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Associations between School Burnout, Perceived Learning Difficulties, and Delayed Graduation from Upper Secondary Education: A Longitudinal Study

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Abstract

The aim of this longitudinal study was to examine how adolescents' school burnout profiles relate to perceived learning difficulties and delayed graduation in upper secondary education. Adolescents (N = 485, mean age 15.7 years) living in a mid-sized city in Finland completed questionnaires during their upper secondary education in either the academic or vocational track. A person-oriented approach was used, and the results imply that students with perceived learning difficulties are at a higher risk of school burnout than those who do not report learning difficulties. Adolescents with a higher likelihood of belonging to the 'at risk of school burnout' profile also had a higher risk of delayed graduation than students in other profiles, as well as those without perceived learning difficulties. In addition, students in the vocational track were more likely to belong to the 'Not at risk of school burnout' profile than to the other school burnout profiles. Girls had an increased risk of belonging to one of the three profiles indicating burnout than to the 'not at risk of school burnout' profile. These findings suggest that perceived learning difficulties affect adolescents' lives longitudinally; thus, better identification of these difficulties and more effective support are needed.

Keywords

delayed graduation; latent profiles; longitudinal study; perceived learning difficulties; school burnout; upper secondary education

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Asociaciones entre agotamiento escolar, dificultades de aprendizaje percibidas y graduación tardía en educación media superior: un estudio longitudinal

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Resumen

El objetivo del presente estudio fue examinar cómo los perfiles de agotamiento escolar en los adolescentes se relacionan con las dificultades de aprendizaje en la educación secundaria superior y, además, con el retraso en la graduación. Adolescentes (N = 585, edad media de 15,7 años) de Finlandia, completaron cuestionarios ya sea en el ámbito académico o profesional. Los resultados indican que los estudiantes con dificultades de aprendizaje percibidas corrían un mayor riesgo de sufrir agotamiento escolar que los estudiantes que no presentaban dificultades en el aprendizaje. Los adolescentes que tenían una mayor probabilidad de pertenecer al perfil «En riesgo de agotamiento escolar» también tenían un mayor riesgo de retrasar la graduación de educación secundaria superior a los estudiantes. Además, los resultados indicaron que los estudiantes en la rama vocacional probablemente pertenecían más a la categoría «No están en riesgo de agotamiento escolar». Las niñas tenían un mayor riesgo de pertenecer a uno de los tres perfiles de agotamiento escolar diferentes. Estos hallazgos sugieren que las dificultades de aprendizaje percibidas afectan a lo largo de la vida de los adolescentes y, por lo tanto, se necesita una mejor identificación de estas dificultades y un apoyo eficaz.

Palabras clave

agotamiento escolar; dificultades de aprendizaje percibidas; enseñanza secundaria superior; estudio longitudinal; perfiles latentes; retraso en la graduación

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Graduation from upper secondary education is essential for pursuing further education and successfully integrating into the labour market (Getzel, 2014; Hoff et al., 2018; Wagner & Newman, 2015). Graduation is also meaningful with regard to outcomes indicative of an independent adult life (Buchmann & Kriesi, 2011; Crockett & Beal, 2012; Schulenberg & Schoon, 2012). However, success in upper secondary education and timely graduation are not always certain, as they may be affected by factors such as symptoms of school burnout and learning difficulties (Wagner & Newman, 2015). In this study, such learning difficulties are referred to as perceived LDs.

The concept of school burnout originates from that of work burnout, which was introduced in the 1970s. Work burnout refers to an imbalance between a job's task-related demands and the corresponding available human resources (Maslach, 2003; Maslach et al., 2001). When applying this theory to the school context, the concept of school burnout contains three dimensions: exhaustion, cynicism towards schoolwork, and feeling inadequate as a student (Salmela-Aro et al., 2009a; Salmela-Aro et al., 2009b; Schaufeli et al., 2002). Exhaustion is associated with experiences of emotional overload related to academic pressure, powerlessness, and tiredness. Cynicism in the school context means that a student has lost interest in studying and has a negative attitude towards schoolwork, and feelings of inadequacy are evidence of a student's experiences of reduced competence and achievement. According to Parker and Salmela-Aro (2011), exhaustion and a cynical attitude towards schoolwork predict feelings of inadequacy. These feelings are reflected in a pessimistic opinion of oneself and one's abilities as a student (Marttinen, 2017).

School burnout symptoms may arise because of an adolescent's attempt to cope with the pressure caused by an imbalance between their resources and the expectations of their learning abilities (Salmela-Aro et al., 2009a). Overall exhaustion has not been found to be a serious risk factor with regard to academic achievement; however, a cynical attitude towards schoolwork has been shown to be associated with lower academic achievement (Cadime et al., 2016). Furthermore, feelings of inadequacy have been found to be related to perceived LDs in reading and math among lower secondary education students (Kiuru et al., 2011). The role of gender in these associations is not clear; some studies have shown that girls experience higher levels of school burnout symptoms than boys (Kiuru et al., 2008; Salmela-Aro & Tynkkynen, 2012), while in others (Fiorilli et al., 2017), gender differences were not found.

Research has revealed that students with symptoms of school burnout may find schoolwork very challenging. In upper secondary education, the academic demands and learning expectations placed upon students by teachers and parents increase, which may lead to the perception of LDs and stress, even if students do not have diagnosed LDs (Berninger et al., 2008; Undheim, 2009). In a sample of Finnish students aged 13–17, academic stress was associated with concentration difficulties, poorer social relationships, poorer academic performance, and worse reading and writing outcomes (Fröjd et al., 2008). Moreover, in upper secondary education, studying skills and reading comprehension are especially important for academic success, as the amount of written material increases at this level. In addition, difficulties with basic reading skills affect reading comprehension strategies (Cirino et al., 2013; Kintsch & Kintsch, 2005; Nation & Norbury, 2005) and make it challenging to understand the content of more demanding texts (Ferrer et al., 2010). Specifically, successful

comprehension requires the integration of multiple linguistic and cognitive processes (e.g. constructing morphosyntax and sentence structure) that are critical for making meaning from text (Cain & Oakhill, 2012). Thus, students who struggle with these written language skills might experience other severe difficulties related to performing academic tasks, such as writing essays, understanding study materials, or taking notes (Boyle, 2012; Oefinger & Peverly, 2020; Vekaria & Peverly, 2018). Perceived LDs and a lack of study skills may negatively impact academic achievement, self-esteem, and academic well-being, and such students may also consider themselves limited in their abilities to handle these difficulties (Xiang et al., 2019). This, in turn, may decrease their mental health and increase their stress and risk of school burnout (Banks & Woolfson, 2008; Carroll & Iles, 2006; Horanicova et al., 2020). At the same time, previous studies have shown that through support provided by a teacher or other school staff, it is possible to lower the risk of school burnout (e.g., Chu et al., 2010; Kim et al., 2018).

Previous studies have shown that school burnout symptoms correlate with delayed completion of high school (Melkevik et al., 2016), dropping out of school (Bask & Salmela-Aro, 2013; Korhonen et al., 2014), and changes in motivation (Lee et al., 2020). In earlier studies, the risk of school burnout was found to be more common among students in the academic track than among those in the vocational track (e.g., Bask & Salmela-Aro, 2013). Moreover, feelings of inadequacy and cynicism have been overrepresented among students in the academic track compared to those in the vocational track (Holopainen et al., 2012; Salmela-Aro et al., 2008; Symonds et al., 2016; Tuominen-Soini et al., 2012). This shows that school-related stress is strongly related to features of learning environments, such as teacher support, motivational climate, and school connectedness (Kidger et al., 2012; Skaalvik & Skaalvik, 2013). The notion of a motivational climate refers to what is valued and defined as success in different environments, and the degree to which individual effort and progress is emphasised (Meece et al., 2006; Patrick et al., 2011).

Studies have shown that perceived LDs negatively affect school well-being and the success of educational transitions (Sainio et al., 2021) and delay graduation (Wagner & Newman, 2015). Graduating from secondary education within the expected time and successfully transitioning from school to work positively affect adolescents' well-being. Such a transition is also a significant personal and economic issue, as having an upper secondary education—including a diploma—has become a precondition for avoiding unemployment (Hoff et al., 2018).

Mäkikangas and Kinnunen (2016) have suggested that more attention be paid to the participants of school burnout studies to gain a thorough understanding of these individuals' perspectives on the dimensions of burnout. More specifically, such attention could aim to capture individual types to better apply the research findings to practice. The prevention of school burnout is essential, and previous studies have demonstrated the importance of positive relationships with parents, teachers, friends, and classmates in lowering school stress (Bilge et al., 2014). Enhancing students' personal resources (e.g., emotional intelligence and resilience) also reduce the risk of school burnout (Romano et al., 2021).

This study used a person-oriented methodology to investigate these issues. In our previous study (Authors), four latent school burnout profiles were identified: 'not at risk of school burnout', 'average exhaustion and inadequacy', 'at risk of school burnout', and 'at high risk of school burnout' (Lee et al., 2010; Lee et al., 2020; Salmela-Aro & Read, 2017). In addition,

while some research has been conducted on school burnout and LDs in lower secondary education (Korhonen et al., 2014; Torppa et al., 2019), to the best of our knowledge, there is a lack of studies on the long-term consequences of perceived LDs and school burnout during upper secondary education, especially those that include both educational tracks (academic and vocational) in the same study. This study contributes to knowledge about longitudinal associations among the identified school burnout profiles, perceived LDs, delayed graduation, gender, and educational tracks. The specific research questions were as follows:

1. What kinds of associations can be found between different school burnout profiles and perceived LDs, gender, and educational track?
2. How is timely graduation from upper secondary education related to different school burnout profiles?

Methods

Participants

The present study is part of longitudinal study that included 585 adolescents (299 girls, 286 boys; mean age 15.7 years) from a mid-sized city in Finland and they were finishing their last year in general compulsory education classes. 98.8% spoke Finnish as their first language. In the present study 485 students, who started in this longitudinal study, participated when they were studying in their first year in upper secondary education and 416 participated in the third year in upper secondary education. At the beginning of this four-year longitudinal study, the Written consent for participation was requested from their parents. The SES variable could not be used in the analyses because more than half of the participants did not answer the content of the question, or the answers were incomplete.

After finishing compulsory education (nine years) at the age of 16, students in Finland choose whether to continue their studies in general upper secondary school (academic track) or vocational upper secondary school (vocational track). The academic track offers a general academic programme that aims to prepare students for higher education at the tertiary level, whereas the vocational track includes formal education courses at school with curricula-driven workplace learning and focuses on providing training for different occupations (Haltia et al., 2021), as well as the opportunity to continue studying at both the polytechnic and university levels. The tracking of students is based on their grade point averages at the end of compulsory education (Ministry of Education and Culture, Finnish National Agency of Education, 2018). Approximately 40% of Finland's student population enrolls in vocational programmes (Official Statistics of Finland, 2017). In this study, immediately after compulsory education, 59.5% transitioned onto the academic track and 40.5% onto the vocational track. On both tracks, students generally graduate within 3.5 years (with 150 credit points). In Finland, on both tracks, students with difficulties at school can receive special educational support for learning, for which they do not need a formal diagnosis (Finnish National Board of Education, 2014).

According to the instructions of the Committee on Research Ethics at the University of Eastern Finland (UE), an ethical review statement was not required from a human sciences

ethics committee, as this research does not involve an intervention into the physical integrity of the research participants. Participation in the study did not pose an immediate danger or threat to the participants' safety or exposure to strong stimuli. Moreover, participating in the study did not cause mental harm beyond the limits of normal everyday life for those involved. Finally, only the participants' personal data were collected, and they were not combined with data from any other sources than students own school records.

Procedure and Measures

Perceived LDs and school burnout were assessed using questionnaires. Specifically, perceived LDs were measured in the 10th grade (first year in upper secondary education) and school burnout in the 12th grade (third year in upper secondary education). The researchers instructed the schoolteachers on how to implement the questionnaires, after which the teachers administered the assessments in class during the regular school day. The data from this study were based on the participants' self-rated assessments. Information about graduation from upper secondary education was collected from school records.

School Burnout.

School burnout was assessed using the School Burnout Inventory (SBI; Salmela-Aro & Näätänen, 2005). The questionnaire statements were evaluated on a six-point Likert scale, with responses ranging from 1 (not true at all) to 6 (very true). The inventory contained three items for each of the three school burnout dimensions: (1) exhaustion included statements such as 'I feel exhausted by my schoolwork'; (2) feelings of academic inadequacy included statements such as 'I feel that I am failing in my studying'; and (3) cynicism towards studies included statements such as 'I feel that I have less and less to give in my schoolwork'. The internal consistency of these scales was adequate: Cronbach's alpha for exhaustion was 0.72; for feelings of academic inadequacy, it was 0.75; and for cynicism towards studies, it was 0.84.

Perceived Learning Difficulties.

Perceived LDs were tested using a questionnaire in which participants were asked if they had experienced difficulties in seven different situations involving learning, schoolwork, and understanding teaching, which included taking notes, writing essays, understanding instructions, understanding whiteboard notes, completing exams on time, preparing for exams, and understanding written study materials. Statements measuring perceived LDs included, for example, 'I have difficulties taking notes during lessons' and 'I have difficulties preparing for exams'. A Likert scale ranging from 1 (not at all) to 7 (very much) was used to assess how frequently the participants had experienced the above-mentioned difficulties during the previous six months. Cronbach's alpha for perceived LDs was found to be good (0.89).

Background Variables.

Self-rated learning difficulties, educational track (1 = vocational track, 0 = academic track), and gender (1 = girls, 0 = boys) were used as independent variables to determine how they predicted the membership of the students in the identified profiles. There were 299 girls and 286 boys in the study (N = 585). Information about the educational track was obtained from 572 participants: 228 were vocational-track students, while 344 were on the academic track. 13 students could not be reached.

Graduation.

In this study, 120 of the 597 adolescents did not graduate within the expected time (3–3.5 years for both tracks). In the framework of this study, graduation was considered delayed if the participants had not completed their studies within four years or less. The variable of graduation (0 = graduated in the expected time, 1 = delayed graduation) from upper secondary education was used as the dependent variable.

Data Analysis

In the first step of the data analysis, missing values were analysed using IBM SPSS Statistics version 27 (IBM, Armonk, NY, USA). Little's missing completely at random (MCAR) test showed that the missing information was entirely at random ($\chi^2 = 32.408$, $df = 34$, $p = 0.546$) with all measures we use in this study. Under MCAR, the Mplus programme (version 8.3) gave the full information maximum likelihood (FIML) estimation when all available information was considered (Muthén & Muthén, 1998–2017). Perceived LD variables were normalised using logarithmic conversion within the IBM SPSS Statistics programme. All other study variables were normally distributed.

In accordance with the literature (e.g., Salmela-Aro & Näätänen, 2005), school burnout profiles were created using the three dimensions of school burnout: emotional exhaustion, cynicism, and feelings of inadequacy. The results from a latent profile analysis (Authors) were utilised in this study, and the four-profile solution (Figure 1) was reproduced using the Mplus programme (Muthén & Muthén, 1998–2017), which was also used in the analyses. Based on the fit indices and entropy value (0.798), a four-group solution fit the data best. In the four-group model, BIC values were the lowest compared to previous groups, and VLMR and LMR likelihood ratios were statistically significant ($p < 0.05$).

Next, the factor structure of perceived LDs was tested, and the factor score was saved using SPSS version 27 for use in further analyses. Using confirmatory factor analysis (CFA) is recommended as a method to examine the structural validity of a measure (e.g., Mokkink et al., 2018). CFA was performed to create the factor of perceived LDs with the Mplus programme (version 8.4; Muthén & Muthén, 1998–2017), and the obtained factor score was saved for the main analysis. The CFA of perceived LDs was conducted using seven indicators: taking notes, writing essays, understanding instructions, understanding whiteboard notes, completing exams on time, preparing for exams, and understanding study materials. According to fit indicators,

the factor model fit the data well: CFI values were 0.985, and TLI values were 0.974. In addition, the RMSEA value was 0.060, and the SRMR value was 0.027. In structural equation models and the evaluation of the good-fit model, indices of CFI, TLI, RMSEA, and SRMR were used, with values less than 0.06 for RMSEA, less than 0.08 for SRMR (Hu & Bentler, 1999), greater than 0.09 for CFI and TLI (Marsh et al., 2004)

To analyse the associations between perceived LDs and the background variables (i.e., gender and educational track) with school burnout, profiles were examined using the R3STEP procedure and the AUXILIARY command in Mplus (Asparouhov & Muthén, 2014). The R3STEP command performed multinomial logistic regressions to determine which variables were more likely to predict a participant belonging to one latent profile when another latent profile was used as a reference group.

The R3STEP method saved the latent profiles' solutions and kept them unchanged when auxiliary variables were added (Asparouhov & Muthén, 2014).

The second objective of this study was to investigate how different school burnout profiles were related to graduation in time from upper secondary education. In this part of the analysis, the DCAT command (Lanza et al., 2013) was utilised. The DCAT method is based on an overall test and a pairwise comparison between the means and probabilities of auxiliary variables using the Wald chi-square test (Asparouhov & Muthén, 2014; Lanza et al., 2013).

The results of the analyses were evaluated using odds ratio values (ORs) from the multinomial logistic regression. In a situation where logistic odd was negative, the interpretation was made using the opposite group as a reference group.

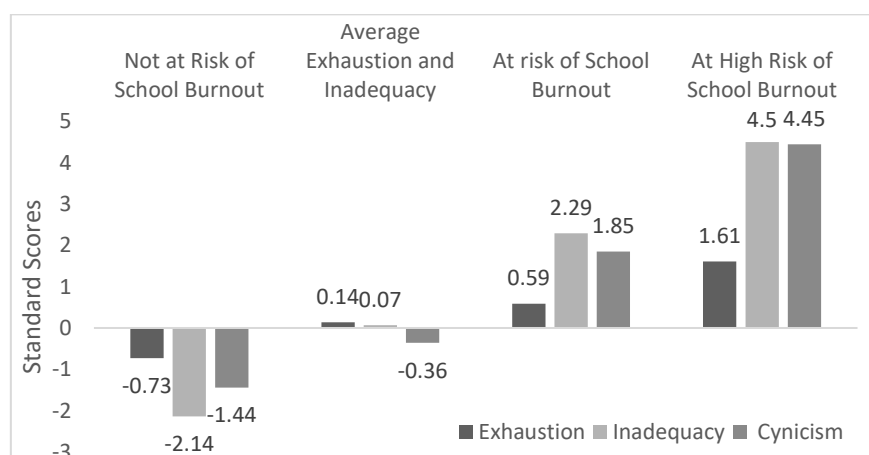
Results

School Burnout Profiles

Figure 1 shows the standardised values of exhaustion, inadequacy, and cynicism in the four latent school burnout profiles.

Figure 1

Four Latent Profile Solutions for School Burnout with Standard Scores



As Figure 1 shows, the ‘not at risk of school burnout’ profile (36% of the students, $n = 150$) was characterised by below-average mean values of all three school burnout dimensions. Students in this profile did not experience exhaustion, inadequacy, or cynicism. Participants in the ‘average exhaustion and inadequacy’ profile (36% of students, $n = 149$) showed average patterns of exhaustion and feelings of inadequacy, and their tendency to exhibit a cynical attitude towards schoolwork was slightly below the sample mean. According to the profiling, students in these two latent groups were not at risk of school burnout.

The third profile, ‘at risk of school burnout’, differed from the two above-mentioned profiles in all three school burnout dimensions. The results showed that 23% ($n = 97$) of the students in this profile were above the overall mean level in all dimensions of school burnout. Participants in this profile experienced feelings of inadequacy and cynicism markedly more often and exhaustion a bit more than average. These findings indicate that students in this profile exhibited an increased risk of school burnout.

Participants in the ‘at high risk of school burnout’ profile (5% of students, $n = 20$) scored at the highest levels on all dimensions of school burnout. These students were highly cynical, expressed high levels of inadequacy, and were exhausted. All these school burnout profiles were used in the main analysis of this study.

Associations between school burnout profiles, educational track, gender, and perceived learning difficulties

Table 1 shows the descriptive characteristics of the sample. Students in the academic track were statistically and significantly different from those studying in the vocational track with respect to how they experienced the different dimensions of school burnout. Students in these tracks also statistically and significantly differed in terms of the five items of perceived LDs, but no statistically significant difference between the tracks was found in the variables of preparation for exams and understanding of the study material.

Table 1
Sample Characteristics

Variable	Participants			Vocational track			Academic track			<i>t</i>
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	
<i>School burnout dimensions</i>										
Exhaustion	416	2.95	1.19	146	2.40	0.98	270	3.25	1.14	-7,372**
Inadequacy	416	2.38	1.27	146	2.42	1.07	270	3.00	1.24	-4,510**
Cynicism	416	2.81	1.22	146	2.10	1.08	270	2.50	1.27	-2,709*
<i>Perceived LD dimensions</i>										
Taking notes	486	1.67	1.16	182	2.40	1.55	304	1.65	1.19	5,515**
Writing essays	486	2.17	1.19	182	2.74	1.43	304	2.31	1.18	3,371**
Understanding instructions	486	1.94	1.13	182	2.58	1.49	304	2.01	1.11	4,482**

	Not at risk of school burnout profile as compared with:								
Perceived LD	1.37	0.58	3.94*	1.37	0.51	3.96**	1.69	0.58	5.42**
Gender	0.79	0.37	2.22*	0.66	0.33	1.93*	1.22	0.57	3.40*
Education track	-1.26	0.37	0.28**	-1.59	0.36	0.20**	-1.63	0.75	0.19*

Note. The reference group is Not at risk of school burnout profile. Log odds= logistic odds. ORs= odds ratio. SE= Standard error. Gender (1= girls). Education track (1 = vocational school). * $p < 0.05$, ** $p < 0.01$, two-tailed Pearson's correlation

Educational tracks were found to be associated with latent school burnout profiles when the results were examined in relation to different reference groups than in order of Table 3. The ORs indicated that students in the vocational track had a greater probability (Log odd =1.26, SE= 0.37, OR = 3.55) of belonging to the 'not at risk of school burnout' profile than the 'average exhaustion and inadequacy' profile. Furthermore, vocational track students (Log odd =1.59, SE= 0.36, OR = 4.93) were almost five times more likely to belong to the 'not at risk of school burnout' profile when reference group was the 'at risk of school burnout' profile, and they had the greatest probability (Log odd =1.63, SE= 0.75, OR = 5.11) of belonging to the 'not at risk of school burnout' profile when reference group was the 'at high risk of school burnout' profile. In other words, students in the vocational track were more likely to belong to the 'not at risk of school burnout' profile than to the other profiles. In contrast, students in the academic track were evenly distributed between the other three school burnout profiles.

Gender was found to be associated with the participants' school burnout profiles. The ORs indicated that girls were twice as likely to belong to the 'average exhaustion and inadequacy' profile or the 'at risk of school burnout' profile and more than three times as likely to be profiled as 'at high risk of school burnout' than 'not at risk of school burnout'. Among boys in the vocational track, exhaustion, feelings of inadequacy, and cynicism were low, so they were more likely to belong to the 'not at risk of school burnout' group. Adolescents with perceived LDs, especially girls in academic track were the vulnerable group, as they were more likely to belong to the 'at risk of school burnout' group.

The second research question focused on the associations between the four different school burnout profiles and on-time graduation. According to the results, there was no statistically significant difference between the school burnout profiles and delayed graduation. Students in academic track profiled as 'at risk of school burnout' might be more in a risk for delayed graduation than students in 'not at risk of school burnout' profile ($\chi^2 = 3.129$, $p = 0.077$). Surprisingly, the results implied that being profiled as 'at high risk of school burnout' did not increase the risk of delayed graduation when compared with 'not at risk of school burnout' profile ($\chi^2 = .000$, $p = 0.997$), 'at average risk of school burnout' profile ($\chi^2 = .000$, $p = 0.991$) or 'at risk of school burnout' group ($\chi^2 = .904$, $p = 0.342$) in secondary education.

Discussion

In this study, we used person-oriented latent profile analyses to identify students' school burnout profiles and how they are associated with on-time graduation from upper secondary education. Moreover, we examined the associations between perceived LDs, latent school burnout profiles, gender, and educational tracks.

Our results revealed that 36% of the participants had low stress and no perceived LDs, and they were likely to graduate at the expected time from upper secondary education. This result is in line with several other studies (Lee et al., 2010; Lee et al., 2020). Compared to the other three school burnout profiles, students in this 'not at risk of school burnout' profile were more likely to study in vocational education. This indicates that while academically demanding education can be motivating and inspiring, it may also cause academic stress for some students, whereas vocational education can offer a motivational learning environment in which students' competences and progress are valued, which positively affects their feelings of well-being (Meece et al., 2006; Patrick et al., 2011). This finding is especially important and positive to notice, as some previous research has shown that students in vocational education often have low motivation and perceive themselves as academically inadequate (e.g., Fuller & Macfadyen, 2012).

The second profile group, 'average exhaustion and inadequacy', also comprised 36% of the students. A similar group of university students was described by Salmela-Aro and Read (2017) as an engaged-exhausted group; in other words, these students were exhausted but still showed engagement in studying. In our study, the students in this group graduated on time, indicating a balance in the demands of studies and personal competences, but also the motivation to complete their studies. This emphasises not only the importance of choosing the right personal educational track after secondary education, but also the essential role of an appropriate learning environment.

The results concerning the 'at risk of school burnout' profile brought up interesting findings that are partly supported by the results of previous studies. Students in this group (23% of students) had high scores on exhaustion and cynicism and even higher scores on inadequacy. This was also found in Parker and Salmela-Aro's (2011) study. In a related study, Undheim and Sund (2008) found an association between LDs and school-related stress, but interestingly, the person-oriented approach in the present study also showed this relationship with perceived LDs. Low academic achievement has also been shown to be associated with higher levels of school burnout across all dimensions (Herrmann et al., 2019; May et al., 2015). As school burnout develops over time, prevention is essential. As burnout is the result of a combination of high demands and low resources, by adjusting the school demands and student's personal resources, it is possible to lower the risk of its development (Cadime et al., 2016). Subject teachers, special education teachers, and psychologists should carry out targeted psychological counselling and provide support for learning to promote the mental health and learning competences of 'at risk' students. Based on the results of our study, special focus should be directed towards the prevention of school burnout among girls in the academic track, because they were more likely to belong to the 'at risk of school burnout' group.

The number of students in the 'at high risk of school burnout' profile was fortunately quite small. Unfortunately, however, the students in this profile group reported more perceived LDs

than students in the ‘not at risk of school burnout’ profile group, indicating that this group of students perceived studies in upper secondary education as stressful and too demanding. Nevertheless, their graduation from upper secondary education was not delayed, which contrasts with earlier findings showing that students with high burnout rates have a risk of dropping out of school (Bask & Salmela-Aro, 2013; Fiorilli et al., 2017; Korhonen et al., 2014). These findings could be attributed to the Finnish support system, which makes it possible for every student to receive support for learning in both tracks, although this support seems to be insufficient to hinder feelings of burnout. This implies that actions to recognise and help students with feelings of high school burnout need to be much more efficient, better-timed right from the detection of the problem, and long enough to lower the feelings of stress (Romano et al., 2021). Furthermore, interventions should focus on all three dimensions of school burnout (Maslach, 2003).

More research is needed to explore other factors that may be related to academic burnout. Possibilities include school engagement, cognitive and affective skills, and satisfaction with school relationships (peers and teachers; Vasalampi et al., 2009; Walburg, 2014). In future studies, the role of these factors in predicting latent profile groups should be examined.

Conclusions and Limitations

The most important new finding of this longitudinal study was that perceived LDs produced the probability of belonging to the profile, with average scores in exhaustion and cynicism and even higher scores in inadequacy. Moreover, these students are unlikely to graduate from upper secondary education within the expected timeframe. The second novel result was that vocational-track students were more likely to be profiled as ‘not at risk of school burnout’. The third important finding was that girls in the academic track with perceived LDs were especially at risk of school burnout.

Several limitations of this study should be considered. First, perceived LDs were measured based on students’ self-reports. Second, the study was conducted in only one educational context: Finland. Although many countries have comparable educational systems, wherein students’ study on an academic or a vocational track after basic education, caution should be exercised in taking a broad view of the results of our study. Finally, the effect of parents’ SES on the study results was not possible to determine in the analyses because of missing information.

References

- Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling*, 21(3), 329–341. <https://doi.org/10.1080/10705511.2014.915181>
- Bask, M., & Salmela-Aro, K. (2013). Burned out to drop out: Exploring the relationship between school burnout and school dropout. *European Journal of Psychology of Education*, 28(2), 511–528. <https://doi.org/10.1007/s10212-012-0126-5>
- Berninger, V. W., Nielsen, K., Abbott, R. D., Wijsman, E., & Raskind, W. (2008). Gender differences in severity of writing and reading disabilities. *Journal of School Psychology*, 46(2), 151–172. <https://doi.org/10.1016/j.jsp.2007.02.007>
- Bilge, F., Dost, M. T., & Çetin, B. (2014). Factors affecting burnout and school engagement among high school students: Study habits, self-efficacy beliefs, and academic success. *Educational Sciences Theory and Practice*, 14, 1721–1727. <https://doi.org/10.12738/estp.2014.5.1727>
- Boyle, J. R., & Rivera, T. Z. (2012). Note-taking techniques for students with disabilities: A systematic review of the research. *Learning Disability Quarterly*, 35(3), 131–143. <https://doi.org/10.1177/0731948711435794>
- Buchmann, M., & Kriesi, I. (2011). Transition to adulthood in Europe. *Annual Review of Sociology*, 37(1), 481–503. <https://doi.org/10.1146/annurev-soc-081309-150212>
- Cadime, I., Pinto, A., Lima, S., Rego, S., Pereira, J., & Ribeiro, I. (2016). Well-being and academic achievement in secondary school pupils: The unique effects of burnout and engagement. *Journal of Adolescence*, 53, 169–179. <https://doi.org/10.1016/j.adolescence.2016.10.003>
- Carroll, J., & Iles, J. (2006). An assessment of anxiety levels in dyslexic students in higher education. *British Journal of Educational Psychology*, 76(3), 651–662. <https://doi.org/10.1348/000709905X66233>
- Chu, P. S., Saucier, D. A., & Hafner, E. (2010). Meta-analysis of the relationships between social support and well-being in children and adolescents. *Journal of Social and Clinical Psychology*, 29(6), 624–645. <https://doi.org/10.1521/jscp.2010.29.6.624>
- Cirino, P. T., Romain, M. A., Barth, A. E., Tolar, T., Fletcher, J., & Vaughn, S. (2013). Reading skill components and impairments in middle school struggling readers. *Reading and Writing*, 26(7), 1059–1086. <https://doi.org/10.1007/s11145-012-9406-3>
- Crockett, L., & Beal, S. J. (2012). The life course in the making: Gender and the development of adolescents' expected timing of adult role transitions. *Developmental Psychology*, 48(6), 1727–1738. <https://doi.org/10.1037/a0027538>
- Ferrer, E., & McArdle, J. J. (2010). Longitudinal modelling of developmental changes in psychological research. *Current Directions in Psychological Science: A Journal of the American Psychological Society*, 19(3), 149–154. <https://doi.org/10.1177/0963721410370300>
- Finnish National Board of Education. (2014). National core curriculum for basic education 2014. https://www.oph.fi/sites/default/files/documents/perusopetuksen_opetussuunnitelman_perusteet_2014.pdf
- Fiorilli, C., De Stasio, S., Di Chiacchio, C., Pepe, A., & Salmela-Aro, K. (2017). School burnout, depressive symptoms and engagement: Their combined effect on students' achievement.

- International Journal of Education Research, 84, 1–12. <https://doi.org/10.1016/j.ijer.2017.04.001>
- Fröjd, S. A., Nissinen, E. S., Pelkonen, M. U. I., Marttunen, M. J., Koivisto, A.-M., & Kaltiala-Heino, R. (2008). Depression and school performance in middle adolescent boys and girls. *Journal of Adolescence*, 31(4), 485–498. <https://doi.org/10.1016/j.adolescence.2007.08.006>
- Getzel, E. E. (2014). United States Congress, Senate Committee on Health, Education, Labor and Pensions: Introductory remarks. *Journal of Vocational Rehabilitation*, 40(3), 183–184. <https://doi.org/10.3233/JVR-140682>
- Haltia, N., Isopahkala-Bouret, U., & Jauhiainen, A. (2021). The vocational route to higher education in Finland: Students' backgrounds, choices and study experiences. *European Educational Research Journal*, 21(3), 541–558. <https://doi.org/10.1177/1474904121996265>
- Herrmann, J., Koeppen, K., & Kessels, U. (2019). Do girls take school too seriously? Investigating gender differences in school burnout from a self-worth perspective. *Learning and Individual Differences*, 69, 150–161. <https://doi.org/10.1016/j.lindif.2018.11.011>
- Hoff, R., Corbett, K., Mehlum, I. S., Mohn, F. A., Kristensen, P., Hanvold, T. N., & Gran, J. N. (2018). The impact of completing upper secondary education—A multi-state model for work, education and health in young men. *BMC Public Health*, 18(556). <https://doi.org/10.1186/s12889-018-5420-y>
- Holopainen, L., Lappalainen, K., Junntila, N., & Savolainen, H. (2012). The role of social competence in the psychological well-being of adolescents in secondary education. *Scandinavian Journal of Educational Research*, 56(2), 199–212. <https://doi.org/10.1080/00313831.2011.581683>
- Horanicova, S., Husarova, D., Madarasova Geckova, A., Klein, D., van Dijk, J. P., de Winter, A. F., & Reijneveld, S. A. (2020). Teacher and classmate support may keep adolescents satisfied with school and education. Does gender matter? *International Journal of Public Health*, 65(8), 1423–1429. <https://doi.org/10.1007/s00038-020-01477-1>
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Kidger, J., Araya, R., Donovan, J., & Gunnell, D. (2012). The effect of the school environment on the emotional health of adolescents: A systematic review. *Pediatrics*, 129(5), 925–949. <https://doi.org/10.1542/peds.2011-2248>
- Kim, B., Jee, S., Lee, J., An, S., & Lee, S. M. (2018). Relationships between social support and student burnout: A meta-analytic approach. *Stress and Health: Journal of the International Society for the Investigation of Stress*, 34(1), 127–134. <https://doi.org/10.1002/smi.277>
- Kintsch, E., & Kintsch, W. (2005). Comprehension. In G. Paris & S. A. Stahl (Eds.) *Children's reading comprehension and assessment* (pp. 89–100). Routledge.
- Kiuru, N., Leskinen, E., Nurmi, J., & Salmela-Aro, K. (2011). Depressive symptoms during adolescence: Do learning difficulties matter? *International Journal of Behavioral Development*, 35(4), 298–306. <https://doi.org/10.1177/0165025410396764>
- Korhonen, J., Linnanmäki, K., & Aunio, P. (2014). Learning difficulties, academic well-being and educational dropout: A person-centred approach. *Learning and Individual Differences*, 31, 1–10. <https://doi.org/10.1016/j.lindif.2013.12.011>

- Lanza, S., Tan, X., & Bray, B. C. (2013). Latent class analysis with distal outcomes: A flexible model-based approach. *Structural Equation Modeling*, 20(1), 1–26. <https://doi.org/10.1080/10705511.2013.742377>
- Lee, M. Y., Lee, M. K., Lee, M. J., & Lee, S. M. (2020). Academic burnout profiles and motivation styles among Korean high school students. *Japanese Psychological Research*, 62(3), 184–195. <https://doi.org/10.1111/jpr.12251>
- Lee, J., Puig, A., Kim, Y.-B., Shin, H., Lee, J. H., & Lee, S. M. (2010). Academic burnout profiles in Korean adolescents. *Stress and Health*, 26(5), 404–416. <https://doi.org/10.1002/smi.1312>
- Meece, J. L., Anderman, E. M., & Anderman, L. H. (2006). Classroom goal structure, student motivation, and academic achievement. *Annual Review of Psychology*, 57(1), 487–503. <https://doi.org/10.1146/annurev.psych.56.091103.070258>
- Mäkikangas, A., & Kinnunen, U. (2016). The person-oriented approach to burnout: A systematic review. *Burnout Research*, 3, 11–23. <https://doi:10.1016/j.burn.2015.12.002>
- Marttinen, E. (2017). Deciding on the direction of career and life: Personal goals, identity development, and well-being during the transition to adulthood. *Jyväskylä studies in education, psychology and social research*, 584. University of Jyväskylä.
- Marsh, H. W., Hau, K.-T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling*, 11(3), 320–341. https://doi.org/10.1207/s15328007sem1103_2
- Maslach, C. (2003). Job burnout: New directions in research and intervention. *Current Directions in Psychological Science*, 12(5), 189–192. <https://doi.org/10.1111/1467-8721.01258>
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52(1), 397–422. <https://doi.org/10.1146/annurev.psych.52.1.397>
- May, R. W., Bauer, K. N., & Fincham, F. D. (2015). School burnout: Diminished academic and cognitive performance. *Learning and Individual Differences*, 42, 126–131. <https://doi.org/10.1016/j.lindif.2015.07.015>
- Melkevik, O., Hauge, L. J., Bendtsen, P., Reneflot, A., Mykletun, A., & Aarø, L. E. (2016). Associations between delayed completion of high school and educational attainment and symptom levels of anxiety and depression in adulthood. *BMC Psychiatry*, 16(65), 64–64. <https://doi.org/10.1186/s12888-016-0765-1>
- Ministry of Education and Culture, Finnish National Agency of Education. (2018). Finnish education in a nutshell. <https://www.oph.fi/en/statistics-and-publications/publications/finnish-education-nutshell>
- Muthén, L. K., & Muthén, B. O. (1998–2017). *Mplus user's guide* (7th ed.). Muthén & Muthén.
- Nation, K., & Norbury, C. F. (2005). Why reading comprehension fails: Insights from developmental disorders. *Topics in Language Disorders*, 25(1), 21–32. <https://doi.org/10.1097/00011363-200501000-00004>
- Oefinger, L., & Peverly, S. T. (2020). The lecture note-taking skills of adolescents with and without learning disabilities. *Journal of Learning Disabilities*, 53(3), 176–188. <https://doi.org/10.1177/0022219419897268>
- Official Statistics of Finland. (2017). Progress of studies. https://www.stat.fi/til/opku/2015/opku_2015_2017-0317_tie_001_en.html

- Parker, P. D., & Salmela-Aro, K. (2011). Developmental processes in school burnout: A comparison of major developmental models. *Learning and Individual Differences*, 21(2), 244–248. <https://doi.org/10.1016/j.lindif.2011.01.005>
- Parviainen, M., Aunola, K., Torppa, M., Lerkkanen, M.-K., Poikkeus, A. M., & Vasalampi, K. (2020). Early antecedents of school burnout in upper secondary education: A five-year longitudinal study. *Journal of Youth and Adolescence*, 50(2), 231–245. <https://doi.org/10.1007/s10964-020-01331-w>
- Patrick, H., Kaplan, A., & Ryan, A. M. (2011). Positive classroom motivational environments: Convergence between mastery goal structure and classroom social climate. *Journal of Educational Psychology*, 103(2), 367. <https://doi.org/10.1037/a0023311>
- Sainio, P., Eklund, K., Hirvonen, R., Ahonen, T., & Kiuru, N. (2021). Adolescents' academic emotions and academic achievement across the transition to lower secondary school: The role of learning difficulties. *Scandinavian Journal of Educational Research*, 65(3), 385–403. <https://doi:10.1080/00313831.2019.1705900>
- Salmela-Aro, K., Kiuru, N., Leskinen, E., & Nurmi, J.-E. (2009a). School burnout inventory (SBI): Reliability and validity. *European Journal of Psychological Assessment*, 25(1), 48–57. <https://doi.org/10.1027/1015-5759.25.1.48>
- Salmela-Aro, K., Kiuru, N., & Nurmi, J.-E. (2008). The role of educational track in adolescents' school burnout: A longitudinal study. *British Journal of Educational Psychology*, 78(4), 663–689. <https://doi.org/10.1348/000709908X281628>
- Salmela-Aro, K., & Näätänen, P. (2005). Nuorten koulu-uupumusmittari BBI-10 [Adolescents' school burnout inventory]. Edita.
- Salmela-Aro, K., & Read, S. (2017). Study engagement and burnout profiles among Finnish higher education students. *Burnout Research*, 7, 21–28. <https://doi.org/10.1016/j.burn.2017.11.001>
- Salmela-Aro, K., Savolainen, H., & Holopainen, L. (2009b). Depressive symptoms and school burnout during adolescence: Evidence from two cross-lagged longitudinal studies. *Journal of Youth and Adolescence*, 38(10), 1316–1327. <https://doi.org/10.1007/s10964-008-9334-3>
- Salmela-Aro, K., & Tynkkynen, L. (2012). Gendered pathways in school burnout among adolescents. *Journal of Adolescence*, 35(4), 929–939. <https://doi.org/10.1016/j.adolescence.2012.01.001>
- Schaufeli, W. B., Martinez, I. M., Pinto, A. M., Salanova, M., & Bakker, A. B. (2002). Burnout and engagement in university students: A cross-national study. *Journal of Cross-Cultural Psychology*, 33(5), 464–481. <https://doi.org/10.1177/0022022102033005003>
- Schulenberg, J., & Schoon, I. (2012). The transition to adulthood across time and space: Overview of special section. *Longitudinal and Life Course Studies*, 3(2), 164–172. <https://doi.org/10.14301/llcs.v3i2.194>
- Skaalvik, E. M., & Skaalvik, S. (2013). School goal structure: Associations with students' perceptions of their teachers as emotionally supportive, academic self-concept, intrinsic motivation, effort, and help seeking behavior. *International Journal of Educational Research*, 61, 5–14. <https://doi.org/10.1016/j.ijer.2013.03.007>
- Symonds, J., Dietrich, J., Chow, A., & Salmela-Aro, K. (2016). Mental health improves after transition from comprehensive school to vocational education or employment in England: A

- national cohort study. *Developmental Psychology*, 52(4), 652–665. <https://doi.org/10.1037/a0040118>
- Torppa, M., Vasalampi, K., Eklund, K., Sulkunen, S., & Niemi, P. (2019). Reading comprehension difficulty is often distinct from difficulty in reading fluency and accompanied with problems in motivation and school well-being. *Educational Psychology*, 40(1), 62–81. <https://doi.org/10.1080/01443410.2019.1670334>
- Tuominen-Soini, H., Salmela-Aro, K., & Niemivirta, M. (2012). Achievement goal orientations and academic well-being across the transition to upper secondary education. *Learning and Individual Differences*, 22(3), 290–305. <https://doi.org/10.1016/j.lindif.2012.01.002>
- Undheim, A. (2009). A thirteen-year follow-up study of young Norwegian adults with dyslexia in childhood: Reading development and education levels. *Dyslexia*, 15(4), 291–303. <https://doi.org/10.1002/dys.384>
- Undheim, A., & Sund, A. (2008). Psychosocial factors and reading difficulties: Students with reading difficulties drawn from a representative population sample. *Scandinavian Journal of Psychology*, 49(4), 377–384.
- Vasalampi, K., Salmela-Aro, K., & Nurmi, J.-E. (2009). Adolescents' self concordance, school engagement, and burnout predict their educational trajectories. *European Psychologist*, 14(4), 332–341. <https://doi.org/10.1027/1016-9040.14.4.332>
- Vekaria, P., & Peverly, S. T. (2018). Lecture note-taking in postsecondary students with attention-deficit/hyperactivity disorder. *Reading & Writing*, 31(7), 1551–1573. <https://doi.org/10.1007/s11145-018-9849-2>
- Vinter, K. (2021). Examining academic burnout: Profiles and coping patterns among Estonian middle school students. *Educational Studies*, 47(1), 1–18. <https://doi.org/10.1080/03055698.2019.1702510>
- Wagner, M., & Newman, L. (2015). Longitudinal post-high school outcomes of young adults with learning disabilities or emotional/behavioral disorders. In B. Cook, M. Tankersley, & T.J. Landrum, *Transition of Youth and Young Adults* (1st ed., Vol. 28, pp. 31–61). Emerald Group Publishing Limited. <https://doi.org/10.1108/S0735-004X20150000028003>
- Walburg, V. (2014). Burnout among high school students: A literature review. *Children and Youth Services Review*, 42, 28–33. <https://doi:10.1016/j.chilyouth.2014.03.020>
- Xiang, Z., Tan, S., Kang, Q., Zhang, B., & Zhu, L. (2019). Longitudinal effects of examination stress on psychological well-being and a possible mediating role of self-esteem in Chinese high school students. *Journal of Happiness Studies*, 20(1), 283–305. <https://doi.org/10.1007/s10902-017-9948-9>