

Peer support among student teachers through close social bonds

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Abstract. This study explores the impact of peer support on 471 student teachers during the practicum phase, particularly how such support can influence their motivation and self-efficacy. Questionnaires were distributed to student teachers in Schleswig-Holstein, Germany, with all measures based on established scales. The survey was validated for internal consistency, resulting in a high response rate. Data were analysed using structural equation modelling, demonstrating an acceptable fit for the proposed model. The results indicate that motivation to become a teacher is the strongest predictor of peer support; altruistic motivation has a weaker correlation. Additionally, teacher self-efficacy during various practicum phases is positively associated with peer support, whereas perceived disciplinary issues in the classroom negatively impact instructional self-efficacy. These findings highlight the need for structured peer support systems in teacher education to enhance student teachers' experiences and for further research into the dynamics of peer relationships in educational settings.

Keywords: teacher education, peer support, self-efficacy

1. Introduction

The behaviour of student teachers can be classified into two types: expected, role-compliant behaviour that adheres to established standards, and individual, attitude-based behaviour. The latter is more elusive to define and assess because it incorporates elements such as emotional engagement and displaying a sense of responsibility toward students. These behaviours, which extend beyond the confines of professional duties, play a crucial role for both student teachers shaping their educator identity and experienced educators in building relationships with students and colleagues. This interplay of behaviours is particularly significant in schools that prioritise social justice [42]. Teachers who invest deeply in their interactions with others can positively

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influence the nurturing of quality in the educational environment. The practicum in teacher education can be viewed as a training arena for developing these skills [55].

While practising teachers can continually develop these behaviours through a high degree of identification with their workplace, that path is not typically open to student teachers, unless they are already employed part-time as substitute teachers. Empirical findings [61, 78, 79] also show that student teachers often identify more with their subjects of study than with the practical parts of their educational training. This effect is exacerbated by student perceptions of an inadequate link between theory and practice in university teacher education.

The schools where student teachers conduct their practice often face challenges in functioning as effective workplaces that foster the professionalism of supervising teachers [83]. For these schools to flourish, principals must embrace distributed leadership [41] to create a more collaborative and supportive environment. In this context, the knowledge base for transformational leadership serves as a valuable foundation for improving school practices [43].

While the various practicum phases offer opportunities to view and reflect on the school institution and the teaching profession more generally, their short durations and varied school settings often prevent student teachers from developing identity-forming connections to a specific school. The introduction of the practical semester at teaching universities in Schleswig-Holstein, with longer periods in one school, may have altered this (§ 13.2 of the LehrBG [50]). The social aspects of student teachers' interactions and the potential advantages are not explicitly part of university curricula but are implicitly encouraged through specific teaching, exchange, and examination formats. Generally, student teachers have intensive contact with their classmates throughout their studies. Because the practicum is typically challenging, it is reasonable to assume that positive relationships among participating students positively determine the experienced quality and individual benefits of that phase [32, 35, 40, 56, 69].

This is particularly important since student teachers will likely face a series of demanding teaching situations during their teaching practice and will need to manage them as appropriately as possible. Especially in reflecting on and processing such potentially critical situations, constructive support from peers can contribute significantly to students' personal growth. This fills a gap that school mentors and university lecturers cannot realistically address, as they operate in a non-evaluative space, unlike their peers who are being taught. This phenomenon of student teachers helping and supporting one another without formal responsibility for that role is referred to here as peer support and can manifest itself in various areas. For example, student teachers might need peer support due to genuine fears about dealing with students [9] or questions about the technical implementation of their ideas, including lesson preparation.

Personal support after challenging teaching situations (e.g., discipline problems or conflicts with mentors) also falls into this category. It is important to remember that student teachers receive feedback and often grades for their practicum performance from both school mentors and university lecturers. Therefore, many students might prefer discussing potential performance shortcomings with peers rather than highlighting these issues to evaluators, which could lead to lower grades. To address this behaviour, it might be helpful to reduce students' assessment anxiety during the learning process [9, 65]. Since learning occurs both individually and through social processes, targeted social support should be promoted [5, 25, 38].

Another aspect worth noting is knowledge transfer, which refers in this context to the process by which student teachers acquire relevant skills and expertise that make them more competent and productive in peer exchanges [70]. Evidence of peer

effects in various professional fields has been found [36], including schools, where professional knowledge among teachers can be shared through deliberate exchange among the faculty [55, 71]. Thus, as noted above, it is believed that peers can be an important source of support for student teachers, especially in potentially critical situations. The close social bonds formed can lead to both long-lasting friendships and positive impacts on professional development.

Overall, social factors during teacher training can have a crucial impact on performance and the quality of these practicum phases [53, 66, 74]. A suitably supportive climate for student teachers during their on-campus and practicum phases is expected to influence individual and team learning, cooperation, and professional development [38, 75]. What we refer to here as peer support through close social bonds can therefore be regarded as an often-overlooked feature of quality teacher education. Institutionalised cooperation among student teachers should be considered a mandatory part of the curriculum [33, 45, 82] so that peer cooperation might shift from individual behaviour to more role-compliant behaviour, though this remains uncertain and is still atypical in practice. The individual, attitude-based behaviour extends beyond externally facilitated forms of collaboration among student teachers and should be seen as intrinsic helpfulness, not initiated by external factors like lecturers or module contents. Nonetheless, relationships between student teachers and their instructors are critical for professionalisation [54]. This article investigates factors relevant to student teachers related to peer support through close social bonds, as mastering knowledge and skills by interacting with others significantly influences long-term performance [52, p. 650].

2. Teacher education in Schleswig-Holstein

In Germany, teacher education is regulated by state law. State ministries for education and science govern teacher training through study, training, and examination regulations. For this study, the relevant law is the Teacher Training Act of Schleswig-Holstein (LehrBG) [50], which includes teacher-specific university education (phase one), preparatory service (phase two), and continuing education (phase three), with each phase linked to the next. This study focuses on the second phase, preparatory service (§ 21), which is aimed at enhancing and deepening subject-specific and pedagogical knowledge, experience, and skills in close connection to teaching. In Schleswig-Holstein, this service lasts 18 months (§ 23), covering topics such as managing heterogeneity, inclusion, the basics of diagnostic promotion, continuous language education, and media literacy (§ 25). Schools are tasked with guiding, advising, and supporting trainee teachers (§ 26) through supervised and independent teaching and other school responsibilities.

3. Theoretical framework

Student teachers encounter significant challenges during their practicums, often finding that their roles differ greatly from those of established teachers [68]. Unlike school-engaged educators, student teachers typically lack formal authority, which can create a sense of imbalance in classroom dynamics. This lack of authority can lead to interactions that feel transactional. As a result, student teachers may struggle with classroom management and experience feelings of exhaustion or an inability to make progress [2].

Research indicates that student teachers often invest more time in teaching-related tasks during practicums than in their coursework. The complexity of teaching requires the simultaneous integration of several factors. Experienced teachers develop routines that ease cognitive load [27], while novice teachers frequently feel stress due to their

limited strategies [59].

In settings such as Schleswig-Holstein, two to four student teachers are assigned to the same school, allowing for peer observation and potential co-teaching. These collaborative environments provide opportunities for peer support, which can help address difficulties and enhance teaching outcomes [14]. *We hypothesise that the perception of discipline problems correlates positively with the level of peer support received (Hypothesis 1).*

Social networks play a crucial role in developing collaborative relationships among peers; a social network consists of individuals and their interactions [80]. Prior research suggests that strong reciprocal relationships positively influence collaborative efforts [18], and professional collaboration has been linked to better learning outcomes [15, 28, 58]. We believe establishing strong social networks among student teachers can enhance their collective efficacy [12, 19, 51].

Despite the potential for support from teaching instructors, their evaluative role may discourage candid discussions of difficulties. Conversely, peers offer an environment that fosters open communication and support. Peer interactions can take various forms, including assistance with teaching questions and emotional support after challenging situations [6]. Connecting with peers can significantly enhance the quality of teacher education [51]. Socially connected students tend to exchange ideas and build supportive relationships, which enhances their professional growth [39, 67]. Those lacking peer support often face greater challenges in their professional development.

Several factors influence levels of peer support among student teachers. Motivation plays a critical role. Student teachers may experience different types of motivation. *Intrinsic motivation, which is driven by personal satisfaction [21], is anticipated to have a positive correlation with peer support [62] (Hypothesis 2). We also hypothesise that the perception of discipline problems may be negatively correlated with intrinsic motivation (Hypothesis 3).*

Another relevant motivation category is achievement goal motivation, which is propelled by the desire for respect and validation from others. *We posit that achievement goal motivation is positively correlated with peer support [24] (Hypothesis 4). Moreover, we expect that a perception of discipline issues may be negatively correlated with achievement goal motivation (Hypothesis 5).*

Altruistic motivation can influence peer interactions, as both established teachers and student teachers often seek collaboration and support [8]. *We hypothesise a positive correlation between altruistic motivation and peer support [47] (Hypothesis 6) and an inverse correlation between discipline problem perception and altruistic motivation (Hypothesis 7).*

In summary, three motivation categories – intrinsic, performance-oriented, and altruistic – impact teacher behaviour. Furthermore, factors such as self-efficacy influence the extent of peer support. Teaching self-efficacy varies among student teachers [44]; low self-efficacy, which can be detrimental to their development, often stems from insufficient peer support [29]. Research indicates that those with higher self-efficacy tend to perform better than their peers [6, 49]. *Thus, we hypothesise that negative discipline issues adversely affect self-efficacy (Hypothesis 8).*

Liou et al. [52] found that closer peer support is associated with higher teaching performance assessments. *We thus propose that self-efficacy positively correlates with peer support (Hypothesis 9).* It is important to note that motivation also significantly influences self-efficacy, and *we anticipate a positive correlation between altruistic motivation and self-efficacy (Hypothesis 10), and that goal motivation correlates positively with self-efficacy (Hypothesis 11). Lastly, we suggest that intrinsic motivation is positively correlated with self-efficacy (Hypothesis 12).*

By developing a structured theoretical framework, this discussion highlights the critical interplay between motivation, peer support, and self-efficacy in shaping student teachers' experiences and professional development.

4. Methods

4.1. Procedure

An anonymous survey was distributed online among student teachers at two teacher education programs in Schleswig-Holstein, Germany; 471 student teachers answered the questions. Based on legal requirements, participation in surveys like this one must be voluntary for student teachers, a point clearly communicated during the data collection process, which local representatives conducted at the two universities. While no student openly declined to participate, we cannot entirely rule out the possibility that a few students chose not to return the questionnaires. However, the number of non-responses was likely minimal, and we believe it would not significantly impact the overall results of the study. The response rate for the study was high. We were also committed to ensuring that our research adhered to the ethical guidelines set forth by both institutions. This adherence was achieved through effective communication with institutional leaders. We obtained institutional ethical approval and collected informed consent from all participants, ensuring that the study met international ethical standards.

4.2. Instruments

The questionnaire was based on existing measures [34]. Student teachers responded to statements on a seven-point Likert scale, where four was neutral. The analysis used six concepts that had internal consistency based on Cronbach's alpha. The analysis revealed that the Cronbach's alpha for the intrinsic motivation scale was relatively low ($\alpha = .64$), which raises concerns regarding its internal consistency. While this value is below the commonly accepted threshold of 0.70, it is important to consider the context in which this scale was developed and used [17]. One reason for retaining the scale despite its suboptimal alpha is that it captures a multidimensional construct, reflecting various facets of intrinsic motivation. Each item may resonate differently with participants, and the variability in responses might actually reflect the diverse motivations present in the sample. Furthermore, some researchers suggest that context-specific scales naturally exhibit lower reliability due to the unique characteristics of the population being studied. At the same time, we acknowledge the importance of refining the scale to enhance its internal consistency. This could involve revising or removing certain items that do not align well with the overall construct or perhaps adding new items better tailored to the specific academic context of our participants. In light of these considerations, we propose to conduct follow-up studies that either validate the existing scale further or incorporate item revisions to ensure that we adequately capture the intricacies of intrinsic motivation while improving the scale's reliability.

All item wordings are presented in table 1.

5. Analysis

The analysis employed structural equation modelling (SEM) as described by Kline [46] and Brown [11] to analyse the relationships between variables. SEM is a statistical method used in research and data analysis to examine and quantify relationships between variables in a theoretical model. It provides a visual representation of dependent and independent variables about how different constructs are interconnected and how they collectively influence the observed data. SEM combines elements of

Table 1
Cronbach’s alpha, constructs, and items, $N = 474$.

Constructs	Items	Cronbach’s α
Intrinsic Motivation (adapted from Vallerand et al. [76]) I want to become a teacher because: It is exciting to teach. I want others to be interested in learning.	im w22 w23	.64
Achievement Goal Motivation (adapted from Archer [3]) It is important to me: to be admired by my peers. to be seen as the best in the study group.	pm w25 w26	.70
Altruistic Motivation (adapted from Roness [60]) It is important to me: to work with people. to help people who need support.	fg w29 w30	.74
Self-Efficacy in Cognitive Activation of Students (adapted from Skaalvik and Skaalvik [64]) To what extent do you manage: to motivate students with little interest in school matters? to make students believe they can do well in school? to inspire students to value learning?	en w6 w7 w8	.77
Perceived Discipline Problems During Practicum (adapted from Gray and Sime [31]) In your last practicum phase, you taught one or more classes. How often did the following occur during your teaching? Students disturbed their peers’ work. Students broke the class rules. Students made unnecessary noise. Students left their desks without permission.	pb w83 w86 w88 w90	.85
Peer Support through Close Social Bonds I voluntarily help other student teachers with teaching-related questions. I help other student teachers even if it is not my responsibility.	ocb w60 w61	.85

factor analysis and multiple regression analysis to allow researchers to test complex hypotheses about the relationships among manifest (observed) and latent (unobserved) variables. SEM is used to test whether a hypothesised model representing a theory about how variables are related fits well with the observed data.

Model-data fit was evaluated using root mean square error of approximation (RMSEA), Tucker-Lewis Index (TLI), goodness-of-fit index (GFI), and comparative fit index (CFI). $RMSEA < 0.05$ and $TLI, GFI, CFI > 0.95$ indicate good fit, while $RMSEA < 0.08$ and $TLI, GFI, CFI > 0.90$ indicate acceptable fit [46]. Structural models were estimated with IBM SPSS Amos 21. Following the benchmarks in Kline [46], values of RMSEA (0.028), TLI (0.984), GFI (0.975), and CFI (0.989) indicate that the structural model in figure 1 and figure 2 shows an acceptable fit to the data.

The results showed no association between perceived discipline problems and peer support (H1). The link between intrinsic motivation and peer support was also insignificant (H2). There was a negative link between perceived discipline problems and intrinsic motivation. Achievement goal motivation was significantly positively associated with peer support (H4). Perceived discipline problems had no link with achievement goal motivation (H5). Hypothesis 6, describing altruistic motivation

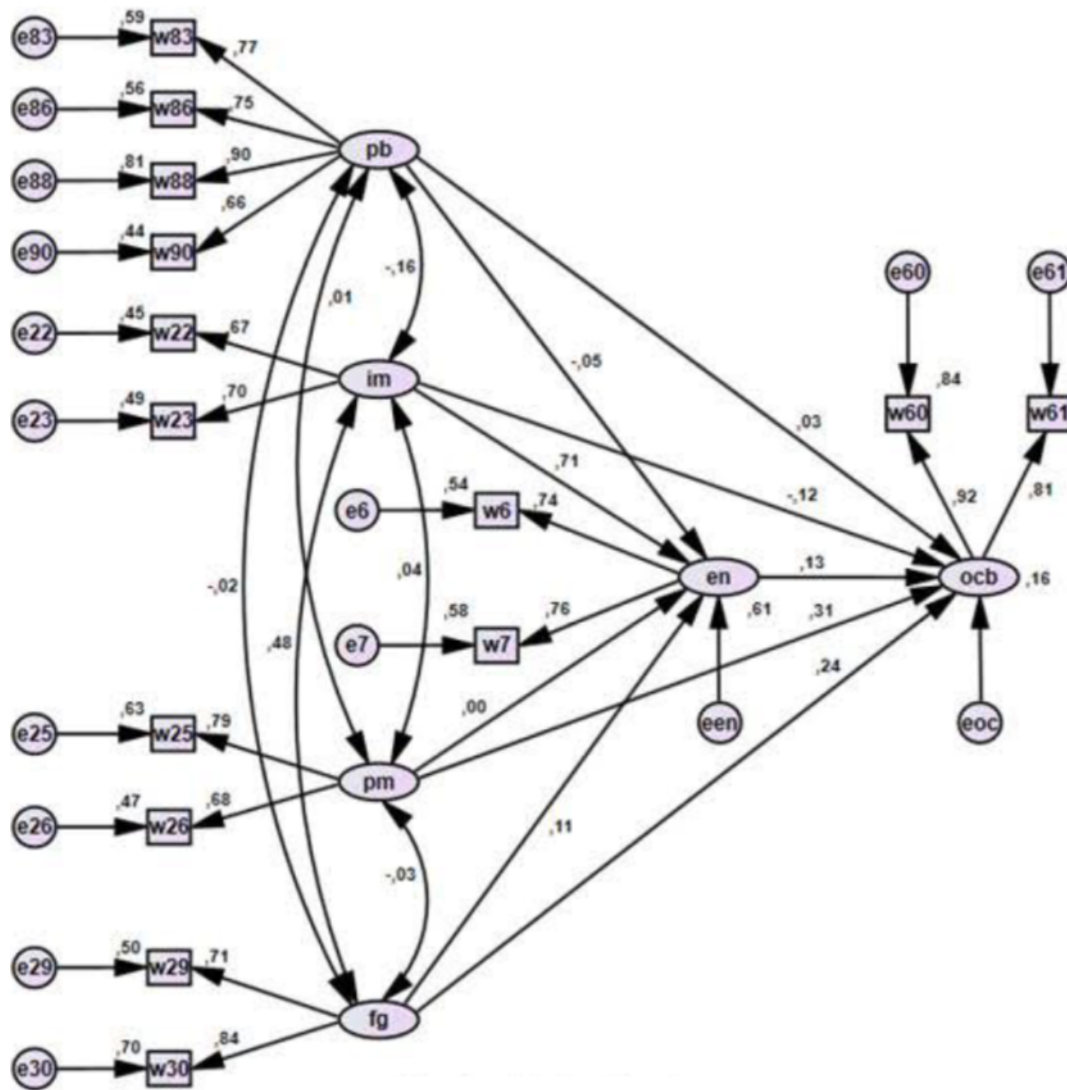


Figure 1: Structural model – maximum-likelihood estimation, $N = 481$.

Note: pb = perceived discipline problems; im = intrinsic motivation; pm = achievement goal motivation; fg = altruistic motivation; en = self-efficacy; ocb = peer support through close social bonds. * $p < .05$, ** $p < .01$

positively associated with peer support, was confirmed. Perceived discipline problems had no link with altruistic motivation (H7). Hypotheses 8 and 9 – perceived discipline problems weakly negatively correlated to teaching self-efficacy (H8), and self-efficacy related to peer support (H9) – were not supported. Altruistic motivation was significantly positively related to self-efficacy (H10) and intrinsic motivation (H12). Hypothesis 11, expecting achievement goal motivation to relate to self-efficacy, was not confirmed.

6. Discussion

This study focused on the antecedents of peer support among student teachers. The analysis revealed significant associations of achievement goal motivation (0.31) and altruistic motivation (0.24) with peer support. These statistical associations may not necessarily be causal but could indicate underlying two-way factors [46]. Goal achievement and altruistic motivations might be preconditions for peer support [8, 24]. Altruistic motivation reflects a willingness to help, which is a positive mechanism

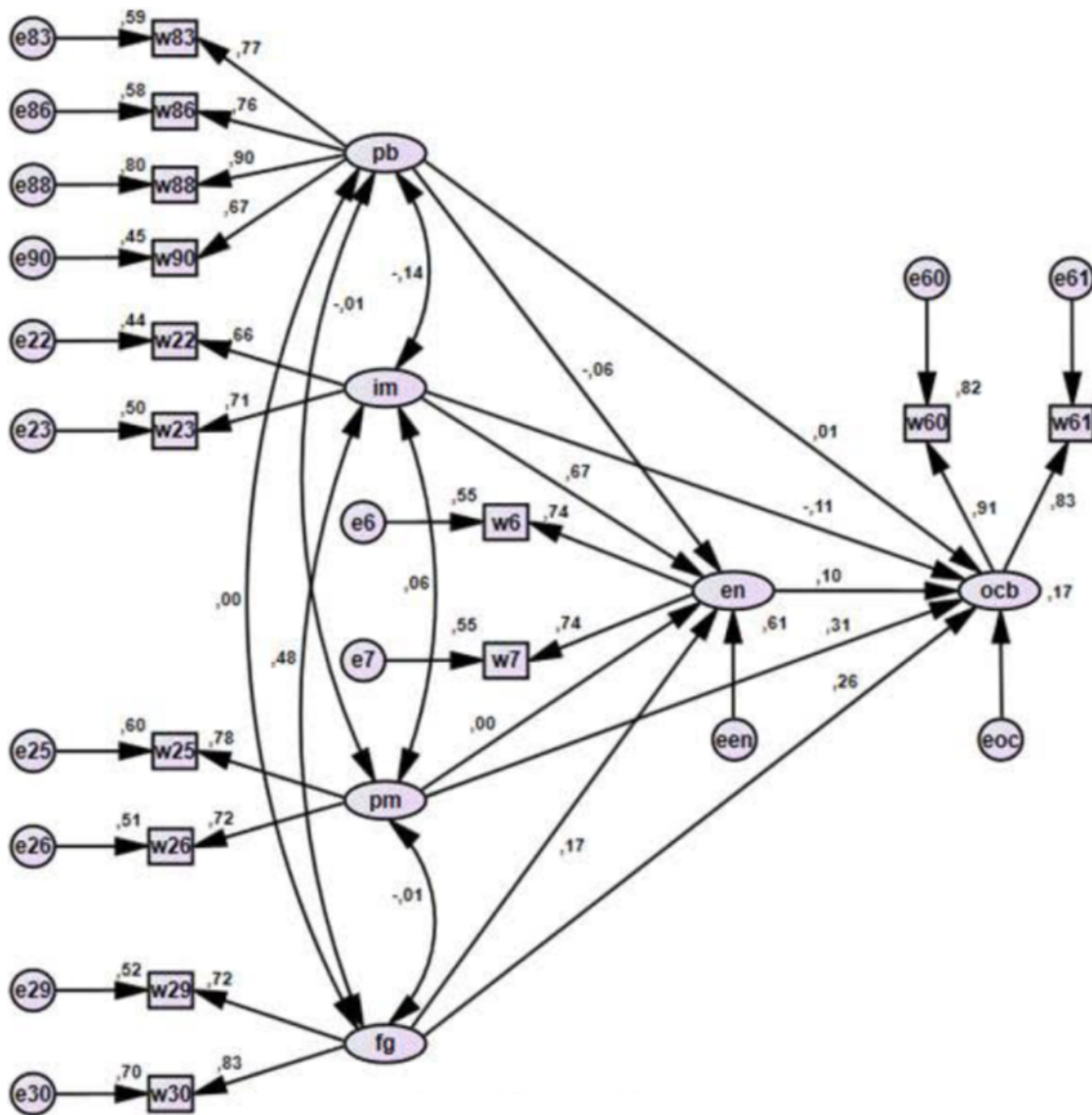


Figure 2: Structural model – generalized least squares model.

Note: pb = perceived discipline problems; im = intrinsic motivation; pm = achievement goal motivation; fg = altruistic motivation; en = self-efficacy; ocb = peer support through close social bonds. * $p < .05$, ** $p < .01$

for both teacher education and individual student teachers [60]. Goal achievement motivation is often associated with competitive attitudes [26], which are considered less helpful in this context. Another interpretation might be that supportive behaviour enhances one’s ego-driven desire to attain a superior position compared to peers [13].

If we believe that peer support should be promoted, a key question is what factors contribute to goal motivation and altruistic motivation in teacher education. One possible interpretation of these results is that the perception of one’s performance by others is significant for the level of peer support ultimately provided [81]. Selecting candidates for teacher education programs with both high goal motivation and high altruistic motivation [63] could have an impact on practice, assuming that peer support is important and beneficial for close relationships among student teachers (as long as peer support positively impacts one’s teaching and learning).

Surprisingly, the hypothesis regarding intrinsic motivation was negatively associated with peer support. Additionally, the analysis revealed that student teachers’ self-

efficacy had only a weak statistical association with peer support. This empirical relationship highlights the need for further research to deepen our understanding of the connection between altruistic motivation and peer support through close social bonds. While the suggestion of egoistic enhancement as a potential mechanism is intriguing [7], it lacks sufficient empirical or theoretical substantiation at this time. To strengthen our conclusions, it is essential to explore possible confounding variables that may influence these relationships. Furthermore, it may be necessary to reassess whether the measures used to evaluate intrinsic motivation effectively captured the intended construct, ensuring that our findings accurately reflect the dynamics at play. By addressing these considerations, future research can clarify how intrinsic motivation interacts with peer support.

Up to now, we have focused on variables closely tied to personality traits. However, the actual situations in which student teachers operate are significant when it comes to peer support through close social bonds. Additionally, the analysis showed that the experience of discipline problems in teaching situations had little correlation with other concepts.

7. Limitations

As with similar studies, this research faced certain methodological limitations (e.g., a cross-sectional approach does not allow for causal statements) and conceptual challenges [16]. We acknowledge these limitations but argue they provide a foundation for future studies. Given the emphasis on sparse modelling in the research method, we had to limit the number of tests regarding different aspects of peer support. Future research in this area could expand the scope of this dimension in empirical research by introducing additional conceptual distinctions within peer support, reflecting its diverse nature. Another issue was the use of self-reported questionnaire data, which can be biased by subjective factors challenges [16]. Independent, observation-based evaluations could provide more valid data, though such an investigation is challenging while also maintaining respondents' anonymity. Despite these few shortcomings, this study contributes to our understanding of the factors associated with peer support. If the associations between independent and dependent variables represent causal relationships, our findings could have significant practical implications.

8. Implications

The findings of this study have significant practical and research implications. In Germany, as in many European nations, there is a high dropout rate in teacher education, which is an even greater concern in light of an anticipated teacher shortage in the coming years. Implementing measures that promote and sustain peer support could help mitigate dropout rates during teacher training, ultimately increasing the number of qualified teachers available to meet schools' needs.

To provide more specificity in our policy recommendations, we suggest formalising peer support through structured practicum groups. This could include strategies such as faculty-guided peer coaching, peer-led reflection sessions, and the integration of peer collaboration into teacher performance portfolios [72, 73]. Furthermore, considering the post-pandemic educational landscape, utilising digital tools to sustain peer networks in blended or virtual environments is crucial [37, 57]. Leveraging online platforms for collaboration can enhance peer interactions, allowing student teachers to build supportive networks, even in hybrid settings.

Currently, peer support in German teacher education is often perceived as outside the traditional role of educators [30]. However, it should be recognised as a civic virtue akin to altruism or conscientiousness; these traits thrive on authentic behaviour.

Therefore, defining peer support through close social bonds as part of the formal teacher education curriculum could be counterproductive. Instead, establishing small groups of students who can cultivate strong personal relationships during practicum periods may lead to genuine helpfulness among student teachers.

Despite the importance of peer support, there is limited understanding of how to design formal peer support opportunities in professional knowledge contexts effectively [48]. This gap highlights the need for teacher education institutions to consider formally integrating peer support into their quality enhancement strategies.

Our findings indicate significant correlations between motivation, peer support, and self-efficacy, suggesting that this area warrants further investigation. Future research should focus on several key aspects to deepen our understanding of these dynamics. One important avenue for future inquiry is the value of longitudinal studies that track student teachers over time. Such research would allow for examining how peer support influences professional development, self-efficacy, and career commitment long after the practicum experience. Insights gained from these studies could illuminate how initial peer interactions shape future teaching practices and even career paths [22]. Additionally, the rise of digital platforms presents an opportunity to explore how online collaboration impacts peer support among student teachers [20]. Investigating virtual communities and social media groups as spaces for peer interaction can provide valuable data on their effect on motivation and overall support [77]. This exploration is particularly relevant in a post-pandemic context, where many educators have shifted to hybrid or online learning formats.

Comparative studies across various educational contexts also warrant attention [1]. By examining different geographic regions or institutional frameworks, researchers can uncover how cultural and systemic factors influence peer support dynamics. This comparative approach may reveal best practices and unique challenges, contributing to a more nuanced global understanding of peer support in teacher education.

Moreover, intervention studies focused on promoting peer support among student teachers should be prioritised. Experimental research can develop and test targeted interventions, such as structured peer collaboration programs or social bonding activities integrated into teacher education curricula. Insights from these studies could help inform policy decisions aimed at enhancing support systems for student teachers [10]. It is equally essential to investigate the emotional and psychological aspects of peer support. Future research should explore whether and, if so, how relationships among peers impact student teachers' well-being, resilience, and overall mental health, shedding light on the emotional labour demanded by teaching and identifying necessary support systems to sustain motivation and job satisfaction.

Additionally, the role of mentoring relationships deserves a thorough examination [4]. Understanding how the quality of mentoring affects peer interactions and whether positive mentor relationships enhance peer support can clarify the complementary roles of mentors and peers in student teachers' professional development. Additionally, exploring the transfer of pedagogical content knowledge through peer interactions can provide insights into best practices and the development of teaching competencies.

Lastly, examining cultural perspectives on altruistic motivation within teacher education programs could yield valuable insights. Different cultural contexts may shape how student teachers perceive collaboration and support, ultimately affecting their engagement with peer support [23]. Research in this area can inform adaptations of teacher education programs to better align with diverse cultural frameworks. Scholars can significantly enhance the understanding of peer support mechanisms in teacher education by exploring various avenues for future research. This deeper insight may lead to innovative practices that foster the professional growth of student teachers and help develop a more effective and resilient teaching workforce.

Data availability statement: Requests for data availability must be sent to k.a.a.christophersen@stv.uio.no

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