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Student teachers´ proactive strategies for avoiding study-related burnout during teacher education

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Student teachers' proactive strategies for avoiding study-related burnout during teacher education

Abstract

The study aims to gain a better understanding of the function of proactive strategies in buffering study burnout among student teachers at the early stage of their studies. There is some evidence that the use of active social coping strategies during studies is related to reduced burnout levels among early career teachers. Less is known about the association between the proactive strategies and burnout among student teachers. Altogether, 244 Finnish student teachers completed the survey. The data were analysed by using SEM. The results suggested that the proactive strategies adopted by student teachers seem to prevent study-related burnout, especially in terms of exhaustion in studies and inadequacy in studying, but not directly the perceived cynicism towards studies. The results imply that learning how to use proactive strategies is functional in coping with study-related stressors, by reducing the risk of student teachers' burnout.

Key words: well-being; burnout; proactive strategies; student teacher

Introduction

Although early career teachers are shown to be satisfied with, and even enthusiastic about, their work (Skaalvik and Skaalvik 2015; Goddard and Goddard 2006; Stockard and Lehman 2004), they also suffer from increased levels of stress (Hillel Lavian 2012; Chan 2002) and burnout (Hultell, Melin, and Gustavsson 2013; Gavish and Friedman 2010). Early indicators of increased risk of experiencing burnout later on in their career can emerge even during teacher education. Also, the means to cope with work-related stressors start to develop during studies. There is, for instance, evidence that, especially teaching practice can provide a significant stressor for student teachers (Mahmoudi and Özkan 2016; Klassen and Durksen 2014; Caires, Almeida, and Vieira 2012; Chaplain 2008), even to the extent that some student teachers develop burnout symptoms caused by their experiences (Fives, Hamman, and Olivarez 2007; Chan 2003).

Pre-service (Paquette and Rieg 2016; Klassen and Durksen, 2014; Knight et al. 2010; Chaplain 2008) and in-service teachers have been found to have partly similar stressors, such as heavy workload (Skaalvik and Skaalvik 2015; Hong 2010; McCallum and Price 2010; Clunies-Ross, Little, and Kienhuis 2008), time management and pressure (Skaalvik and Skaalvik 2015; Skaalvik

and Skaalvik 2010) and student misbehaviour (Hinds et al. 2015; Skaalvik and Skaalvik 2015; Clunies-Ross et al. 2008; Tait 2008). Also, student teachers' concerns about their competences (Knight et al. 2010; Zhang, Gan, and Cham, 2007), performance as teachers (Paquette and Rieg 2016; Chaplain 2008) and teacher educator's expectations (Mahmoudi and Özkan 2016; Klassen and Durksen 2014) are identified as sources of stress. Also, being observed and evaluated by teacher educators, for instance during teaching practices, may cause stress for student teachers (Paquette and Rieg 2016). Moreover, study-related stressors entail concerns about the student teacher's own academic ability (Zhang et al. 2007) and lack of confidence to reach the academic goals set (Pierceall and Keim 2007).

Prior research has shown that student teachers have adopted different strategies to cope with study stressors (Paquette and Rieg 2016; Gustems-Carnicer and Calderón 2013). The strategies employed while facing stressors have been shown to have a significant impact on early career teacher well-being. In particular, active and social coping strategies are suggested to be effective in buffering teacher stress (Väisänen et al. 2017; Aspinwall and Taylor 1997). Yet, coping strategies utilised by student teachers are not always functional in reducing burnout. For instance, according to Reichl et al. (2014) almost half of the first-year student teachers showed unhealthy coping behaviour and experienced exhaustion. Furthermore, the functional social strategies to cope with challenges during studies have been found to be related to burnout levels in the early phases of the career (Salmela-Aro, Tolvanen, and Nurmi 2011). Our understanding, however, about the kinds of strategies that are effective in proactively buffering student teachers' and early career teachers' burnout (Gustems-Carnicer and Calderón 2013) is still less than sufficient. This study aims to contribute to the earlier literature on early career teacher well-being by exploring the association between proactive strategy use and burnout experienced among student teachers already in the midst of their studies in teacher education.

Teacher burnout

Burnout results from prolonged work stress (e.g. Maslach 2003; Maslach, Schaufeli, and Leiter 2001; Freudenberger 1974). It has been shown that prolonged stress due to, for example, difficult classroom dynamics, is a significant predictor of teacher burnout (Hillel Lavian 2012). Burnout has three distinctive symptoms, including *exhaustion*, *cynicism*, and *inadequacy* (Pietarinen et al. 2013a; Moneta 2011; Pyhältö, Pietarinen, and Salmela-Aro 2011; Bresó, Salanova, and Schaufeli 2007; Schaufeli and Salanova 2007; Maslach et al. 2001). *Exhaustion* (Leiter and Maslach 2016;

Maslach 2003; Maslach et al. 2001; Maslach and Goldberg 1998; Maslach and Jackson 1981) refers to feelings of fatigue (Bresó et al. 2007; Schaufeli et al. 2002), whereas *cynicism* entails a negative or distant attitude towards work, study and other people (Bresó et al. 2007; Maslach 2003; Schaufeli et al. 2002; Maslach et al. 2001). *Inadequacy* consists of a reduced sense of accomplishment (Leiter and Maslach 2016; Maslach et al. 2001), feelings of incompetence, insufficiency and lowered sense of self-efficacy, i.e. inefficacy (Bresó et al. 2007; Schaufeli et al. 2002; Maslach and Goldberg 1998). Previous studies suggest that student teachers are reported to suffer especially from emotional exhaustion during their teacher education studies (Fives et al. 2007; Chan 2003).

There is partly contradictory evidence on the development of burnout symptoms, especially in terms of inadequacy, despite the fact that the interrelation between the exhaustion and cynicism has been verified across multiple settings (Maslach 2003; Maslach et al. 2001; see also Leiter and Maslach 2016). Inadequacy is shown to result both from the exhaustion and the cynicism, but it can also develop independently (Maslach and Leiter 2008; Maslach 2003; Maslach et al. 2001; Leiter 1993; Maslach and Jackson 1981). For example, exhaustion is found to predict a cynicism that further contributed to inefficacy (Moneta 2011). On the other hand, teachers' experienced sense of insufficiency, such as a lack of skills to handle with burdening situations caused by problematic encounters with pupils, may result in cynicism as a distancing mechanism (Pillay, Goddard, and Wilss 2005). However, there is insufficient understanding of the interrelation between experienced exhaustion, inadequacy and cynicism among student teachers.

Although, the majority of early career teachers only experience low levels of burnout (Hultell et al. 2013), they have found to have increased risk of burnout compared to their more experienced counter- parts (Gavish and Friedman 2010; McCallum and Price 2010; Goddard and Goddard 2006). However, early career teachers are also shown to be highly committed and often enthusiastic about their work (Tait 2008; Goddard and Goddard 2006). Student teachers are also shown to be committed to teaching profession, while stress, for instance due to the unmanageable workload or continuous student misbehaviour, may lower it already during the teacher studies (e.g. Klassen et al. 2013; Klassen and Chiu 2011). High commitment and motivation may buffer certain burnout symptoms among early career teachers, while increasing the risk of experiencing others. Teachers who enjoy teaching and perceive it to be significant are likely to invest a lot of effort in their work, which may result in an overly high workload and high time pressure, further contributing to exhaustion (Skaalvik and Skaalvik 2010). Similarly, if highly motivated student teachers do not succeed in their studies according to their own standards despite their efforts, they may further increase their workload, resulting in exhaustion (Jacobs and Dodd 2003). Accordingly, stressors

faced by the student teachers in their studies and early career teachers in their everyday work at school are highly similar.

Yet, setting high standards does not necessarily result in burnout if goals are realistic and achievable or when the student or early career teacher is capable of setting standards again to a proper level (Zhang et al. 2007). Accordingly, dedicated and well performing students experience less exhaustion, and are shown to be the least cynical (Schaufeli et al. 2002). Student teachers are often shown to experience themselves as highly competent and happy with their performance as teachers (Kaldi 2009). During the first year of teaching, teachers tend to suffer the lowest levels of cynicism, whereas their sense of inadequacy is the highest (Gavish and Friedman 2010; see also Leiter and Maslach 2016). A number of student teachers are suggested to experience inadequacy during teaching practice, due to less developed abilities to work with students (Bloomfield 2010). This implies that the inadequacy experienced during teacher studies and when entering the profession may play a central role in developing burnout.

Those teachers who start to develop burnout symptoms only a few months after entering on a teaching career, may have exposed to burnout already during their teacher education, i.e. may be burned out already when they go into schools (Salmela-Aro et al. 2011; Gavish and Friedman 2010). There is evidence that academic success and good health among student teachers predict lower initial levels of burnout, whereas low academic success and poor health predict higher levels of burnout, at the beginning of their teaching career (Hultell et al. 2013). A reason for this may be that some early career teachers have not developed sufficient coping strategies to deal with work stressors during their teacher education. Accordingly, preparing student teachers to monitor and regulate their own and others' well-being may improve their coping with demanding situations when they have entered the working life (Olsen 2017). Exploring the association between the student teachers' proactive strategies and study burnout is likely to provide new insights into how to prevent teacher burnout latter on in their career.

Student teachers' proactive strategies

Student teachers can use different strategies to cope with study stressors. The strategies used regulate the burnout symptoms experienced (Väisänen et al. in press; Carnicer and Calderón 2014; Gustems-Carnicer and Calderón 2013). In general, active and social strategies are found to be effective in buffering stress among student teachers (e.g. Väisänen et al. 2017; Alarcon, Edwards,

and Menke 2011). For example, inadequate use of active strategies has been associated with increased psychological distress (Carnicer and Calderón 2014). On the other hand, problem-focused strategy use is shown to be related to reduced levels of academic-related stress (Renk and Smith 2007). In turn, avoidance coping strategies that are utilised, such as avoiding thinking about the problems, are linked to lower psychological well-being (Carnicer and Calderón 2014; Gustems-Carnicer and Calderón 2013).

Student teachers, do not, however, simply react to a certain stressor; they can also make efforts to deal with future stressors. They can utilise *proactive strategies* to buffer potential stressors in advance, by building and using the resources at hand (Straud, McNaughton-Cassill, and Fuhrman 2015; Aspinwall and Taylor 1997). Accordingly, proactive coping is future-oriented (Gan et al. 2007; Aspinwall 2005; Greenglass 2005) and entails efforts to prevent or adjust a potentially stressful event before it occurs (Aspinwall and Taylor 1997). It entails treating stressors and demands as challenges (Straud et al. 2015; Greenglass and Fiksenbaum 2009) rather than threats (ibid.). It is suggested that effective proactive coping encompasses planning, organizing and managing a burden (Greenglass 2005; Aspinwall and Taylor 1997). Also, an ability to plan and to be organized are helpful in identifying future stressors and developing methods for coping with university studies (Straud et al. 2015). Accordingly, teacher education provides an essential context for student teachers to develop such strategies (Caires et al. 2012; Randi, Corno, and Johnson 2011).

There is some empirical evidence that proactive coping is effective in reducing the effects of stress (Gan et al. 2007) among both pre- and in-service teachers. For instance, proactive coping that focuses on problem solving has been shown to reduce psychological distress among student teachers (Gustems-Carnicer and Calderón 2013). Also, in-service teachers who are proactive in coping are less prone to burnout (Pietarinen et al. 2013a; Schwarzer, Schmitz, and Tang 2000). Proactive coping has been associated with reduced levels of emotional exhaustion and cynicism via exhaustion (Greenglass 2005). Moreover, the use of proactive strategies is related to the teacher's sense of professional competence (ibid.). This indicates that proactive coping might also be effective in reducing student teachers' risk of study burnout (Väisänen et al. in press; Aspinwall and Taylor 1997), through minimizing the impact of stressful transaction as well as buffering them in advance (ibid.).

Proactive strategies can consist of both self-regulative and co-regulative activities (Pietarinen et al. 2013a). Proactive coping requires a capability to regulate one's own thoughts, emotions and behaviours in different potentially stressful situations i.e. to *self-regulate* (Chang 2009; see also

Pintrich 2004; Zimmerman 2002; Boekaerts, Pintrich, and Zeidner 2000) as well as drawing from or building social resources i.e. *co-regulation*, such as asking for help from or providing help to others. For example, proactive self-regulation in classroom management includes reflecting on potential risks beforehand and thus being prepared to face problems (Soini, Pyhältö, and Pietarinen 2010; Chang 2009), whereas co-regulative actions can entail discussing alternative ways of resolving challenging situations in advance with peers (Randi et al. 2011). Accordingly, proactive co-regulation (Pietarinen et al. 2013a; see also Järvelä, Volet, and Järvenoja 2010) involves identification and active use of those social resources student teachers have in order to cope with stressors.

Self-regulatory strategies, such as time or workload management, are shown to be utilised by student teachers (Paquette and Rieg 2016; Price and McCallum 2015; Randi et al. 2011). Student teachers manage stress proactively, for example by organizing their time by defining their own priorities for work and free time (Paquette and Rieg 2016; Murray-Harvey et al. 2000) and taking intentionally the time for planning (Paquette and Rieg 2016). Time management, such as setting and prioritising goals and planning in advance, can be used for countervail the negative effects of high work demands, impede exhaustion (Peeters and Rutte 2005) and to lower stress (Misra and McKean 2000). Early career teachers also recognise the importance of avoiding work overload, managing their personal time and prioritising for their well-being (McCallum and Price 2010). On the other hand, student teachers who have problems regulating their learning and studies are shown to experience most often stress and exhaustion (Heikkilä et al. 2012).

Social resources have a significant impact on developing and maintaining proactive coping strategies among student teachers (Väisänen et al. 2017; Murray-Harvey et al. 2000). There is evidence that use of functional strategies is predicted by social support, for example receiving advice or asking for feedback from peers or teacher educators to cope with stressful situations (Mahmoudi and Özkan 2016; Paquette and Rieg 2016; Alarcon et al. 2011). Moreover, the use of co-regulative strategies is shown to reduce the exhaustion, cynicism towards teacher community and inadequacy in teacher-student interaction among in-service teachers (Pietarinen et al. 2013a). Conversely, inadequate support may cause stress (Väisänen et al. 2017; Hillel Lavian 2012). Student teachers, for example, manage stress proactively by sharing their concerns (Klassen and Durksen 2014). Receiving social support is found to buffer burnout, especially cynicism (Jacobs and Dodd 2003). Social support may ease proactive coping among student teachers, by providing a source of informational support (Väisänen et al. 2017; Price and McCallum 2015; Renk and Smith 2007; Aspinwall and Taylor 1997). Accordingly, use of a proactive strategy both in terms of self-

and co-regulation is likely to be effective in building student teachers' capacity to cope with stressful transactions during the course of teacher education (Pietarinen et al. 2013a).

Aim of the study

The study aims to gain a better understanding of the interrelations between the proactive strategy use and study burnout experienced among student teachers at the early stages of their teacher studies. Accordingly, the association is explored between proactive self- and co-regulated strategies and study related exhaustion, inadequacy and cynicism. Our presumption is that learning how to utilise proactive strategies during the teacher studies is beneficial in terms of reducing student teacher burnout. Based on the previous research, the following hypotheses were tested (see Figure 1):

1. Proactive (STRA) self- and co-regulative strategies regulate student teachers' cynicism towards studies (CYN), the experienced exhaustion in studies (EXH) and the inadequacy in studying (INAD) (e.g. Pietarinen et al. 2013a; Greenglass 2005; Jacobs and Dodd 2003).

2. Experienced exhaustion in studies (EXH) and inadequacy in studying (INAD) regulate the cynicism towards studies (CYN) (e.g. Pillay et al. 2005).

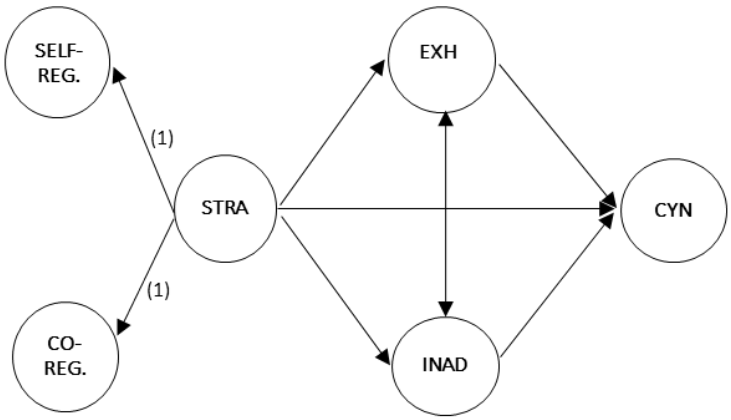


Figure 1. Hypothesised model of the relations between student teachers' proactive strategies (SELF-REG and CO-REG) and study-related burnout symptoms (EXH, CYN and INAD).

Method

Research context

In Finland, all primary school teachers must have a master's degree, and they typically teach grades 1–6 (age 7–13). Class teacher education is one of the most popular study programmes in the universities. Approximately 10% of applicants are approved on the training programme. Hence, the student teachers are highly motivated (Niemi and Jakkula-Sihvonen 2011) and diligent (Niemi and Jakku-Sihvonen 2006). The MA degree consists of 300 credits, and studies take five years. The primary teacher students' major is either educational science or educational psychology (140 credits, of which 20 credits come from teaching practice). The degree also consists of multidisciplinary studies of various subjects and cross-curricular issues covered in comprehensive school (60 credits), orientation studies (25 credits), and optional minor subject and optional studies (75 credits).

Participants

Altogether 244 first-year primary school student teachers from three Finnish universities completed the study survey (women n=186, 76.2%; men n=58, 23.8%). The average age was 24.2 (SD = 5.35; Min/Max = 20/46; Md=22; Mo=21) years. They had all started their studies in the autumn of 2012, and they had completed their first teaching practice. The total response rate was 83%. The sample represented the whole first year primary teacher student population at particular Finnish universities sufficiently in terms of gender and age.

The data was collected from student teachers during the spring of 2013. Participants were informed about the study. Participation was on a voluntary basis, strictly confidential, and they had an opportunity to withdraw from the study at any phase if they chose to do so (see Kvale 2007, 27-28; Raffe, Bundell, and Bibby 2005). Also, information on the participants was given without compromising their anonymity at any phase of the research process (ibid.). Accordingly, the ethical code of conduct set by the Finnish Advisory Board on Research Integrity was followed (see Finnish Advisory Board on Research Integrity 2012). Participants completed the questionnaire during a lecture. It took about 20 minutes to complete. Data were collected by the trained researchers of the research group. In turn, to make sure that all students included in the sample have equal opportunities to participate in and answer the survey, the questionnaire was sent by mail to those students who did not attend the lectures.

Measures

Student teachers completed a questionnaire containing scales measuring proactive strategies and study burnout. Two scales for measuring student teachers' proactive strategies and burnout were developed for the study by the authors. The instrument used draws on the Socio-Contextual Teacher Burnout Inventory (STBI) (see Pietarinen et al. 2013a, 2013b). The instrument was modified for student teachers and the pilot tested in a teacher education unit.

The *Proactive Strategy* scale was based on the research evidence showing that functional proactive strategies for reducing exhaustion, inadequacy and cynicism can be adopted (Pietarinen et al. 2013b). The scale consists of seven items measuring two factors of proactive strategies: a) *self-regulation* (4 items), and b) *co-regulation* (3 items).

The *Student Teacher Burnout* scale (STB) draws both on Maslach and Jackson's (1981) burnout scale and Elo, Leppänen, and Jahkola's (2003) single-item stress scale that measures perceived exhaustion. The STB scale consists of eight items measuring three factors of student teacher burnout in teacher studies: a) *exhaustion in studies* (3 items), b) *inadequacy in studying* (3 items) and c) *cynicism towards teacher studies* (2 items). All items were rated on a 7-point Likert scale ranging from 1 (completely disagree) to 7 (completely agree), excluding the stress item, which was rated on a 10-point scale.

Data analysis

Structural Equation Modeling (SEM) was used to test the hypothesised model (see Figure 1). Confirmatory analysis strategy made it possible to analyse the relations between variables and latent factors. It also allowed us statistically define the extent to which a hypothesised model was in-line with the data. The analyses were conducted using an Mplus statistical package version 6.11. (Munthén and Munthén 1998−2010.) Robust maximum likelihood (MLR) was used as a method of estimation, because it produces maximum likelihood estimates with standard errors and χ^2 test statistics that are robust to non-normality. The goodness-of-fit of the estimated standardised model was assessed by a χ^2 test, the Comparative fit index (CFI), Tucker-Lewin Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardised Root Mean Square Error of Approximation (SRMR) (Munthén and Munthén 1998−2010). Cronbach's alpha coefficient has been used for evaluating the reliability of the questionnaire used (see Table 1). Reliability

coefficient alphas were all sufficient, ranging between .66 and .84 (see Nunnally and Bernstein 1994, 264−266).

Results

The hypothesised latent factor structures of student teachers' proactive strategies and burnout scales were tested (Hu and Bentler 1999; Bollen 1989). The means, Cronbach alpha reliability coefficients, standard deviations and correlations for the mean variables are shown in Table 1.

Table 1. Correlations, means, standard deviations and alphas among all the factors

Variable	1.	2.	3.	4.	5.	6.
1. Co-regulative strategy (CO)	–					
2. Self-regulative strategy (SELF)	.55	–				
3. Proactive strategies (STRA)	.82	.93	–			
4. Exhaustion (EXH)	-.22	-.57	-.49	–		
5. Inadequacy (INAD)	-.35	-.51	-.50	.56	–	
6. Cynicism (CYN)	-.25	-.26	-.29	.23	.51	–
M	5.41	5.23	5.31	3.92	3.26	2.64
SD	.93	1.06	.89	1.67	1.28	1.36
α	.66	.84	.84	.81	.77	.75

* Observed means were used in correlations. All the correlations were significant at the 0.01 level.

Table 1 shows that all bivariate scale correlations among sub-scales were statistically significant in the directions expected. The scales and items used in this study are presented in Table 2 (see Appendix 1). Results also showed that the proactive strategies adopted by student teachers were at the relatively high level (STRA, M=5.31). More specifically, student teachers were able to utilise the self-regulative strategies (SELF-REG, M=5.23), such as workload management in studies, proactively. They were also able to use the co-regulative strategies (CO-REG, M=5.41), i.e. to receive, give and ask for social support needed when facing stressful transactions in their studies.

Student teachers reported higher level of exhaustion in studies (EXH, M=3.92) compared to experienced inadequacy (INAD, M=3.26), i.e. the sense of incompetence, or the cynicism towards their studies (CYN, M=2.64), i.e. alienation from the teacher education studies. Accordingly, first-year student teachers reported diverse proactive strategy use in buffering study-related burnout

symptoms. Moreover, the higher level of experienced exhaustion in studies compared to inadequacy in studying and the cynicism towards the studies suggests that student teachers are committed to studying in teacher education and invest a great deal of effort in studying at the early phase of teacher education studies (see Table 1).

The theoretical model tested confirmed that the proactive strategies, including self- and co-regulative strategies correlated negatively with perceived exhaustion in studies (-.64) and inadequacy in studying (-.63) (see Figure 2). Moreover, the experienced exhaustion and inadequacy in studying correlated positively with each other (.48). The proactive strategies used by student teachers significantly explained the experienced exhaustion in studies (R^2 = .41) and inadequacy in studying (R^2 = .40). Hence, the results confirmed that the proactive strategies adopted by student teachers regulate the study-related burnout in terms of the experienced exhaustion in studies and the inadequacy in studying in teacher education (hypothesis 1). However, the proactive strategies did not directly regulate the perceived cynicism towards studies as were assumed in hypothesis 1. This result indicates that the use of proactive strategies is effective in buffering the experienced exhaustion in studies and the inadequacy in studying. At the same time, it is ineffective in directly buffering the perceived cynicism towards studies.

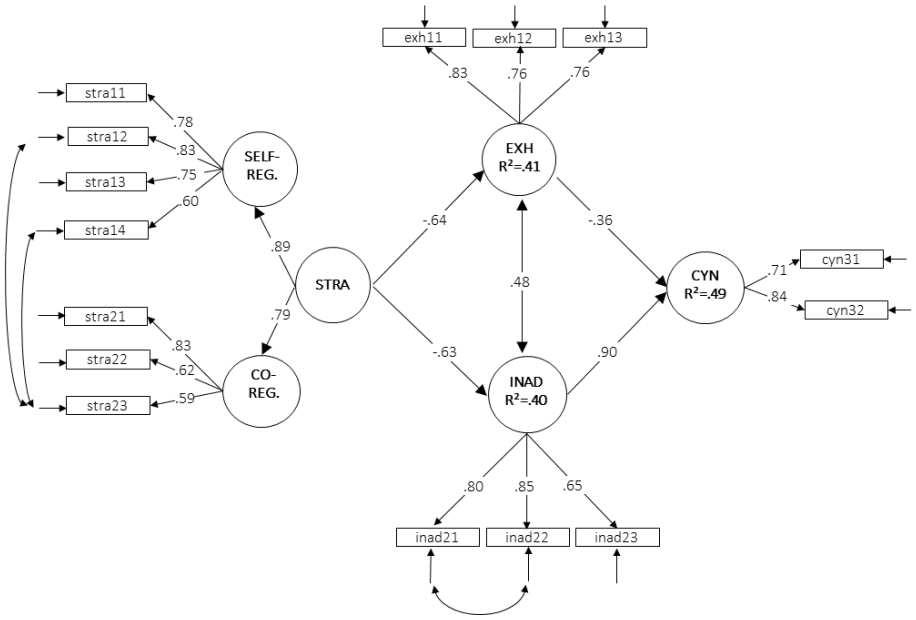


Figure 2. Standardized model of student teachers' proactive strategies that regulate study-related burnout: $\chi^2(81) = 163.35$, p <.001; RMSEA = .07 (90% C.I. = .05–.08); CFI/TLI = .94/.92; SRMR = .09.

Further investigation showed that the experienced exhaustion in studies correlated negatively with the perceived cynicism towards teacher studies (-.36). Accordingly, the perceived stress and concerns related to studies did not increase the cynicism towards studies, i.e. alienation from the teacher education at the beginning of the studies. The experienced inadequacy in studying correlated positively and significantly with perceived cynicism towards studies (.90). Accordingly, if student teachers experienced inadequacy in studying, i.e. questioned whether they have worked enough, suffered from a sense of insufficiency and failing, the cynicism towards studies increased (see Figure 2).

The perceived exhaustion in studies and inadequacy in studying explained significantly the perceived cynicism towards studies (R^2 = .49). This is in line with the hypothesis 2, i.e. student teachers' experienced study-related burnout is composed of three distinct but correlated burnout symptoms. Hence, the study-related experienced exhaustion and inadequacy regulated the perceived cynicism.

Concluding discussion

This study provided new insights into the interrelation between student teachers' proactive strategies and study-related burnout at the early stages of teacher studies. Previous studies have shown that the strategies that student teachers utilise may either increase or hinder their psychological distress (e.g. Gustems-Carnicer and Calderón 2013). In particular, in this study, the proactive strategies adopted by student teachers were related to reduced levels of study-related burnout primarily in terms of exhaustion and inadequacy. Accordingly, our results confirmed that proactive coping strategies are effective in buffering work-related stress (e.g. Straud et al. 2015; Pietarinen et al. 2013a; Aspinwall and Taylor 1997) also among student teachers during the studies. However, proactive strategies did not contribute directly to the perceived cynicism towards studies. In general, student teachers reported high levels of proactive strategy use combined with low levels of study exhaustion, inadequacy and cynicism towards studying. This implies that student teachers successfully utilised proactive strategies, contributing to low levels of study exhaustion and feeling less inadequate to carry out their studies (see also Renk and Smith 2007; Greenglass 2005).

There is contradictory evidence on the development of burnout symptoms and their interrelations (e.g. Moneta 2011; Maslach and Leiter 2009; Leiter 1993; Maslach and Jackson 1981; see also

Leiter and Maslach 2016). Our study provided new insights into the interrelations of the burnout symptoms in the context of teacher education. The results suggested that study exhaustion was negatively related to cynicism towards studies. Student teachers are highly committed, motivated (see Niemi and Jakkula-Sihvonen 2011) and enthusiastic (Anttila et al. 2017) in their studies, and hence are likely to invest a great deal of effort in their studies, resulting in fatigue caused by work overload, rather than cynicism towards studies. The hypothesis is also supported by prior studies suggesting that the most dedicated students usually suffer the least cynicism (Schaufeli et al. 2002), and that the cynicism is least experienced at the early phase of teaching career (Gavish and Friedman 2010).

In turn, the experienced inadequacy in studies was related to increased levels of cynicism towards studies. This implies that the sense of inadequacy is a central determinant of student teachers' cynicism towards studies. Our assumption is that the experiencing constant failure or insufficiency may cause cynicism as a distancing mechanism from studies that protects the student from the effects of further failure (e.g. see Pillay et al. 2005). The assumption is supported by the fact that early career teachers have been shown to experience inadequacy rather than exhaustion or cynicism (Gavish and Friedman 2010). While inadequacy in studies was related to increased levels of cynicism towards studies, the association between the study exhaustion and the cynicism was negative. The results imply that student teachers should be able to develop research based understanding on the dynamics challenging teacher's occupational well-being and the means to cope with these challenges proactively already during the teacher studies (e.g. Olsen 2017; Yager 2009). This calls for paying more attention in processing interrelation between the pedagogical practices and well-being in the classroom and in the professional community (e.g. Soini et al. 2010). This is further likely to contribute to future teachers' capacity to enhance both learning and well-being in the school community in their work.

Our study also contributed to the understanding on the burnout prevention among student teachers by showing that the proactive strategies were functional in buffering student teacher's study burnout, primarily exhaustion and inadequacy at the early phase of teacher studies. Accordingly, the finding has two main implications for teacher education. Firstly, to be able to buffer study burnout, which has shown to increase burnout risk latter on in work life (see also Salmela-Aro et al. 2011), learning of both self- and co-regulative proactive strategies should be facilitated from the beginning of teacher studies. This entails learning, for instance, how actively both to utilise and contribute to the social resources (e.g. Renk and Smith 2007; Murray-Harvey et al. 2000), learning how to manage time (e.g. Paquette and Rieg 2016; Misra and McKean 2000), and to set and

prioritize study goals (see also Zhang et al. 2007) in order to enhance their well-being. It can be assumed that the strategies buffering the student teachers' study burnout are also functional in promoting their well-being when entering the profession, due to the fact some of the stressors such as workload and student misbehaviour are the same that in-service teachers face (Klassen and Durksen 2014; Chaplain 2008). Moreover, the pre-assumption is also supported by the fact that proactive strategies are shown to be effective in reducing in-service teachers' burnout (Pietarinen et al. 2013a). Moreover, if student teachers learn to recognise the significance of and utilise social resources and collegial support already during their teacher studies, they are more likely to rely and actively draw on them when entering the teaching profession, which further reduces the risk for developing burnout during the early year of teaching that has shown to be stressful (see Goddard and Goddard 2006; Chan 2002). Learning of such skills, however requires opportunities to learn them, for instance, by carrying out collaborative and supported analysis on the authentic situations that challenge a student teacher's experienced well-being, during the teaching practice, with teacher educators and peers. Accordingly, student teachers do not learn proactive strategies that are functional in burnout prevention as a side product of teacher studies, but they need to be explicitly integrated into aims and practised teacher education. This challenges teacher educators to develop the kind of pedagogy that engages student teachers in reciprocal and constructive feedback practices facilitating both learning and well-being simultaneously from the very beginning of their studies (see Väisänen et al. 2017). This is especially typical during teaching practices simulating teacher's work in the classroom, and during which the students' behaviours are observed and they receive feedback form their teaching (Paquette and Rieg 2016). Without appropriate support, feedback and proper guidance (Väisänen et al. 2017) these developmental opportunities may turn as a source of stress (Paquette and Rieg 2016) instead of promoting meaningful learning.

Secondly, the results imply that particularly efforts to buffer student teachers' sense of inadequacy during their teacher studies might be worthwhile since not only a positive association between the study exhaustion and inadequacy occurred, but inadequacy provided a route to cynicism towards studies. Cynicism towards studies can be considered particularly problematic because it may alienate student teachers from learning to become teachers and increase the risk for study turnover, further alienation from the studies may prevent student teachers from learning active strategies for regulating their own and others' (i.e., peers and students) learning and well-being in school (see also Roffey 2012; Soini et al. 2010).

Finally, there are some limitations of the study. The response rate was high, and the sample well represented the group of student teachers at particular Finnish universities. Nevertheless, the scales

have not been validated in other teacher educational contexts in different countries; accordingly, further studies in different cultural contexts are needed to validate the measures. Also, the validity and reliability of co-regulative strategy measures could be increased by constructing additional items into a sub-scale.

The cross-sectional design was adopted; hence, further longitudinal studies are needed to investigate both the consistency of the proactive strategies buffering study burnout symptoms and the student teachers' developmental trajectories in terms of study burnout and proactive strategies during teacher education. Moreover, the development of the interrelations between the self- and co-regulative strategies, experienced burnout symptoms and the social support system provided by teacher education should be investigated in future studies.

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