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**Author(s):** Virtanen, Tuomo; Lerkkanen, Marja-Kristiina; Poikkeus, Anna-Maija; Kuorelahti, Matti

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Student Engagement and School Burnout in Finnish Lower Secondary Schools:  
Latent Profile Analysis

Virtanen, T. E.<sup>1</sup>, Lerkkanen, M.-K.<sup>2</sup>, Poikkeus, A.-M.<sup>3</sup>, & Kuorelahti, M.<sup>4</sup>

<sup>1</sup> University of Jyväskylä, Department of Teacher Education, P.O. Box 35, FI-40014  
University of Jyväskylä, Finland; [tuomo.e.virtanen@jyu.fi](mailto:tuomo.e.virtanen@jyu.fi); Tel. [+358408053636](tel:+358408053636)

<sup>2</sup> University of Jyväskylä, Department of Teacher Education, P.O. Box 35, FI-40014  
University of Jyväskylä, Finland; [marja-kristiina.lerkkanen@jyu.fi](mailto:marja-kristiina.lerkkanen@jyu.fi); Tel. [+358408053347](tel:+358408053347)

<sup>3</sup> University of Jyväskylä, Department of Teacher Education, P.O. Box 35, FI-40014  
University of Jyväskylä, Finland; [anna-maija.poikkeus@jyu.fi](mailto:anna-maija.poikkeus@jyu.fi); Tel. [+358408053363](tel:+358408053363)

<sup>4</sup> University of Jyväskylä, Department of Education, P.O. Box 35, FI-40014 University of  
Jyväskylä, Finland; [matti.kuorelahti@jyu.fi](mailto:matti.kuorelahti@jyu.fi); Tel. [+358407442797](tel:+358407442797)

<sup>1</sup> Corresponding author

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## Abstract

Self-ratings of behavioural engagement, cognitive engagement and school burnout were used in person-centred analyses to identify latent profiles among 2485 Finnish lower secondary school students. Three profiles were identified: high-engagement/low-burnout (40.6% of the sample), average-engagement/average-burnout (53.9%), and low-engagement/high-burnout (5.5%). Another sample of lower secondary school students was used to validate the three profiles. The factors most strongly associated with the high-engagement/low-burnout profile of lower secondary school students' were high levels of support from teachers and family, good academic performance and lack of truancy. The study indicated that teacher and family support and students' academic achievement are pivotal in understanding student engagement and school burnout.

*Keywords:* student engagement; school burnout; latent profile analysis; lower secondary school

# Student Engagement and School Burnout in Finnish Lower Secondary Schools:

## Latent Profile Analysis

### **Introduction**

Student disengagement has negative consequences both for students (see Henry, Knight, & Thornberry, 2012) and society as a whole (Fredricks, Blumenfeld, & Paris, 2004). Many young people become disengaged from school during compulsory education (Skinner, Furrer, Marchand, & Kindermann, 2008) and fail to proceed with post-compulsory education. In 2010, an average of 8.1% (ranging from 3.5% to 25.6%) of 15- to 19-year-olds in the OECD countries were not involved in education, employment or training (OECD, 2012). In Finland, where this study was conducted, the corresponding percentage was 5.1%.

Student engagement (Appleton, Christenson, Kim, & Reschly, 2006; Fredricks et al., 2004) and school burnout (Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009) are central concepts for understanding students' well-being and adjustment to school. Both school burnout and student engagement depict a student's social and emotional well-being and, therefore, may provide a complementary understanding. To date, few studies have explored how the combination of student engagement and school burnout may form different profiles, and none have focused on the lower secondary school years (ages 13 to 16), a critical period for early signs of waning engagement and increased risk of dropping out (see Skinner et al., 2008). We utilised the person-environment fit perspective (Eccles & Roeser, 2011) as a guiding theoretical framework, and applied a person-centred approach to identify homogeneous latent profiles for lower secondary school students' engagement and burnout. In contrast to variable-centred analyses, person-centred research take as a starting point the notion that individual differences may reflect sub-populations and a model that focuses on the average population cannot apply to all subjects (Bergman & Andersson 2010). For example, a student can be highly engaged behaviourally, yet experience simultaneously a high level of

school burnout. In such cases, unlike variable-centred methods, person-centred analyses avoid masking the heterogeneity (Janosz, 2012), and may reveal why some students adjust to school well while others do not. In line with You and Sharkey (2009) who analysed the impact of personal and contextual factors on student engagement, we examined the associations between student engagement and school-burnout profiles with respect to students' experiences of contextual support from teachers, family and peers. The analysis was performed in conjunction with student characteristics and aspirations, including self-esteem, academic performance, school aspirations and school truancy. Gaining an understanding of the interplay between contextual and personal factors that may contribute to a student's engagement and well-being was deemed crucial for a student's school adjustment. As previous literature indicates that background factors, such as the student's gender, special education status, family's socioeconomic status, and age, are important correlates of a student's overall school adjustment, they were statistically controlled in the analyses as covariates.

### ***Student engagement***

The term *student engagement* refers to being actively engaged in school, and implies that committing and investing in learning and school life are key contributors to academic success (Henry et al., 2012). Engagement is associated with patterns of attendance and academic resilience, whereas disengagement relates to underachievement, deviant behaviour and dropping out. Importantly, student engagement is not a personal trait of the individual student, but rather indicates the malleable fit between a student and the educational environment (e.g., Reschly & Christenson, 2012).

Three components capturing affective, behavioural and cognitive aspects are typically included in conceptualising student engagement (e.g., Fredricks et al., 2004). First, an affective component depicts both student-perceived positive emotions aroused by schoolwork

and students' reported experiences of resources that facilitate them. Affective engagement intersects constructs such as bonding, belonging, connectedness, attachment, involvement (Jimerson et al., 2003), feelings of being accepted and supported by teachers and classmates (Appleton et al., 2006; Fredricks et al., 2004), and students' enjoyment and interest in learning (Janosz, Archambault, Morizot, & Pagani, 2008). Some scholars construe students' perceived support from teachers, family and peers as indicators of affective engagement (Appleton et al., 2006), while others view students' perceptions of support from important others as contextual facilitators of engagement (e.g., Lam et al., 2012; Skinner et al., 2008). This implies that students' affective experiences typically precede changes in their behaviour (see Reschly & Christenson, 2012). In this study, we treated dimensions of affective engagement (student-perceived teacher support, family support for learning and peer support at school) as contextual facilitators of affects that contribute to lower secondary school students' behavioural and cognitive engagement and burnout. Second, the cognitive component refers to the extent to which individuals are motivated to learn and achieve, and whether they plan, monitor, regulate cognition and value education (Fredricks et al., 2004). Finally, the behavioural component of engagement includes observable indicators such as schoolwork participation (Skinner, Wellborn, & Connell, 1990) and sustained behavioural involvement in learning activities (Skinner & Belmont, 1993).

### ***School burnout***

School burnout assesses students' stress levels, feelings of frustration, and the extent of negative emotions aroused by schoolwork, all indicating poor well-being (Salmela-Aro et al., 2009). School burnout has three dimensions: exhaustion, cynicism and lack of efficacy (inadequacy). *School-related exhaustion* is the affective feeling of strain and chronic fatigue. According to Maslach, Schaufeli and Leiter (2001), exhaustion is a necessary but not a sufficient criterion for burnout. Eventually, exhausted students may distance themselves from

schoolwork as a way of coping with the workload. A strong relationship exists between exhaustion and *cynicism*, which is manifested in a general indifference or a detached attitude toward school and a loss of interest in academic work. Exhausted and cynical students are likely to experience a low sense of accomplishment in their schoolwork. The perception of *inadequacy* at school refers to the individual's diminished feelings of competence and accomplishment as a student. School burnout aligns conceptually with the concept of disengagement, and some researchers view it as the psychological process of emotional disengagement (Wang, Chow, Hofkens, & Salmela-Aro, 2015). Prior studies have shown that adolescents displaying higher levels of school burnout report more depressive symptoms. Moreover, the lower the students' school engagement and academic achievement, the higher they score for cynicism and a sense of inadequacy, and the meaning or value they attach to school is also lower (Salmela-Aro et al., 2009). School burnout is also associated with dropping out of school (Tuominen-Soini & Salmela-Aro, 2014).

### ***Person-environment fit and contextual support for students' engagement and well-being***

The person-environment fit perspective (Eccles & Roeser, 2011) states that students perform best and are likely to be most engaged when there is a synchrony across personal characteristics, values, needs and practices espoused by the school. When students' inherent need for autonomy, relatedness and competence are met at school, they find support for participation in school activities, which strengthens their academic performance, beliefs in the meaningfulness of schoolwork, school belonging and mental health (Deci & Ryan, 2000; Eccles & Roeser, 2011; Skinner, Kindermann, Connell, & Wellborn, 2009). In reverse, when students are supported in their activities, their need for autonomy, relatedness and competence can be met. . Conversely, individuals are not likely to do well or be highly motivated if their social environments do not fit their psychological needs. Such a misfit may result in unfavourable outcomes, such as negative behaviours and attitudes and a low

evaluation of school (Eccles & Midgley, 1989). Supportive, caring social contexts nurture the student's sense of belonging, which in turn facilitates student motivation and engagement (Wang & Eccles, 2013). Unsupportive contexts (lack of affiliative, trusting bonds and support from teachers, peers and parents), on the other hand, undermine students' school-related attitudes and beliefs about the self, and may lead to extrinsic motivation, and emotional and behavioural disaffection (Skinner et al., 2008). The importance of personal and contextual factors on youth functioning is recognised in the developmental-ecological model (You & Sharkey, 2009), which posits that engagement is influenced by both personal propensities and interpersonal relationships. There is evidence that the student's self-esteem, in particular, is positively and significantly associated with his or her engagement (e.g., Finn & Rock, 1997; Ma, 2003).

Research has consistently shown that students' perceptions of care and support from their teachers facilitate engagement (e.g., Wang & Eccles, 2013) and protect against school burnout (Salmela-Aro, Kiuru, Pietikäinen, & Jokela, 2008). Wang and Holcombe (2010) found that teachers' social support (students' perceptions of teachers' help and understanding) contributed positively to students' school participation and identification. One study (Li, Doyle Lynch, Calvin, Liu, & Lerner, 2011) indicated that trusting and supportive peer relationships positively predicted behavioural and emotional school engagement. Wang and Eccles (2013) showed that perceived peer acceptance and positive peer relationships had a positive influence on all three dimensions of student engagement. However, the evidence on the impact of peer influence on students' school-related burnout is inconsistent. Associating with peers who experience high burnout may contribute to a student's burnout, whereas associating with those with low burnout may tend to decrease a student's burnout (Kiuru, Aunola, Nurmi, Leskinen, & Salmela-Aro, 2008).



The impact of a positive parent-child relationship on a student's achievement, motivation, engagement and well-being has also been documented (see Bempechat & Shernoff, 2012). A positive relationship and bond between the parent and the child is likely to foster parental interest and support for the child's schoolwork. A child positively attached to norm-relevant significant others, such as parents, is more likely to conform to parental expectations regarding school engagement (Veenstra, Lindenberg, Tinga, & Ormel, 2010).

As in previous literature, we took the multidimensionality of student engagement into account: a behavioural component referring to students' active participation and effort; a cognitive component involving valuing school as useful for future endeavours; and an affective component consisting of support from teachers, family and peers. We followed scholars (Lam et al., 2012; Skinner et al., 2008) who suggest that perceptions of support from teachers, family and peers should be seen as facilitators of engagement rather than indicators of it. Applying the person-environment fit perspective (Eccles et al., 1993), we assume that an optimal match between a student's personal characteristics and the school environment maximises the student's school engagement and minimises burnout. More specifically, the more support students experience with their schoolwork, the greater their engagement will be and the less they will feel school-related burnout.

### ***The profiles of engagement and well-being in adolescence***

Previous longitudinal, person-centred analyses have shed light on the relationship between students' engagement profiles and school adjustment, including dropping out of school. In summary, studies have revealed that there are interindividual differences in the level and development of engagement. Students with stable high levels of engagement (a composite of affective, behavioural and cognitive engagement) from ages 12 to 16 have the best overall personal, school and social profiles with minimal dropping out (Janosz et al., 2008). Most adolescents maintain a stable engagement profile and show high levels of

affective, cognitive and behavioural engagement. Students with the most significant increases in misbehaviour and the lowest levels of behavioural compliance at age 12, however, have the highest risk of dropping out (Archambault, Janosz, Morizot, & Pagani, 2009).

Only a few previous studies have taken into account adolescents' heterogeneity by identifying student profiles of engagement and analysing links between the profiles and indicators of student well-being. Wang and Peck (2013) profiled students' levels of behavioural, emotional and cognitive engagement by gathering data from the students from ninth grade to one year after their expected high school graduation. They identified five student profiles: moderately engaged, highly engaged, minimally engaged, emotionally disengaged and cognitively disengaged. The five profiles differed in educational and psychological functioning. In general, highly engaged students showed the highest academic achievement, college enrolment rates and educational aspirations, and did not drop out of high school. They also had less depressive symptoms than the less engaged groups. No significant correlations were found between the five profiles and students' gender, ethnicity or family's socioeconomic status. Unlike Wang and Peck (2013), Li and Lerner (2011) inspected students' behavioural and emotional engagement profiles separately. Among the adolescents studied (grades 5–8), they identified four profiles of behavioural engagement (transitory decreasing, decreasing, moderately stable and highly stable), and four profiles of emotional engagement (decreasing, moderate, high with decreasing, and highest). Overall, they found that youths in the highest trajectories of behavioural and emotional engagement performed better academically, and showed less delinquency, less depression and less substance abuse than students in the behaviourally and emotionally decreasing profiles. Conversely, youths in the transitory decreasing group of behavioural engagement or the decreasing group of emotional engagement reported the lowest grades and the highest rates of delinquency, substance abuse and depression.

A growing body of research suggests that student engagement is an important construct for understanding students' school adjustment and well-being. However, there are at least two limitations in the previous research. First, studies employing person-centred approaches are scarce (Janosz, 2012). Second, student engagement has not been investigated in relation to school-related burnout among lower secondary school students. Consequently, this study applied an integrative framework to analyse student profiles of behavioural and cognitive engagement and school-related well-being, i.e. level of students' school burnout and their associations with background, contextual and student characteristics and aspirations factors.

### *Aims of the study*

In this study, we set out to identify profiles of student engagement and school burnout among Finnish lower secondary school students, and to examine variables associated with these profiles. We used a person-centred approach to reveal the heterogeneity of students' school-related experiences. Thus, the study's dual aims were to first identify latent profiles of Finnish lower secondary school students based on student engagement and burnout. The second was to examine factors related to the students' backgrounds, their experiences of support from teachers, family and peers, and student characteristics and aspirations correlating with the profiles. Based on our guiding framework, the person-environment fit model (Eccles & Roeser, 2011), students who experience a good fit with their school environment would be expected to show elevated levels of engagement and would be less likely to suffer from school burnout compared with those with a poorer fit (Eccles et al., 1993). In line with evidence of substantial heterogeneity in students' school adjustment (Li & Lerner, 2011; Wang & Peck, 2013), we expected to identify a profile with a high level of engagement and low level of burnout, and a profile with a low level of engagement and high level of burnout (Hypothesis 1).

Based on accounts indicating that a supportive school context facilitates students' fit to the school environment (Skinner et al., 2008; Wang & Eccles, 2013), we hypothesised that student profiles would be associated with students' experiences of contextual support in the form of affective support from teachers (Klem & Connell, 2004), parents (Rosenfeld, Richman, & Bowen, 2000; Woolley & Bowen, 2007) and peers (Lam et al., 2012). High support was expected to be associated with a high-engagement/low-burnout profile and low support with a low-engagement/high-burnout profile (Hypothesis 2). The background factors that we expected to correlate with the latent profiles were gender, special education status, family's socioeconomic status and age. We expected female students (Reschly, Huebner, Appleton, & Antaramian, 2008), students not attending special education (Yazzie-Mintz, 2009), those from families with high socioeconomic statuses (Li & Lerner, 2011) and younger students (Wang & Eccles, 2012) to show a better fit to the school environment than males, older students and those receiving special education support, and those with low socioeconomic statuses (Hypothesis 3). In line with the propositions of the impact of personal factors (referred to as student characteristics and aspirations in the present study) in You and Sharkey's (2009) developmental-ecological model of student engagement, we expected students' self-esteem to be positively associated with their engagement even after numerous contextual correlates were taken into account. Other factors describing students' characteristics and aspirations that we expected to be associated with the latent profiles were academic performance (Ross, 2009; Salmela-Aro et al., 2009), school aspirations (Wang & Peck, 2013) and truancy (Maynard, Salas-Wright, Vaughn, & Peters, 2012) (Hypothesis 4).

## **Methods**

### ***Participants and procedure***

The research sample consisted of 2485 Grade 7 through Grade 9 students (52.1% females) from eight Finnish lower secondary schools (158 classrooms), who volunteered to

participate in the study. These schools were typical public, general education schools located in western (three schools) and northern (five schools) Finland, with Finnish as the language of instruction. The student bodies ranged from 252 to 550 students. Following the guidelines of the National Advisory Board on Research Ethics (2009), the schools distributed a letter to the children's parents or guardians explaining the study and procedures for withdrawing their children from participation. The questionnaire was piloted in one separate lower secondary school prior to data collection.

Following written instructions from the research team, teachers collected the data during normal instruction periods in December 2012 and January 2013 from all participating students in attendance. Teachers were advised to assure students that their responses were confidential. During data collection, students needing help were given instructions on how to fill out the questionnaire. Two schools preferred an Internet-based questionnaire ( $N = 654$ ) and the remainder used a paper questionnaire ( $N = 1831$ ). The response rate was 86.3%. The research sample consisted of 795 seventh-graders (32.0%, mean age 13.65,  $SD = 0.42$  years), 805 eighth-graders (32.4%, mean age 14.66,  $SD = 0.42$  years), and 885 ninth-graders (35.6%, mean age 15.66,  $SD = 0.39$  years).

To validate the latent profiles and to ensure geographical representation of students, we utilised another independent sample consisting of 821 students (mean age 14.4 years, 49.7% male) from seven Finnish public lower secondary schools. These schools were located in central Finland and participated in a nationwide three-tiered support-system initiative. The schools' student bodies ranged from 170 to 445. The validation sample data were collected in November and December 2010 following the same procedures as the research data collection, except that classrooms were selected by a random draw.

## **Measures**

### ***Engagement***

As suggested by the literature considering engagement as a multidimensional construct (e.g., Fredricks et al. 2004), we analysed engagement through separate dimensions. In the present analyses, the core construct was represented by two indicators of engagement – behavioural and cognitive dimensions. However, the affective component was not represented by an indicator of emotional engagement, as students’ perceptions of support from significant others was construed here as a contextual factor facilitating (or preceding) engagement.

**Behavioural engagement.** We used the ongoing engagement scale from the middle-school Research Assessment Package for Schools (RAPS-SM: Wellborn & Connell, 1987) to measure students’ self-reported behavioural engagement. Using a four-point scale (1 = *strongly agree*; 4 = *strongly disagree*), students rated themselves on four items: effort (*I work very hard on my schoolwork; I don’t try very hard in school*), attention (*I pay attention in class*), and preparation (*I often come to class unprepared*). In addition, self-ratings were obtained on students’ personal beliefs about the importance of school (*How important is it to you to do the best you can in school?*), and were 1 = *very important*, 2 = *sort of important*, 3 = *not very important* and 4 = *not at all important*. Responses were reverse-coded so that higher scores indicated higher levels of student engagement. The Cronbach’s alpha ( $\alpha$ ) for our study was 0.77. We used the composite mean score for subsequent analyses as an indicator of student behavioural engagement.

**Cognitive engagement.** We used the Student Engagement Instrument (SEI: Appleton et al., 2006) to assess students’ cognitive engagement with school. To form an overall indicator of cognitive engagement, we combined two subscales: future goals (5 items; e.g. *I am hopeful about my future*), and control and relevance of schoolwork (8 items; e.g. *Most of what is important to know you learn in school*). Students rated the items on a four-point scale (1 = *strongly agree*; 4 = *strongly disagree*), and responses were reverse-coded so that higher

scores indicated a higher level of cognitive engagement. Cronbach's  $\alpha$  for the cognitive engagement scale (the two scales combined) was 0.88.

### ***School burnout***

School burnout has been specified as either consisting of three factors or a single construct (e.g., Salmela-Aro & Upadyaya, 2014), depending on whether burnout was the primary or secondary interest in a study. The present study focused on the two dimensions of student engagement and their associations with student-perceived school burnout (as an indicator of students' well-being); thus, burnout was measured as a single construct. We used the Bergen Burnout Indicator (BBI-10; Salmela-Aro & Näätänen, 2005), a standardised test that assesses: (1) school-related exhaustion (four items, such as 'I often sleep badly because of matters related to my schoolwork'); (2) cynicism (three items, such as 'I feel that I am losing interest in my schoolwork'); and (3) inadequacy (three items, such as 'I used to have higher expectations of my schoolwork than I do now'). Students' self-ratings were provided on a six-point Likert scale (1 = completely agree; 6 = completely disagree). In the present data, exhaustion, cynicism and inadequacy were highly interrelated (correlations between 0.60 and 0.80), supporting the use of an overall composite (mean of all items) of burnout. The Cronbach's  $\alpha$  for the scale was 0.91. To calculate the raw score sum of burnout, the students' responses were reverse-coded so that higher scores indicated a higher level of school burnout.

### ***Background factors***

Students' gender, special education status, family's socioeconomic status, and age were controlled in the statistical models as covariates with latent profile memberships. We entered two self-reported, dummy-coded variables into the analyses: gender (1 = *male*) and special education status (1 = *receives special education services*). Other covariates included the following self-reported variables: family's socioeconomic status (1 = *low income*; 5 = *high income*) and age (in years).

### ***Contextual support for engagement***

Students' experiences of support from teachers, family and peers were rated on a four-point scale (1 = *strongly agree*; 4 = *strongly disagree*) using the affective engagement subscales of the SEI (Appleton et al., 2006). The subscales included nine items concerning teachers (e.g. *At my school, teachers care about students*), four concerning families/guardians (e.g. *When I have problems at school, my family/guardian(s) are willing to help me*) and six concerning peers (e.g. *Other students at school care about me*). One item concerning teacher support was excluded because of large cross-loadings on the other factors. The responses were reverse-coded so that higher scores indicated a higher level of perceived support. The Cronbach's  $\alpha$ 's were 0.88, 0.78 and 0.84, respectively. We used the mean values of subscales for subsequent analyses as indicators of student-experienced teacher, family and peer support.

### ***Student characteristics and aspirations***

To assess students' general self-esteem, we used the Rosenberg Self-Esteem Scale (Rosenberg, 1965). The Self-Esteem Scale measures self-esteem as a global, partly environmentally dependent component of self-concept (as opposed to specific components of self-concept including physical, social and academic components). Therefore, self-esteem indicates the extent to which an individual likes, accepts, approves and values oneself (Marsh & O'Mara, 2008). The Rosenberg Self-esteem Scale consists of five items with positively worded statements (e.g. *On the whole, I am satisfied with myself*), and five with negatively worded statements (e.g. *At times, I think I am no good at all*). Students provided self-ratings on a four-point scale (1 = *strongly agree*; 4 = *strongly disagree*), and the responses were reverse-coded so that higher scores indicated higher self-esteem. We used a mean score of self-esteem in the subsequent analyses. The Cronbach's  $\alpha$  for the scale was 0.83.

We used students' self-reported grades in three core academic subjects to provide a measure of students' academic performance. These three subjects were those with the largest



number of hours in the lower secondary school syllabus: Finnish language and literature, mathematics and the first foreign language. The students were asked to report their last school grade on each subject using the Finnish lower secondary schools' seven-point scale for grading (4 = fail, 5 = adequate, 6 = moderate, 7 = satisfactory, 8 = good, 9 = very good, 10 = excellent). The Cronbach's  $\alpha$  for academic performance across the three items was 0.81, and we used the mean value for subsequent analyses.

To measure students' school aspirations, we asked the students to specify the next educational choice they wished to pursue after compulsory school: *After lower secondary school, I would like to continue studying* (1 = *in high school*; 2 = *in vocational school*; 3 = *in school other than high school or in vocational school*; 4 = *I do not intend to continue studying*). The school aspiration variable was recoded into  $k-1$  dummy-coded variables (1 = *high school*, 0 = *others*; 1 = *vocational school*, 0 = *others*; 1 = *school other than high school or vocational school*, 0 = *others*).

Absences from school that the students themselves indicated as being unacceptable to teachers and parents, i.e. truancy, were measured with one item: *I play truant from school* (Studsrod & Bru, 2009) using a 5-point scale (1 = *often*, 2 = *quite often*, 3 = *occasionally*, 4 = *seldom* and 5 = *never*). The truancy item was dummy-coded (1 = *truancy*).

### ***Data analysis***

We utilised a multistep process for the statistical analyses of the data. First, we calculated the correlations between the variables, descriptive statistics for continuous variables and classroom-level intra-class correlations for the variables used in student profiling (student behavioural and cognitive engagement, and burnout). Second, using a person-centred (Bergman & Andersson, 2010) mixture model approach, we identified homogeneous profiles through latent-profile analysis (LPA: Muthén & Muthén, 1998-2012). Third, we cross-validated the profiles with an independent sample of Finnish lower secondary school

students. Finally, we used multinomial logistic regression to associate the latent profiles with student background, contextual and student characteristics and aspirations variables.

To select the best model of latent profiles, we examined a series of models with progressively greater numbers of profiles. We then compared these models according to the statistical criteria available in the Mplus statistical modelling program, version 7.11: log-likelihood (LL), Akaike information criterion (AIC), Bayesian information criterion (BIC), Vuong-Lo-Mendell-Rubin likelihood ratio test (VLMR), and entropy value. Smaller values in AIC and BIC indicate a better fit between the model and the data (Nylund, Asparouhov, & Muthén, 2007) or an increased probability of replication. Higher values of entropy reflect better distinctions between latent profiles (Kline, 2005). VLMR tests a  $k-1$  profile model ( $H_0$ ) against a  $k$ -profile model; therefore, a low  $p$  value suggests that the model with one less profile should be rejected in favour of the estimated model.

The estimation method was maximum likelihood with robust standard errors (MLR), which were computed using a sandwich estimator (MLR: Muthén & Muthén, 1998–2012). We controlled the nested data using an Mplus complex-type analysis, which adjusted the standard errors of the estimated coefficients. The percentage of missing values among the analysis variables varied between 2.4 (*I often come to class unprepared*) and 6.1 (*I often have feelings of inadequacy in my schoolwork*). The missing values were imputed with the Mplus Bayesian multiple-imputation method (Rubin, 1987), which averages the parameter estimates over the set of analyses (50 imputed data sets), and averages the standard errors over the set of analyses and the between-analysis parameter estimate variation.

## **Results**

### ***Correlations and descriptive statistics***

Table 1 presents the correlations between all variables, and means and standard deviations for continuous variables ( $N = 2485$ ).

INSERT TABLE 1 ABOUT HERE

The correlation coefficients between the three variables applied in the student profiling were significant at  $p < 0.001$  and were in the expected directions. Behavioural and cognitive engagement correlated positively and were statistically significant with each other, whereas school burnout correlated negatively with the two components of engagement. Contextual support variables (student perceived affective support from teachers, family and peers) had statistically significant positive correlations with behavioural and cognitive engagement, and negative correlations with school burnout: The more contextual support the students experienced, the more they were behaviourally and cognitively engaged and the less they reported school burnout. Behavioural and cognitive engagement were also statistically significantly associated with self-esteem and academic performance (higher engagement related to higher self-esteem and academic performance), and the latter variables correlated negatively with school burnout. Finally, students who reported playing truant also reported lower levels of both behavioural and cognitive engagement and perceived affective support from teachers, family and peers, self-esteem, and academic performance along with higher levels of school burnout.

With the exception of behavioural engagement, the intra-class correlations of the profiling variables were statistically significant ( $ICC_{BEH} = 0.01, p > 0.05$ ;  $ICC_{COGN} = 0.03, p < 0.05$ ;  $ICC_{BURN} = 0.04, p < 0.001$ ), indicating a hierarchical structure in the data, although the effects were notably small (students nested in 158 classrooms).

### ***Latent-profile model***

Table 2 provides fit indices and group sizes for the six estimated models. The VLMR test results indicated that the three-profile model was superior to the two-profile one. On the other

hand, the VLMR also suggested the five-profile model was superior to the four-profile, and the six-profile to the five-profile. However, comparisons of the two- and three-profile models revealed a significant drop in AIC and BIC indices (12579 → 12040 and 12637 → 12122), a finding that was not replicated in comparisons between other  $k$  versus  $k-1$  profile models. In addition, the five- and six-profile models included profiles that would apply to less than 1% of the student population.

INSERT TABLE 2 ABOUT HERE

The results with their statistical indices suggested that the three-profile model was superior to the two-profile, but the differences between other  $k$  versus  $k-1$  profile models were relatively small. Therefore, we selected the three-profile model as the most justifiable and parsimonious. We found additional support for a three-profile model when we calculated the odds of correction classification (OCC) ratios, which must be greater than 5.0 in each profile (Nagin, 2005). The OCCs varied between 6.0 and 155.5. Large OCC values, along with an entropy value of 0.73, indicate a latent profile model with good profile separation and assignment accuracy.

We validated the selection of the three-profile model with an independent sample. The results with the validation data, shown in Table 3, reveal the same pattern of AIC and BIC indices. Again, the three-profile model was significantly superior to the two-profile, although the differences between other  $k$  versus  $k-1$  profile solutions were minor.

INSERT TABLE 3 ABOUT HERE

Thus, we were able to validate three latent profiles of student engagement and burnout across two independent samples of Finnish lower secondary school students. The three profiles identified in both samples were named as follows: (1) low-engagement/high-burnout

(5.5%); (2) high-engagement/low-burnout (40.6%); and (3) average-engagement/average-burnout (53.9%).

Table 4 shows the descriptive statistics of the variables applied in student profiling by the latent profiles.

INSERT TABLE 4 ABOUT HERE

First, the descriptive statistics indicated that there was more variation between the profiles in students' behavioural and cognitive engagements than in school burnout (as suggested by high intra-class correlations). Second, all the profiles were highly statistically significantly different from each other in the variables applied in student profiling.

Figure 1 shows the standardised values ( $M = 0$ ,  $SD = 1$ ) of the profiles in behavioural engagement, cognitive engagement and school burnout.

INSERT FIGURE 1 ABOUT HERE

As shown by the standardised values, students in the average-engagement/average-burnout profile manifested average patterns in the variables used for profiling. High-engagement/low-burnout students had values of about one standard deviation above average in the two components of engagement, and values below zero in school burnout. Low-engagement/high-burnout students showed an inverse pattern in their school adjustment. They reported high levels of school burnout with two standard deviations below average in values of behavioural and cognitive engagement.

#### ***Variables associated with the latent profiles***

Table 5 presents the unstandardised results of the multinomial logistic regression analyses associations between background, contextual and student characteristics and aspirations factors with membership in the latent profiles, contrasting the low-engagement/high-burnout

profile with the high-engagement/low-burnout and average-engagement/average-burnout profiles.

INSERT TABLE 5 ABOUT HERE

In general, contextual and student characteristics and aspirations factors had a greater correlation with the latent profiles than the background factors. Students who reported high levels of teacher and family support, who performed well academically, were not truant, and who aspired to go to high school (as compared with those who did not intend to continue their studies) were more likely to have the high-engagement/low-burnout or average-engagement/average-burnout profiles, than the low-engagement/high-burnout profile. For instance, the odds ratios (OR) indicated that a one-unit increase on the teacher-support scale related to approximately 33.1 times greater odds of belonging to the high-engagement/low-burnout profile and 5.6 times greater odds of being in the average-engagement/average-burnout profile, compared with the low-engagement/high-burnout profile, when controlling for other variables. Likewise, a one-unit increase on the family-support scale corresponded to OR of 8.3 and 2.2 in these categories. The OR for student academic performance were 2.1 and 1.5, respectively, for highly engaged and averagely engaged students. Students reporting truancy from school were likely to belong to the low-engagement/high-burnout profile. In addition, high self-esteem contributed to the high-engagement/low-burnout student profile (OR = 5.1), compared with the low-engagement/high-burnout profile.

Gender was also statistically significantly associated with students' latent profile membership: girls were more likely to belong to the high-engagement/low-burnout profile than to the low-engagement/high-burnout profile, whereas boys were more likely than girls to belong to the low-engagement/high-burnout profile

## **Discussion**

This study had two goals: to identify latent profiles of Finnish lower secondary school students regarding student behavioural and cognitive engagement and school burnout, and to investigate background, contextual and student characteristics and aspirations factors that are associated with these profiles. Our findings extend the understanding of how 13- to 16-year-old students' engagement is linked to school burnout. The study has some important practical implications for researchers and practitioners with respect to factors facilitating or supporting students' engagement and preventing waning involvement with schoolwork and interest in school.

Using the latent-profile analysis on a data set of 2485 Finnish lower secondary school students from Grade 7 through Grade 9, we identified three student profiles: high-engagement/low-burnout, average-engagement/ average-burnout and low-engagement/ high-burnout. The student profiles were consistent across the two components of engagement used in the profiling, behavioural and cognitive engagement (both were high, average or low), thereby replicating the results of Wang and Peck (2013). School burnout was dynamically, and in an expected fashion, related to behavioural and cognitive engagement, as high engagement was associated with low burnout, average engagement with average burnout and low engagement with high burnout. This finding suggests that students' engagement and school burnout are to some extent parallel processes and their development may have similar mechanisms and underlying factors.

The second stage of the analyses where the focus was on analysing the associations of background, contextual and student characteristics and aspirations factors with the latent profile groups showed that along with student characteristics and aspirations factors (in particular, academic performance, truancy and self-esteem), student-perceived teacher and family support for learning (construed often as facilitators of affective engagement) played a

pivotal role in understanding students' adjustment in their lower secondary school environment.

In accordance with Hypothesis 1, we identified a profile with simultaneous high engagement and low burnout. These students, approximately 40% of the sample, found schoolwork relevant for their future, had high control over what they did at school, showed positive behaviours of attention and preparation in classes, had low levels of school-related burnout, were not truant, and were able to succeed academically. We may conclude that for this subgroup of students, the fit between the students and the environment was positive, they appeared to perceive school as an integral, valued part of their life, and they had the ability to utilise school resources.

Furthermore, supporting Hypothesis 1 and aligning with Li and Lerner (2011) and Wang and Peck (2013), we found variations in students' school adjustment. A small portion of students (5.5%) reported low engagement and high burnout, which suggests a non-optimal adjustment overall and a poor fit with the school environment. Perceived low support from teachers (c.f., Salmela-Aro et al., 2008) and family (see Bempechat & Shernoff, 2012) has earlier also been associated with burnout. For these students, lower secondary school did not appear to represent an environment where they would feel supported, competent and autonomous (Eccles & Roeser, 2011). School burnout is likely to have negative consequences for adolescents' long-term school careers (Tuominen-Soini & Salmela-Aro, 2014), and because of disaffection, these students may not be motivated to continue their education, placing them at risk of dropping out of school and the educational track (Wang & Peck, 2013).

We found partial support for Hypothesis 2 which posited that the profiles would be associated with students' experiences of support from teachers (Klem & Connell, 2004), parents (Rosenfeld et al., 2000; Woolley & Bowen, 2007) and peers (Lam et al., 2012).



Students showing the most optimal fit with school reported receiving affective support in the school environment (Skinner et al., 2008; Wang & Eccles, 2013), in particular, from the teachers (c.f., Klem & Connell, 2004). Teachers' ability to form meaningful, supportive relationships with students has been shown to facilitate students' social connections with school, energise their engagement, and protect against disengagement (Pianta, Hamre, & Allen, 2012). As these students identify with school and are comfortable with it as a social context, they are likely to show persistence in their educational goals (Tuominen-Soini & Salmela-Aro, 2014; Wang & Peck, 2013). Conversely, students in the low-engagement/high-burnout profile reported poor perceived teacher support and a higher rate of skipping classes (Skinner et al., 2009).

Similarly, students who reported receiving high affective support from their family tended to belong to the profiles showing good or average fit to their lower secondary schools. These results imply that a match across environments (school and home) fosters student engagement and prevents school burnout, while a mismatch may hinder student engagement and increase school burnout (Kumar, 2006). Lohman, Kaura, and Newman (2007) found that adolescents experiencing simultaneously high levels of autonomy and connectedness both at home and at school showed the most positive academic and psychosocial outcomes at school. They performed better academically, had fewer school absences, and reported a more positive sense of peer-group membership in comparison to adolescents with low autonomy and connectedness in both settings or those with mismatched levels of autonomy and connectedness at home and at school. In short, adolescents whose needs are met both at school and at home are likely to show a good fit with their lower secondary school.

Contrary to our expectations, peer support was not associated with profile membership. An explanation for this finding may be found in previous research showing that peers tend to be similar in engagement (Kindermann, 2007) and burnout (Kiuru et al., 2008). Receiving

support from low-engaged peers may not foster a student's engagement, but hinder it as peers who condone low engagement do not serve as a buffer against it. Likewise, high support from peers with high burnout may lead to elevated levels of burnout in a student by reinforcing similar attitudes of cynicism, for instance.

In setting Hypothesis 3, we expected that background factors such as family's socioeconomic status, age, attending special education and gender were associated with profile memberships. However, gender was the only one of these factors that was associated with profile membership. Girls tended to belong to the high-engagement/low-burnout profile rather than the low-engagement/high-burnout profile (Reschly et al., 2008). Family's socioeconomic status was not associated with membership in the latent profiles, which was consistent with some previous findings (Tuominen-Soini & Salmela-Aro, 2014; Wang & Peck, 2013), and in this specific sample, suggests that the equal educational opportunities for students from diverse socioeconomic backgrounds (Savolainen, 2009) are still uniformly guaranteed in Finland with respect to support for student engagement.

Typically, younger students are more engaged with school than older students, indicating that younger students have a better fit with the school environment (Wang & Eccles, 2012). In the present study, no age effects were found for the latent profile. This finding may be due to the measure of cognitive engagement which focused on students' future aspirations and goals. In the present data, older students (those in Grade 9) tended to have higher aspirations for their future education than younger students, which explains why a lower age was not related to high-engagement/low-burnout profile membership.

Special education tends to optimise the match between a student and the school environment (Thompson, Wehmeyer, & Hughes, 2010). In Finland, special education strives to strengthen individual students' positive ties with teachers and foster participation and investment in learning (Finnish National Board of Education, 2010). One possible

explanation why our analysis did not find an association between special education status and an engagement/burnout profile may be that school personnel were able to identify low-engagement/high-burnout students and provide them with special education services, thereby fostering their adjustment and securing a good fit with the school.

Consistent with Hypothesis 4, self-esteem (Finn & Rock, 1997; Ma, 2003; You & Sharkey, 2009), academic performance (Ross, 2009; Salmela-Aro et al., 2009), school aspirations (Wang & Peck, 2013) and truancy (Maynard, Salas-Wright, Vaughn, & Peters, 2012) each correlated with the latent profiles. The students with high-engagement/low-burnout viewed school as relevant to their futures, had high self-esteem, performed well academically and did not play truant. This suggests an optimal match with their school environment, fostering educational resilience and persistence and a sense of belonging.

### ***Limitations***

Several limitations of this study are worth mentioning. First, the study utilised self-reported data, which can be vulnerable to biases. However, previous studies have shown that teacher (Appleton & Lawrenz, 2011) and parent reports (Wylie & Hodgen, 2012) on students' engagement tend to be overly positive. Therefore, despite the risk of bias, we believe that lower secondary school students are the key informants concerning their own school experiences (Appleton et al., 2006). Second, our measure of students' academic performance was based on students' reports of their grades in three specific subjects. Although this measure tends to be more reliable than self-reported grade-point averages (Kuncel, Crede, & Thomas, 2005), future studies should use actual GPAs. Third, a mixed quantitative and qualitative methodology (for example, student interviews) would have complemented our understanding of the development of student profiles. Fourth, these results from Finnish schools may not be generalizable to other lower secondary school settings, and replication studies that account for cultural differences are needed. Unlike many other school

systems, the schools in the Finnish systems are virtually all public schools with little variation in students' performance between schools. In addition, Finnish schools are relatively homogeneous culturally, and emphasise educational equity (Savolainen, 2009) and learning mastery as opposed to competition and high-stakes testing (Kumar, 2006). Future studies using instruments with established measurement invariances across cultures are needed to allow for reliable comparisons. Finally, the present study was cross-sectional. One cannot make inferences about causation from the present cross-sectional data. Rather, interpretations concerning the links between the variables are based on theory (person-environment fit in this study) and prior empirical findings. In order to examine causal relationships between the study variables, longitudinal data sets and a cross-lagged design would need to be applied.

### ***Practical implications***

This study shows that student engagement is dynamically associated with students' well-being at school: Students who had high levels of behavioural and cognitive engagement, reported low levels of school burnout. Thus, preventing downward spirals that can lead to dropping out of school requires regular monitoring of engagement and burnout with timely, tailored interventions early in lower secondary school. Students showing low engagement may benefit from a temporary easing of their school workload to fit their prevailing mental resources. One such intervention to increase students' person-environment fit is the Check & Connect program (Christenson et al., 2008), which provides needs-based, individualised intervention to build positive, stable relationships between the student, family members and the school staff.

### ***Conclusion***

Overall, the findings indicated that the vast majority of lower secondary school students in this sample showed average or high levels of fit with their schools. The study provided strong empirical evidence of the interrelatedness of behavioural and cognitive aspects of

student engagement and burnout. Students showing high engagement tended to experience low levels of school burnout, whereas students characterised by high levels of burnout tended to have low levels of behavioural and cognitive engagement. To address the prevailing problems of low engagement or disengagement, practitioners should focus on creating secure relationships with students, involving parents to support their adolescents' schooling, and preventing students' school truancy.

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Table 1

*Correlations between All Variables, Means and Standard Deviations for Continuous Variables (N = 2485)*

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.
1. Gender	1													
2. Special education status	0.12 <sup>a</sup>	1												
3. Family's socio-economic status	0.09 <sup>a</sup>	-0.02	1											
4. Age	0.00	0.08 <sup>a</sup>	-0.04 <sup>c</sup>	1										
5. Behavioural engagement	-0.15 <sup>a</sup>	-0.24 <sup>a</sup>	0.09 <sup>a</sup>	-0.06 <sup>b</sup>	1									
6. Cognitive engagement	-0.10 <sup>a</sup>	-0.20 <sup>a</sup>	0.13 <sup>a</sup>	0.07 <sup>b</sup>	0.65 <sup>a</sup>	1								
7. School burnout	-0.04	0.21 <sup>a</sup>	-0.12 <sup>a</sup>	0.05 <sup>c</sup>	-0.34 <sup>a</sup>	-0.34 <sup>a</sup>	1							
8. Teacher support	-0.02	-0.11 <sup>a</sup>	0.09 <sup>a</sup>	-0.15 <sup>a</sup>	0.44 <sup>a</sup>	0.62 <sup>a</sup>	-0.36 <sup>a</sup>	1						
9. Family support for learning	-0.04	-0.12 <sup>a</sup>	0.15 <sup>a</sup>	-0.06 <sup>b</sup>	0.38 <sup>a</sup>	0.55 <sup>a</sup>	-0.25 <sup>a</sup>	0.46 <sup>a</sup>	1					
10. Peer support at school	0.00	-0.09 <sup>a</sup>	0.19 <sup>a</sup>	-0.03	0.17 <sup>a</sup>	0.35 <sup>a</sup>	-0.22 <sup>a</sup>	0.32 <sup>a</sup>	0.37 <sup>a</sup>	1				
11. Self-esteem	0.25 <sup>a</sup>	-0.11 <sup>a</sup>	0.20 <sup>a</sup>	0.06 <sup>b</sup>	0.28 <sup>a</sup>	0.29 <sup>a</sup>	-0.48 <sup>a</sup>	0.28 <sup>a</sup>	0.30 <sup>a</sup>	0.39 <sup>a</sup>	1			
12. Academic performance	-0.19 <sup>a</sup>	-0.43 <sup>a</sup>	0.05 <sup>c</sup>	-0.16 <sup>a</sup>	0.38 <sup>a</sup>	0.34 <sup>a</sup>	-0.28 <sup>a</sup>	0.21 <sup>a</sup>	0.20 <sup>a</sup>	0.08 <sup>a</sup>	0.14 <sup>a</sup>	1		
13. School aspiration	-0.16 <sup>a</sup>	-0.34 <sup>a</sup>	0.07 <sup>b</sup>	0.05 <sup>c</sup>	0.31 <sup>a</sup>	0.33 <sup>a</sup>	-0.22 <sup>a</sup>	0.19 <sup>a</sup>	0.23 <sup>a</sup>	0.13 <sup>a</sup>	0.14 <sup>a</sup>	0.49 <sup>a</sup>	1	
14. Truancy	0.00	0.21 <sup>a</sup>	-0.07 <sup>b</sup>	0.16 <sup>a</sup>	-0.40 <sup>a</sup>	-0.30 <sup>a</sup>	0.28 <sup>a</sup>	-0.29 <sup>a</sup>	-0.22 <sup>a</sup>	-0.10 <sup>a</sup>	-0.17 <sup>a</sup>	-0.29 <sup>a</sup>	-0.23 <sup>a</sup>	1
<i>M</i>	-	-	-	14.71	3.02	3.03	3.15	2.79	3.35	3.12	2.73	7.81	-	-
<i>SD</i>	-	-	-	0.92	0.51	0.43	1.08	0.52	0.50	0.48	0.48	1.07	-	-

*Note.* <sup>a</sup>  $p < .001$ ; <sup>b</sup>  $p < .01$ ; <sup>c</sup>  $p < .05$ . Two-tailed Pearson's  $r$ . *M* = Mean. *SD* = Standard deviation. Gender (1 = male). Special education status (1 = receives special education services). Truancy (1 = truancy).

Table 2

*Deciding the Number of Latent Profiles: Fit Indices and Group Sizes of the Estimated Models*

No. of profiles	No. of free parameters	LL	AIC	BIC	Entropy	<i>p</i> VLMR	Group sizes
2	10	-6,279.638	12,579.276	12,637.400	0.69	<0.001	676, 1795
3	14	-6,006.426	12,040.852	12,122.226	0.73	0.001	137, 1003, 1331
4	18	-5,888.726	11,813.451	11,918.074	0.73	0.232	546, 438, 62, 1425
5	22	-5,820.264	11,684.528	11,812.401	0.75	0.001	479, 23, 577, 85, 1307
6	26	-5,782.965	11,617.931	11,769.053	0.78	0.016	97, 23, 21, 1269, 478, 583

*Note.* LL = Log-likelihood. AIC = Akaike information criterion. BIC = Bayesian information criterion. *p*VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio test.

Table 3

*Validating the Three-Profile Model: Fit Indices and Group Sizes of the Estimated Models*

No. of profiles	No. of free parameters	LL	AIC	BIC	Entropy	<i>p</i> VLMR	Group sizes
2	10	-2007.289	4034.578	4081.622	0.63	<0.001	318, 498
3	14	-1912.485	3852.971	3918.833	0.78	0.025	99, 204, 513
4	18	-1884.258	3804.516	3889.195	0.81	0.172	489, 193, 8, 126
5	22	-1867.986	3779.973	3883.470	0.74	0.477	105, 6, 108, 406, 191
6	26	-1852.422	3756.845	3879.160	0.78	0.036	93, 127, 16, 3, 404, 173

*Note.* LL = Log-likelihood. AIC = Akaike information criterion. BIC = Bayesian information criterion. *p*VLMR = Vuong-Lo-Mendell-Rubin likelihood ratio test.



Table 4

*Latent Profile Raw Score Means, Standard Deviations (in parentheses), and Intra-Class Correlations*

Variables applied in identification of latent profiles	Low-engagement/ high-burnout <i>M (SD)</i>	High-engagement/ low-burnout <i>M (SD)</i>	Average-engagement/ average-burnout <i>M (SD)</i>	<i>ICC</i>
Behavioural engagement	1.96 (0.41)	3.45 (0.30)	2.81 (0.33)	0.79
Cognitive engagement	2.06 (0.44)	3.37 (0.24)	2.87 (0.25)	0.81
School burnout	4.16 (1.12)	2.59 (0.91)	3.46 (0.98)	0.31

*Note.* *ICC* = Intraclass correlation. The differences of the means on each row are statistically significant from each other at  $p < 0.001$  using the Sidak post hoc test.

Table 5

*The Unstandardised Results of the Multinomial Logistic Regression Analyses Associations between Background, Contextual and Student Characteristics and Aspirations Factors with Latent Profiles*

Low-engagement/high-burnout profile as compared with:						
Factors	High-engagement/low-burnout profile			Average-engagement/average-burnout profile		
	$\beta$	S.E.	OR	$\beta$	S.E.	OR
Background factors						
Gender	-1.21	0.30	0.30 <sup>a</sup>	-0.47	0.26	0.63
Special education status	-0.48	0.29	0.62	-0.46	0.25	0.63
Family's socio-economic status	0.15	0.14	1.16	0.06	0.13	1.06
Age	0.28	0.14	1.32	0.18	0.12	1.19
Contextual support						
Teacher support	3.50	0.26	33.13 <sup>a</sup>	1.73	0.18	5.62 <sup>a</sup>
Family support for learning	2.12	0.27	8.31 <sup>a</sup>	0.80	0.22	2.22 <sup>a</sup>
Peer support at school	0.36	0.29	1.43	0.29	0.23	1.33
Student characteristics and aspirations						
Self-esteem	1.62	0.32	5.06 <sup>a</sup>	0.52	0.29	1.68
Academic performance	0.76	0.15	2.13 <sup>a</sup>	0.38	0.13	1.47 <sup>a</sup>
School aspiration						
High school	2.15	0.99	8.62 <sup>c</sup>	1.04	0.71	2.83
Vocational school	1.67	0.94	5.31	1.01	0.64	2.76
School other than high school or vocational school	2.07	1.31	7.92	1.02	0.87	2.76
School truancy	-1.92	0.29	0.15 <sup>a</sup>	-1.02	0.25	0.36 <sup>a</sup>

*Note.* The reference group is the low-engagement/high burnout profile. OR = odds ratio. S.E. = standard error. Gender (1 = male). Special education status (1 = receives special education). School aspiration (1 = high school, 1 = vocational school, 1 = school other than high school or vocational school). School truancy (1 = truancy).

<sup>a</sup>  $p < .001$ ; <sup>c</sup>  $p < .05$ . Two-tailed Pearson's  $r$ .

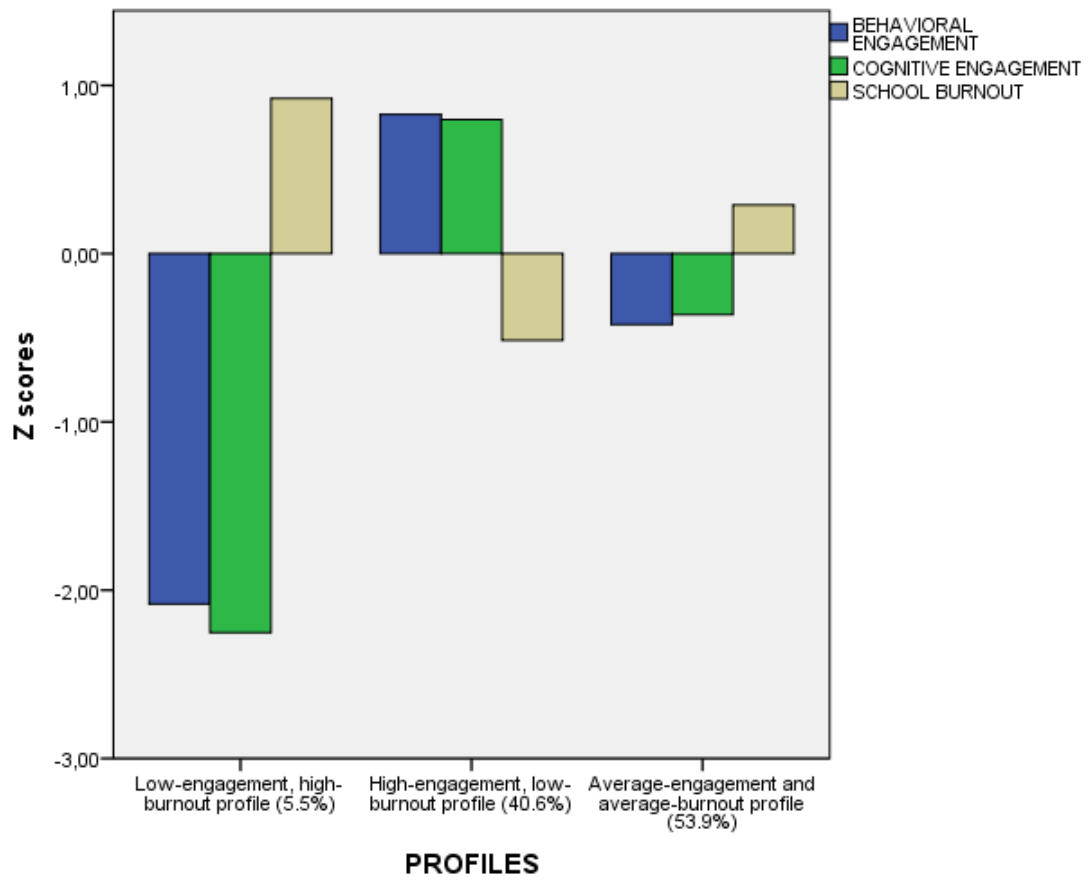


Figure 1. Students' behavioural engagement, cognitive engagement and school burnout standardised means according to the latent profile membership.