The role of educational track in adolescents’ school burnout: A longitudinal study

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**Background.** Transition from comprehensive school to later educational tracks is challenging for many adolescents. The present three-wave longitudinal study conducted in Finland considers this issue from the perspective of school burnout.

**Aims.** The study investigated the extent to which school-related burnout (exhaustion, cynicism, and feelings of inadequacy) changes during the transition from comprehensive school to an academic or vocational track.

**Sample.** The participants of the present study were 658 ninth graders, who filled in questionnaires twice during their final term of comprehensive school and once after the transition to post-comprehensive schooling.

**Methods.** The participants filled in the school burnout inventory and supplied background information on gender and academic achievement. The data have analysed by latent growth curve modelling.

**Results.** The results showed that adolescents on an academic track experienced more exhaustion at school than those on a vocational track. Moreover, among adolescents on an academic track both the level of cynicism and inadequacy at school increased across time. In turn, among adolescents on a vocational track inadequacy at school decreased across time while cynicism increased before the school transition and decreased thereafter. Girls experienced more overall school burnout than boys, and adolescents whose academic achievement was lower experienced a higher level of burnout than adolescents who did better at school.

**Conclusions.** The results support the stage-environment fit theory according to which the nature of the environments in academic and vocational education are more important than the transition per se for changes in how adolescents think and feel about school (see Eccles & Midgley, 1989).

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DOI:10.1348/000709908X281628
The transition from comprehensive school\(^1\) to either an academic or vocational track is a key educational transition in adolescence and a challenge for school adjustment. In the present study we conceptualized school maladjustment in terms of school-related burnout, which was defined as consisting of three dimensions: exhaustion due to school demands; a cynical and detached attitude towards one’s school; and feelings of inadequacy as a student (Salmela-Aro & Näätänen, 2005; Schaufeli, Martínez, Pinto, Salanova, & Bakker, 2002). Although a substantial amount of research has been carried out on adjustment and maladjustment at the school context (Deci, Vallerand, Pelletier, & Ryan, 1991; Konu & Lintonen, 2006; Roeser, 1998; Wigfield & Eccles, 1994; Zimmerman, Bandura, & Martinez-Pons, 1992), few studies have focused on school burnout and few attempts have been made to follow-up adolescents who face the transition from comprehensive school to post-comprehensive education (i.e. either to an academic or a vocational track), particularly during middle adolescence. The present study conducted in Finland examined the development of school burnout during the transition from comprehensive school to either an academic (senior high school\(^2\)) or vocational track (vocational school\(^3\)) at the age of 16 by using latent growth curve modelling. In addition, the roles of gender and academic achievement with respect to school burnout were investigated.

**School burnout**

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. School dislike is related to internal and external problem behaviours, and reduced quality of life (e.g. Jessor, 1991; Kasen, Johnson, & Cohen, 1990). Poor academic performance and academic failures are related to psychological stress and negative affect (Cole, Peeke, Dolezal, Murray, & Canzoniero, 1999; Crystal et al., 1994), and low self-esteem (e.g. Harter, 1996; Masi et al., 2000), while high academic achievement is related to high emotional well-being and protects against maladjustment (Gerard & Buehler, 2004; Seroczynski, Cole, & Maxwell, 1997). Although many concepts, such as low academic achievement and motivation, poor self-esteem, school tiredness, and internal and external problem behaviour (e.g. Rudolph, Lambert, Clark, & Kurlakowsky, 2001; Wentzel, Barry, & Caldwell, 2004; Zimmerman & Schmeelk-Cone, 2003) have been used to describe maladjustment at school, less research has been carried out on school burnout.

School burnout is defined along three dimensions: exhaustion due to school demands; cynical and detached attitude towards one’s school; and feelings of inadequacy as a student (Salmela-Aro & Näätänen, 2005; Schaufeli et al., 2002). Although burnout was originally studied as a work-related disorder (Maslach, Jackson, & Leiter, 1996), it is also useful in the school-context: school is a context in which students work. Students attend classes and do assignments in order to pass exams and acquire a degree.

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\(^1\) Comprehensive school refers to a school from which children start at the age of 7 and which they finish after 9 years (grades) at the age of 16.

\(^2\) Senior secondary school is an ‘academic track’ that leads to studies at university or polytechnic university. It is started after comprehensive school and lasts from 3 to 4 years.

\(^3\) Vocational school is started after comprehensive school and lasts from 2 to 3 years, leading typically to practical education in an occupational field.
Consequently, the concept of burnout has been extended to studies of university students (Schaufeli et al., 2002) and, recently, to the school context (Kiuru, Aunola, Nurmi, Leskinen, & Salmela-Aro, 2008; Salmela-Aro, Vuori, & Koivisto, 2007; Tuominen, Salmela-Aro, & Niemivirta, 2008). The dimensions of school burnout overlap with some earlier concepts. Exhaustion, for example, resembles the concepts of stress, tiredness, and anxiety (Byrne, Davenport, & Mazanov, 2007). Similarly, cynicism and reduced accomplishments resemble depressive symptoms (Schmidt et al., 2007). Previous studies have also shown that although the different dimensions of school burnout, that is exhaustion, cynicism, and inadequacy at school, overlap, they are nevertheless different constructs (Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2008). Thus, in the present study we examine exhaustion, cynical attitude, and feelings of inadequacy at school as different constructs.

Educational tracks and school adjustment

The transition from comprehensive school to either an academic or a vocational track is the key educational change during adolescence in many European educational systems, although the actual age of the transition varies substantially across countries. The track taken determines the quality and kinds of learning opportunities each student receives (Oakes, Gamoran, & Page, 1992). 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 as 'neighbourhood' schools, the students spending most of the school day with one set of peers and teachers, whereas secondary schools are in most cases larger than comprehensive schools.

School transitions can be approached by means of the stage-environment fit theory (Eccles & Midgley, 1989). According to the theory (Eccles & Midgley, 1989), positive outcomes will result if the changes in adolescents' needs are aligned with the changes in school opportunities. In turn, unfavourable outcomes will result if adolescents' needs are not matched by the opportunities provided by school. Thus, students can be expected to be more motivated to learn if the material they are asked to master is appropriate for their current level of competence and interests. There is substantial evidence of a decline in academic motivation, attachment to school and academic achievement across the school transition in early adolescence (cf. transition to middle school or junior high school) (Anderman & Maehr, 1991; Eccles & Midgley, 1989; Maehr & Midgley, 1996; Roeser, Eccles, & Freedman-Doan, 1999; Simmons & Blyth, 1987; Wigfield, Eccles, & Mac Iver, 1991). Most of these studies have been conducted in the US. However, little is known about what happens in the school transition in middle adolescence, for example, during the transition from comprehensive school to senior high school or vocational school, which is the typical pattern in the Nordic countries.

The present study investigated whether the transition from comprehensive school to either an academic or a vocational track at the age of 16 contributed to Finnish adolescents' school-related burnout. We assumed that the nature of the academic and vocational education environments themselves, rather than the transition per se, would be important for changes in how adolescents think and feel at school (see Entwisle, 1990; Wigfield, Eccles, & Pintrich, 1996). For example, Eccles and Midgley (1989) proposed that negative developmental changes may result if schools do not provide developmentally appropriate educational environments for adolescents and that negative developmental fit may lead to alienation and cynicism. We assumed in the
present study that studying the transition from comprehensive school to either an academic or vocational track in Finland would provide a possibility to test this hypothesis. In Finland, all students follow the same curriculum while in comprehensive school. This might be assumed to mean that the match between the material they are asked to master and their current level of competence is poor for those who show low level of academic skills. However, we expected this to change when the adolescents in this group make the transition to vocational schools, where the focus is more on practical training than on academic learning. In turn, it can be assumed that comprehensive schools are relatively less demanding for those adolescents who have high academic skills. However, when they make the transition to academic track which is very demanding in Finland, this may lead to a poor fit between the demands of the academic environment and their level of competence, at least for some senior high school students. The demands and norms of Finnish senior high schools can be challenging and stressful: young people often face unfamiliar academic expectations; changes in sources of social support; and demanding social norms.

The roles of gender and academic achievement in school burnout

Previous research has shown gender differences in academic achievement and school adjustment. For example, girls tend to perform better at school than boys (e.g. Dwyer & Johnson, 1997; Pomerantz, Altermatt, & Saxon, 2002) and to attribute greater importance to academic achievement than boys (Berndt & Miller, 1990; Murberg & Bru, 2004). However, girls also experience higher levels of stress (e.g. Ge, Lorenz, Conger, Elder, & Simons, 1994; Jose & Ratcliffe, 2004; Matud, 2004), and internalized symptoms (e.g. Hoffmann, Powlishta, & White, 2004; Nolen-Hoeksema & Girgus, 1994; Pomerantz et al., 2002). As adolescents make the transition to an academic track they might perceive their classrooms as more competitive. There is some evidence to suggest that girls respond more negatively to competitive learning conditions and attribute greater importance to academic achievement. In line with this, research shows that girls not only are more exposed to stressful life-events, but are more vulnerable to their negative effects (Ge et al., 1994; Kessler & McLeod, 1984; Turner, Wheaton, & Lloyd, 1995). Moreover, courses are often taught in a manner that girls might find either boring or irrelevant to their interests (Eccles & Midgley, 1989). Consequently, we expected girls to experience a higher level of school-related burnout, particularly exhaustion and inadequacy than boys.

Schooling in Finland

The present study was carried out in Finland. At the age of 7 children move to comprehensive school, where they remain for the next 9 years. Comprehensive school students spend approximately half of their school hours with their classmates and about half in classes with other students. Up to age 16, all Finnish adolescents receive a similar basic education. After comprehensive school, 55% of adolescents enter senior high schools (from 3 to 4 years) and 37% vocational schools (from 2 to 3 years), 2% remain in the comprehensive school to attend the voluntary tenth grade and 6% exit formal education (School statistics, Central Statistical Office of Finland, 2003). In the present study, we focused on the transition from comprehensive school to either an academic track, (i.e. entering senior high school) or a vocational track (i.e. entering a vocational
school). According to the Programme for International Student Assessment (PISA) study, Finnish students scored high in academic achievement, while they scored lower in terms of school adjustment compared to students in other countries (OECD, 2006).

**Research questions**

The present study examined the following research questions:

1. Does adolescents’ school-related burnout, that is, exhaustion at school, cynicism towards the meaning of school, and sense of inadequacy at school, change following the transition from comprehensive school to an academic or vocational track?

2. Does adolescents’ school-related burnout change differently among adolescents on different educational tracks after comprehensive school, that is, senior high school (academic track) and vocational school (vocational track)? We expected that those on an academic track would experience more exhaustion during the transition than those on a vocational track (Hypothesis 2a), because the amount of schoolwork increases and education in senior high schools is more challenging and stressful than education in vocational schools. Students on a vocational track, in turn, experience a decrease in academic demands, which we expected to lead to a decrease in exhaustion (Hypothesis 2b). Second, we expected that cynicism would decrease in vocational school, as the education on this track is more hands on, with a focus on practical subjects, which may increase students’ school engagement and lead them to experience better stage-environment fit than in comprehensive school (Hypothesis 2c). Similarly, those on a vocational track might be expected to experience an increased sense of adequacy at school (Hypothesis 2d). In contrast, students on an academic track were expected to feel a decrease in their stage-environment fit in senior high school than in comprehensive school and thus an increased level of both cynicism and sense of inadequacy (Hypothesis 2e).

3. Does school burnout (exhaustion at school, cynicism towards the meaning of school, sense of inadequacy at school) change differently by gender among adolescents on an academic track or on a vocational track?

4. Does academic achievement predict school burnout among adolescents on an academic or on a vocational track when controlled for gender?

**Method**

**Participants**

The present study is part of the ongoing FinEdu study (Salmela-Aro, Niemivirta, & Nurmi, 2003) focusing on adolescents’ life-planning and well-being in middle and late adolescence. At the beginning of the present study the participants were ninth graders facing the transition to post-comprehensive schooling. All the ninth-grade students from eight schools in the same medium-sized town (population = 88,000) in Central Finland were recruited for the study (N = 773). The participants were asked to participate three times. Two measurements were carried out before the transition to senior secondary (academic track) or vocational (vocational track) education: one at the beginning of the final term of comprehensive school (end of January 2004; Time 1) and the other at the end of the final term of comprehensive school (end of May 2004; Time 2). The last
measurement was carried out after the transition to post-comprehensive schooling (end of January 2005; Time 3). The interval between the first and second measurements was 4 months, whereas the interval between second and third measurements was 8 months. At Time 1, 611 (297 girls, 314 boys) adolescents out of the 773 students attending the eight comprehensive schools participated in the study. At Time 2, the number of participants was 614 (308 girls, 306 boys) and at Time 3, the number was 729 (354 girls, 375 boys). The median age of the participants was 15 at the first measurement (M = 15; SD = 0.34).

The final sample contained 658 adolescents (315 girls, 343 boys) and included only those adolescents whose educational track after the transition to post-comprehensive schooling was either academic or vocational. A heterogeneous group of adolescents who remained outside of formal education or entered the voluntary tenth grade after comprehensive school (N = 71) were omitted from the study. A total of 457 adolescents out of 658 answered all three measurements.

Two sets of attrition analyses were carried out: (1) analyses for selection effects due to the study design and (2) analyses for attrition between measurements. The first set of attrition analyses was carried out by comparing the participants of the study (i.e. those adolescents who were either on an academic or vocational track after the transition; N = 658) with those omitted from it (i.e. a heterogeneous group of adolescents who were either outside education or in the voluntary tenth grade after the transition; N = 71) with regard to the variables of the present study, that is, school burnout (i.e. exhaustion, cynicism, and inadequacy at school) and background variables (i.e. gender and academic achievement). The results showed that adolescents who were either outside education or in the voluntary tenth grade after the transition to post-comprehensive schooling had lower academic achievement (M = 7.13, SD = 0.58) than the adolescents on either an academic or vocational track (M = 8.11, SD = 0.79; t(543) = −10.01, p < .001). Moreover, the adolescents who were either outside education or in the voluntary tenth grade experienced more cynicism at both measurements before the transition (Time 1: M = 2.73, SD = 1.36; Time 2: M = 2.79, SD = 1.19) and a stronger sense of inadequacy at the second measurement before the transition (M = 2.92, SD = 1.14) than the adolescents on either an academic or vocational track (Cynicism at Time 1: M = 2.20, SD = 1.03, t(575) = 2.76, p < .01; Cynicism at Time 2: M = 2.32, SD = 1.27, t(582) = 2.58, p < .01; Inadequacy Time 1: M = 2.73, SD = 1.25, t(581) = 2.18, p < .05). No selection effects were found with respect to the other variables studied.

In the second set of attrition analyses, carried out to examine attrition between measurements, the adolescents who participated in the study at each measurement point (N = 457) were compared with those for whom data at some measurement point were missing (N = 201). The results indicated no selection effect with respect to the burnout variables. In the case of the background variables the results showed that boys (Adjusted standardized residual = −2.4) were less likely to participate at all the measurement points than girls (χ²(1, N = 658) = 5.807, p < .05). Moreover, those who did not participate at any measurement point did less well at school (M = 7.74, SD = 0.92) and were more likely to be on a vocational than academic track after comprehensive school (Adjusted standardized residual = 2.7) than those who participated at all the measurement points (M = 8.17, SD = 0.75, t(501) = −3.73, p < .001; χ²(1, N = 658) = 7.184, p < .01). However, by using the missing data procedure (see details below in the description of the time strategy used in the analysis), we were able to supply data for all the participants (N = 658) in the analyses.
The majority of the participants (99%) were Finnish speaking, 1% of them having some other mother tongue. The questionnaires were group administered to the students in their classrooms during regular school hours. The adolescents answered questions on school burnout at all three measurements. Predictor background variables (i.e. gender and academic achievement) were included only at Time 1.

Measures

School burnout
School burnout was examined with the school burnout inventory developed by Salmela-Aro and Näätänen (2005; see also Salmela-Aro et al., 2008; see also Schaufeli et al., 2002) and according to adolescents’ self-reports for the previous month (see also Schaufeli et al., 2002). The scale is based on the burnout inventory (BBI-15) (Näätänen, Aro, Matthiesen, & Salmela-Aro, 2003; Salmela-Aro, Näätänen, & Nurmi, 2004), which has been shown to correlate with the maslach burnout inventory .86 (Maslach et al., 1996). The scale consists of nine unidimensional items measuring three components of school burnout: (1) exhaustion at school (I feel overwhelmed by my schoolwork, I often sleep badly because of matters related to my schoolwork, I brood over matters related to my schoolwork a lot during my free time); (2) cynicism towards the meaning of school (e.g. I feel lack of motivation in my schoolwork and often think of giving up, I feel that I am losing interest in my schoolwork, I'm continually wondering whether my schoolwork has any meaning); and (3) sense of inadequacy at school (e.g. I often have feelings of inadequacy in my schoolwork, I feel that I have less and less to give in my schoolwork, I used to have higher expectations of my schoolwork than I do now). For each of the three components of school burnout there were three items and all the items were rated on a 6-point scale (1 = strongly disagree; 6 = strongly agree). Sum scores for each of the three time points were calculated separately for exhaustion at school, cynicism towards the meaning of school and sense of inadequacy at school. The Cronbach’s alpha reliability for these scales was as follows: (1) exhaustion at school (Time 1 = .58; Time 2 = .75; Time 3 = .78); (2) cynicism towards the meaning of school (Time 1 = .83; Time 2 = .86; Time 3 = .87); and (3) sense of inadequacy at school (Time 1 = .74; Time 2 = .84; Time 3 = .78). In the present data, exhaustion (r = −.25), cynicism (r = −.35), and inadequacy (r = −.43) were found to correlate negatively with self-esteem (Rosenberg, 1965). In turn, exhaustion (r = .42), cynicism (r = .45), and inadequacy (r = .51) correlated positively with depressive symptoms (Beck, Ward, Mendelsohn, Mosck, & Erlaugh, 1961).

Educational track
Educational track after comprehensive school (Time 2) was measured by asking the participants the following questions: (1) Are you in education at the moment? (1 = yes, 0 = no); (2) If you are in education, what is the name of your school? Participants’ answers to these questions were coded in the following way: 1 = senior secondary school (58.3%), 2 = vocational school combined with senior secondary school courses (4.3%), 3 = vocational school (28.0%), 4 = tenth grade voluntary (6.9%), and 5 = outside formal education (2.5%). Next, an educational track variable was created by contrasting academic track with vocational track. Both adolescents who were in vocational school and those who were in vocational school inclusive of senior secondary school courses were considered vocational school students. Adolescents in
senior secondary school (academic track; \( N = 426 \)) were coded 1 and adolescents in vocational school (vocational track; \( N = 232 \)) were coded 0.

**Gender**

Gender was coded by asking the adolescents to circle the correct alternative (1 = girl, 2 = boy).

**Academic achievement**

Academic achievement was measured at Time 1 by asking the participants to report their grade point average (GPA) from the preceding spring term (i.e. Time 0). GPA ranged from 4 (lowest) to 10 (highest). Self-reported GPA has shown to correlate .96 with actual GPA (Holopainen & Savolainen, 2005).

**Analytical strategy**

The research questions were investigated by using latent growth modelling (LGM; Muthén & Muthén, 1998–2006; see also Duncan, Duncan, Stycker, Li, & Alpert, 1999). LGM is an excellent tool for the present study as it enables change to be analysed simultaneously both at the level of means and at the level of individual variation across means (variance). LGM estimates different growth components, such as level (intercept), linear change (linear trend), and quadratic change (quadratic trend), from data consisting of at least three measurements. Besides estimating the means of these components (the shape of change), LGM also estimates the variances of the level and growth components, and whether these variances are statistically significant. Examining change at the mean level by using LGM resembles repeated measures ANOVA, except that LGM analyses latent growth components instead of observed variables. However, within the ANOVA approach individual variation in level and change is not modelled as in the LGM approach but instead considered as error variance. Moreover, LGM offers more flexible and diverse possibilities to analyse predictors and distal outcomes of various growth components compared to the ANOVA approach.

The first research question was whether the components of adolescents’ school burnout would change when they moved from comprehensive school to either an academic or a vocational track. This research question was examined by testing LGMs consisting of the level and linear trend components of each burnout component separately. In these analyses, the loadings of the observed variables across Times 1–3 were fixed to 1 on the level factor and to 0, 1, and 3 on the linear change factor (the interval between Time 1 and Time 2 was 4 months and between Time 2 and Time 3 was 8 months). The residual variances were allowed to be freely estimated. If the results showed that the linear trend was not sufficient to describe the change in school burnout at the mean level, then the quadratic change component with factor loadings 0, 1, and 9 was added into the model.

The second research question was to examine whether school burnout would change differently after comprehensive school among adolescents on an academic track compared those on a vocational track. This was analysed for each burnout component separately by using multigroup LGM. In this procedure the same LGM is tested in two (or more) subsamples. First, unrestricted LGMs were carried out by using educational track as a grouping variable. Second, LGMs in which all the parameters were set equal for both educational track groups (academic and vocational track) were estimated. Next, the
Satorra–Bentler scaled $\chi^2$-test was used (Muthén & Muthén, 1998–2006) to compare the difference between the fit of an unrestricted model and the fit of a restricted model. Finally, the modification indices were examined, and the necessary parameters ($p < .05$ significance level) freed one by one in order to obtain a model that showed the best fit with the data.

Our third research question was to examine whether school burnout would change differently by gender among adolescents on an academic and vocational track. This research question was analysed in two alternative ways for each component of school burnout, depending on the results of the first research question. First, if no differences between adolescents on an academic and those on a vocational track were found, gender differences were examined at the level of the whole sample by using the same multisample LGM procedure as before but with gender as a grouping variable. The second strategy was applied if group differences were found among the adolescents on an academic and those on a vocational track. In this case multiple group LGMs for girls and boys were carried out separately for those on an academic (girls vs. boys) and those on a vocational (girls vs. boys) track, following the same multiple group procedure described above.

The fourth aim was to examine whether gender and academic achievement would predict school burnout differently among adolescents on the academic and those on the vocational track. Because the LGM models for all the components of school burnout were different for the adolescents in the academic and vocational track groups, the predictor analyses were also carried out separately for these groups. The analyses were carried out by adding gender and academic achievement as covariates separately into the LGM of each component of school burnout. Only those growth components in which there was significant variation were explained.

The analyses were performed by using the Mplus statistical package (Version 4.2, Muthén & Muthén, 1998–2006). By using the missing data method, we were able to utilize all the available observations in the data set when estimating the parameters of the models. Because the variables were skewed, the parameters of the models were estimated using the MLR estimator (Muthén & Muthén, 1998–2006). The MLR produces robust standard errors and a $\chi^2$-test statistic for missing data with non-normal outcomes by means of a sandwich estimator (Muthén & Muthén, 1998–2006). The goodness-of-fit of the estimated models was evaluated by four indicators, $\chi^2$-test, comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). The correlations, means ($M$), and variances ($\text{Var}$) for the observed variables for girls (below the diagonal) and boys (above the diagonal) on an academic (below the diagonal) track are presented in Table 1, whereas those for girls (below the diagonal) and boys (above the diagonal) on a vocational track (above the diagonal) are presented in Table 2.

**Results**

**Change in school burnout in whole sample**

The first research question of the present study was to examine whether adolescents’ school burnout would change as they move to post-comprehensive schooling. To answer this question, LGMs were carried out separately for each component of school burnout at the level of the whole sample.

The results of the LGM for exhaustion in which only statistically significant parameters were included ($\chi^2(3) = 4.49$, $p = .21$; $\text{CFI} = .99$; $\text{RMSEA} = .03$;
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<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
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<th>8</th>
<th>9</th>
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<th>Var</th>
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</thead>
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<td>.53(^{a})</td>
<td>.53(^{a})</td>
<td>.36(^{a})</td>
<td>.24(^{b})</td>
<td>.24(^{b})</td>
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<td>.59(^{a})</td>
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<td>.63(^{b})</td>
<td>.39(^{a})</td>
<td>.48(^{a})</td>
<td>.69(^{a})</td>
<td>.39(^{a})</td>
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<td>3. Exhaustion (T3)</td>
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<td>.52(^{a})</td>
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<td>.17(^{c})</td>
<td>.29(^{a})</td>
<td>.48(^{a})</td>
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<td>.10</td>
<td>.19(^{b}) 1.00</td>
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<td>.72(^{a})</td>
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<td>9. Inadequacy (T3)</td>
<td>.15(^{c})</td>
<td>.33(^{a})</td>
<td>.52(^{a})</td>
<td>.37(^{a})</td>
<td>.52(^{a})</td>
<td>.77(^{a})</td>
<td>.35(^{a})</td>
<td>.59(^{a})</td>
<td>1.00</td>
<td>2.38</td>
<td>0.92</td>
</tr>
</tbody>
</table>

Note. T1, Measurement 1; T2, Measurement 2; T3, Measurement 3.

\(^{a}\) \(p < .001\).

\(^{b}\) \(p < .01\).

\(^{c}\) \(p < .05\).
Table 2. Sample correlation matrix and means (M) and variances (Var) for the observed variables (girls at vocational track, $N = 74–86$ below the diagonal; boys on vocational track, $N = 102–133$ above the diagonal)

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>M</th>
<th>Var</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Exhaustion (T1)</td>
<td>1.00</td>
<td>.24$^a$</td>
<td>.41$^b$</td>
<td>.30$^c$</td>
<td>.02</td>
<td>.27$^c$</td>
<td>.52$^b$</td>
<td>.15</td>
<td>.39$^b$</td>
<td>2.40</td>
<td>0.83</td>
</tr>
<tr>
<td>2. Exhaustion (T2)</td>
<td>.54$^b$</td>
<td>1.00</td>
<td>.20$^a$</td>
<td>.17$^a$</td>
<td>.73$^b$</td>
<td>.08</td>
<td>.17$^a$</td>
<td>.85$^b$</td>
<td>.27$^c$</td>
<td>2.47</td>
<td>1.88</td>
</tr>
<tr>
<td>3. Exhaustion (T3)</td>
<td>.36$^b$</td>
<td>.40$^b$</td>
<td>1.00</td>
<td>.26$^c$</td>
<td>0.01</td>
<td>.70$^b$</td>
<td>.35$^b$</td>
<td>0.08</td>
<td>.72$^b$</td>
<td>2.24</td>
<td>1.15</td>
</tr>
<tr>
<td>4. Cynicism (T1)</td>
<td>.38$^b$</td>
<td>.43$^b$</td>
<td>.26$^a$</td>
<td>1.00</td>
<td>.28$^c$</td>
<td>.33$^b$</td>
<td>.66$^b$</td>
<td>.26$^c$</td>
<td>.28$^c$</td>
<td>2.32</td>
<td>1.04</td>
</tr>
<tr>
<td>5. Cynicism (T2)</td>
<td>.30$^c$</td>
<td>.50$^b$</td>
<td>.16</td>
<td>.63$^b$</td>
<td>1.00</td>
<td>.08</td>
<td>.24$^a$</td>
<td>.87$^b$</td>
<td>.17$^a$</td>
<td>2.57</td>
<td>2.00</td>
</tr>
<tr>
<td>6. Cynicism (T3)</td>
<td>-.03</td>
<td>.06</td>
<td>.30$^c$</td>
<td>.53$^b$</td>
<td>.39$^b$</td>
<td>1.00</td>
<td>.27$^c$</td>
<td>.11</td>
<td>.80$^b$</td>
<td>2.05</td>
<td>1.10</td>
</tr>
<tr>
<td>7. Inadequacy (T1)</td>
<td>.46$^b$</td>
<td>.35$^b$</td>
<td>.29$^c$</td>
<td>.69$^b$</td>
<td>.39$^b$</td>
<td>.29$^c$</td>
<td>1.00</td>
<td>.30$^c$</td>
<td>.40$^b$</td>
<td>2.42</td>
<td>0.95</td>
</tr>
<tr>
<td>8. Inadequacy (T2)</td>
<td>.36$^b$</td>
<td>.75$^b$</td>
<td>.37$^b$</td>
<td>.54$^b$</td>
<td>.78$^b$</td>
<td>.36$^b$</td>
<td>.36$^b$</td>
<td>1.00</td>
<td>.24$^a$</td>
<td>2.50</td>
<td>1.86</td>
</tr>
<tr>
<td>9. Inadequacy (T3)</td>
<td>.09</td>
<td>.23$^a$</td>
<td>.54$^b$</td>
<td>.55$^b$</td>
<td>.39$^b$</td>
<td>.83$^b$</td>
<td>.43$^b$</td>
<td>.49$^b$</td>
<td>1.00</td>
<td>2.18</td>
<td>1.01</td>
</tr>
<tr>
<td>M</td>
<td>2.86</td>
<td>2.72</td>
<td>2.71</td>
<td>2.59</td>
<td>2.59</td>
<td>2.37</td>
<td>2.87</td>
<td>2.65</td>
<td>2.51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Var</td>
<td>1.01</td>
<td>1.24</td>
<td>1.10</td>
<td>1.10</td>
<td>1.37</td>
<td>1.42</td>
<td>1.01</td>
<td>1.31</td>
<td>0.98</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. T1, Measurement 1; T2, Measurement 2; T3, Measurement 3.

$^a$ $p < .05$

$^b$ $p < .001$

$^c$ $p < .01$
SRMR = .04) showed that the two growth components (i.e. level and linear change) described the shape of change well. The results at the mean level showed that level of exhaustion was significant (Estimate = 2.71, SE = 0.03, p < .001), but that there was no linear change. The results for the variances of the growth components showed, in turn, significant individual variation in exhaustion both in level (Estimate = 0.66, SE = 0.08, p < .001) and in linear change (Estimate = 0.10, SE = 0.01, p < .001).

The results of the LGM for cynicism, in which only statistically significant parameters were included ($\chi^2(2) = 4.43, p = .11$; CFI = .99; RMSEA = .04; SRMR = .02) showed that the two growth components (i.e. level and linear change) described the shape of change well. The results at the mean level showed that the level of cynicism was significant (Estimate = 2.31, SE = 0.04, p < .001), but that there was no linear change. The results for the variances of the growth components showed, in turn, that there was significant individual variation in cynicism both in level (Estimate = 0.85, SE = 0.10, p < .001) and in linear change (Estimate = 0.06, SE = 0.03, p < .05). The level of and linear change in cynicism also correlated negatively (Estimate = −0.10, SE = 0.04, p < .01): the lower the initial level of cynicism the more it increased from Time 1 to Time 2.

Finally, the results of the LGM for inadequacy, in which only statistically significant parameters were included ($\chi^2(2) = 0.10, p = .61$; CFI = 1.00; RMSEA = .00; SRMR = .01) showed that the two growth components (i.e. level and linear change) described the shape of change well. The results at the mean level showed that the level of inadequacy was significant (Estimate = 2.49, SE = 0.03, p < .001), but that there was no linear change. The results for the variances of the growth components showed, in turn, significant individual variation in inadequacy both in level (Estimate = 0.71, SE = 0.09, p < .001) and in linear change (Estimate = 0.09, SE = 0.03, p < .001). The level of and linear change in inadequacy also correlated negatively (Estimate = −0.10, SE = 0.04, p < .01): the lower the initial level of inadequacy the more it increased from Time 1 to Time 2.

**Multigroup models for exhaustion at school**

Next, the results for research questions 2 and 3 are presented separately for the different components of school burnout (Tables 3–5). Because our primary interest was to examine mean level changes in exhaustion, cynicism, and inadequacy during the transition to post-comprehensive schooling, only the mean level results are described in the text. The results for the variances of the growth components are presented in Tables 3–5.

One of our research questions was to examine whether exhaustion at school would change differently among adolescents on an academic track compared to adolescents on a vocational track after comprehensive school. The Satorra-Bentler scaled $\chi^2$-test for difference (Muthén & Muthén, 1998–2006) showed that the restricted model was rejected compared to the unrestricted model: $\chi^2_{\text{diff}}(8, N = 636) = 40.73, p < .001$. After freeing those parameters suggested by modification indices and including only statistically significant parameters the model showed a good fit ($\chi^2(11) = 14.76, p = .19$; CFI = .98; RMSEA = .03; SRMR = .05). The results at the mean level (Table 3) showed that adolescents on an academic track experienced more overall exhaustion than their counterparts on a vocational track. At the mean level, no significant change was found among the groups.
Table 3. Parameter estimates (unstandardized forms; standard errors in parenthesis) LGMs for exhaustion at school (multigroup comparisons)

<table>
<thead>
<tr>
<th>Growth parameters</th>
<th>Academic track (N = 410)</th>
<th>Vocational track (N = 226)</th>
<th>Academic track (N = 410)</th>
<th>Vocational track (N = 226)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Girls (N = 220)</td>
<td>Boys (N = 190)</td>
</tr>
<tr>
<td><strong>Means</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>2.82 (0.04)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.54 (0.06)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.04 (0.05)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.56 (0.06)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Linear trend</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Variances</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.49 (0.04)&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td>0.45 (0.05)&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Linear trend</td>
<td>0.07 (0.01)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.07 (0.01)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td>Covariance (level, slope)</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Residual variances</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaustion (Time 1)</td>
<td>0.40 (0.04)&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td>0.36 (0.04)&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Exhaustion (Time 2)</td>
<td>0.95 (0.08)&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td>0.84 (0.07)&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Exhaustion (Time 3)</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0.80 (0.12)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
<td>0&lt;sup&gt;*&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note. 0<sup>*</sup> Fixed to zero.

<sup>a</sup>p < .001.
<sup>b</sup>p < .01.
<sup>c</sup>p < .05.
### Table 4. Parameter estimates (unstandardized forms; standard errors in parenthesis) LGMs for cynicism towards the meaning of school (multigroup comparisons)

<table>
<thead>
<tr>
<th>Growth parameters</th>
<th>Academic track (N = 410)</th>
<th>Vocational track (N = 226)</th>
<th>Academic track (N = 410)</th>
<th>Vocational track (N = 226)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls (N = 220)</td>
<td>Boys (N = 190)</td>
<td>Girls (N = 88)</td>
<td>Boys (N = 138)</td>
</tr>
<tr>
<td><strong>Means</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>2.10 (0.05)$^a$</td>
<td>2.46 (0.07)$^a$</td>
<td>2.28 (0.06)$^a$</td>
<td>1.96 (0.07)$^a$</td>
</tr>
<tr>
<td>Linear trend</td>
<td>0.07 (0.02)$^a$</td>
<td>0*</td>
<td>0*</td>
<td>0*</td>
</tr>
<tr>
<td>Quadratic trend</td>
<td>–</td>
<td>–0.06 (0.01)$^a$</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Variances</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.50 (0.05)$^a$</td>
<td>0.51 (0.07)$^a$</td>
<td>0.71 (0.15)$^a$</td>
<td>0.31 (0.10)$^c$</td>
</tr>
<tr>
<td>Linear trend</td>
<td>0.08 (0.01)$^a$</td>
<td>0*</td>
<td>0.08 (0.01)$^a$</td>
<td>0*</td>
</tr>
<tr>
<td>Covariance (level, linear trend)</td>
<td>0*</td>
<td>0*</td>
<td>0*</td>
<td>0*</td>
</tr>
<tr>
<td><strong>Residual variances</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cynicism (Time 1)</td>
<td>0.53 (0.06)$^a$</td>
<td>0.50 (0.08)$^a$</td>
<td>0.34 (0.12)$^c$</td>
<td>0.67 (0.13)$^a$</td>
</tr>
<tr>
<td>Cynicism (Time 2)</td>
<td>0.90 (0.10)$^a$</td>
<td>1.32 (0.18)$^a$</td>
<td>0.92 (0.10)$^a$</td>
<td>0.69 (0.15)$^a$</td>
</tr>
<tr>
<td>Cynicism (Time 3)</td>
<td>0*</td>
<td>0.82 (0.12)$^a$</td>
<td>0*</td>
<td>1.73 (0.23)$^a$</td>
</tr>
<tr>
<td>Residual covariance (Time 1, Time 2)</td>
<td>0.20 (0.07)$^c$</td>
<td>–</td>
<td>0.20 (0.08)$^c$</td>
<td>–</td>
</tr>
</tbody>
</table>

*Note. 0*, Fixed to zero; –, Not estimated.

$^a p < .001$.

$^b p < .05$.

$^c p < .01$. 
Table 5. Parameter estimates (unstandardized forms; standard errors in parenthesis) LGMs for sense of inadequacy at school (multigroup comparisons)

<table>
<thead>
<tr>
<th>Growth parameters</th>
<th>Academic track (N = 410)</th>
<th>Vocational track (N = 226)</th>
<th>Academic track (N = 410)</th>
<th>Vocational track (N = 226)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls (N = 220)</td>
<td>Boys (N = 190)</td>
<td>Girls (N = 88)</td>
<td>Boys (N = 138)</td>
</tr>
<tr>
<td><strong>Means</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>2.35 (0.05)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.62 (0.07)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.53 (0.07)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.21 (0.08)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Linear trend</td>
<td>0.07 (0.02)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.09 (0.03)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>-0.26 (0.11)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.06 (0.03)&lt;sup&gt;c&lt;/sup&gt;</td>
</tr>
<tr>
<td>Quadratic trend</td>
<td>-</td>
<td>0.11 (0.03)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0&lt;sup&gt;e&lt;/sup&gt;</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Variances</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level</td>
<td>0.73 (0.11)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.43 (0.07)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.87 (0.08)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.41 (0.07)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Linear trend</td>
<td>0.11 (0.02)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0&lt;sup&gt;e&lt;/sup&gt;</td>
<td>0.13 (0.02)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>Covariance</td>
<td>-0.11 (0.04)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0&lt;sup&gt;e&lt;/sup&gt;</td>
<td>-0.16 (0.04)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>(level, linear trend)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Residual variances</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inadequacy (Time 1)</td>
<td>0.25 (0.09)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.58 (0.08)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.20 (0.09)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>Inadequacy (Time 2)</td>
<td>0.75 (0.07)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.21 (0.19)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.76 (0.07)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.23 (0.20)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Inadequacy (Time 3)</td>
<td>0&lt;sup&gt;e&lt;/sup&gt;</td>
<td>0.64 (0.10)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0&lt;sup&gt;e&lt;/sup&gt;</td>
<td>0.64 (0.10)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Note. 0<sup>e</sup>, Fixed to zero; –, Not estimated.
<sup>a</sup>p < .001.
<sup>b</sup>p < .01.
<sup>c</sup>p < .05.
The third research question of the present study was to examine whether exhaustion at school would change differently across gender among adolescents on an academic track and those on a vocational track. The analyses for girls and boys on an academic track were carried out first. The results of the final multigroup LGM for exhaustion at school for girls and boys on an academic track in which only statistically significant parameters were included ($\chi^2(12) = 14.12, p = .29; \text{CFI} = .99; \text{RMSEA} = .03; \text{SRMR} = .09$) are presented in Table 3. The results at the mean level showed that while girls experienced a higher level of exhaustion than boys, there was no significant change among either girls or boys. Next, the multigroup analyses for girls and boys on a vocational track were carried out. The results of the final multigroup latent growth model for exhaustion in which only statistically significant parameters were included ($\chi^2(11) = 7.41, p = .76; \text{CFI} = 1.00; \text{RMSEA} = .00; \text{SRMR} = .09$) are presented in Table 3. The results at the mean level (Table 3) showed that while girls experienced higher levels of exhaustion than boys, there was no significant change among either girls or boys.

**Multigroup models for cynicism towards the meaning of school**

The second research question of the present study was to examine whether cynicism towards the meaning of school would change differently among adolescents on an academic track compared to adolescents on a vocational track after comprehensive school. The Satorra–Bentler scaled $\chi^2$-test for difference (Muthén & Muthén, 1998–2006) showed that the restricted model was rejected compared to the unrestricted model: $\chi^2_{\text{diff}}(8, N = 636) = 48.89, p < .001$. The modification indices (MI = 5.36) also suggested that the linear trend was not sufficient to describe the shape of the change in cynicism among adolescents on a vocational track after comprehensive school. Consequently, in addition to level and the linear trend, the quadratic trend was also estimated among adolescents on a vocational track. Because there was no variance in the quadratic trend, this term and its covariance with other growth components were fixed to 0 and the quadratic trend was estimated only at the mean level. The results of the final multigroup latent growth model for cynicism towards the meaning of school for adolescents on an academic and those on a vocational track in which only statistically significant parameters were included ($\chi^2(7) = 6.62, p = .47; \text{CFI} = 1.00; \text{RMSEA} = .00; \text{SRMR} = .04$) are presented in Table 4. The results at the mean level (see also Figure 1 for estimated means) showed that the adolescents on a vocational track experienced a higher initial level of cynicism than those on an academic track. Moreover, among adolescents on an academic track the level of cynicism increased across time. Among adolescents on a vocational track cynicism first increased before and then decreased after the transition to vocational school.

The third research question of the present study was to examine whether cynicism towards the meaning of school would change differently by gender among adolescents on an academic and those on a vocational track after comprehensive school. The analyses for girls and boys on an academic track were carried out first. The results of the final multigroup latent growth model for cynicism for girls and boys on an academic track in which only statistically significant parameters were included ($\chi^2(10) = 13.33, p = .21; \text{CFI} = .98; \text{RMSEA} = .04; \text{SRMR} = .06$) are presented in Table 4. The results at the mean level (see also Figure 1 for estimated means) showed that girls experienced a higher initial level of cynicism than boys. No change was found at the mean level among girls, whereas among boys cynicism was found to increase across time. Next, the multigroup analyses for girls and boys on a vocational track were carried out. The results
Figure 1. Mean profiles of LGM for cynicism towards the meaning of school among adolescents on an academic and on a vocational track, and for boys and girls on these tracks.
of the final multiple group LGM for cynicism towards the meaning of school for girls and boys on a vocational track in which only statistically significant parameters were included ($\chi^2(7) = 7.56, p = .37; \text{CFI} = .99; \text{RMSEA} = .03; \text{SRMR} = .06$) are presented in Table 4. The results at the mean level (see also Figure 1 for estimated means) showed that girls experienced higher initial levels of cynicism than boys. However, among girls no change took place at the mean level. Among boys, cynicism increased before and then decreased after the transition to vocational school.

**Multigroup models of sense of inadequacy at school**

The second research question of the present study was to examine whether sense of inadequacy at school would change differently among adolescents on an academic track compared to those on a vocational track after comprehensive school. The Satorra-Bentler scaled $\chi^2$-test for difference (Muthén & Muthén, 1998–2006) showed that the restricted model was rejected compared to the unrestricted model: ($\chi^2_{\text{diff}}(8, N = 636) = 44.47, p < .001$). After freeing the estimates suggested by modification indices the results of the final multigroup latent growth model for inadequacy at school for adolescents on an academic and those on a vocational track in which only statistically significant parameters were included ($\chi^2(5) = 7.74, p = .17; \text{CFI} = .99; \text{RMSEA} = .04; \text{SRMR} = .04$) are presented in Table 5. The results at the mean level (see also Figure 2 for estimated means) showed that adolescents on a vocational track experienced higher initial levels of inadequacy than adolescents on an academic track. Moreover, it was found that among adolescents on the latter the level of inadequacy increased significantly across time. By contrast, among adolescents on a vocational track inadequacy decreased significantly across time.

The third research question of the present study was to examine whether sense of inadequacy at school would change differently across gender among adolescents on an academic track compared to those on a vocational track after comprehensive school. The analyses for girls and boys on an academic track were carried out first. The results at the mean level showed, however, that the linear trend was not sufficient to describe the shape of the change in inadequacy among girls on an academic track after comprehensive school (MI = 10.12). Consequently, in addition to level and the linear trend, the quadratic trend was also estimated among girls on an academic track. Because there was no variance in the quadratic trend, this term and its covariance with other growth components were fixed to 0 and the quadratic trend was estimated only at the mean level. The results of the final multiple group LGM for inadequacy at school for girls and boys on an academic track in which only statistically significant parameters were included ($\chi^2(8) = 14.35, p = .08; \text{CFI} = .97; \text{RMSEA} = .06; \text{SRMR} = .12$) are presented in Table 5. The results at the mean level (see also Figure 2 for estimated means) showed that girls experienced a higher initial level of inadequacy than boys. Moreover, among girls inadequacy decreased before and increased again after the transition to senior secondary school. Among boys on an academic track inadequacy increased significantly across time.

Next, the multiple group analyses for girls and boys on a vocational track were carried out. The results of the final multiple group LGM for sense of inadequacy at school for girls and boys on a vocational track in which only statistically significant parameters were included ($\chi^2(11) = 10.54, p = .48; \text{CFI} = 1.00; \text{RMSEA} = .00; \text{SRMR} = .09$) are presented in Table 5. The results at the mean level were the same for both groups except that girls experienced higher initial levels of inadequacy than boys. Among both girls and boys inadequacy decreased across time.
The fourth research question of the present study was to examine whether academic achievement would predict school burnout among adolescents on an academic and those on a vocational track when controlled for gender. Because the LGM models for all the components of school burnout were different among adolescents on an academic and those on a vocational track, predictor analyses were also carried out separately for the two educational track groups with regard to all the components of school burnout.

**Adolescents at academic track**

The results of the predictor analyses concerning exhaustion at school for adolescents on an academic track showed that both gender and academic achievement predicted level of exhaustion ($R^2 = .13$): girls experienced a higher level of exhaustion than boys (Standardized Estimate = $-0.36$, $p < .001$) and adolescents with lower academic achievement experienced higher levels of exhaustion than adolescents who did better at school (Standardized Estimate = $-0.13$, $p < .05$). Gender and academic achievement

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**Figure 2.** Mean profiles of LGM for sense of inadequacy at school among adolescents on an academic and on a vocational track and among girls and boys on an academic track.

**Predictors of school burnout**

The fourth research question of the present study was to examine whether academic achievement would predict school burnout among adolescents on an academic and those on a vocational track when controlled for gender. Because the LGM models for all the components of school burnout were different among adolescents on an academic and those on a vocational track, predictor analyses were also carried out separately for the two educational track groups with regard to all the components of school burnout.
also correlated negatively: girls had a higher level of achievement than boys (Standardized Estimate = −0.12, \(p < .05\)).

The results for cynicism showed (Figure 3) that girls experienced more cynicism and did better at school than boys. Adolescents with poor school grades also reported more cynicism than adolescents doing better at school. Moreover, cynicism increased more among adolescents with low achievement compared to those who did better at school.

The results for inadequacy at school among adolescents on an academic track showed that both gender and academic achievement predicted level of inadequacy (\(R^2 = .11\)): girls experienced more inadequacy than boys (Standardized Estimate = −0.21, \(p < .001\) and low school grades predicted a high level of inadequacy (Standardized Estimate = −0.27, \(p < .001\)).

**Adolescents on a vocational track**

The results of the predictor analyses concerning exhaustion at school for adolescents on a vocational track showed that gender predicted level of exhaustion (\(R^2 = .10\)): girls experienced higher levels of exhaustion than boys (Standardized Estimate = −0.31, \(p < .001\)). Also the results for cynicism (\(R^2 = .03\)) and inadequacy (\(R^2 = .03\)) showed that girls experienced more cynicism (Standardized Estimate = −0.18, \(p < .05\)) and inadequacy (Standardized Estimate = −0.26, \(p < .01\)) than boys.

**Discussion**

Although a substantial amount of research has been conducted on adjustment and maladjustment at the school context (Byrne *et al.*, 2007; Deci *et al.*, 1991; Konu &
Lintonen, 2006; Roeser, 1998; Wigfield & Eccles, 1994), little research has focused on school burnout and few attempts have been made to follow up adolescents who face the transition from comprehensive school to further education. The major aim of the study was to investigate whether the educational transition from comprehensive school to either an academic or a vocational track would contribute to the development of school burnout. The results showed that adolescents on an academic track experienced more exhaustion at school than those on a vocational track. Moreover, among adolescents on an academic track both the level of cynicism and inadequacy at school increased across time, while they decreased among adolescents on a vocational track.

The first research question of the study was to examine whether adolescents’ school-related burnout, that is, exhaustion at school, cynicism towards the meaning of school, and sense of inadequacy at school, changes as students move into post-comprehensive education irrespective of track. The results at the level of the whole sample revealed that none of the three components of school-related burnout changed during the transition from comprehensive school to post-comprehensive education. This result suggests that school transitions as such do not contribute to adolescents’ maladjustment at school.

The second research question was to examine whether changes in adolescents’ school-related burnout would differ between adolescents on an academic and those on a vocational track. The results showed that adolescents on an academic track experienced more exhaustion than their counterparts on a vocational track. These results supported our Hypothesis 2a: those on an academic track experienced more exhaustion throughout the transition than those on a vocational track, because the academic demands both at the end of comprehensive school and in the senior high school are typically higher than they are in vocational school. Moreover, those on an academic track often have a strong orientation towards school and they value school, which might be a risk for school exhaustion and tiredness (Roderick & Camburn, 1999).

The results of the present study also supported the hypotheses originating from the theory of stage-environment fit. The results revealed, first, that adolescents on a vocational track experienced a higher initial level of cynicism than their counterparts on an academic track. In support of our hypothesis, cynicism among those on a vocational track first increased before but then decreased after the transition to vocational school (Hypothesis 2c). Second, in support of our Hypothesis 2e, the results showed that among adolescents at an academic track the level of cynicism increased across time. The more theory-based education in comprehensive school might not suit adolescents who are more work and less reading oriented, and thus they experience better fit in vocational school than in comprehensive school. By contrast, we expected that students on an academic track would experience a decrease in their stage-environment fit in senior high school compared to comprehensive school and hence an increased level of both cynicism and sense of inadequacy (Hypothesis 2e). Among those on an academic track the demands in senior high school would be even greater than the demands experienced at the end of comprehensive school.

Overall, our results concerning adolescents’ cynicism during the school transition tend to support the stage-environment fit theory (Eccles & Midgley, 1989). According to this theory, if changes in adolescents’ needs are aligned with changes in school opportunities at a certain stage of life, a positive outcome will result. When these are not congruent, unfavourable outcomes will result. Therefore, students should be more motivated to learn if the material they are asked to master is appropriate for their current level of competence and interests. The results of the present study supported this theory: the interplay between the characteristics of the school environment and
students’ competencies and interests across an educational transition are more important than the transition *per se* for changes in how adolescents think and feel about school (see Eccles & Midgley, 1989; Eccles *et al.*, 1993; Entwisle, 1990; Wigfield *et al.*, 1996). Eccles and Midgley (1989) proposed that negative developmental changes result if schools do not provide developmentally appropriate educational environments for adolescents. Such changes and a negative developmental match seem, according to our results, to increase alienation and cynicism during the transition from comprehensive school to further education.

Similarly, we expected that adolescents on a vocational track would experience a decrease in inadequacy (Hypothesis 2d). In contrast, we expected that students on an academic track would experience a decrease in their stage-environment fit in senior high school compared to comprehensive school and thus feel an increased level of inefficacy (Hypothesis 2e). The results of the present study supported all of our hypotheses concerning stage-environment fit (Hypotheses 2a–2e). The results revealed that adolescents on a vocational track experienced higher initial levels of inadequacy than the adolescents on an academic track. However, in support of Hypothesis 2d, the results also showed that among adolescents on a vocational track inadequacy decreased over time. The results showed further in support of Hypothesis 2e that among adolescents on an academic track level of sense of inadequacy increased across the transition to senior secondary school. An explanation in addition to the stage-environment fit theory regarding the results for those on an academic track is the ‘big-fish-little-pond’ effect (Marsh & Hau, 2003): when students on an academic track move to senior high school they study in the company of other students whose academic achievement and competencies are much higher than those of their peers in comprehensive school. Finally, adolescents on an academic track experienced a higher initial overall level of exhaustion than those on a vocational track. However, exhaustion did not change during the transition.

The third research question of the present study was to examine the extent to which school burnout and change in it would differ by gender among adolescents on an academic compared to vocational track. The results showed, first, that on both tracks, girls experienced a higher level of exhaustion, cynicism, and inadequacy than boys. Second, no change was found in the mean level of cynicism among girls. However, among boys on an academic track cynicism increased across time, whereas among those on a vocational track it increased before but then decreased after the transition to vocational school. Third, among girls on an academic track sense of inadequacy decreased before, but then increased again after the transition to senior secondary school, while among boys on an academic track sense of inadequacy increased significantly across time. These results suggest that there is evidence of gendered trajectories in school burnout in the transition from comprehensive school to both academic and vocational tracks. Consequently, one has to be careful when interpreting the results in relation to adjustment and maladjustment at school if gender has not been taken into account.

The last research question of the present study was to examine whether academic achievement would predict school burnout among adolescents on an academic compared to vocational track when controlled for gender. The results showed that girls, both on an academic and vocational track, experienced a higher level of all three burnout components, exhaustion, cynicism, and inadequacy, than boys. Girls also showed higher achievement than boys. This again indicates the gendered role of school burnout and is in line with the findings that girls’ social roles expose them to more stress
than boys (Kessler & McLeod, 1984; Matud, 2004; Turner et al., 1995), while they perform better at school than boys (e.g. Dwyer & Johnson, 1997; Pomerantz et al., 2002) and attribute greater importance to academic achievement compared to boys (Berndt & Miller, 1990; Murberg & Bru, 2004). As adolescents make the transition to senior high school, they perceive their classrooms as more focused on competition. There is some evidence to suggest that girls respond more negatively to competitive teaching conditions. For example, Tobin and Garnett (1987) report that whole-class lessons in science tend to be dominated by high-achieving boys. Moreover, it has been shown that teachers have lower expectations of girls and many courses are often taught in a manner that females find either boring or irrelevant to their interests (Eccles & Midgley, 1989). These might also lead to a high level of cynicism and sense of inadequacy among girls.

The results showed further that adolescents with lower academic attainment experienced a higher level of exhaustion, cynicism, and inadequacy than adolescents who did better at school. In addition, cynicism increased more among those with low achievement compared to those who did better at school. Cynicism as a concept also includes a sense of belonging to school. It was argued long ago by Dewey (1958) that school administrations and teachers should be responsible for facilitating a sense of community to help students achieve positive academic outcomes. Although a sense of community rather than cynicism is important for young people’s academic achievement, schools pay less attention to the socio-emotional needs of students and give priority to students’ performance in tests (Osterman, 2000).

We should also take into account the practical implications of our study. The results emphasize the need for more support to be given to students suffering from school burnout on an academic track. Moreover, burnout on an academic track might lead to drop-out from school later on. Consequently, it would be important on the one hand to identify students suffering from school burnout and on the other to seek to change the school context in such a way that it would lead rather to school engagement in terms of vigour, dedication, and absorption (Schaufeli et al., 2002).

Limitations

The present study has at least four limitations. First, the educational trajectories under investigation spanned only the transition from comprehensive school to secondary education. Future studies are needed to examine the role of burnout in other educational transitions and educational and occupational trajectories across a more extended period of time. Second, the present study was started rather close to the point of transition to post-comprehensive education, that is, at the beginning of the final term of comprehensive school. It may well be that adolescents’ educational plans and decisions begin to crystallize earlier. Consequently, there is an evident need to examine the role of burnout in adolescents’ educational development by more extended longitudinal studies with a starting-point in early adolescence. Next, in the present study we compared only those educational transitions that were made to either vocational school or senior secondary school. Although it would be very interesting to investigate those who did not continue their formal education and those who opted for the voluntary 10th grade of comprehensive school, the low number of such cases made it impossible to carry out these further analyses. Finally, the present study was carried out in Finland and thus one has to be cautious in generalizing the results to other school contexts. However, many European countries have a similar educational system in which students attend comprehensive school and then go on to an academic or
vocational track. It seems that it is important that the possibility exists for vocational rather than academic schooling in terms of adolescents’ adjustment in the educational context. It is clear that the large number of new peers and teachers in senior high schools, and also the nature of the classes in these schools, seems to put adolescents under huge pressure. In line with this, although Finnish students have received high grades in the OECD’s PISA studies, the results show further that Finnish students do not like school.

Conclusions and practical implications
The results showed that those adolescents on an academic track experienced more exhaustion than those on a vocational track. Also, the level of cynicism and sense of inadequacy increased across time among adolescents on an academic track, whereas they decreased among adolescents in vocational schools. The results suggest, overall, that entering an academic track, which involves large schools, a high level of individual autonomy, large numbers of new teachers and peers, and also less support from these, presents a serious challenge, resulting in student feelings of exhaustion, cynicism towards school, and finally a growing sense of inadequacy. These students need support.

Acknowledgements
This study is a part of the ongoing FinEdu project, and was funded by grant from the Academy of Finland (210319) and the Jacobs Foundation.

References


