Additionally, schools can implement practical strategies aimed at increasing the likelihood of the occurrence of high-quality connections. For instance, schools can establish routines designed to support incoming student teachers. These initiatives may encompass introductions, guided tours, and orientation sessions. Such measures could help to facilitate newcomers' integration and to aid existing school staff in familiarizing themselves with new faces. It is essential to underscore that the benefits arising from high-quality connections are not unidirectional. Consequently, investments in initiatives designed to cultivate these connections can yield advantages not only for student teachers but also for the broader enhancement of the collaborative culture within schools.

## Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

## Author contributions

BD-G: Writing – original draft, Writing – review & editing.

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