School Burnout Inventory (SBI)

Reliability and Validity

Katariina Salmela-Aro, Noona Kiuru, Esko Leskinen, and Jari-Erik Nurmi

University of Jyväskylä, Finland

Abstract. This study introduces a measure for school burnout and examines its validity and reliability among students in upper secondary high schools and vocational schools by using confirmatory factor analysis. School-related burnout comprises three dimensions: (a) exhaustion at school, (b) cynicism toward the meaning of school, and (c) sense of inadequacy at school. A total of 1418 (709 girls, 709 boys) adolescents from 13 postcomprehensive schools (6 upper secondary high schools, 7 vocational schools) filled in a questionnaire concerning their school burnout and background variables. The results showed that the three-factor solution, compared to one- or two-factor solutions, fit the data best and also gave the best reliability indices. The three theoretically-derived dimensions of school burnout were closely related but separate constructs. Finally, concurrent validity for the School-Burnout Inventory (SBI) was found when the correlations of depressive symptoms, school engagement, and academic achievement with each of the three dimensions of school burnout were examined: The more depressive symptoms adolescents suffered, the more exhaustion, cynicism, and inadequacy they reported; and the lower their academic achievement and school engagement, the more cynicism and inadequacy they reported.

Keywords: school burnout, school engagement, depressive symptoms, academic achievement

Introduction

Although burnout has generally been regarded as a work-related disorder (Maslach, Schaufeli, & Leiter, 2001) it may also be useful in the school context. School is a setting in which students work: Students attend classes and do assignments in order to pass exams and acquire a degree (Schaufeli, Martinez, Pinto, Salanova, & Bakker, 2002). Hence, the concept of burnout can reasonably be extended to the school context (Kiuru, Aunola, Nurmi, Leskinen, & Salmela-Aro, 2008) and a valid and reliable instrument is needed. This study reports the development of an instrument to measure school burnout, the School Burnout Inventory (SBI).

Burnout in the work context is defined as a syndrome of emotional exhaustion, cynicism or depersonalization, and reduced professional efficacy (Maslach et al., 2001). Exhaustion refers to feelings of strain, particularly chronic fatigue resulting from overtaxing work. Cynicism consists of an indifferent or a distal attitude toward work, in general, and the people with whom one works; losing interest in one's work; and not seeing work as meaningful. Lack of professional efficacy refers to diminished feelings of competence, as well as less successful achievement and accomplishment both in one's job and in the organization.

School provides an important developmental context for adolescents (Eccles, 2004). Previous research has shown that adolescents' perceptions and experiences of school are associated with various adjustment outcomes. Dislike of school is related to internal and external problem behaviors, and to reduced quality of life (Kasen, Johnson, & Cohen, 1990). Although many concepts, such as low academic achievement and motivation, poor self-esteem, school stress and tiredness, and internal and external problem behavior (Byrne, Davenport, & Mazanov, 2007; Rudolph, Lambert, Clark, & Kurlakowsky, 2001; Wentzel, Barry, & Caldwell, 2004) have been used to describe maladjustment at school, only a few studies have been carried out, in particular, on school-related burnout and stress. For example, Byrne et al. (2007) recently described school-related stress, and we have previously described school-burnout as a new concept (Kiuru et al., 2008; Salmela-Aro, Kiuru, Pietikäinen, & Jokela, 2008). Following the original theory of work burnout (Schaufeli et al., 2002), school-related exhaustion can be defined as school-related feelings of strain, particularly chronic fatigue resulting from overtaxing schoolwork. School-related cynicism, in turn, is manifested in an indifferent or a distal attitude toward schoolwork in general, a loss of interest in one's academic work, and not seeing it as meaningful. Lack of school-related efficacy refers to diminished feelings of competence as well as less successful achievement, and to lack of accomplishment both in one's schoolwork and in school as a whole (Schaufeli et al., 2002). School burnout overlaps with some earlier concepts. For example, exhaustion, measured in terms of feeling overwhelmed, having difficulty sleeping because of worrying and ruminating, resembles the concepts of stress, tiredness, and anxiety (Bagley, 1993; Byrne et al., 2007; McNamara, 2000). In turn, cynicism and reduced accomplishment, measured in terms of loss of interest, apathy, and feeling disappointed and inadequate (Spruijt-Metz & Spruijt, 1997), resemble depressive symptoms (Ahola & Hakanen, 2007). However, while stress, tiredness, anxiety,

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and depressive symptoms do not refer to a specific context, school burnout is a context-specific measure, that is, burnout is measured strictly in the school context. In the present study, we examined whether the three theoretically-derived dimensions of school burnout, that is, exhaustion because of school demands, cynical and detached attitude toward one's school, and feelings of inadequacy as a student (Salmela-Aro & Näätänen, 2005; Schaufeli et al., 2002) can be described as separate constructs representing a single overall construct of school burnout in the school context.

Gender and Tracking Effects

Previous research has shown gender differences in academic achievement and school adjustment. For example, girls tend to perform better at school than boys (Pomerantz, Altermatt, & Saxon, 2002) and to attribute greater importance to academic achievement compared to boys (Berndt & Miller, 1990). However, girls also experience higher levels of stress (Ge, Lorenz, Conger, Elder, & Simons, 1994), and internalized symptoms (Pomerantz et al., 2002).

The transition from comprehensive school to either an upper secondary high school or vocational school is the key educational change during adolescence in many European educational systems. Educational tracking determines the quality and kinds of learning opportunities each student receives. It also determines exposure to different peers and, thus, to a certain degree, the nature of the social relationships that young people form in school (Fuligni, Eccles, & Barber, 1995). Comprehensive schools are frequently referred to as "neighborhood" schools, the students spending most of the school day with one set of peers and teachers, whereas secondary and vocational schools are, in most cases, larger than comprehensive schools and with more teachers in each classroom. For these reasons it is important to take educational track into account when analyzing the reliability and validity of the SBI. Consequently, we took gender and educational track into account as control variables when we analyzed the reliability and validity of the SBI.

The Present Study

This study examined the development of the SBI, its validity as well as reliability, in students of both genders attending upper secondary high schools and vocational schools. The aim of the study was, first, to determine the construct validity of school burnout. In light of research on burnout in the work context (Schaufeli, Bakker, & Salanova, 2006) the structure of the SBI was tested by comparing the goodness-of-fit of the three-factor model of school burnout to that of a one-factor model. It was expected (Hypothesis 1) that a model consisting of three correlated factors measuring exhaustion at school, cynicism toward the meaning of school, and sense of inadequacy at school would describe the phenomenon of burnout in the school context better than a one-factor model representing overall school burnout (Schaufeli et al., 2002, 2006).

Second, different aspects of reliability (i.e., item reliability, scale reliability) of the SBI were investigated. Finally, the discriminant and concurrent validity of the SBI were investigated by examining its associations with depressive symptoms, school engagement, and academic achievement, which were used as validity indicators of school burnout. Considering the possible gender and track effects, these were entered in the model as control variables. The hypothesis was that depressive symptoms would be related to exhaustion, cynicism, and inadequacy, while school engagement and academic achievement would be related to a low level of cynicism and inadequacy (Hypothesis 2).

Method

Participants

The participants were adolescents who, half a year earlier, had faced the transition to postcomprehensive school. Up to age 16, all Finnish adolescents have a similar basic education. After comprehensive school, 55% of adolescents enter upper secondary high schools and 37% vocational schools. Both upper secondary high schools and vocational schools take 3 to 4 years to complete. High academic achievement in the ninth grade is required for admission to upper secondary high school. Upper secondary high school education, in turn, is a prerequisite for university education, whereas education in vocational schools leads directly to a lower-level occupational qualification. A total of 1418 (709 girls, 709 boys) adolescents from 13 postcomprehensive schools (6 upper secondary high schools; 7 vocational schools) filled in a questionnaire on school burnout and background variables. The participation rate from among the total number of students in the schools ranged between 65% and 100%, with an average of 84%.

The median age of the participants was 16 years (M = 16.47; SD = 1.73). The majority of the participants (99%) were Finnish-speaking, 1% of them having some other mother tongue. This agrees well with the figures for ethnic minorities at the national level. The occupational distribution was as follows: 27% of fathers and 20% of mothers of the participants worked in higher white-collar occupations; 17% of fathers and 49% of mothers worked in lower white-collar occupations; 36% of fathers and 17% of mothers worked in blue-collar occupations; 11% of fathers and 4% of mothers were private entrepreneurs; 1% and 2% were students; 3% and 2% were retired, and 5% and 6% had other status (e.g., unemployed). Questionnaires were group-administered to the students in their classrooms during regular school hours.

Measures

School Burnout Inventory

The SBI was originally developed by Salmela-Aro and Näätänen (2005) on the basis of the Bergen Burnout Indicator 15 (BBI-15) for working life (Näätänen, Aro, Matthiesen, & Salmela-Aro, 2003; Salmela-Aro, Näätänen, & Nurmi, 2004). The inventory consists of 10 items measuring three factors of school burnout: (a) exhaustion at school (four items), (b) cynicism toward the meaning of school (three items), and (c) sense of inadequacy at school (three items). All the items were rated on a 6-point Likert-type scale ranging from 1 (*completely disagree*) to 6 (*strongly agree*).

The SBI was originally developed from the BBI-15. The BBI-15 consists of 15 items that form three dimensions: work exhaustion, cynicism toward work, and sense of inadequacy at work. The SBI was constructed by changing the work context to the school context (see also Schaufeli et al., 2002) and including the 10 items that had the highest reliability scores and best suited the school context. The SBI items are given in Appendix A.

Academic Achievement

Academic achievement was measured by asking the participants to report their grade point average (GPA) in their final comprehensive school report. The GPA scale in Finland ranges from 4 (lowest) to 10 (highest). Self-reported GPA has been shown to have a correlation of .96 with actual GPA among Finnish ninth-graders (Holopainen & Savolainen, 2005).

School Engagement

School engagement was measured by the abbreviated student version of the Utrecht work engagement scale (UWES-S) developed originally by Schaufeli et al. (2002; Salmela-Aro, 2004) on the basis of the Utrecht work engagement scale (UWES-9; Schaufeli et al., 2006). The scale consists of nine items measuring vigor (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 school work. Responses were rated on a 7-point Likert-type scale ranging from 0 (*never*) to 6 (*every day*). For the purpose of this study, a sum score was calculated from all nine items to indicate the level of adolescents' school engagement (Hakanen, Bakker, & Demerouti, 2005). Cronbach's α was .94.

Depressive Symptoms

Depressive symptoms were measured by using the Finnish depression scale (DEPS-10; Salokangas, Stengård, & Poutanen, 1994) based on mean ratings of 10 items from the Hopkins checklist. The scale consists of 10 questions regarding participants' mood during the last month (e.g., "I felt sad; I felt that my future is hopeless"). Students' responses were on a 4-point Likert-type scale ranging from 1 (*not at all*) to 4 (*very much*). The Cronbach's α reliability for the scale was .92. A total score, based on the mean of the ratings, was computed.

Demographics

Gender was coded by asking the adolescents to circle the correct alternative (1 = girl, 2 = boy). School track was coded as follows: Upper secondary high school students were coded 1 and vocational school students were coded 0.

Analytic Strategy

Confirmatory factor analysis was used on the SBI items. The statistical analyses were performed using the Mplus statistical package (Version 5.0; Muthén & Muthén, 1998–2007) with the missing-data method. This missing-data method uses all the data that are available in order to estimate the model without inputting data. The parameters of the models were estimated using the maximum likelihood robust (MLR) estimation method, which is robust to nonnormality of observed variables.

The analyses were performed as follows: As a first step, the structure of the SBI was determined. Two alternative theoretical models were estimated separately and their goodness-of-fit compared by using the Satorra-Bentler scaled χ^2 test for difference (Muthén & Muthén, 1998–2007): (a) a one-factor model (M1) that assumes that there is one latent factor underlying all the SBI items, and (b) a three-factor model (M2) that assumes that three correlated latent factors, namely exhaustion, cynicism, and inadequacy, underlie the SBI items. The next step was to examine whether the phenomenon of school burnout could also be described by a second-order-factor model (M3). In Model M3, the relations between the three first-order factors were expected to be explained by a second-order factor measuring overall school burnout. It is noteworthy that the M2 and M3 models are data-equivalent models including the same number of estimated parameters (see also Feldt, Leskinen, Kinnunen, & Ruoppila, 2003). However, to have sufficient validity and reliability, the scale of the second-order latent factor measuring overall school burnout requires relatively high correlations between the first-order factors. All three theoretical models are presented in Figure 1.

As the third step, the reliability and validity of the items composing the SBI were determined based on the confirmatory factor analysis. Item reliability was measured by estimating reliability coefficients (i.e., the squared correlation between the item and the factor, see Bollen, 1989; Liukkonen & Leskinen, 1999). The structural validity of

Table 1. Correlation matrix of the raw scores of items of the School Burnout Inventory, their means and variances

SBI items	1	2	3	4	5	6	7	8	9	10
1. EXH1	1.00									
2. CYN1	.38	1.00								
3. INAD1	.50	.55	1.00							
4. EXH2	.46	.36	.49	1.00						
5. CYN2	.39	.75	.50	.36	1.00					
6. CYN3	.27	.61	.45	.32	.64	1.00				
7. INAD3	.35	.66	.52	.37	.71	.70	1.00			
8. EXH3	.49	.28	.48	.58	.32	.28	.33	1.00		
9. INAD2	.40	.54	.52	.41	.59	.49	.60	.47	1.00	
10. EXH4	.42	.38	.46	.51	.38	.36	.42	.51	.43	1.00
Means	3.09	2.21	2.64	2.25	2.35	1.95	2.07	2.63	2.52	2.07
Variances	1.52	1.42	1.39	1.52	1.65	1.30	1.17	1.84	1.81	1.45

Note. All the correlations were statistically significant ($p < .001$).

the items was measured by estimating standardized validity coefficients (i.e., standardized factor loadings), which indicate direct structural relations between the factor and the item (Bollen, 1989). Next, the internal consistency of the SBI was determined. The internal consistency of the inventory was examined by estimating the factor score scale reliabilities (squared correlations between the factor score scale and the latent factor) and Cronbach's αs.

Finally, we examined whether meaningful predictors of school burnout would provide evidence of concurrent validity of the SBI. This question was answered by adding predictors to the final M2 and M3 models by estimating the paths from academic achievement, school engagement, and depression to the latent factors. The effects of gender and school track were controlled for, that is, were also entered in the model.

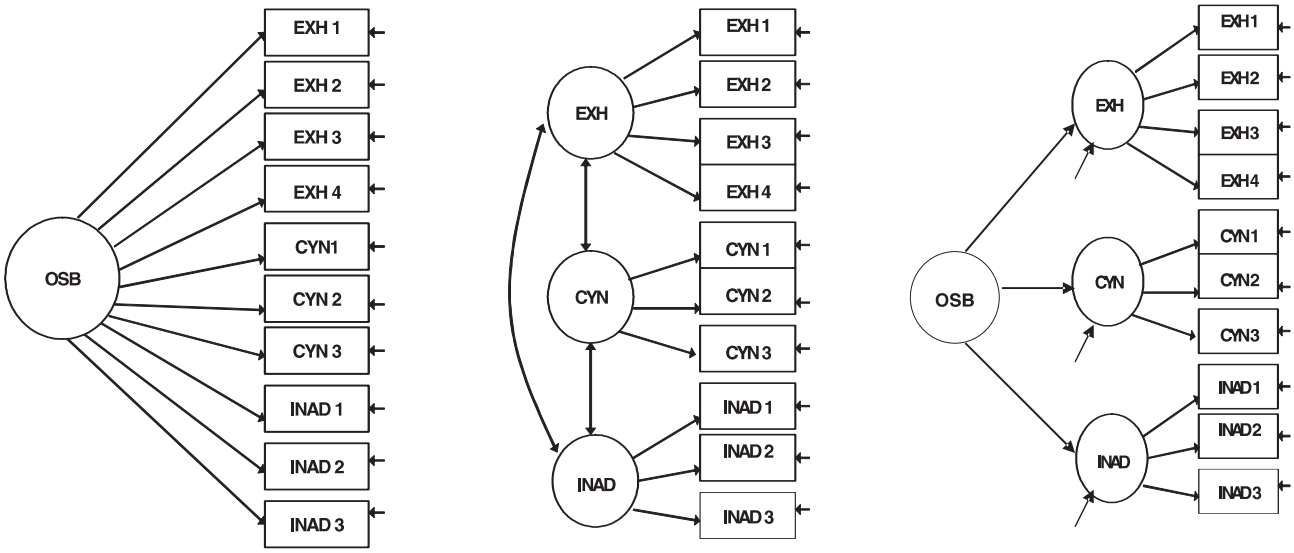
The goodness-of-fit of the estimated models was evaluated by using the following three absolute goodness-of-fit indices: (a) χ^2 test, (b) root mean square error of approximation (RMSEA), and (c) standardized root mean square residual (SRMR). Because the χ^2 test is sensitive to sample size, the use of relative goodness-of-fit indices is also strongly recommended in the case of large sample sizes (Bentler & Bonett, 1980). Consequently, the following relative goodness-of-fit indices were also used to evaluate model fit: (a) comparative fit index (CFI) and (b) Tucker-Lewis index (TLI). Finally, Akaike's information criterion (AIC) indices of the alternative models were also given.

Results

Structure of the SBI

Means, variances, and the correlations for the observed school-burnout variables are presented in Table 1. The confirmatory factor analyses were started by including all of the 10 items measuring three different aspects of school burnout, that is, exhaustion (EXH; 4 items), cynicism (CYN; 3 items), and inadequacy (INAD; 3 items). The results showed, first, that the third item of INAD ("I feel that I have less and less to give in my schoolwork") did not fit with any of the models tested. In the case of the M2 model, the modification indices (MI) indicated that the model's goodness-of-fit would significantly improve if the third item of INAD was also allowed to load on EXH (MI = 106.94) or on CYN (MI = 107.42) in addition to INAD. Also, in the M1 model the MI indicated that the model's goodness-of-fit would significantly improve if the residual of the third item of INAD was allowed to correlate not only with the residuals of the items measuring INAD but also with the residuals of the items measuring EXH (max MI = 31.05, EXH1) and CYN (max MI = 84.21, CYN3). Consequently, because of its poor discriminant validity, the third item of INAD was excluded from further analyses.

Next, the M1 and M2 theoretical models (see Figure 1) were first estimated separately for the nine items of the SBI. The goodness-of-fit indices of the final model M1 were: $\chi^2(27, N = 1344) = 740.31$, $p < .001$, RMSEA = .14, CFI = .81, TLI = .74, SRMR = .08, AIC = 34787.06. The goodness-of-fit indices of the final model M2 were: $\chi^2(24, N = 1344) = 108.91$, $p < .001$, RMSEA = .05, CFI = .98, TLI = .97, SRMR = .03, AIC = 33900.14. The correlations of the factors of the model M2 were high: r(exhaustion, cynicism) = .58, $p < .001$; r(exhaustion, inadequacy) = .89, $p < .001$; and r(cynicism, inadequacy) = .88, $p < .001$. Consequently, besides investigating M1 and M2, we also estimated the Model M3 in which Overall School Burnout was a second-order factor and Exhaustion, Cynicism, and Inadequacy were the three first-order factors. (Note that the second-order factor model and the correlated three-factor model are data-equivalent models.) However, in the final Model M3 the residual variance of the Inadequacy factor was fixed to zero, because of its negative estimate. The goodness-of-fit indices of Model M3 were: $\chi^2(25, N = 1344) = 157.51$, $p <$



Model M1 **Model M2** **Model M3**

Figure 1. Theoretical model MI: one-factor model; theoretical model M2: three-factor model; theoretical model M3: second-order-factor model. OSB = overall school burnout. EXH = exhaustion; CYN = cynicism; INAD = inadequacy.

.001, RMSEA = .06, CFI = .96, TLI = .95, SRMR = .04, AIC = 33966.70.

Because, in Model M2, the Exhaustion and Inadequacy factors, on the one hand, and the Cynicism and Inadequacy factors on the other hand, were highly correlated, two alternative two-factor models were also estimated: (M4a) one latent factor for the exhaustion and inadequacy items and a separate latent factor for the cynicism items, and (M4b) one latent factor for the cynicism and inadequacy items and a separate latent factor for exhaustion. The goodness-of-fit indices of Model M4a were: $\chi^2(26, N = 1344) = 288.31$, $p < .001$, RMSEA = .09, CFI = .92, TLI = .90, SRMR = .06, AIC = 34155.042; whereas those of Model M4b were: $\chi^2(26, N = 1344) = 323.44$, $p < .001$, RMSEA = .09, CFI = .92, TLI = .89, SRMR = .06, AIC = 34196.36.

The results showed that both the M2 and M3 models fitted very well to the data. All the goodness-of-fit indices suggested that these models described the data well (except for the χ^2-test, which is sensitive to large sample size). Also, the two alternative two-factor models (M4a, M4b) showed acceptable fit. Model M1 did not fit the data. Further, Models M1 and M2 were compared by using the Satorra-Bentler scaled χ^2-test for difference. The results showed that the goodness-of-fit of Model M2 was superior to that of M1, $\chi^2(3) = 467.01$, $p < .001$. Similarly, the goodness-of-fit of Model M2 was superior to that of both the alternative two-factor models: M2 vs. M4a: $\chi^2(2) = 113.54$, $p < .001$; M2 vs. M4b: $\chi^2(2) = 176.42$, $p < .001$. This suggests that the model containing three closely related factors, or Model M3, best described the phenomenon of school burnout.

Reliability and Validity

The item reliabilities and validities of SBI were explored in the following estimated models, containing all nine items: (a) the one-factor model M1, (2) the three separate one-factor models for exhaustion, cynicism, and inadequacy, (3) the correlated three-factor model M2, and (4) the second-order-factor model M3. Separate one-factor models for each school-burnout dimension were also estimated in order to compare their reliability and validity properties with the other models. In the separate one-factor model for inadequacy, containing only two items, the factor loadings were estimated to be equal in order to be able to obtain an identifiable model. The item reliability and standardized validity coefficients (i.e., factor loadings) obtained are shown in Table 2. The results (Table 2) showed that the reliability and validity coefficients for Model M1 were lower than those for the other models. Overall, all the items included in the final models seem to be good indicators of latent factors. These results support the findings on factorial validity, suggesting that Model M2, or Model M3, were better ways of describing the phenomenon of school burnout than Model M1.

The internal consistency of the three school-burnout scales was examined by calculating factor-score scales reliabilities and Cronbach's αs for direct sums of items. The results for the structure of the factor-score scale coefficients, reliabilities for factor-score scales, and Cronbach's αs are presented in Table 3. The factor-score coefficients were estimated by using the regression method. Table 3 shows that all the factor-score scales had good internal consistency. The reliabilities for the factor-score scales were somewhat higher than the Cronbach's α reliabilities. The

Table 2. Estimated item reliability and standardized validity (in parentheses) coefficients for the SBI models

	M1	Each factor in separate model			M2			M3			
SBI	OSB	EXH	CYN	INAD	EXH	CYN	INAD	OSB	EXH	CYN	INAD
Item EXH1	.33 (.58)	.39 (.63)	–	–	.43 (.65)	–	–	–	.43 (.65)	–	–
Item EXH2	.35 (.59)	.56 (.75)	–	–	.54 (.74)	–	–	–	.54 (.74)	–	–
Item EXH3	.32 (.57)	.60 (.77)	–	–	.57 (.76)	–	–	–	.56 (.75)	–	–
Item EXH4	.35 (.60)	.45 (.67)	–	–	.47 (.68)	–	–	–	.47 (.68)	–	–
Item CYN1	.60 (.78)	–	.72 (.85)	–	–	.73 (.85)	–	–	–	.73 (.85)	–
Item CYN2	.62 (.79)	–	.78 (.88)	–	–	.77 (.87)	–	–	–	.77 (.88)	–
Item CYN3	.47 (.68)	–	.52 (.72)	–	–	.53 (.73)	–	–	–	.53 (.73)	–
Item INAD1	.52 (.72)	–	–	.58 (.76)	–	–	.52 (.72)	–	–	–	.58 (.76)
Item INAD2	.52 (.72)	–	–	.45 (.67)	–	–	.51 (.71)	–	–	–	.55 (.75)
Exhaustion	–	–	–	–	–	–	–	.65 (.80)	–	–	–
Cynicism	–	–	–	–	–	–	–	.65 (.81)	–	–	–
Inadequacy[a]	–	–	–	–	–	–	–	1.00 (1.00)	–	–	–

Note. M1 = one-factor model; M2 = three-factor model; M3 = second-order-factor model. OSB = overall school burnout; EXH = exhaustion; CYN = cynicism; INAD = inadequacy. [a]Residual variance of Inadequacy is fixed to zero.

Table 3. Estimated coefficients and reliabilities for factor score scales and Cronbach's αs

	M1	Each factor in separate model			M2			M3			
SBI	OSB	EXH	CYN	INAD	EXH	CYN	INAD	OSB	EXH	CYN	INAD
Item EXH1	.05	.12	–	–	.12	.003	.07	.03	.12	.01	.05
Item EXH2	.06	.21	–	–	.17	.004	.10	.05	.17	.02	.06
Item EXH3	.05	.21	–	–	.17	.01	.10	.04	.16	.02	.06
Item EXH4	.06	.15	–	–	.14	.004	.08	.04	.14	.01	.05
Item CYN1	.13	–	.36	–	.01	.29	.14	.07	.03	.29	.09
Item CYN2	.12	–	.45	–	–	.32	.15	.07	.03	.33	.10
Item CYN3	.09	–	.14	–	.004	.15	.07	.03	.01	.15	.05
Item INAD1	.10	–	–	.45	.09	.08	.10	.16	.07	.06	.23
Item INAD2	.09	–	–	.34	.08	.07	.08	.13	.06	.05	.19[a]
Factor score scale reliability	.89	.81	.88	.69	.84	.89	.91	.83	.84	.83	.83
Cronbach's α	.88	.80	.80	.67							

Note. M1 = one-factor model; M2 = three-factor model; M3 = second-order-factor model. OSB = overall school burnout; EXH = exhaustion; CYN = cynicism; INAD = inadequacy. [a]Residual variance of Inadequacy is fixed to zero.

results also showed that the factor-score scale reliabilities for the correlated three-factor model M2 were higher than those for the three separate one-factor models. The factor-score scale reliabilities were also good for Model M3. However, these reliabilities were slightly lower than the reliabilities for Model M2.

Concurrent Validity

The final aim of the present study was to examine whether academic achievement, school engagement, and depressive symptoms would predict school-burnout factors when controlled for gender and school track, thus, providing evidence of the concurrent validity of the SBI. First, the predictors were added to the final model M2 by estimating the regression coefficients for academic achievement, school engagement, and depressive symptoms for each latent factor. The estimation results for the final model M2, $\chi^2(57, N = 1418) = 203.11$, $p < .001$, RMSEA = .05, CFI = .97, TLI = .96, SRMR = .03, containing only statistically significant regression coefficients, are presented in Figure 2. The results showed that, when controlling for the effects of gender and school track, the more depressive symptoms adolescents suffered, the higher also was their level of each component of school burnout. Moreover, the lower their academic achievement and the lower their school engagement, the more cynicism toward the meaning of school and sense of inadequacy at school the adolescents experienced. The means of the predictor

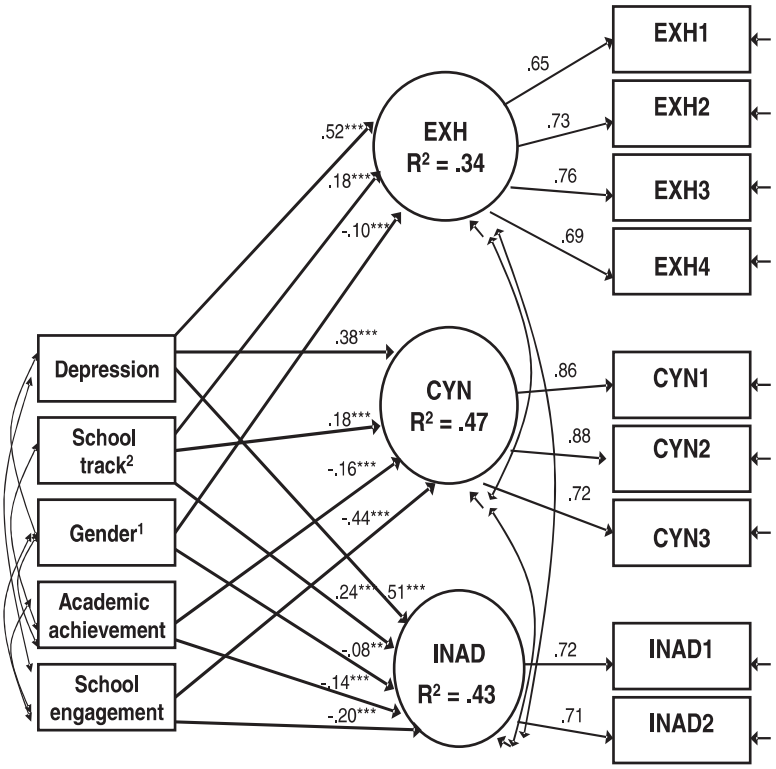


Figure 2. Estimated three-factor model with predictors (only statistically significant regression coefficients are given). *Note*. [1]1 = girl, 2 = boy; [2]0 = vocational school, 1 = upper secondary high school. $^{**}p < .01$, $^{***}p < .001$.

Table 4. Correlations of latent factors with predictors and control variables

	M2			M3		
	EXH	CYN	INAD	OSB	Means	Variances
Predictors						
Depression	.54***	.50***	.59***	.60***	1.56	.33
Academic achievement	.13***	–.11**	–.02	.00	8.01	.67
School engagement	–.13***	.57***	–.36***	–.30***	3.75	1.59
Control variables						
Gender[1]	–.25***	–.06**	–.19***	–.18***	1.50	.25
School track[2]	.17***	.09**	.15***	.15***	.50	.25

Note. M2 = three-factor model; M3 = second-order-factor model. OSB = overall school burnout; EXH = exhaustion; CYN = cynicism; INAD = inadequacy. [1]1 = girl, 2 = boy; [2]0 = vocational track, 1 = academic track. Intercorrelations between the predictor and the control variables varied from –.03 to .27, except that school track and academic achievement correlated .65 (the higher the academic achievement, the higher the chance of being on academic track compared to vocational track). $^{**}p < .01$, $^{***}p < .001$.

and control variables and their correlations with latent factors in the final models M2 and M3 are presented in Table 4.

Finally, the predictors were also added into the final second-order factor model, that is, paths were estimated from all the predictors to the overall school-burnout factor (i.e., second-order factor). The modification index (MI = 224.43), however, suggested that besides predicting overall school burnout, school engagement also had a direct effect on the cynicism factor. Consequently, this path was added into this model. The fit of the final model was $\chi^2(57, N = 1418) = 355.74$, $p < .001$, RMSEA = .06, CFI = .94, TLI = .93, SRMR = .04. The results showed that, when controlling for the effects of gender and school track, the more depressive symptoms adolescents reported (standardized estimate = .54, $p < .001$) and the lower their academic achievement (standardized estimate = –.13, $p < .01$) and school engagement (standardized estimate = –.11, $p < .01$), the higher was their level of overall school burnout ($R^2 = .40$). Moreover, the lower their school engagement (standardized estimate = –.37, $p < .01$), the more cynicism adolescents showed. Overall, these results provided evidence of concurrent validity for the SBI.

Discussion

The present study introduced a new concept of school burnout together with an instrument for measuring it. The results showed, overall, that the correlated three-factor solution fitted the data best and also gave the best reliability and validity indices. In other words, exhaustion because of school demands, a cynical and detached attitude toward one's school, and feelings of inadequacy as a student (Salmela-Aro & Näätänen, 2005; Schaufeli et al., 2002) were closely related but separate constructs. The SBI consists of three subscales, exhaustion at school, cynicism at school, and inadequacy at school. According to Hypothesis 1, a three-factor model would fit the data better than a one-factor model (Schaufeli et al., 2006). Results supported Hypothesis 1: School burnout was best described by three positively correlating factors, that is, exhaustion at school, cynicism toward the meaning of school, and sense of inadequacy at school. The results were also in accordance with findings in work-related burnout (Schaufeli et al., 2002). However, one of the inadequacy items had to be deleted as it did not suit the final model. The deleted item was conceptually challenging for adolescents and did not fit the school context very well ("I feel that I have less and less to give in my schoolwork"). The reason for this is that it focuses on the adolescent's contribution to the school, while the other two items of inadequacy refer to one's personal feelings toward schoolwork.

We were also interested in examining the extent to which school burnout could be described as a second-order factor model with overall school burnout as a second-order factor and exhaustion, cynicism, and inadequacy at school as first-order factors. The results showed that the second-order factor model fitted the data well. We also examined the extent to which a model with only two factors would fit the data, and the results revealed that the model did fit to the data but the fit was lower than that of the other models. This is an important result, as it indicates that although two factors, inadequacy and cynicism, as well as inadequacy and exhaustion, correlated quite highly, they are all separate factors. Consequently, school burnout can be measured either as three positively correlated factors, that is, exhaustion, cynicism and inadequacy at school, or as a secondary factor model measuring overall school burnout.

The final aim of the present study was to determine the concurrent validity of the SBI. The SBI was found to have good concurrent validity. The results showed that depressive symptoms were associated with all three aspects of school burnout: the more depressive symptoms adolescents suffered, the higher also was their level of school burnout (Ahola & Hakanen, 2007). Moreover, the lower the academic achievement and the lower the school engagement, the more cynicism toward the meaning of school and sense of inadequacy at school the adolescents experienced. These results supported our Hypothesis 2. The results also showed that girls and those on an upper secondary high schools experienced more school burnout. The study, thus, supported other recent findings on school burnout (Kiuru et al., 2008; Salmela-Aro et al., 2008).

The study has, at least, the following limitations: First, the educational tracks under investigation considered students who had recently entered upper secondary and vocational schools. Thus, more research is needed in the contexts of both comprehensive schools and university studies, as well as in the other years of upper secondary and vocational schools. Future studies are also needed to examine the role of burnout across an extended period of time. Second, the present study was carried out rather close to the point after the transition to postcomprehensive education. This may have increased school burnout. Finally, the present study was carried out in Finland and, thus, one has to be cautious in generalizing the results to school contexts in other countries. However, many European countries have a similar educational system, in which students attend comprehensive school and then go on to upper secondary high school or vocational school. The present study introduced a new instrument (SBI) for school burnout that could be used in other countries as well. Overall, the SBI showed high structural, item, and scale reliabilities, as well as good concurrent validity, when estimated in the context of depressive symptoms, school engagement, and academic achievement.

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Katariina Salmela-Aro

Department of Psychology
University of Jyväskylä
P.O. Box 35
40014 Jyväskylä
Finland
Tel. +358 50 357-4765
Fax +358 14 260-4400
E-mail katariina.salmela-aro@psyka.jyu.fi

Appendix A
Final Version of School Burnout Inventory (SBI)

Please choose the alternative that best describes your situation (estimation from previous month)

Completely disagree	Partly disagree	Disagree	Partly agree	Agree	Completely agree
1	2	3	4	5	6

1. I feel overwhelmed by my schoolwork (EXH1)
2. I feel a lack of motivation in my schoolwork and often think of giving up (CYN1)
3. I often have feelings of inadequacy in my schoolwork (INAD1)
4. I often sleep badly because of matters related to my schoolwork. (EXH2)
5. I feel that I am losing interest in my schoolwork (CYN2)
6. I'm continually wondering whether my schoolwork has any meaning (CYN3)
7. I brood over matters related to my schoolwork a lot during my free time (EXH3)
8. I used to have higher expectations of my schoolwork than I do now (INAD2)
9. The pressure of my schoolwork causes me problems in my close relationships with others (EXH4)

Note. EXH = exhaustion at schoolwork; CYN = cynicism toward the meaning of school; INAD = sense of inadequacy at school.