

PRESERVICE TEACHERS' PEER SUPPORT THROUGH CLOSE SOCIAL TIES: AN INVESTIGATION OF THE SOCIAL SIDE OF TEACHER EDUCATION

Eyvind ELSTAD¹

Knut-Andreas CHRISTOPHERSEN²

Are TURMO³

^{1,2,3} University of Oslo, Norway

Abstract

Typical preservice teachers will experience a number of demanding teaching situations during their school-based teaching practice. In such situations, peer support from fellow students may be an important factor.

A questionnaire was distributed to Danish preservice teachers in selected teacher education programmes (namely, at university colleges). A total of 1,448 preservice teachers participated. Structural equation modelling of the questionnaire data shows that achievement goal motivation is the factor most

strongly related to peer support. Intrinsic motivation is also a significant factor. The self-efficacy of preservice teachers in teaching situations is also related to peer support, while experiences of discipline problems in teaching situations are negatively related to self-efficacy. Implications of these findings are discussed.

Keywords: preservice teacher education; closeness; peer support; self-efficacy; Denmark.

1. Introduction

In a teacher education context, behaviour can be divided into expected behaviour (in-role behaviour described by clear standards) and behaviour that is more difficult to define explicitly—for instance, emotional commitment, care attitudes toward pupils, etc. Such behaviour based on attitudes can be described as extra-role behaviour that emerges from attitudes that are difficult to define. Nonetheless, such extra-role behaviours are important for preservice teachers as well as teachers to express and manage in their interactions. Teachers can develop such behaviours through affective commitment to the workplace of which they are a part. This is more difficult, however, for preservice teachers who lack such organizational professionalism.

Preservice teachers often have an unclear identity or sense of loyalty in relation to the teacher training institution or to the practice schools. Sometimes, students are appointed to 3–5-year concurrent teacher education programmes. In other instances, teacher training is undertaken by an individual at the end of an educational process, after the conclusion of the main subject-based university studies (e.g., a consecutive programme). It is therefore often striking that some

students can more readily identify with and have loyalty to academic subjects (such as mathematics) and the academic culture established by the university than they can within their teacher training. In the course of their teacher training, the vast majority of preservice teachers will experience teaching practice at different practice schools. For this reason, preservice teachers (like teachers) will not normally develop a strong sense of identity with, or loyalty to, one particular school.

Closeness among preservice teachers has not been traditionally or formally applicable to teacher training. On the other hand, preservice teachers often experience close contact with fellow students, particularly during their teaching practice. It is normal for 2–4 preservice teachers who have one or two academic subjects in common to practice as preservice teachers in at least two schools (generally covering different levels within the school system, such as primary and secondary). These practice periods are generally very intense, so good relationships might be a prerequisite for a good internship. Preservice teachers can act as each other's "charging stations"; however, they can also drain each other's energy.

A typical preservice teacher will experience a number of demanding teaching situations during their school-based teaching practice. Tackling these situations will require all of their energy, and often more. In such situations, interpersonal support from fellow students may be an important factor if experiences gained during teaching practice are to make a constructive and useful contribution to the teacher's personal growth. Support from fellow students can fill a gap that can only be filled to a very limited extent by practice supervisors and teacher educators, who also have a role in giving grades and feedback. The phenomenon of preservice teachers helping their co-students, even though, strictly speaking, they have no formal responsibility in this area, will here be termed "peer support".

Preservice teachers might be anxious about meeting learners (Birchinall, Spendlove, & Buck, 2019; Burke, 2010; Bursal & Paznokas, 2006). Furthermore, the need for help with technical questions (such as preparing teaching sessions) or personalised support in connection with challenging situations during practice periods (such as discipline problems or demanding supervisors who expect preservice teachers to correct a large volume of learner assignments) will often arise out of genuine feelings of need in demanding situations. Danish preservice teachers are subject to assessment by practice supervisors and staff of the teacher training institution who attend the preservice teachers' teaching sessions. As such, preservice teachers have an incentive to avoid exposing potential weaknesses to practice supervisors, since the assessments weigh heavily in the decision to approve their teaching practice. In such a context, reducing anxiety during learning processes might be helpful (Birchinall, Spendlove, & Buck, 2019; Spector, Burkett, & Steffen, 2002). Further, since learning takes place through social processes as well as through individual studies, social support should be encouraged (Bandura, 1977; Easterby-Smith & Lyles, 2011; Janssen, Knoef & Lazonder, 2019).

Transfer of knowledge refers to a process in which a preservice teacher learns relevant knowledge or skills that makes them more productive in terms of sharing with peers (Sun, Loeb, & Grissom, 2017). There is evidence of peer effects in other workplaces (Herbst & Mas, 2015) as well as in schools where teachers' instructional expertise might be shared through professional interactions (Jackson & Bruegmann, 2009; Papay, Taylor, Tyler, & Laski, 2016; Sun, Penuel, Frank, Gallagher, & Youngs, 2013). We believe that peers might represent an important source of support for preservice teachers. Contact with fellow preservice teachers during teaching practice may also serve as the foundation for friendship. Therefore, social factors in teacher preparation might

play a critical role in preservice teachers' performance and may influence the quality of their performance during their school practice (McCarthy & Youens, 2005; Steele, Brew, Rees, & Ibrahim-Khan, 2013; Trapp, 2010). We expect that a supportive climate for preservice teachers during teacher training could be critical to individual learning, team learning, collaboration and teacher professionalism (Tschannen-Moran, 2009; Janssen et al., 2019). What we describe here as peer support through close social ties can therefore be considered a quality feature of a teacher training programme.

Collaboration among preservice teachers could be an explicitly designated behaviour within the teacher training curriculum (Klassen, Perry, & Frenzel, 2012; Willegems, Consuegra, Struyven & Engels, 2017; Häkkinen et al., 2020). In such cases, collaboration could become a part of preservice teachers' in-role behaviour; however, this would be atypical.

Extra-role behaviour goes beyond the normal designated forms of collaboration between preservice teachers; that is, beyond normal human helpfulness with respect to others. This is a form of helpfulness that, strictly speaking, is not a defined responsibility of preservice teachers, nor is it a behaviour that is exhibited at the behest of others, such as by a practice supervisor or via the teacher training curriculum. The relationships between preservice teachers and supervisors are important for professional learning in many ways (Stanulis & Russell, 2000). The purpose of this article is to investigate which factors are related to peer support through close social ties. This is important because "Those who are able to master knowledge and skills through interacting with others may have a greater chance to share instructional ideas to develop self-efficacy, which may influence performance in the long term" (Liou et al., 2007, p. 650).

2. Theoretical Framework

Preservice teachers' teaching practice can be affected by challenging situations in which the preservice teacher does not have a normal role as a teacher and is therefore not on an equal footing with the school's ordinary teachers (Stoughton, 2007). Preservice teachers are, essentially, teachers on trial. Preservice teachers thus lack the authority derived from an ordinary teacher's power to, for instance, give academic grades and discipline behaviour. Accordingly, interactions between preservice teachers and learners might be considered exchanges or transactions (Elstad, 2008). It is an integral characteristic of practice situations that preservice teachers have a weaker transactional position than a school's ordinary teachers (Elstad, 2002). This places the preservice teacher in a particularly demanding position. The preservice teacher can attempt to borrow the authority of the ordinary class teacher by referring to and following up on the latter's practice. This is more easily achieved in practice situations in which the ordinary teacher is present, seated at the back of the room and monitoring what is going on. When the supervisor is not present, however, the preservice teacher alone needs to tackle potentially demanding situations. It is not unusual for learners to test the boundaries when a preservice teacher is teaching alone (Alger, 2006). Teaching situations can therefore be experienced as draining and, for some, can lead to experiences of defeat. Surveys have shown that preservice teachers spend far more time on tasks during teaching practice than they do during campus-based teaching (e.g., Martinussen & Smestad, 2011). This indicates that teaching practice is experienced as far more demanding than the on-campus experiences with the teacher training programme.

Teaching inevitably involves relating to many factors and forces at the same time. Someone embarking on teacher training without prior teaching experience can easily be exhausted or overwhelmed when too many tasks arise

all at once (Calderhead, 1991). The functional memory of preservice teachers, like that of other people, has a limited capacity to tackle unfamiliar situations (Leinhardt & Greeno, 1986). Experienced teachers have developed automatic routines that diminish the pressure on cognitive load (Fogarty, Wang, & Creek, 1983). A lack of experience will in itself contribute to stress if the preservice teacher does not know how to handle the situation (Rieg, Paquette, & Chen, 2007). Usually, however, 2–4 preservice teachers are given placements at the same school. They will often be able to observe each other’s teaching and may even teach together. When this is the case, fellow students will be enabled to provide support for a peer who is experiencing demanding situations and/or setbacks. This may allow for knowledge to flow across the support network (Percy, 2009), which might in turn help foster better outcomes (Cakiroglu, 2012). We hypothesise that preservice teachers’ perceptions of discipline problems will be positively related to peer support (Hypothesis 1).

A social network consists of actors and the relational ties that define them (Wasserman & Faust, 1994). Previous network studies (e.g., Daly & Finnigan, 2010) have suggested a potential positive influence of reciprocated ties in strengthening a collaborative network structure. Additionally, much research has shown that professional collaboration might sustain successful learning results (Çelik & Ekinici, 2012; Forbes & Billet, 2012; Pil & Leana, 2009). Social networks among preservice teachers might be formed by social relations that can foster the likelihood of mutual success (Burt, 1992; Daly, Moolenaar, Liou, Tuytens, & del Fresno, 2015; Lin, 2009). Studies of educational networks have suggested that a closely connected network of advice-seeking relationships permits professionals to work collaboratively to improve their students’ performance (Daly, Der-Martirosian, Moolenaar, & Liou, 2014). Although a practice supervisor can in theory be consulted, such a supervisor also plays a

crucial role in approving the preservice teacher's practice period, i.e., passing/failing or grading the students. Consequently, preservice teachers might wish to avoid exposing their uncertainties and doubts to their practice supervisor. Fellow students, however, are (metaphorically speaking) in the same boat. As such, helpfulness on the part of fellow students can satisfy a deeply felt need that cannot be met by the practice supervisor due to their pre-defined role. Peer support describes such a behaviour, which involves helping a fellow student with technical, instructional, or managerial issues, or providing human support in situations that a student finds challenging (Bates, Latham, & Kim, 2011). Network connectedness (Lin, 2009) and peer support through close social ties are important components of good teacher training. Preservice teachers who are socially connected to their peers more often have opportunities to exchange and improve their instructional ideas and to build good relations for ongoing social support (Jensen, 2012; Steinbrecher & Hart, 2012). In contrast, preservice teachers who do not experience helpfulness from their fellow students will likely find developing themselves as future teachers during their teaching practice more demanding than those who do receive support from their fellow students.

What factors can be proposed to be related to peer support? First, behaviour is related to motivation. Preservice teachers, however, can have different sorts of motivational leanings. Intrinsic motivation is a term used to refer to motivations that are inspired by gratification (Deci & Ryan, 1975). There are grounds to expect that intrinsic motivation will be a factor positively associated with peer support through close social ties (Ryan & Deci, 2000; Hypothesis 2). Furthermore, we hypothesise that preservice teachers' perception of discipline problems will be negatively related to intrinsic motivation (Hypothesis 3).

Another motivational category is achievement goal motivation. This type of motivation is derived from, for instance, the need to be respected by others or

to be regarded as a skilled person. Hypothesis 4 is that achievement goal motivation will generate (is positively related to) peer support through close social ties (Dweck & Leggett, 1988). The justification for this hypothesis is that individuals feel the need to be regarded as a positive person by those around them (Wigfield, Eccles, Schiefele, Roeser, & Davis-Kean, 2007). Additionally, we hypothesise that preservice teachers' perceptions of discipline problems will be negatively related to achievement goal motivation (Hypothesis 5).

Helping a fellow student can therefore involve an element of calculation. However, it has been proposed that teachers, and therefore also preservice teachers, genuinely wish to work together and to help learners who need assistance (Belogolovsky & Somech, 2010). This can be called an altruistic motivation (Roness, 2011). In other words, we believe that a personality characteristic of preservice teachers is the desire to be perceived as a good role model throughout their future teaching career, and that this too will generate altruism toward fellow students (Kokkinos, 2007). Thus, Hypothesis 6 states that an altruistic motivation for a future teaching career generates (is positively related to) peer support through close social ties. Furthermore, we hypothesise that preservice teachers' perceptions of discipline problems will be negatively related to altruistic motivation (Hypothesis 7). These three motivational categories (intrinsic, achievement and altruistic) can be said to constitute the driving force in a teacher that leads to action, regardless of whether the motivation is explicitly regarded as intrinsic, extrinsic, or altruistic.

In addition to motivation, other cognitions and emotions may influence the degree to which a preservice teacher is inclined to give peer support through close social ties. Instructional self-efficacy varies among teachers as well as among preservice teachers (Klassen & Chiu, 2010). Low self-efficacy due to a lack of peer support is considered to be a problem (Organization for Economic

Co-operation and Development, 2014). Preservice teachers with higher self-efficacy beliefs might be more effective teachers than those with low self-efficacy (Bates et al., 2011; Leader-Janssen & Rankin-Erickson, 2013). Behaviour is related to situations in which the preservice teacher is exercising their profession. Preservice teachers' self-efficacy depends on mastering experiences during, for instance, teaching practice (Gurvitch & Metzler, 2009). As preservice teachers may experience demanding discipline problems (Kounin, 1971) during their teaching practice, Hypothesis 8 states that such discipline problems are negatively related to instructional self-efficacy, since these problems can contribute to creating an imbalance between opportunities and challenges. Liou et al. (2017) found that preservice teachers who had closer support from peers also tended to have higher teaching scores on performance assessments. Thus, Hypothesis 9 states that self-efficacy generates (is positively related to) peer support through close social ties. Self-efficacy is influenced by motivation, among other factors. For preservice teachers, motivational categories are seen as important factors that are related to their self-efficacy in learner engagement. We therefore hypothesise that preservice teachers' altruistic motivation will be positively associated with their self-efficacy (Hypothesis 10). We also hypothesise that preservice teachers' achievement goal motivation will be positively associated with their self-efficacy in learner engagement (Hypothesis 11). Lastly, we hypothesise that preservice teachers' intrinsic motivation will be positively associated with their self-efficacy (Hypothesis 12).

3. Materials and Methods

3.1. Samples and Procedures

The reported analysis is part of a research project in which Danish preservice teachers' perceptions were examined. A paper-based questionnaire

was distributed to Danish preservice teachers in selected teacher education programmes (i.e., at a university college). A total of 1,448 preservice teachers participated. The survey was entirely anonymous; in this way, the privacy of participants was respected. Owing to this anonymity, approval by the ethics committee was not required by Danish law.

The sample from classes in Danish teacher education programmes was randomly selected. Data collection was carried out as follows: Students at a university college were given the paper-based questionnaire during obligatory seminar teaching; the students were informed that participation was voluntary and that they could withdraw from the survey at any point. None of the students who were present declined to take part in the survey, so the response rate was nearly 100%.

3.2. Measurement Instruments

The questionnaire was constructed based on measurement instruments previously reported in the literature, as well as on new developments (based on Haladyna & Rodriguez, 2013). In the survey, the preservice teachers responded to items on a seven-point Likert scale, where the alternative “four” represented a neutral midpoint. The concepts were measured with two to four single items. The analysis reported below was based on six measurement instruments. The internal consistency for each concept was satisfactory, with a Cronbach’s alpha between .71 and .89. The indicators for the concepts are shown in Table 1.

Table 1: Overview of Constructs and Items

<p>Intrinsic motivation (im) (adopted from Vallerand et al., 1992)</p> <p>I want to be a teacher because:</p> <ul style="list-style-type: none">• It is exciting to teach (w22)• I want others to be interested in learning (w23)
<p>Achievement goal motivation (pm) (adopted from Archer, 1994)</p> <p>It is important to me:</p> <ul style="list-style-type: none">• to be looked up to by the other students (w25)• to be described as the best in the study group (w26)
<p>Altruistic motivation (fg) (adopted from Roness, 2011)</p> <p>It is important to me:</p> <ul style="list-style-type: none">• to work with people (w29)• to help people who need it (w30)
<p>Perceived discipline problems during teaching practice (pb) (adopted from Grey & Sime, 1989)</p> <ul style="list-style-type: none">• Learners disturbing their fellow learners in their work (w83)• Learners breaking class rules (w86)• Learners making unnecessary noise (w88)• Learners leaving their desks without asking permission (w90)
<p>Self-efficacy in learner engagement (en) (adopted from Skaalvik & Skaalvik, 2007)</p> <p>To what extent will you as a future teacher:</p> <ul style="list-style-type: none">• motivate those learners who show little interest in school work? (w6)• manage to get the learners to believe that they can actually do well at school? (w7)
<p>Peer support through close social ties (ocb)</p> <ul style="list-style-type: none">• I freely help other preservice teachers with teaching-related questions (w60)• I help other preservice teachers even though it is not strictly my responsibility (w61)

4. Analysis

Structural equation modelling (SEM) was used to analyse the relationships between the variables, following Kline (2005), Hancock and Mueller (2013), and Brown (2015).

SEM is suitable for confirmatory factor analysis and path analysis. Assessments of fit between the model and the data were based on the following indices: root mean square error of approximation (RMSEA), normed fit index (NFI), goodness-of-fit index (GFI) and comparative fit index (CFI). RMSEA < .05 and NFI, GFI and CFI > .95 indicated a good fit, while RMSEA < .08 and NFI, GFI and CFI > .90 indicated an acceptable fit (Kline, 2005).

The measurement and structural models were estimated with IBM SPSS Amos 21. The values of RMSEA, NFI, GFI and CFI indicated that the structural model in Figure 1 had an acceptable fit. Table 2 gives an overview of the hypotheses formulated in the section "Theoretical framework". The connections between the hypotheses and the analyses presented in Figure 1 can be made through the abbreviations in bold.

Table 2: Overview of hypotheses formulated in the section "Theoretical framework".

H1	Preservice teachers' perceptions of discipline problems (pb) will be positively related to peer support (ocb)
H2	Intrinsic motivation (im) will be a factor positively associated with peer support through close social ties (ocb)
H3	Preservice teachers' perception of discipline problems (pb) will be negatively related to intrinsic motivation (im)
H4	Achievement goal motivation (pm) will generate (is positively related to) peer support through close social ties (ocb)
H5	Preservice teachers' perceptions of discipline problems (pb) will be negatively related to achievement goal motivation (pm)
H6	Altruistic motivation for a future teaching career (fg) generates (is positively related to) peer support through close social ties (ocb).
H7	Perceptions of discipline problems (pb) will be negatively related to altruistic motivation (fg)
H8	Discipline problems (pb) are negatively related to instructional self-efficacy (en)
H9	Self-efficacy (en) generates (is positively related to) peer support through close social ties (ocb)
H10	Preservice teachers' altruistic motivation (fg) will be positively associated with their self-efficacy (en)
H11	Preservice teachers' achievement goal motivation (pm) will be positively associated with their self-efficacy in learner engagement (en)
H12	Preservice teachers' intrinsic motivation (im) will be positively associated with their self-efficacy (en)

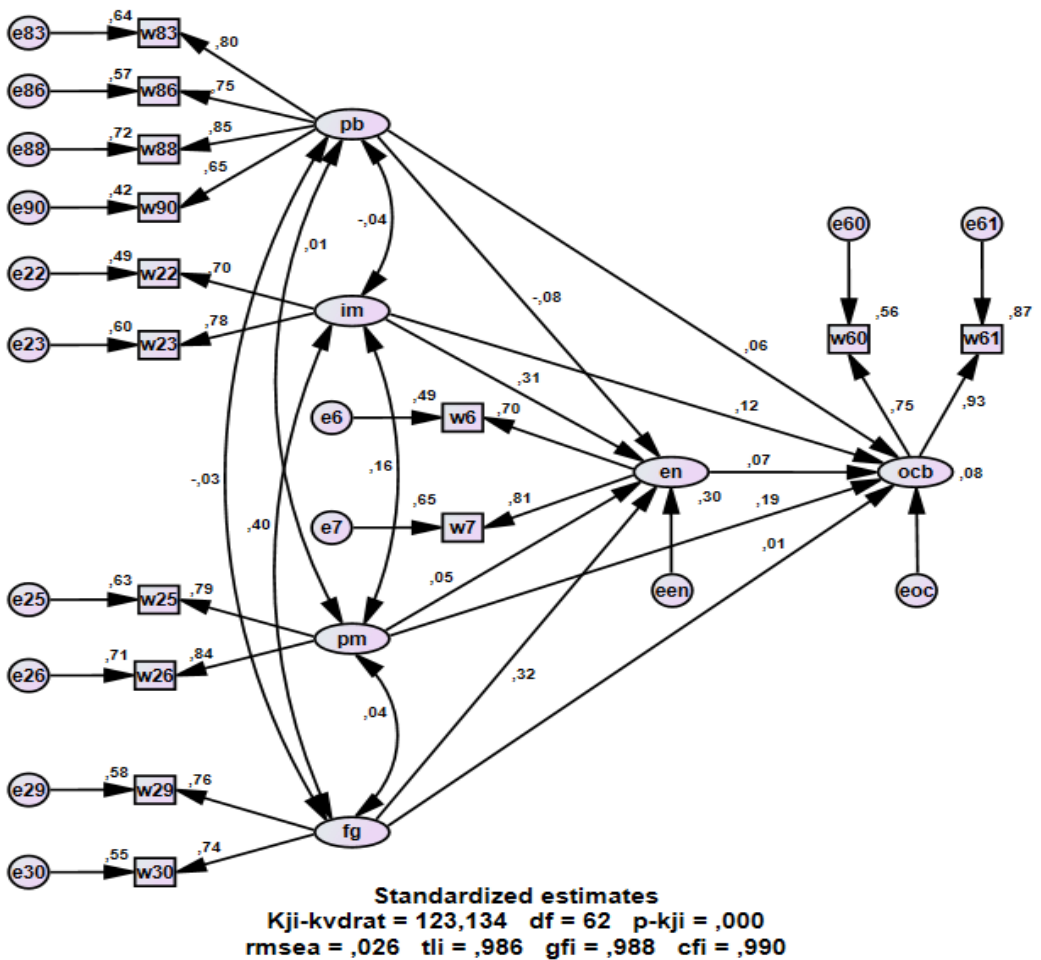


Figure 1. Estimated structural model. Intrinsic motivation (im), Achievement goal motivation (pm), Altruistic motivation (fg), Perceived discipline problems during teaching practice (pb), Self-efficacy in learner engagement (en), Peer support through close social ties (ocb).

5. Discussion

This study focused on the antecedents of peer support among preservice teachers. The analysis showed that achievement goal motivation and intrinsic motivation were significantly related to peer support. This statistical connection does not need to entail a causal relationship, but can be understood as the

consequence of a common, though unidentified, causal factor. However, achievement goal motivation and intrinsic motivation could also be interpreted as antecedents of peer support. Intrinsic motivation reflects the pleasure and positive experiences of participating in a role at the practice schools. This, of course, is a positive mechanism in every sense of the word, both for teacher training and for individual preservice teachers. Achievement goal motivation is often linked with competitive attitudes, which is the opposite of being helpful. Another interpretation could be that supportive behaviour nurtures one's own ego to achieve a superior position compared with peers.

If we believe that peer support should be nurtured, then a key question is what factors contribute to achievement goal motivation and intrinsic motivation in teacher training? One possible interpretation is that these findings steer us towards the understanding that how others perceive one's performance may be significant to the level of peer support that is ultimately given. Selecting applicants to teacher training programmes who have high achievement goal motivation and high intrinsic motivation might be a possible implication for practice if we presume that peer support is important and useful for close relationships among preservice teachers (insofar as peer support supports one's own teaching and learning outcomes). Could teacher training programmes foster motivation? This remains unclear. However, one assumption might be that we are not locked into fixed personality traits; rather, we have room to develop ourselves toward our own personal goals. However, our personalities are derived from interactions with our environments, and these interactions are nothing if not complex. We want those around us to have a positive impression of us, and this desire can motivate us to show peer support through close social ties. If this interpretation does reflect genuine causal processes, then the challenge is to ensure that the proper conditions are in place to promote and develop achievement

goal motivation and intrinsic motivation during teaching practice.

Surprisingly, the hypothesis regarding altruistic motivation was not supported. The analysis also unexpectedly demonstrated that preservice teachers' self-efficacy in learner engagement had almost no statistical association with peer support. We believed that preservice teachers who had the desire to act as positive role models for future learners would also display altruistic motives in their behaviour during teacher training. However, only a weak association was found, which surprised us. Evidently, this empirical relationship warrants more in-depth research in the future if we are to gain a better understanding of the association between altruistic motivation and peer support through close social ties.

Thus far, we have focused on variables that are closely related to personality traits. However, the actual situations in which preservice teachers operate are significant in terms of peer support through close social ties. In addition, the analysis showed that the experience of discipline problems in teaching situations had almost no association with the other concepts. This is again surprising. Considering the research method's emphasis on parsimonious modelling, we had to limit the number of tests with respect to several aspects of peer support. Future research in this area could extend the scope of this dimension in empirical research by introducing additional conceptual distinctions within peer support reflective of its multifaceted nature.

5.1. Implications

The findings of this study have implications for practice and for further research. In Denmark, as in many European countries, the dropout rate from teacher training is high; at the same time, it is predicted that there will be a significant shortage of teachers within the next few years. Measures that encourage and sustain peer support might therefore help to reduce dropout rates during teacher training, thereby increasing the number of available teachers

needed by schools. Interesting avenues for further research are how online collaboration among preservice teachers might nurture their peer support (Margaliot, Gorev & Vaisman, 2018; Janssen, Knoef & Lazonder, 2019) and how digital practicum might give room for peer support via virtual coaching and communities of practice (Keefe, 2020; Hamilton & Margot, 2019).

In the context of contemporary Danish teacher training, peer support has thus far been regarded as extra-role behaviour. On the contrary, peer support should be regarded as a civic virtue, much like altruism or conscientiousness. All these characteristics presuppose authentic behaviour if they are to demonstrate their true potential. From such a perspective, it would be paradoxical to define peer support through close social ties as a part of the formal teacher training curriculum (in other words, as in-role behaviour). Rewarding peer support via formal arrangements in order to sustain social ties by, for instance, enhancing grades in teaching practice could be construed as turning an emotional-ethical value into a utilitarian value. On the other hand, it is possible to plot a direction for genuine helpfulness among preservice teachers by deliberately assembling small groups of students who have good personal relations during practice periods.

5.2. Limitations of the Study

As with similar studies, this research was confronted by certain methodological limitations (e.g., a cross-sectional approach cannot prove causality) as well as conceptual challenges (e.g., parsimonious modelling). We acknowledge these limitations but argue that they represent a foundation for future studies. First, it should be emphasized that relatively little quantitative research has been carried out on preservice teachers' peer support; therefore, we did not have a solid foundation of empirically based research on which to complete our study.

Another limitation of this study was the use of self-reported questionnaire data. These data can be biased by subjective factors. Independent judgements based on observation can provide interesting data about an employee's performance, but such research is difficult to conduct while simultaneously respecting respondent anonymity.

We also did not have the opportunity to couple preservice teachers' self-reports with objective performance-related goals, because it was not possible to examine the associations between self-efficacy and student attainment.

Despite its shortcomings, this study contributes to our understanding of the antecedents of Danish preservice teachers' peer support. If the associations between the independent and dependent variables represent causal relationships, then our findings may have important implications for practice.

6. Conclusion

This study foregrounds the social dimension of preservice teachers. Substantial research has been conducted on other aspects of preservice teachers' arrangements during teaching practice and teacher training, specifically activities designed by the teacher training institution. However, the study contributes to the field because we do not know any other studies of antecedents of peer support among preservice teachers. What we have discussed in this article is the kind of spontaneous and informal helpfulness which, we argue, fills the gap in provisions designed to support the preservice teacher's personal growth in conducting the teaching role. However, the facilitation of formal opportunities for collaboration within programmes is also important. The education community could, for instance, prioritize the social dimension of cohort design (Nobles, Dredger, & Gerheart, 2012). While cultivating peer support could achieve better teaching performance among preservice teachers and perhaps encourage preservice teachers' completion of training.

We know little about how the design of formal opportunities for peer support in professional knowledge contexts might work (Korthagen, Kessels, Koster, Wubbels, & Lagerwerf, 2001). To the best of our knowledge, this topic has not been specifically addressed in prior research (Liou et al., 2017). For this reason, we believe that teacher training institutions should consider peer support in their plans for providing good teacher training. In this article, we attempted to identify which factors are statistically related to peer support through close social ties. We conclude that both intrinsic and achievement goal motivation appear to be antecedents of peer support. This conclusion may indicate what factors researchers should be looking for when seeking better insights into how to foster high-quality teacher training. Attention should be devoted to the quality of peer relationships. In our own research, we have therefore attempted to follow up on these findings by deploying a broader set of theoretical variables that will form the basis on which to deduce testable, empirical traces of factors related to peer support. It is our hope that other researchers may take an interest in this issue, which, in our opinion, is an important indicator of quality in effective teacher training programmes.

References

- Alger, C. (2006). What went well, what didn't go so well: Growth of reflection in pre-service teachers. *Reflective Practice*, 7(3), 287–301.
- Archer, J. (1994). Achievement goals as a measure of motivation in university students. *Contemporary Educational Psychology*, 19(4), 430–446.
- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bates, A. B., Latham, N., & Kim, J. A. (2011). Linking preservice teachers' mathematics self-efficacy and mathematics teaching efficacy to their mathematical performance. *School Science & Mathematics*, 111, 325–333.

- Belogolovsky, E., & Somech, A. (2010). Teachers' organizational citizenship behavior: Examining the boundary between in-role behavior and extra-role behavior from the perspective of teachers, principals and parents. *Teaching and Teacher Education*, 26(4), 914–923.
- Birchinall, L., Spendlove, D., & Buck, R. (2019). In the moment: Does mindfulness hold the key to improving the resilience and wellbeing of pre-service teachers?. *Teaching and Teacher Education*, 86, 102919.
- Brown, T. A. (2015). *Confirmatory Factor Analysis for Applied Research. 2nd New edition*. New York, United States: Guilford Publications.
- Burke, A. (2010). How well prepared and supported are new teachers? Results for the Northwest region from the 2003/04 schools and staffing survey. Summary. Issues & Answers. REL 2010-No. 097. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northwest.
- Burt, R. S. (1992). *Structural holes*. Cambridge, MA: Harvard University Press.
- Cakiroglu, U. (2012). Comparison of novice programmers' performances: Blended versus face-to-face. *Turkish Online Journal of Distance Education*, 13, 135–151.
- Calderhead, J. 1991. The nature and growth of knowledge in student teaching. *Teaching and Teacher Education*, 7(5-6), 531–536.
- Çelik, V., & Ekinci, A. (2012). The effects of social capital on school success. *International Journal of Social Sciences and Education*, 2, 211–223.
- Daly, A. J., Der-Martirosian, C., Moolenaar, N., & Liou, Y.-H. (2014). Accessing capital resources: Investigating the effects of teacher human and social capital on student achievement. *Teachers College Record*, 116(7), 1–42.
- Daly, A. J., & Finnigan, K. (2010). A bridge between worlds: Understanding network structure to understand change strategy. *Journal of Educational Change*, 11, 111–138. doi:10.1007/s10833-009-9102-5
- Daly, A. J., Moolenaar, N. M., Liou, Y.-H., Tuytens, M., & del Fresno, M. (2015). Why so difficult? Exploring negative relationships between educational leaders: The role of trust, climate, and efficacy. *American Journal of Education*, 122, 1–38. doi:10.1086/683288
- Deci, E. L., & Ryan, R. M. (1975). *Intrinsic motivation*. New York: John Wiley & Sons, Inc.

- Dweck, C. S., & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review*, 95(2), 256.
- Easterby-Smith, M., & Lyles, M. A. (2011). *Handbook of organizational learning and knowledge management* (2nd ed.). West Sussex: Wiley.
- Fogarty, J. I., Wang, M. C., & Creek, R. (1983). A descriptive study of experienced and novice teachers' interactive instructional thoughts and actions. *The Journal of Educational Research*, 77(1), 22–32.
- Forbes, L., & Billet, S. (2012). Successful co-teaching in the science classroom. *Science Scope*, 36, 61–64.
- Grey, J., & Sime, N. (1989). Findings from the national survey of teachers in England and Wales. In *The Elton Report: Discipline in Schools*. London: HMSO.
- Gurvitch, R., & Metzler, M. W. (2009). The effects of laboratory-based and field-based practicum experience on preservice teachers' self-efficacy. *Teaching and Teacher Education*, 25(3), 437–443.
- Haladyna, T. M., & Rodriguez, M. C. (2013). *Developing and validating test items*. London: Routledge.
- Hamilton, E. R., & Margot, K. C. (2019). Preservice Teachers' Community-based field experiences. *Frontiers in Education*, 4 (1), 115-130.
- Hancock, G. R., & Mueller, R. O. (Eds.). (2013). *Structural equation modeling: A second course* (2nd ed.). IAP Information Age Publishing.
- Herbst, D., & Mas, A. (2015). Peer effects on worker output in the laboratory generalize to the field. *Science*, 350, 545–549.
- Häkkinen, P., Virtanen, T., Virtanen, A., Näykki, P., Pöysä-Tarhonen, J., Niilo-Rämä, M., & Järvelä, S. (2020). Finnish pre-service teachers' perceptions of their strategic learning skills and collaboration dispositions. *Journal of Education for Teaching*, 46(1), 71-86.
- Janssen, N., Knoef, M., & Lazonder, A. W. (2019). Technological and pedagogical support for pre-service teachers' lesson planning. *Technology, Pedagogy and Education*, 28(1), 115-128.
- Jensen, A. (2012). Digital culture, and the viewing/participating preservice teacher: (Re)envisioning theatre teacher training for a social media culture. *Research in Drama Education: The Journal of Applied Theatre and Performance*, 17, 553–568. doi:10.1080/13569783.2012.727626

- Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology, 102*, 741–756. doi:10.1037/a0019237
- Klassen, R. M., Perry, N. E., & Frenzel, A. C. (2012). Teachers' relatedness with students: An underemphasized component of teachers' basic psychological needs. *Journal of Educational Psychology, 104*, 150–165. doi:10.1037/a0026253
- Kline, R. B. (2005). *Principle and practice of structural equation modeling*. New York: The Guildford Press.
- Kokkinos, C. M. (2007). Job stressors, personality and burnout in primary school teachers. *British Journal of Educational Psychology, 77*(1), 229–243.
- Kounin, J. (1977). *Discipline and group management in classrooms*. New York: Holt, Rinehardt and Winston.
- Korthagen, F. A. J., Kessels, J., Koster, B., Wubbels, T., & Lagerwerf, B. (2001). *Linking practice and theory: The pedagogy of realistic teacher education*. Mahwah: Lawrence Erlbaum Associates.
- Leader-Janssen, E. M., & Rankin-Erickson, J. L. (2013). Preservice teachers' content knowledge and self-efficacy for teaching reading. *Literacy Research and Instruction, 52*, 204–229. doi:10.1080/19388071.2013.781253
- Leinhardt, G., & Greeno, J. G. (1986). The cognitive skill of teaching. *Journal of Educational Psychology, 78*(2), 75–95.
- Lin, N. (2009). *Social capital: A theory of social structure and action* (8th ed.). New York, NY: Cambridge University Press.
- Liou, Y. H., Daly, A. J., Canrinus, E. T., Forbes, C. A., Moolenaar, N. M., Cornelissen, F., van Lare, M., & Hsiao, J. (2017). Mapping the social side of preservice teachers: Connecting closeness, trust, and efficacy with performance. *Teachers and Teaching, 23*(6), 635–657.
- Margaliot, A., Gorev, D., & Vaisman, T. (2018). How student teachers describe the online collaborative learning experience and evaluate its contribution to their learning and their future work as teachers. *Journal of Digital Learning in Teacher Education, 34*(2), 88-102.
- Martinussen, G., & Smestad, B. (2011). Allmennlærerstudenters arbeidsinnsats: bedre enn sitt rykte? In T. L. Hoel, T. M. Guldal, C. F. Dons, S. Sagberg, T. Solhaug, & K. Wæge (Eds.), (pp. 331–340). *FoU i praksis 2010*.

- Rapport fra konferanse om praksisrettet FoU i lærerutdanning.*
Trondheim: Tapir.
- McCarthy, S., & Youens, B. (2005). Strategies used by science preservice teachers for subject knowledge development: A focus on peer support. *Research in Science & Technological Education*, 23, 149–162.
- Nobles, S., Dredger, K., & Gerheart, M. D. (2012). Collaboration beyond the classroom walls: Deepening learning for students, preservice teachers, teachers, and professors. *Contemporary Issues in Technology and Teacher Education*, 12, 343–354.
- Organ, D. W. (1988). *Organizational citizenship behavior: The good soldier syndrome*. Lexington, MA: Lexington Books.
- Papay, J., Taylor, E. S., Tyler, J., & Laski, M. (2016). Learning job skills from colleagues at work: Evidence from a field experiment using teacher performance data. NBER Working Paper No. 21986. Retrieved from <http://www.nber.org/papers/w21986>
- Pearcy, A. G. (2009). *Finding the perfect blend: A comparative study of online, face-to-face, and blended instruction*. Denton, TX: University of North Texas.
- Pil, F. K., & Leana, C. (2009). Applying organizational research to public school reform: The effects of teacher human and social capital on student performance. *Academy of Management Journal*, 52, 1101–1124. doi:10.5465/AMJ.2009.47084647
- Rieg, S. A., Paquette, K. R., & Chen, Y. (2007). Coping with stress: An investigation of novice teachers' stressors in the elementary classroom. *Education*, 128(2), 211–227.
- Roness, D. (2011). Still motivated? The motivation for teaching during the second year in the profession. *Teaching and Teacher Education*, 27(3), 628–638.
- Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54–67.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68.

- Skaalvik, E.M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology*, 99(3), 611–625.
- Spector, B. S., Burkett, R. S., & Steffen, C. O. (2002). Factors contributing to preservice teachers' discomfort in a web-based course structured as an inquiry. *Journal of Educational Technology Systems*, 30, 293–310. doi:10.2190/RCFD-NC5M-3NMM-BQUG
- Stanulis, R. N., & Russell, D. (2000). "Jumping in": Trust and communication in mentoring preservice teachers. *Teaching and Teacher Education*, 16, 65–80. doi:10.1016/S0742-051X(99)00041-4
- Steele, A., Brew, C., Rees, C., & Ibrahim-Khan, S. (2013). Our practice, their readiness: Teacher educators collaborate to explore and improve preservice teacher readiness for science and math instruction. *Journal of Science Teacher Education*, 24, 111–131. doi:10.1007/s10972-012-9311-2
- Steinbrecher, T., & Hart, J. (2012). Examining teachers' personal and professional use of Facebook: Recommendations for teacher education programming. *Journal of Technology and Teacher Education*, 20, 71–88.
- Stoughton, E. H. (2007). "How will I get them to behave?": Pre service teachers reflect on classroom management. *Teaching and Teacher Education*, 23(7), 1024–1037.
- Sun, M., Loeb, S., & Grissom, J. A. (2017). Building teacher teams: Evidence of positive spillovers from more effective colleagues. *Educational Evaluation and Policy Analysis*, 39(1), 104–125.
- Sun, M., Penuel, W. R., Frank, K. A., Gallagher, H. A., & Youngs, P. (2013). Shaping professional development to promote the diffusion of instructional expertise among teachers. *Educational Evaluation and Policy Analysis*, 35, 344–369.
- Trapp, C. S. (2010). The association among emotional intelligence, resilience, and academic performance of preservice teachers (Unpublished dissertation). Tempe, AZ, USA: University of Phoenix.
- Tschannen-Moran, M. (2009). Fostering teacher professionalism in schools: The role of leadership orientation and trust. *Educational Administration Quarterly*, 45, 217–247. doi:10.1177/0013161X08330501

- Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The academic motivation scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, 52(4), 1003–1017.
- Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications*. Cambridge, NY: Cambridge University Press. doi:10.1017/CBO9780511815478
- Wigfield, A., Eccles, J. S., Schiefele, U., Roeser, R. W., & Davis-Kean, P. (2007). *Development of achievement motivation*. New York: John Wiley & Sons, Inc.
- Willegems, V., Consuegra, E., Struyven, K., & Engels, N. (2017). Teachers and pre-service teachers as partners in collaborative teacher research: A systematic literature review. *Teaching and Teacher Education*, 64, 230-245.