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Title: Study engagement and burnout profiles among Finnish higher education students

Year: 2017

Version:

Please cite the original version:

Salmela-Aro, K., & Read, S. (2017). Study engagement and burnout profiles among Finnish higher education students. Burnout Research, 7, 21-28. https://doi.org/10.1016/j.burn.2017.11.001

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Burnout Research 7 (2017) 21–28

Contents lists available at ScienceDirect

Burnout Research

journal homepage: www.elsevier.com/locate/burn

Study engagement and burnout profiles among Finnish higher education students

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ARTICLE INFO

Keywords:
Study burnout
Study engagement
Profiles
Person-oriented approach
Higher education
Study stage
Demands-resources

ABSTRACT

A person-oriented approach was applied to identify profiles of study engagement and burnout (i.e., exhaustion, cynicism, inadequacy) in higher education in a large and representative sample of 12,394 higher education students at different phases of their studies in universities and polytechnics in Finland. Four profiles were identified: *Engaged* (44%), *engaged-exhausted* (30%) *inefficacious* (19%) and *burned-out* (7%). The engaged students had the most positive engagement accompanied with the least burnout symptoms compared to other groups. The engaged-exhausted students experienced emotional exhaustion simultaneously with academic engagement. The inefficacious group had heightened experience of inadequacy as a student. The burned-out students showed very high cynicism and inadequacy and very low academic engagement compared to the other groups. Of these groups, the engaged students tended to be in the earlier stages in their studies, whereas the burned-out and inefficacious students had been studying the longest. The pattern suggests that students starting out with high engagement and that burnout becomes more common later in the academic career. Supporting demands-resources model, the covariates reflecting the demands were higher and those reflecting resources were lower among the burned-out and inefficacious students compared to the engaged students.

1. Introduction

Higher education is a demanding context in which students work with the aim of achieving a degree: they attend courses, do assignments in order to pass courses and strive to meet deadlines (Robotham, 2008; Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002). Burnout in the study context can be defined as a syndrome of emotional exhaustion that is an outcome of high perceived study demands, the development of a cynical and detached attitude towards one's studies and feelings of inadequacy as a higher education student (Salmela-Aro, Kiuru, Leskinen & Nurmi, 2009; Schaufeli, Martinez et al., 2002). Recently, however, the research focus has shifted from burnout to academic engagement in the school (Fredricks, Blumenfeld, & Paris, 2004; Salmela-Aro & Upadaya, 2012, 2014), work (Schaufeli, Martinez et al., 2002) and, to a lesser extent, university (Schaufeli, Martinez et al., 2002) contexts. In higher education, academic engagement can be defined as vigour, dedication and absorption (Salmela-Aro & Upadaya, 2012; Schaufeli, Martinez et al., 2002). In the present study, conducted in Finland, our aim was to identify study burnout and engagement profiles using a large and representative sample of higher education students in universities and polytechnics. Second, the aim was to examine the extent to which these different profiles would differ in terms of their demands and resources. Third, we examined possible gender differences, and the extent to which profiles differed among students at different stages of their studies.

Higher education is an important developmental context for young people. While many concepts, such as low academic achievement and motivation, poor self-esteem, stress and tiredness, and internal and external problem behaviours (e.g., Robotham, 2008) have been used to describe maladjustment in education, little research has been carried out in higher education-related study burnout. Higher education-related exhaustion can be defined as study-related feelings of strain and stress, particularly chronic fatigue, a potential first sign of study burnout, resulting from perceived overtaxing study load and study demands. Higher education-related cynicism, in turn, is manifested as an indifferent or a distant attitude towards studying in general, a loss of interest in one's academic work and not seeing higher education as meaningful. Lack of studying-related efficacy and feelings of inadequacy as a student refer to diminished feelings of competence, successful achievement and accomplishment (Salmela-Aro, Tolvanen et al., 2009). Parker and Salmela-Aro (2011) presented evidence that emotional exhaustion and cynicism are independent constructs that

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https://doi.org/10.1016/j.burn.2017.11.001
Received 8 August 2017; Received in revised form 9 November 2017; Accepted 9 November 2017
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predict differences in feelings of inadequacy over time. Their results suggested that a model in which emotional exhaustion and cynicism were initial and consistent predictors of feelings of inadequacy yielded a significantly better fitting model than the alternative frameworks. Inadequacy can thus be seen as an element in the last phase of the study burnout process and one which increases risk of dropout (see also Tinto, 2007).

Burnout in higher education overlaps with some earlier concepts. For example, exhaustion, measured as feelings of being overwhelmed, having difficulty in sleeping due to worrying and ruminating, resembles the concepts of tiredness, anxiety and, in particular, stress (Bush, Thompson & Van Tuvergen, 1985; McNamara, 2000; Robotham, 2008). In turn, cynicism and reduced accomplishment, measured as loss of interest, apathy, feelings of disappointment and inadequacy, resemble depressive symptoms (Andrews & Wilding, 2004). However, whereas stress, tiredness, anxiety and depressive symptoms do not refer to any given context, burnout in higher education is a context-specific measure, measured strictly in the context of higher education. Burnout in the study context is a serious problem, as studies of students in school have found that burnout can lead to depression later in life (Salmela-Aro, Savolainen & Holopainen, 2009; Salmela-Aro & Upadyaya, 2014) and to dropout (Bask & Salmela-Aro, 2012).

Research interest has recently shifted from burnout to engagement in the school (Salmela-Aro & Upadyaya, 2012), university (Schaufeli, Martinez et al., 2002; Uludag & Yaratan, 2010) and work (Maslach, Schaufeli, & Leiter, 2001; Schaufeli, Martinez et al., 2002; Schaufeli & Salanova, 2007; Schaufeli, Salanova, Gonzale-Roma & Bakker. 2002) contexts. In the present study, study engagement in higher education is defined as vigour, dedication and absorption (Salmela-Aro & Upadyaya, 2012; Schaufeli, Salanova et al., 2002) and is thus a positive, fulfilling state of mind. Vigour is characterized by high levels of energy and mental resilience while studying and the willingness to invest effort in studying. Dedication is characterized by the sense of significance attributed to and inspiration felt towards studying. Absorption, the last dimension of engagement, is characterized by being fully concentrated and happily engrossed in one's academic work. Recent studies have found a negative correlation between school burnout and school engagement (Salmela-Aro & Upadaya, 2012; Schaufeli, Salanova et al., 2002), and in a cross-lagged model burnout negatively predicted later engagement in school (Salmela-Aro & Upadyaya, 2014).

However, the existing research on study engagement and burnout has two main weaknesses. First, studies using a person-oriented approach to capture study engagement and burnout simultaneously are lacking (for an exception, see Tuominen-Soini and Salmela-Aro, 2014). In their study, Tuominen-Soini and Salmela-Aro (2014) identified four profiles among high school students: engaged (44%), engaged-exhausted (28%), cynical and (14%) and burned-out (14%). Second, studies among higher education studies in particular, using large and representative samples, are lacking. These weaknesses indicate the need to further examine the different combined study engagement and burnout profiles and their characteristics.

Previous psychological research has shown that young people's perceptions and experiences of higher education are associated with various adjustment outcomes. In line with the demands-resources model in work (Bakker & Demerouti, 2006) and school (Upadyaya & Salmela-Aro, 2013) contexts, study-related burnout and low engagement could be related to depressive symptoms and to impaired quality of life (e.g., Kasen, Johnson, & Cohen, 1990). Previous studies in the school context have found burnout to be associated positively with depression and anxiety, and negatively with self-esteem (Fimian & Cross, 1986; Salmela-Aro, Tolvanen et al., 2009; Salmela-Aro & Upadyaya, 2014). Research following the JD-R model (Bakker & Demerouti, 2006; Demerouti et al., 2001) has shown that multiple physical, psychological, social and organizational demands and resources are related to school burnout and engagement (Salmela-Aro & Upadyaya, 2014). In the educational context of burnout has also been linked with tedium, poor school-life quality, an external locus of control, self-handicapping and failure-avoidance achievement strategies (Fimian & Cross, 1986; Covington, 2000). Cynicism, in turn, is related to a low level of resources, such as lack of feedback, low control and lack of social support (Demerouti, Bakker, Nachreiner & Schaufeli, 2001). In the present study, we examine how the different study engagement and burnout profiles differ in the key demands and resources.

Previous research has shown gender differences in academic achievement and adjustment. For example, females tend to perform better than males (e.g., Pomerantz, Altermatt, & Saxon, 2002) and to attribute greater importance to academic achievement compared to males (Berndt & Miller, 1990). However, females also experience higher levels of stress (e.g., Ge, Lorenz, Conger, Elder, & Simons, 1994; Reiseberg, 2000), school burnout (Kiuru, Aunola, Nurmi, Leskinen & Salmela-Aro, 2009) and internalized symptoms (e.g., Pomerantz et al., 2002) compared to males. As young people make the transition to higher education, they may perceive their new educational context as more competitive. There is evidence to suggest that females respond more negatively to competitive learning conditions than males as well as attribute greater importance than males to academic achievement (Salmela-Aro & Tynkkynen, 2012). In line with this, other studies have shown that females are not only more exposed to stressful life events, but are more vulnerable to their negative effects (Ge et al., 1994; Kessler & McLeod, 1984; Turner, Wheaton & Lloyd, 1995). In turn, females have also been found to experience more school and study engagement (Vasalampi, Salmela-Aro & Nurmi, 2009) than males. Consequently, we assumed women in higher education would experience both a higher level of study burnout, particularly exhaustion and inadequacy, and study engagement compared to men.

In Finland, adolescents on a post-compulsory education have been compared to those on a vocational track for signs of school burnout and engagement (Salmela-Aro, Kiuru & Nurmi, 2008). The results showed that those on an academic track experienced more feelings of inadequacy more often than peers on a vocational track. The nature of the academic and vocational education environments and of the transition itself play an important role in the changes in how students think and feel in higher education (see Entwisle, 1990; Wigfield et al., 1996). For example, Eccles and Midgley (1989) proposed that negative developmental changes may result if the educational context does not provide educational environments that are developmentally appropriate for young people, and that a negative developmental fit may lead to cynicism.

Studies examining changes in study burnout and engagement during higher education are lacking (Andrews & Wilding, 2004). Earlier research reported that high levels of school engagement and low levels of school burnout had effects on entrance into higher education: engagement in high school predicted success in the educational transition from upper secondary school to university, whereas burnout in high school predicted delay in studies and low educational aspirations after upper secondary school (Vasalampi et al., 2009). Moreover, as university entrance examinations are demanding and difficult, some undergraduates might experience a honeymoon period during the first year of their studies. Hence, we assumed that first-year students in higher education experience a high level of study engagement and a low level of study burnout. In addition, some students experience difficulties in progressing in their studies, leading to delay in graduation from higher education (Statistics Finland, 2007). We assumed these students especially would be at risk for burnout (Vasalampi et al., 2009): delay in studies is assumed to be stressful and to be manifested as cynicism and inadequacy towards studying. Among nursing students, the level of stress was found to increase during their studies (Deary, Watson & Hogston, 2003). However, studies examining differences in study burnout and study engagement at the different stages (early, middle, late) of higher education are lacking.

Earlier studies have shown that adolescents display different patterns of academic and socioemotional functioning and that, in a

minority of adolescents, adjustment problems in school appear to cluster (e.g., Archambault et al., 2009; Li & Lerner, 2011; Roeser & Peck, 2003; Roeser et al., 2002; Tuominen-Soini & Salmela-Aro, 2014). This study, conducted in Finland, is the first to apply a person-oriented approach to the study of engagement and burnout simultaneously among a large representative sample of students in higher education. Our aim was to complement the existing research, most of which has been conducted in the United States and have mainly concerned younger adolescents. The primary objective was to examine what different study engagement and burnout profiles higher education students show, and how these profiles are associated with the stage of study. Applying a person-oriented approach, we focused on classifying youth into homogeneous groups with similar profiles of study engagement and different levels of burnout symptoms, that is, exhaustion in higher education, cynicism toward the meaning of higher education, and sense of inadequacy as a student.

Specifically, we sought answers to the question: What study burnout and engagement profiles can be identified and do these profiles change across three measurement occasions, viz. 2008, 2012 and 2016? Based on previous work among high school students, we expected to find the profiles engaged, engaged-exhausted, cynical and burned-out (Tuominen-Soini & Salmela-Aro, 2014). In more depth, we expected to find higher education students characterized by high engagement and low burnout (students with multiple strengths), students characterized by low engagement and high burnout (students with multiple problems), students who are academically engaged but also show some signs of emotional distress (poor mental health), and students who display low engagement in school but no other notable problems. Second, in line with demands-resources model, we compared the identified profiles based on demands and resources and expected the burnout profiles experience more demands and less resources compared to those in engaged profiles. Finally, compared the profiles according to gender and we also asked, do students' study burnout and engagement profiles differ during the various stages of their studies (early, middle, late)? We assumed females to be overrepresented in both engaged and burnout profiles and that burnout would be lower and engagement higher among students in the early stages of their studies compared to those in the later stages.

2. Method

Finnish tertiary education. The tertiary level of the education system in Finland, the so-called higher education system, is binary, comprising universities and polytechnics. The requirement for admission to higher education is a secondary general or vocational education diploma. Universities, which are academic or arts-based institutions, focus mainly on research, and the education is research-based. Polytechnics offer more occupation-related education in response to labour market needs but also research-based education. Finland has 16 universities and 25 polytechnics. Since 2010, the universities have been legally independent of the state; of the polytechnics, 3 are owned by municipalities, 7 by coalitions of municipalities, and 15 are private. There are no tuition fees. Students also receive state maintenance grants towards the cost of living.

Students are selected on the basis of the national matriculation examination and the institution's own entrance requirements. When aiming to enter either a university or a polytechnic, students need to apply for a specific major subject. All the Finnish universities and polytechnics have their own selection procedures, and competition for study places is fierce. For example, in 2017 only 35% of applicants succeeded in gaining a place at a university or polytechnic during their first year after upper secondary school (Statistics Finland, 2007).

All universities engage in both education and research, and have the right to award doctorates. A bachelors' degree takes about three years, and a masters' degree five to six years. It is then possible to continue in higher education with the intention of gaining a licentiate or doctoral degree. A polytechnic degree, on the other hand, takes about 3.5–4.5 years of full-time study. The requirement for a polytechnic masters' programmes is a polytechnic degree or equivalent, plus a minimum of three years of work experience in the relevant field. The polytechnics are multi-field institutions offering professional higher education. They specialize in the teaching of practical skills and in applied research and development.

2.1. Participants

The present target group consisted of all Finnish students under the age of 35 in higher education. The sample was collected using stratified randomized sampling by the Finnish Student Health Service: using proportional allocation, the polytechnic sector formed one stratum and the university sector the other. The sample comprised 12,599 students of whom 36% were men. A total of 5125 (34% men) students were studying at polytechnics and 7386 (37% men) at universities. The survey was conducted as a postal questionnaire during the spring of 2008, 2012 and 2016, although it was also possible to complete the questionnaire via the Internet. The questionnaire was sent three times, once on paper and twice electronically. The overall response rate in 2008 was 51% (polytechnics 47%, universities 55%); for men 42% (polytechnics 38%, universities 45%) and for women 59% (polytechnics 55%, universities 63%). The overall response rate in 2012 was 44% (Polytechnics 40%; Universities 49%); for men 35% (Polytechnics 31%; Universities 39%) and for women 52% (Polytechnics 47%; Universities 57%). Except for the low male response rate, the respondents were representative of the target population in the background variables. The overall response rate 2016 was 31% (polytechnics 25%; Universities 39%). The response rate was 22% for men (polytechnics 16%; Universities 29%) and 39% for women (Polytechnics 32%; Universities 45%). Except for the underrepresentation of males, the respondents represented well the target population

The study protocol was approved by the Medical Ethics Committee of the Hospital District of South West Finland, and the students, who participated voluntarily, gave their informed consent by responding to the questionnaire.

2.2. Measures

Study Burnout. The Study Burnout Inventory (see Appendix 1 in Supplementary material) was developed on the basis of the School Burnout Inventory (SBI) (Salmela-Aro, 2009; Salmela-Aro, Tolvanen et al., 2009) and Work Burnout Inventory (Salmela-Aro & Nurmi, 2004). We changed the context of use to studying in higher education. The new inventory consists of 9 items measuring three components of study burnout in higher education (see Appendix 1 in Supplementary material): (1) exhaustion in higher education (four items), (2) cynicism toward the meaningfulness of studying (three items) and (3) a sense of inadequacy as a student in higher education (two items). All items were rated on a 6-point scale (1 = *completely disagree*; 6 = *strongly agree*). Cronbach's Alphas were 0.79-0.80 for exhaustion, 0.86-0.87 for cynicism, and 0.72-0.75 for inadequacy. Cronbach's alpha for the whole scale was 0.83-0.85 showing good reliability.

Study Engagement (see Appendix 2 in Supplementary material) was measured by the schoolwork engagement scale (Salmela-Aro, 2009; Salmela-Aro & Upadaya, 2012) adapted from the Utrecht Work Engagement Scale (UWES-S) originally developed by Schaufeli, Salanova et al. (2002) on the basis of the Utrecht Work Engagement Scale (UWES-9, Schaufeli, Bakker & Salanova, 2006). The scale consists of 9 items measuring vigour (e.g., *When I study, I feel that I am bursting with energy*), dedication (e.g., *I am enthusiastic about my studies*), and absorption (e.g., *Time flies when I'm studying*) in relation to studying in higher education. All the items were rated on a 6-point scale (1 = *completely disagree*; 6 = *strongly agree*). For the present study, a

Table 1
Distributions of study stage and its associations with burnout and engagement.

			Burnout						Engagement	
			Exhaustion		Cynicism		Inadequacy			
	n	%	Mean	(SE)	Mean	(SE)	Mean	(SE)	Mean	(SE)
Men										
Study stage (years)			*		***		***		***	
< 2	928	21.40	2.43	(0.034)	2.17	(0.042)	2.57	(0.043)	3.53	(0.031)
2–3	1555	35.80	2.55	(0.026)	2.36	(0.032)	2.78	(0.033)	3.40	(0.024)
4–5	1096	25.30	2.54	(0.032)	2.51	(0.038)	2.85	(0.040)	3.26	(0.029)
6+	761	17.50	2.51	(0.038)	2.68	(0.046)	3.02	(0.048)	3.12	(0.034)
Women										
Study stage (years)			**		***		***		***	
< 2	1702	22.70	2.57	(0.026)	2.14	(0.031)	2.76	(0.032)	3.66	(0.023)
2–3	3033	40.40	2.59	(0.020)	2.36	(0.023)	2.98	(0.024)	3.44	(0.017)
4–5	1738	23.20	2.62	(0.026)	2.50	(0.030)	3.05	(0.032)	3.36	(0.023)
6+	1034	13.80	2.64	(0.034)	2.72	(0.039)	3.43	(0.041)	3.22	(0.029)

ANOVA for mean differences.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

sum score was calculated from all 9 items to indicate the level of engagement in higher education. The Cronbach's alpha was 0.92-0.93 showing excellent reliability.

2.3. Demands and resources

Depressive symptoms were identified using a 12-item General Health Questionnaire (Goldberg & Williams, 1988) with 4 or more symptoms as cut-off (see James, Yates & Ferguson, 2013). *Loneliness* was measured by one question: Do you feel lonely? 0 = no, 1 = yes, sometimes, 2 = yes, often. *Internet dependency* was identified (0 = no, 1 = yes) if a positive answer was given to any of the following three questions: Does the time you spend in internet cause you problems in 1) relationships, 2) studying, or 3) circadian rhythm?

Right study place was elicited with the question: Are you in the right study place? 0 = no, 1 = yes. Question of whether the respondent *can talk with someone about the important matters or problems* was answered on a 5-point scale: 0 = never, 1 = seldom, 2 = sometimes, 3 = often, 4 = always or most of the time.

Study stage was determined by asking the students to write down their current study year. Based on the year of study stated, we coded the study stage as follows: 1 = 1st year (beginning), 2 = 2nd−3rd year (early years, bachelor's level), 3 = 4th-5th year (middle years, master's level) and 4 = 6th year or more (late).

Gender was coded by asking the participant to circle the applicable alternative (1 = male, 2 = female, 3 = other). Because of the small number of answers to 'other' (n = 8), this category was omitted in the analysis. *Living with a partner* and *having children* were both dichotomous variables, (0 = no, 1 = yes).

Higher education sector was coded by asking the participant to circle the applicable alternative (1 = polytechnic, 2 = university). Health-related behaviours were measured with three dichotomous items (0 = no, 1 = yes): current smoking, use of drugs in the last 12 months and binge drinking (6 or more units of alcohol on one occasion) weekly.

2.4. Analysis strategy

We used Latent Class Analysis (LCA) to identify subgroups of study burnout (using subscales of exhaustion, cynicism and inadequacy) and study engagement in Mplus (Muthén & Muthén, 1998 Muthén and Muthén, -2017) was used. Because study burnout is assessed on three subscales, the model fit was tested for the latent factor for burnout comprising three subscales (exhaustion, cynicism and inadequacy). These items showed the following standardized factor loadings on burnout as one factor: 0.88, 0.60 and 0.44. Study engagement was expected to form a single factor, and hence the model was allowed to create a factor that was represented by the composite score of all its items. Although it would have been possible to perform confirmatory factor modelling using the original items (nine items each for burnout and engagement), such a model would have been heavy to run and was not used in this study. Models with 1–5 groups were tested for fit to identify the most parsimonious model. This was done by comparing the Bayesian Information Criterion (BIC), Vuong-Lo-Mendell-Rubin Likelihood Ratio Test (VLMR-LRT), and the Bootstrapped Likelihood Ratio Test (BLRT) and entropy value between the nested models, as provided in Mplus (Asparouhov & Muthén, 2014). A lower BIC values indicates a better fit, whereas an entropy value closer to 1 indicates a clearer delineation of classes (Celeux, & Soromenho, 1996). The likelihood ratio tests (VLMR-LRT and BLRT) compare the nested models for whether adding one more class to the model improves the fit. A significant p-value indicates that the added class is needed to improve the fit of the model. The decision on the number of classes should also take into account the interpretability of the results.

We used a 3-step approach to study the associations between the subgroup memberships, study stage and demands and resources. This approach allows the creation of an optimal number of subclasses and examination of the other variables at the same time. In addition to the variables of interest, several covariates were included in the 3-step model to adjust for the sociodemographic characteristics (age, gender, survey year, university type, having partner and having children), all of which are known to be associated with both the subclass memberships and study stage. Study stage, demands and resources and the covariates were added to the LCA model as auxiliary variables (Asparouhov & Muthén, 2014).

3. Results

3.1. Descriptive results

The distributions and associations of study stage with the burnout subscales and engagement are shown in Table 1. Most of the students were in the early bachelor's stage of their studies. Exhaustion, cynicism and inadequacy increased and engagement showed a relatively linear decrease with increasing years of studies. Because of the linear pattern, study stage was used as a continuous variable in the further analyses. The pattern of associations was very similar for both men and women,

although gender differences were observed in level, with women on average reporting higher burnout and engagement than men. Because of the similarity in the associations across gender, men and women were analysed together and gender was used as a covariate in the model.

Mean respondent age was 24.5 (SD = 3.46), and 37% were men. Men (M = 24.7, SD = 3.39) were older than women (M = 24.0, SD = 3.48). Higher age was associated with a higher level of cynicism and inadequacy in both men (r = 0.09 and r = 0.07, $p < 0.001$, respectively) and women (r = 0.03, p < 0.001, and r = 0.06, $p < 0.001$). Higher age was also associated with a lower level of engagement in men ($r = -0.5$, p < 0.01). The distributions and associations of the categorical covariates of background characteristics, demands and resources with the subscales of burnout and engagement are shown in for men in Appendix 3 in Supplementary material and for women in Appendix 4 in Supplementary material. About 60% of the respondents were studying at the academic university and 40% at the polytechnics. Of the whole sample, 40% participated in the survey in 2008, 35% in 2012 and 25% in 2016. Two-thirds of the respondents were in a regular partnership and 9% had children. About one-third of the women and one-fifth of men reported 4 or more depressive symptoms. A total of 37% of men and 27% of women reported internet dependency. About two-thirds felt that they were suited to their study field. Most men (70%) and women (80%) reported they can talk with someone about important matters or problems often or always. As expected, all variables were associated with burnout and engagement. The associations were very similar across gender.

3.2. Latent class profiles

The fit statistics for the different number of latent classes are shown in Table 2. The four-class solution showed the best fit according to the Vuong-Lo-Mendell-Rubin Likelihood test. The Bootstrapped Likelihood Ratio Test (BLRT) did not differentiate between classes 1–5. The BIC value was lowest in the five-class solution. The entropy value was, however, considerably poorer for the five- (0.68) compared to four-class solution (0.82). The results suggested the use of four classes, as has also been reported in a previous study using the same constructs among students (Tuominen-Soini & Salmela-Aro, 2014).

The analysis yielded four profiles (Fig. 1): *Engaged* (44%), *engaged-exhausted* (30%) *inefficacious* (19%) and *burned-out* (7%). The engaged students had the most positive engagement accompanied with the least burnout symptoms compared to other groups. The engaged-exhausted students experienced emotional exhaustion simultaneously with academic engagement. The inefficacious group had heightened experience of inadequacy as a student. The burned-out (7%) students showed very high cynicism and inadequacy and very low academic engagement compared to the other groups.

A similar four-class profile pattern was found for each of the three measurement occasions years 2008, 2012 and 2016 (see Appendix 5 in Supplementary material for the distribution). In general, the proportion of *engaged* students increased and the proportion of *inefficacious students* deceased over time (the three measurement occasions were tested as continuous). The *engaged-exhausted* profile showed a slight decrease and the *burned-out* profile a slight increase. Comparison of the classes over time revealed that less change in *engaged-exhausted* class than in the *inefficacious, burned out* and *engaged classes* (estimates: −0.291, $p < 0.001$; −0.122, $p < 0.05$; and −0.213, $p < 0.01$. respectively). The *inefficacious* class showed more change over the three measurement occasions than *burned-out* class (estimate: 0.169, $p < 0.001$).

3.2.1. Associations with length of study

Table 3 shows that the *engaged* students were in earlier stages of their studies than those in the other three subgroups. The *inefficacious* and *burned-out* students had been studying longer than the *engaged-exhausted* students. No difference in study length was observed between the *burned-out* and *inefficacious* profiles. Fig. 2 shows the proportions of students at the different stages of study by latent class. The largest differences in the proportions between the classes can be seen in the late study stage (6 or more years): about a quarter of the students classified as *inefficacious* or *burned out* were in a late stage of study, whereas the corresponding proportions in the *engaged* and *engaged-exhausted* profiles were lower (18% and 17%, respectively).

3.2.2. Associations with demands and resources

The associations between the demands and resources and depressive symptoms, and latent classes are shown in the latter part of Table 3. The demands (internet dependency and loneliness) were higher and resources (suited to study field, can talk with someone) were lower among the *inefficacious* and *burned-out* students compared to the *engaged* and *engaged-exhausted*. Those *engaged-exhausted* had higher demands and lower resources than the *engaged*. Moreover, the *inefficacious* students had somewhat higher demands and lower resources than the *burned-out*. Finally, inefficacious and burned-out students had more depressive symptoms compared to engaged students.

4. Discussion

Our results demonstrate that Finnish young people display various patterns of study engagement and burnout. In higher education, as expected, and consistent with earlier research (e.g., Tuominen-Soini & Salmela-Aro, 2014), four groups of students emerged, each representing a different combination of study engagement and burnout. The results showed that both study burnout and engagement are quite common in higher education: 7% of students suffered from very severe study burnout, while 44% experienced study engagement. Moreover, the results showed that 30% of the students were identified as simultaneously exhausted and engaged. This is an important finding, as it reveals the possible dark side of engagement among higher education students (Salmela-Aro, 2017). The proportion of engaged students increased, whereas the proportion of inefficacious students decreased by about 5 percent points over the three measurement occasions in 2008, 2012 and 2016.

The results showed that the stage (early, middle, late) of studies contributed to the study burnout and engagement profiles in both the universities and polytechnics. This finding is significant, as no previous research exists on this topic. The results showed that study burnout increased and study engagement decreased along with the number of years of study. Of the three components of study burnout in higher education, cynicism and inadequacy increased gradually with the

Table 2
Fit statistics for five latent class models.

Number of classes	Loglikelihood	N of parameters	Voung-Lo-Mendell-Rubin Likelihood Ratio Test	Bootstrapped Likelihood Ratio Test	BIC	Entropy
1	−69860.05	11	–	–	139824	–
2	−68323.92	20	$p < 0.001$	$p < 0.001$	136836	0.81
3	−67805.84	27	$p < 0.001$	$p < 0.001$	135866	0.81
4	−67805.84	34	$p < 0.001$	$p < 0.001$	135103	0.82
5	−66418.71	37	$p = 0.219$	$p < 0.001$	135069	0.68

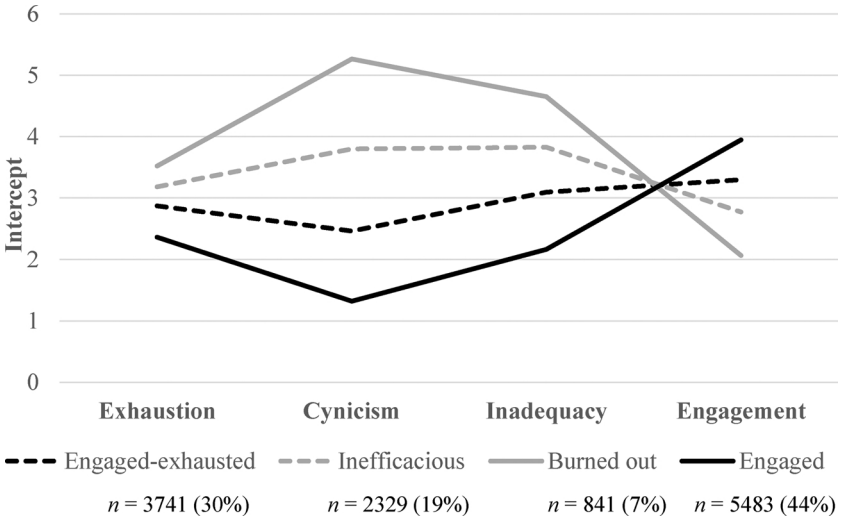

Fig. 1. The profiles of the four subgroups from the latent class analysis.

Table 3
Associations between length of study, study demands and resources, and subgroups of burnout and engagement in the latent class analysis.

Comparing the variable between the classes	vs. Engaged-exhausted	vs. Inefficacious	vs. Burned-out
Study length			
Inefficacious	0.15**	–	–
Burned-out	0.24***	0.10	–
Engaged	−0.27***	−0.41***	−0.51***
Demands, resources and outcomes			
Depressive symptoms			
Inefficacious	0.54***		
Burned-out	1.31***	0.78***	
Engaged	−0.89***	−1.42***	−2.20***
Internet dependency			
Inefficacious	0.25**		
Burned-out	0.41***	0.16	
Engaged	−0.62***	−0.87***	−1.03***
Loneliness			
Inefficacious	0.29***		
Burned-out	0.49***	0.20*	
Engaged	−0.39***	−0.67***	−0.88***
Suited to study field			
Inefficacious	−1.39***		
Burned-out	−2.66***	−1.27***	
Engaged	1.90***	3.29***	4.55***
Can talk with someone on important matters or problems			
Inefficacious	−0.11**	–	–
Burned-out	−0.25***	−0.14*	–
Engaged	0.18***	0.29***	0.42***

Note. Models are adjusted for age, gender, year of study, type of university, having a partner, and having any children.

number of years of study in both the universities and polytechnics (see also Deary et al., 2003; Guthrie et al., 1998). This supports a previous cross-sectional study conducted among medical students showing an increase in burnout with years of study (Dyrbye et al., 2006). The results also support Uludag & Yaratan (2010), who examined the associations of educational status (two-year and four-year programs) with sub-dimensions of burnout and engagement, and found higher burnout mong older students.

Some students experience difficulties in graduating from higher education, and thus prolong their studies (Statistics Finland, 2007). These students in particular might be at risk for burnout (Vasalampi et al., 2009): prolonging one's studies is assumed to be stressful and to lead to cynicism towards the meaningfulness of studying and feelings of inadequacy as a student. In line with this, burnout also presents a risk for later dropout (Bask & Salmela-Aro, 2012) and depression (Salmela-Aro & Upadyaya, 2014). To gain deeper insights into these phenomena in the context of tertiary education requires longitudinal studies. Future studies should also take both the study context and personal life events into account. Here we took a psychological perspective; in future research, however, the social context and the larger societal context warrant further study.

The results supported the demands-resources model. The demands were higher and resources were lower among the *inefficacious* and *burned-out* students compared to the *engaged* and *engaged-exhausted*. Also in line with the demands-resources model, inefficacious and burned-out students had more depressive symptoms compared to engaged students. In the further studies a wider selection of demands, resources and outcomes are however needed.

The results supported earlier studies (Ge et al., 1994; Kiuru et al., 2009) in which women in higher education were found to experience both more study burnout and more study engagement than men. Of the components of study burnout in the present higher education students, women experienced more exhaustion and inadequacy than men, whereas no gender differences were found for cynicism. When making the transition to higher education, young people may perceive their new educational context as more competitive (Salmela-Aro & Tynkkynen, 2012). The present results suggest that women may react more negatively to more increasing competitive learning conditions. Women are not only more exposed to stressful life events, but are also more vulnerable to their negative effects (Ge et al., 1994; Kessler & McLeod, 1984; Turner et al., 1995). Our results also supported those found previously among females (Vasalampi et al., 2009) for study engagement: women experienced study engagement more than men. This prompts the conclusion that women are more engaged in their higher education studies but they also burnout more frequently than men. Cynicism towards studying was higher among polytechnic students, and inadequacy was higher among university students, while study burnout increased and study engagement decreased along with the number of years of study (Dyrbye et al., 2006). Despite the mean-level gender differences found in study burnout and engagement, the associations of study burnout and engagement with stage of study and other characteristics were very similar for both men and women. This suggest that the role of the predictors and outcomes of burnout and engagement are of similar importance between the sexes.

5. Implications

Our study has at least the following implications. First, educators

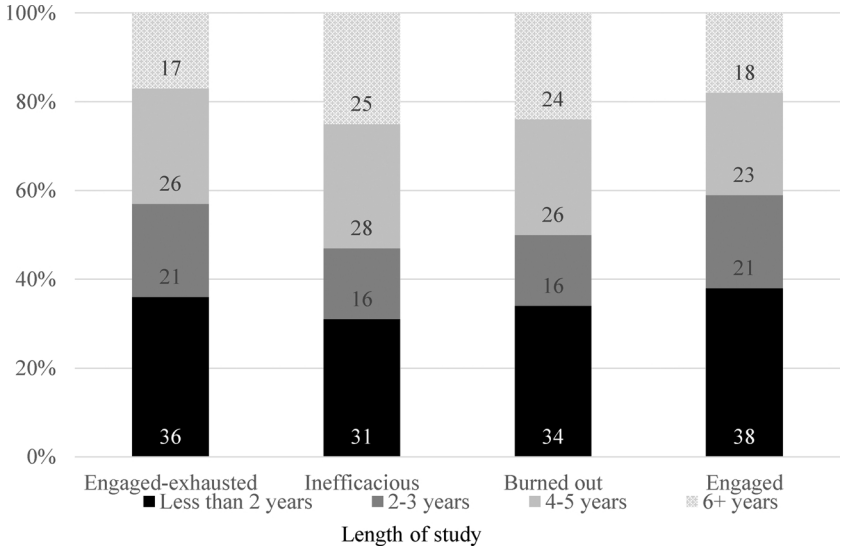

Fig. 2. Proportions of students at different stages of study in the four latent classes (Engaged-exhausted, Inefficacious, Burned out, and Engaged).

need to be aware of the prevalence of study burnout, which may relate to students' experiences of distress. Second, existing study programmes need to incorporate support systems to help students address these challenges, including confidential resources for treating burnout. This would be especially important during the later years of studies when burnout tends to increase and engagement decrease. Third, students need to be educated about the early signs of burnout during their academic career and inform them about how to seek help. Descriptions of such systems have been reported and may serve as models (Ball & Bax, 2002; Vuori et al., 2008). The effects of curricular factors known to contribute to student distress must also be addressed. Higher education has a duty to equip students with the skills necessary to cope with personal distress, determine its effects, recognize when students need assistance and to develop self-help strategies (to promote their own well-being). These skills are essential for maintaining a healthy perspective and resilience throughout the study process and should be considered an essential component of higher education. Curricula components to help students develop such skills need to be in place in higher education to support both student success and retention. This suggests that efforts to address burnout must begin early in the higher education process. To this end, study burnout and engagement inventories would prove very useful tools for identifying students at risk and as a tool for student support services.

6. Limitations

The following limitations should be considered in any attempt to generalize the results of this study. First, the study was cross-sectional, and hence there is an evident need for a longitudinal study in the higher education context. There is a need to investigate how students' burnout and engagement fluctuate during their degree studies. Second, this study was carried out in Finland and thus one has to be cautious in generalizing the results to higher education contexts in other countries. Several features of Finnish higher education, such as higher age on entry, the absence of tuition fees, and the difficulty in gaining admission may mean that some of the results would have been different in countries with a different education system. There is a need to replicate some of the results among other groups. Third, we need to develop a greater understanding of students' capacity to cope with changes in stress levels during their studies. Consequently, future studies should focus on the reasons why burnout increases and engagement decreases during tertiary education. Fourth, the present sample consisted of higher education students and thus was not representative of the Finnish young adult population. Although previous studies have shown no differences in psychological well-being between non-university and university respondents (Hankin at al., 1998), the results should be interpreted as a follow-up of this population only. Young adults in vocational schools might show a different pattern. Finally, given that the response rate was rather low, we need to emphasize that the results pertain solely to those who responded and as such cannot be generalized to the population from which the sample was drawn.

7. Conclusions

Four different profiles of study engagement and burnout was identified in higher education students. While the largest proportion of students (44%) were engaged in their studies, 7% suffered from study burnout, and 19% experienced heightened feelings of inadequacy as a student. Moreover, 30% were simultaneously engaged and exhausted, particularly during the early stage of studies. Study burnout increased and study engagement decreased over time during higher education. Women experienced both more study burnout and more study engagement than men.

Funding

This work was supported by the Academy of Finland [grant number 308351] and [grant number 307598].

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.burn.2017.11.001.

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