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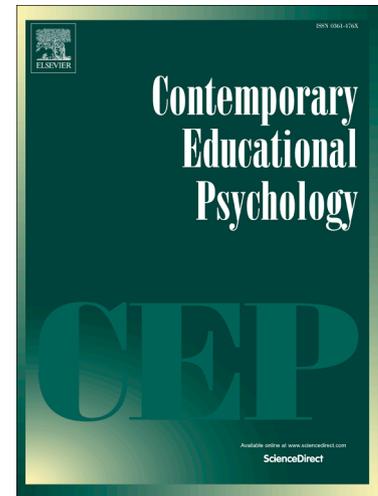
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The Role of a Supportive Interpersonal Environment and Education-Related Goal Motivation
During the Transition Beyond Upper Secondary Education

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The Role of a Supportive Interpersonal Environment and Education-Related Goal Motivation
During the Transition Beyond Upper Secondary Education

Abstract

This longitudinal study investigated the role of parents and peers as well as of education-related goal motivation during educational transitioning in late adolescence. The sample consisted of 1,520 upper secondary education students attending either academic or vocational upper secondary school in Finland. They were surveyed three times: (1) in the first year of their upper secondary education, 2) in the second year of their upper secondary education, and (3) two years later. The results show, first, that when students in upper secondary education pursued their educational goals out of autonomous motivation they also invested more effort in their goals, which was reflected in high levels of goal progress. High goal progress, in turn, was related to high levels of school satisfaction, whereas low goal progress was associated with the intention to drop out of school. By contrast, controlled motivation was associated neither with goal effort or goal progress in educational goals. Second, different interpersonal environments played unique and different roles in adolescents' educational goals. While mothers' affective warmth and involvement particularly enhanced adolescents' autonomous motivation, fathers' affective support directly predicted high levels of school satisfaction and low intentions to drop out of upper secondary school. The role of peer acceptance (measured using a sociometric procedure) was twofold: it was related to high autonomous motivation in adolescents' educational goals, and it also directly predicted adolescents' satisfaction with their chosen educational track. The intention to drop out of school is an important warning signal of later actually dropping out. Additional

analyses showed that the less adolescents had the intention to drop out of upper secondary school, the more likely they were to be successful in dealing with the educational transition from upper secondary school to further education or employment.

Keywords: educational goal, educational transition, intention to drop out, school satisfaction, goal attainment

The Role of a Supportive Interpersonal Environment and Education-Related Goal Motivation During the Transition Beyond Upper Secondary Education

During their school years, adolescents face several school-related transitions, such as the transition from lower secondary to upper secondary education, or from upper secondary to further studies. Transitions are critical junctures in which both motivational and interpersonal factors are likely to play a crucial role. First, adolescents' own education-related goal motivation has been shown to play an important role in their success in fully dealing with these transitions (e.g., Eccles, 2005; Haase, Heckhausen, & Silbereisen, 2011; Salmela-Aro & Nurmi, 1997a; Vasalampi, Nurmi, Jokisaari, & Salmela-Aro, 2012; Vasalampi, Salmela-Aro, & Nurmi, 2009). Second, self-determination theory (SDT) suggests that one's motivation is channelled by significant others (Deci & Ryan, 2000)). In the four-year longitudinal study we present here, we examined the role of supportive parent and peer relationships in: a) Finnish adolescents' motivation concerning their education-related goals, and b) in their success in dealing with the transition to further studies or working life following their upper secondary education (see Figure 1). In Finland, this is one of the most demanding educational transitions and one that has a significant impact on individuals' later life.

Educational Goal Motivation

According to SDT (Deci & Ryan, 1985), the motivation underlying personal goals varies depending on the reasons for pursuing these goals. Goals that are based on autonomous motivation reflect personal interests and values. By contrast, controlled motivation occurs when a goal is adopted because of social pressure (i.e., an individual is doing something because others want or expect him/her to) or internal pressure (i.e., an individual is doing something to avoid feelings of shame/guilt or to gain feelings of pride/self-esteem). Thus, a student who applies to become a medical doctor because he/she finds the medical profession

to be an interesting and important occupation chooses his/her educational goal for autonomous reasons. Comparatively, a student who does so only because it is a highly valued profession in his/her family, chooses his/her educational goal for controlled reasons. Autonomous motivation has been shown to be important for successful goal attainment because it promotes effort in pursuing the goal, which then leads to high goal progress (Sheldon, 2002; Sheldon & Elliot, 1998, 1999; Sheldon & Kasser, 1998). Progress in a personal goal contributes to goal attainment (Nurmi, Salmela-Aro, & Koivisto, 2002; Wiese & Freund, 2005) and has been found to have a direct effect on adjustment (Sheldon & Houser-Marko, 2001; Sheldon & Kasser, 1998; Skorikov, 2006). For example, Sheldon and Elliot (1999) found, in their semester-long study, that adolescents who began their semester with goals that matched their implicit values and interests (i.e., the goals were based on autonomous motivation) invested more effort in these goals during the semester and were less likely to give up their goals than those with goals motivated by control. As a result, autonomously motivated individuals attained their goals more readily and this led to their increased adjustment (see also Ketonen, Dietrich, Moeller, Salmela-Aro, & Lonka, 2018).

Controlled motivation in personal goals is instead considered potentially problematic, because with this type of motivation people's goals are not connected to their deeper values and interests and may therefore fail to activate their inner source of energy (Sheldon & Elliot, 1998; Sheldon, 2002). Thus, although controlled motivation may also form a preliminary sense of commitment, individuals can have problems in translating these goals into action (Gollwitzer, 1996; Sheldon, 2002; Sheldon & Elliot, 1998). This was evidenced, for example, in three studies by Koestner and colleagues (2008), which examined the role of autonomous and controlled motivation in academic, leisure and weight-loss goals. All of these studies showed that controlled motivation is less likely to lead to progress in the goals, whereas autonomous motivation facilitated goal progress in all of these goals.

Autonomous motivation may be especially beneficial in attaining an education-related goal that can only be achieved by hard work (Locke & Latham, 2002). Empirical evidence for this was provided by Lazarides, Viljaranta, Ranta and Salmela-Aro (2017), who showed that adolescents studying during the educational transition from lower secondary to upper secondary education whose goal orientation was mastery (i.e., studying for learning and understanding) invested effort and valued school after the transition. Similarly, Vasalampi and colleagues (2009; see also Vasalampi et al., 2012) showed that when upper secondary school students pursued their education-related goal out of autonomous motivation, they invested more effort in their goal, and this was reflected in the high level of goal progress. Goal progress, in turn, predicted a high level of school engagement during upper secondary school and, subsequently, success in the educational transition beyond upper secondary school (i.e., these students were more likely to pursue further education right after upper secondary school). By contrast, Vallerand and Bissonnette (1992; see also Black & Deci, 2000) showed that college students who dropped out during the school year had significantly lower scores in autonomous motivation than did those who did not drop out.

However, despite these transitions being critical junctures in which motivational factors may play an important role (Salmela-Aro, 2009), only a few attempts have been made to investigate these motivational processes systematically by using longitudinal data during educational transitioning. Vasalampi and colleagues (2009) studied the role of autonomous motivation, goal effort and goal progress during the educational transition beyond upper secondary school (i.e., academic track) and the transition to university (Vasalampi et al., 2012). The results showed the importance of autonomous motivation in goal effort and goal progress, but the authors did not separately examine the role of controlled goal motivation versus autonomous motivation. The present research expands these studies by separately examining both types of goal motivation.

This research explores, first, the role of autonomous and controlled motivation, goal effort and goal progress in students' school satisfaction and intentions of dropping out during their upper secondary education. Second, we examined the role of these variables in regard to the degree of success in dealing with educational transition from upper secondary school to further education or employment. The success in transitioning was investigated with a four-point scale documenting each student's current situation and satisfaction with their educational choice shortly after their upper secondary education. One end of the scale was "optimally successful," that is, these students had completed their upper secondary education in the three normative years and subsequently pursued higher education or obtained a relevant job after graduating from upper secondary school (academic or vocational) and indicated no plans to change or quit their present studies/job. In contrast, the other end was defined as "unsuccessful" if students had not completed an upper secondary qualification in the three normative years. The scale was based on earlier studies about school-to-work transitions (e.g., Piquart, Juang, & Silbereisen, 2003; for a review, see McKee-Ryan & Harvey, 2011) and educational transitions (e.g., Vasalampi et al., 2009).

Interpersonal Environment and Educational Goals

Adolescents typically do not face challenging educational transitions on their own, but they ask for advice from and discuss opportunities with their significant others. The life-span model of motivation (Nurmi, 2004; Salmela-Aro, 2009) suggests that, besides one's own beliefs and motivation, an individual's goals during critical transitions are also influenced by the perceptions, attitudes and expectations of his/her significant others. Thus, affective support from one's interpersonal environment during challenging educational transitions can be a critical resource for adolescents (see also, e.g., Gniewosz, Eccles, & Noack, 2012). Particularly the importance of parents and peers as part of a student's interpersonal environment influencing his/her choices have been emphasized (see, e.g., Nurmi, 2004). This

suggestion is underscored by the fact that most adolescents not only live with their parents but also spend increasing amounts of time with their peers (e.g., Csikszentmihalyi & Larson, 1984).

Regarding family characteristics, supportiveness and encouragement from parents might be particularly helpful for adolescents during a period of educational transitioning (see, e.g., Duineveld, Parker, Ryan, Ciarrochi, & Salmela-Aro, 2017; Ratelle, Guay, Larose, & Sénécal, 2004). When adolescents have close and supportive relationships with their parents, they will more likely aim for educational goals that suit their realistic abilities and other resources (Tynkkynen, Dietrich, & Salmela-Aro, 2014). Close and supportive relationships, including parental affection in general (i.e., affective support and warmth from one's parents), also typically increase adolescents' engagement in their studies during an educational transition (for a review, see Upadaya & Salmela-Aro, 2013) and help them to attain their educational goals (Melby, Conger, Fang, Wicrama, & Conger, 2008). Likewise, supportive relationships with peers have been shown to be beneficial. Having friends and feeling accepted at school appears to support involvement and engagement in school-related activities (Berndt, Laychak, & Park, 1990; King, 2015; Ladd, 1990; Vandell & Hembree, 1994; Wentzel, 1998; Wentzel, Battle, Russell, & Looney, 2010; Wentzel & Caldwell, 1997; Wentzel, Muenks, McNeish, & Russell, 2017) as well as supporting positive feelings toward school (Estell & Perdue, 2013) and good school performance (Ladd, Kochenderfer, & Coleman, 1997), and subsequently increases the likelihood of graduating from school (for a review, see Véronneau & Vitaro, 2007). By contrast, students who are not accepted by their peers tend to have lower graduation rates (Risi, Gerhardstein, & Kistner, 2003) and a higher risk of dropping out (French & Conrad, 2001; Hymel, Comfort, Schonert-Reichl, & McDougall, 1996; Parker & Asher, 1987; Ricard & Pelletier, 2016).

Parental affective supportiveness and peer acceptance can be assumed to have an influence on educational goals also via adolescents' motivation. This assumption is based on SDT theory (Deci & Ryan, 1985; Ryan & Deci, 2000), which highlights that an environment that recognizes others' perspectives, offers opportunities to feel volitional and provides meaningful rationales for pursuing goals and opportunities for choice, while minimizing the use of pressure and demands, promotes individuals being autonomous rather than controlled.

On the basis of the assumption made in SDT, a high level of affective warmth, acceptance and involvement by parents as well as acceptance by peers should also foster adolescents' autonomous motivation concerning their educational goals and therefore facilitate the ability to deal with challenging educational transitions. However, this topic has seldom been explored. A study by Dietrich and Salmela-Aro (2013) found that the greater the career-related support provided by parents was (e.g., how supportive parents were of their children's own decisions) before their children's upper secondary graduation, the higher was their' autonomous motivation and the lower was their controlled motivation after graduating. Their study focused on joint parental variance, but parents possibly also play different roles in adolescents' educational goals. Although, generally, mothers tend to be perceived as more affective-supportive than fathers (Duineveld et al., 2017; Grolnick et al., 1991), the findings in the educational context are inconsistent. Some studies (e.g., Grolnick et al., 1991; Guay & Chanal, 2008) have found that both parents' support has a positive effect on their child's autonomous motivation, whereas others have found that only a mother's support is significant (e.g., d'Ailly, 2003; Grolnick & Ryan, 1989).

Moreover, to fully understand the role of the social context in adolescents' educational attainment during critical educational transitions, research that examines several types of social contexts (e.g., mothers, fathers, peers) simultaneously is important. For example, Kiuru and colleagues (2014) showed that even when the joint variance in social

relationships was controlled for, authoritative parenting and peer acceptance had a unique positive effect on students' task-focused behavior (i.e., students were more willing to approach difficult learning tasks, and they showed persistence and sustained effort in such tasks). Moreover, Wang and Eccles' (2012) study on school engagement showed that different sources of support are not equally important and that they influence different aspects of school engagement. They demonstrated, for example, that parental social support is a stronger predictor of school engagement (i.e., participation in extracurricular activities, school identification, and subjective valuing of learning) than is peer social support. Similarly, Wentzel (1998) found that perceived affective support from parents predicted adolescents' academic goal orientation, but social support from teachers or peers did not have the same effect. Finally, a study by King (2015) showed only a moderate overlap among students' sense of relatedness to the different social partners, such as peers, parents and teachers. More specifically, the study showed that students' sense of relatedness to their parents (e.g., feeling accepted by their parents) was a more important predictor of academic achievement and positive emotions toward school than was relatedness to teachers and peers. Thus, besides the joint effect, peers and parents possibly also have unique effects on adolescents' educational goals.

Aims and Hypotheses

The present study focused on examining the roles of autonomous and controlled motivation, goal effort and goal progress in Finnish students' education-related goal attainment during educational transitioning. Furthermore, the relation between students' interpersonal environment and goal motivation was investigated. The hypothesized model is presented in Figure 1. The following research questions were posed:

1. How are autonomous and controlled motivation in education-related goal pursuits related to goal effort and goal progress during the transition beyond upper secondary education?

On the basis of some earlier studies in the field of SDT theory (e.g., Sheldon & Elliot, 1998, 1999; Vasalampi et al., 2009; Vasalampi et al., 2012) and on the related assumption suggesting that adolescents whose goals are autonomously motivated tend to put more effort into achieving those goals, we hypothesized (Hypothesis 1a) that autonomous motivation for an educational goal facilitates progress in the goal. In turn, we expected that controlled motivation might not be related to goal effort and goal progress (Hypothesis 1b), because such goals are less likely to activate an inner source of energy (Sheldon & Elliot, 1998; Sheldon, 2002).

2. To what extent do mothers' and fathers' affective supportiveness and peer acceptance facilitate adolescents' autonomous motivation in their educational goal during upper secondary education? We hypothesized (Hypothesis 2), as suggested in SDT, that supportive relationships with mothers, fathers and peers play important roles in increasing adolescents' autonomous motivation for educational goals (Ryan & Deci, 2000, see also Dietrich & Salmela-Aro, 2013; Guay & Chanal, 2008). However, besides the joint effect, peers and parents possibly also have unique effects on adolescents' educational goals (Kiuru et al., 2014; Wang & Eccles, 2012; Wentzel, 1998).
3. Do a supportive interpersonal environment and education-related goal motivation promote adolescents' satisfaction with their educational choice (i.e., high level of school satisfaction and low intention to drop out of school) during upper secondary education?

On the basis of existing studies, we assumed that students with autonomous education-related goal motivation are those who try hardest to achieve their goals and who consequently also progress better in their goals (Deci & Ryan, 1985; Sheldon & Houser-Marko, 2001; Sheldon & Kasser, 1998; Skorikov, 2006), and that this effort toward education-related goals predicts satisfaction and success in such educational goals (Hypothesis 3a). We also assumed (Hypotheses 3b) that close and supportive

interpersonal environment increases adolescents' engagement and satisfaction in their studies and the likelihood of graduating from school (Deci & Ryan, 1985; Melby et al., 2008; Sheldon & Houser-Marko, 2001; Sheldon & Kasser, 1998; Skorikov, 2006; Upadaya & Salmela-Aro, 2013; Véronneau & Vitaro, 2007).

4. To what extent do adolescents' education-related goal motivation and satisfaction with their educational choice predict success in their educational transition beyond their upper secondary education (academic or vocational)? Success in educational transitioning was assessed with a four-point scale from "optimally successful" (a student pursued further education or obtained a relevant job after completing his/her secondary education and had no plans to change or quit his/her current studies/job) to "unsuccessful" (a student did not complete his/her secondary education in the three normative years). Between these ends of the scale were two possibilities: 1) individuals completed their vocational or academic upper secondary qualification degree but were unemployed and not studying at the moment, or 2) they were not satisfied with their completed education (i.e., a student may be studying at the moment but is planning to apply somewhere else, or is working in a place related to his/her completed degree but is nonetheless going to apply for further studies). We expected (Hypothesis 4) that education-related goal motivation (i.e., autonomous motivation, goal effort, and goal progress) and satisfaction with an educational choice reduce the risk of dropping out of school (Black & Deci, 2000; Lazarides et al., 2017; Sheldon & Elliot, 2001; Vallerand & Bissonnette, 1992; Vasalampi et al., 2009).

Description of Educational Transitions Finnish School System

In Finland, children start their education at age six, in kindergarten. After the kindergarten year, they then progress to a comprehensive school where they continue studying for the next nine years. Thus, all Finnish adolescents receive a similar basic

education up to age 16. After this point, adolescents proceed to upper secondary education (either on the academic or vocational track). According to recent statistics, 53% of adolescents proceed on the academic track and 42% on the vocational track, while around 5% do not continue their studies (Central Statistical Office of Finland, 2016). Those who continue on the academic track attend upper secondary school for three years, after which they apply for the next transition to a university, a university of applied sciences, or a vocational school. Those who proceed on the vocational track attend vocational school for three years, after which they make the next key transition to employment or they apply to continue their studies at a university of applied sciences. The transition commencing at the end of students' upper secondary education (academic or vocational) is one of the most crucial times for young adults as it sets the stage for, and thus affects, their further educational and occupational trajectories as well as predicting their adaptation to society (Nurmi, 2004). Compared with educational transitioning in early adolescence, this transition can be very stressful for some adolescents because a successful academic experience or career is not assured. For example, in 2012, only 33.3% of all adolescents who graduated from Finnish upper secondary schools (academic track) succeeded in gaining entrance to a university (an academic university) or an university of applied sciences during their first year after upper secondary school; in 2014, as many as 20.5% of all students who graduated from vocational schools were unemployed one year after graduating from upper vocational school (Central Statistical Office of Finland, 2016). These problems can have several negative consequences for adolescents' lives. First, adolescents who cannot find work after their vocational qualification are on an uncertain life path because they need to deal with unstable or low-level employment that has dismal prospects of improvement. In addition, underemployment is detrimental because it can have as many negative consequences as unemployment has regarding individuals' well-being (for a review, see McKee-Ryan &

Harvey, 2011). Second, a moratorium or delay in upper secondary school studies can have a negative effect on other transitions in young people's lives (see, e.g., Nurmi, 2004).

Methods

Participants

This study is part of the ongoing XX longitudinal study (authors removed for review purposes, 2003–) that examines life planning, motivation and school transitions from middle adolescence to adulthood. At the beginning of the longitudinal study, the participants were lower secondary school students (15-year-olds) in Grade 9 facing the transition to post-compulsory education. After the transition, these students and all of their classmates answered questionnaires during their first and second year in upper secondary education (academic or vocational), as well as right after their upper secondary education (four years after lower secondary school). All students attended school in the same community in Central Finland.

For the present study, we used the data collected when the participants were in upper secondary school. At the beginning of our study, the participants were 16 years old and attending either an academic or vocational upper secondary school. They were surveyed three times: (1) in the first year of upper secondary school, (2) in the second year of upper secondary school, and (3) two years after the second measurement point when the participants should have completed the transition from secondary school to either further studies or working life. At the first measurement point, 1,520 (712 girls and 808 boys) students participated in the study, and at the second measurement point, 1,017 (500 girls, 517 boys) joined. Six hundred eighty-five of the students (45.1%) represented five different academic upper secondary schools, and 835 (54.9%) represented four different vocational upper secondary schools. At the third measurement point, 494 (265 girls, 229 boys) students participated in the study. The small number of participants at the third measurement point

was due to the fact that only the participants who had already been followed since Grade 9 were also assessed after their upper secondary education.

Analyses were conducted to compare those students who participated in all measurements with those who did not with respect to our key variables. The results of the *t*-test revealed that these groups did not differ in peer acceptance, parents' support, autonomous and controlled motivation, school satisfaction or their intention to drop out of school during their upper secondary education. However, they did differ in goal effort, goal progress and the outcome of the educational transition after their upper secondary education; those students who participated at all measurement times invested more effort [$t(420) = -2.72, p = .007, \text{Cohen's } d = -0.29$], progressed better in their educational goals [$t(420) = -2.92, p = .004, \text{Cohen's } d = -0.31$], and were more successful in their educational transition after upper secondary school than were those who did not participate [$t(492) = -2.15, p = .032, \text{Cohen's } d = -0.20$].

Measures

Peer acceptance (T1). Peer acceptance was measured using a sociometric procedure at the first measurement time. The level of peer acceptance was represented by the number of positive nominations each adolescent received, standardized by school size. Each student was able to freely name a maximum of three classmates (from the entire cohort in their school) with whom they would most like to spend time in school. Sociometric nominations have been shown to yield valid, stable and reliable assessments of peer acceptance during childhood (Bukowski, Cillessen, & Velasquez, 2012).

Perceived parental affective support (T1). Maternal and paternal support were measured at the first measurement time with a Finnish version (Aunola & Nurmi, 2004) of the Child Rearing Practices Report (Roberts, Block, & Block, 1984). The assessment refers to the extent to which parents show affective warmth, acceptance, and involvement.

Adolescents were asked to rate the maternal and paternal affective support they received with nine items (e.g., *My mother/father often shows me how much he/she appreciates the fact that I try to do or achieve something; My mother/father respects my opinion; My mother/father often shows that she/he loves me*). Items were rated on a scale ranging from 1 (*not at all*) to 7 (*completely*). Items were averaged to create the subscale score for maternal support ($\alpha = .91$) and paternal support ($\alpha = .93$).

Autonomous and controlled motivation, goal effort, and goal progress (T2). First, at the second measurement time, adolescents were asked to name one personal goal related to their education, future career or occupation by answering an open-ended question (*“Please state one personal goal related to your education, future career, or occupation”*; Nurmi, Salmela-Aro, & Koivisto, 2002; Salmela-Aro & Nurmi, 1997a). Second, the participants were requested to rate this educational goal in relation to eight appraisal items by using a seven-point scale ranging from 1 (*not at all for this reason*) to 7 (*completely for this reason*). These items reflected the following: (1) autonomous motivation (three items, *How important is this goal to you? Why are you trying to carry out this goal—because you enjoy carrying it out and you are interested in it? –because you really believe it is an important goal?*); (2) controlled goal motivation (two items, *Why are you trying to carry out this goal—because someone else wants you to or because the situation requires it? –because you would feel ashamed, guilty or anxious if you would not?*); (3) goal effort (two items, *How much time and effort have you spent on this goal? To what extent have you worked for your goal?*); and (4) goal progress (one item, *To what extent have you progressed toward achieving this goal?*). The Cronbach’s alpha reliabilities of these scales were .63 for autonomous goal motivation, .63 for controlled goal motivation, and .89 for goal effort.

School satisfaction (T2). In the second year of upper secondary school (second measurement time), academic or vocational, students’ school satisfaction was examined with

four items (e.g., *Are you satisfied with your current form of education?*). The items were rated on a five-point scale ranging from 1 (*not at all*) to 5 (*very much*), and a mean sum score was calculated for all four items. The Cronbach's alpha reliability of the scale was .87.

Intention to drop out of school (T2). In the second year of upper secondary school (second measurement time), academic or vocational, adolescents' intention to drop out of school was measured with two items (e.g., *Have you considered changing your school or field of study and quitting the current one?*). The items were rated on a four-point scale ranging from 1 (*not at all*) to 4 (*very often*). The Cronbach's alpha reliability of this scale was .78.

Successful transition (T3). Success in educational transition was assessed at the third measurement time with a variable that indicated whether the participants were able to complete an upper secondary qualification (i.e., an upper secondary school or vocational school qualification in the three normative years) and whether they were satisfied with their educational choice. The following categories were created: (1) did not complete any upper secondary qualification in the three normative years ($n = 29$; 5.9%), (2) completed an upper secondary qualification but did not progress beyond (e.g., is unemployed and not studying at the moment; $n = 120$; 24.3%), (3) completed a vocational or academic upper secondary qualification but is not satisfied with his/her education (i.e., may be studying at the moment but is still going to apply somewhere else, or is working in a place related to his/her completed degree but is going to apply for further studies; $n = 95$; 19.2%), and (4) had a successful transition (e.g., is studying further and not going to apply anywhere else, or is in a job related to his/her completed degree and has no plans to change or quit the job at the moment; $n = 250$; 50.6%).

Socioeconomic status (controlled for variable). The socioeconomic status of mothers and father was controlled for. Mothers and fathers were classified into different

socioeconomic status categories according to their occupations by using a standard classification system (Central Statistical Office of Finland, 1989). These classifications were coded as the following ordinal socioeconomic categories: (1) blue-collar professions, such as manual labor (12% of mothers and 34% of fathers); (2) lower-level white-collar professions, such as lower-level professional, managerial or administrative work (51% of mothers and 17% of fathers); and (3) higher-level white-collar professions, such as higher-level professional, managerial or administrative work (23% of mothers and 29% of fathers). All other occupations were coded as missing values (14% of mothers and 20% of fathers).

Statistical Analyses

Statistical analyses were performed using the Mplus statistical package (version 7; Muthén & Muthén, 1998–2017). The proportion of missing data in the variables at the first and second measurement time (T1 and T2) ranged from 16% to 34%. In turn, the proportion of missing data at the third measurement time (T3) was 68%, because only the participants who had already been followed since Grade 9 were also assessed after their upper secondary education. Missing at Random (MAR), which is a weaker condition of missing data than Missing Completely at Random (MCAR), was expected. In the MAR situation, missingness does not depend on the unmeasured variables, but it can depend on the values of the observed variables included in the analyses (Little, 1988; Rubin, 1974). When MAR was expected, the parameters of the models were estimated using full-information maximum likelihood estimation with non-normality robust standard errors (Muthén & Muthén, 1998–2017). The chi-square test (χ^2), comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) were used to evaluate the goodness-of-fit of the estimated model. Indirect paths from interpersonal environmental variables to outcome variables via motivational variables were examined using the *model indirect* command in Mplus.

We ran four models to examine the relations between the students' interpersonal environment, motivational constructs, and educational outcomes (Figure 1). In the first model (Hypotheses 1a and 1b), we tested the relations between the motivational constructs (i.e., between autonomous and controlled motivation, goal effort, and goal progress) with a simultaneous path model. In the second model, we tested the relations between the interpersonal environment and motivational variables with a recursive path model (Hypothesis 2). In this model, peer acceptance as well as maternal and paternal support during the first year of upper secondary school predicted autonomous and controlled motivation in the second year. In the third model (Hypotheses 3a and 3b), educational outcomes in upper secondary school (i.e., school satisfaction and the intention to drop out) were added to the model. The fourth model included additional analyses that tested whether peer acceptance, autonomous motivation, goal effort, goal progress, school satisfaction or intentions to drop out predicted success in the transition beyond upper secondary school (Hypothesis 4). Although models 1, 2 and 3 were also part of the final model (model 4), they were run first to ensure that the coefficients of the paths would not change when increasing the complexity of the model. We also reported the results of each model to provide a clear picture of the relations between all of the assessed constructs.

Results

Relations Between Motivational Constructs

In the following section, the results are reported in the order that the models were run, as described in the analysis strategy. The descriptive statistics of the variables in the models are presented in Table 1. The first step in our analyses involved examining the theoretical model between all motivational constructs. In model 1, goal effort was predicted by autonomous and controlled motivation, and goal progress was predicted by goal effort

(Figure 1). The indirect effects of autonomous and controlled motivation on goal progress via goal effort were also tested.

The result of the path model showed that the overall fit of the model was excellent: $\chi^2(2) = 9.45, p = .009$; CFI = 0.99; RMSEA = 0.06; SRMR = 0.02. The results (presented in Figure 2) showed that goal effort was significantly predicted by autonomous motivation, but not by controlled motivation. Furthermore, goal progress was significantly predicted by goal effort. These findings were also supported by the indirect model. The results of the indirect model showed a significant association (standardized indirect effect = .32, *s.e.* = 0.03, $p < .001$) between autonomous motivation and goal progress via goal effort. Contrastingly, the indirect path from controlled motivation to goal progress was non-significant (standardized indirect effect = $-.03$, *s.e.* = 0.02, $p > .05$).

Predicting Motivation with the Supportiveness of the Interpersonal Environment

In the second step, we added the factor of supportiveness of the interpersonal environment (i.e., mother's support, father's support, and peer acceptance) to the model as an antecedent to goal motivation. More specifically, autonomous and controlled motivation were predicted by peer acceptance and both mothers' and fathers' affective supportiveness. Goal effort, in turn, was predicted by autonomous motivation, and goal progress by goal effort (Figure 1).

The results of the path model 2 showed that the overall fit was good, once again: $\chi^2(14) = 32.13, p = .004$; CFI = 0.98; RMSEA = 0.03; SRMR = 0.04. The results (Figure 2) indicated that mothers' support played a role in adolescents' motivation. Mothers' high supportiveness was significantly related to adolescents' high autonomous motivation for their educational goals, whereas mothers' low support was associated with high controlled motivation. Furthermore, peer acceptance was statistically significantly related to high autonomous motivation in adolescents' educational goal pursuit. These results were also

supported by the indirect model. Statistically significant unique indirect paths were observed from mothers' support (standardized indirect effect = .04, *s.e.* = 0.01, $p < .001$), as well as from peer acceptance (standardized indirect effect = .02, *s.e.* = 0.01, $p = .03$), via autonomous motivation and goal effort to goal progress. Fathers' support, in turn, was neither related to adolescents' autonomous motivation nor to controlled motivation. In other words, after mothers' support was controlled for, fathers, on their own, were found not to have a unique effect on adolescents' motivation.

School Satisfaction and the Intention to Drop Out of Upper Secondary School

Next, as a third step, we added variables for school satisfaction and the intention to drop out of upper secondary school to the model as possible outcome variables (see Figure 1). The fit of the model 3 was acceptable: $\chi^2(20) = 67.75$, $p < .001$; CFI = 0.96; RMSEA = 0.04; SRMR = 0.05. However, to fit the model to the data as presented above, a direct path from autonomous motivation to school satisfaction had to be added. The results (Figure 2) showed, first, that education-related goal motivation was strongly related to adolescents' satisfaction with their educational choice (Figure 2). High autonomous motivation and high goal progress were related to high school satisfaction, whereas low goal progress was related to the intention to drop out of upper secondary school. Second, parents had different roles in this process. Fathers' high supportiveness was significantly related to adolescents' high levels of school satisfaction and to low intentions of dropping out. Contrastingly, mothers' high support was not related to either of these outcome variables, but the indirect model indicated a weak indirect effect of mothers' support on high levels of school satisfaction via motivational variables (standardized indirect effect = .01, *s.e.* = 0.01, $p < .001$) and low intentions of dropping out (standardized indirect effect = $-.007$, *s.e.* = 0.003, $p = .002$). Third, peer acceptance also played a role in adolescents' satisfaction with their educational track. High peer acceptance was related to adolescents' school satisfaction as well as to low

intentions of dropping out. The indirect effect model showed that the effect of peer acceptance was also partly mediated by motivation leading to greater school satisfaction (standardized indirect effect = .004, *s.e.* = 0.001, $p = .04$) and to lower intentions of dropping out (standardized indirect effect = $-.003$, *s.e.* = 0.001, $p = .05$).

All together, these results indicate that both autonomous motivation and the supportiveness of the interpersonal environment are significant determinants of adolescents' satisfaction with their educational choice. Adolescents' progress in their educational goals was reflected in their high levels of school satisfaction and low intention to drop out of upper secondary school. Furthermore, peer acceptance and high levels of fathers' support were particularly associated with school satisfaction and low intentions of dropping out of school, whereas mothers' support had only a small influence via adolescents' motivation.

Successful Transition Beyond Upper Secondary Education

In the last step, we used additional analyses to examine whether adolescents' interpersonal environment, motivation and satisfaction with their educational choice would predict their success in their educational transition beyond upper secondary school. We examined whether the students completed their upper secondary education in the three normative years and subsequently searched for and pursued higher education or obtained a relevant job, that is, after graduating from upper secondary school (academic or vocational) with a sense of satisfaction. Thus, we added a *successful educational transition* variable as an outcome variable to the model (see Figure 1). The model fit was acceptable: $\chi^2(23) = 81.40$, $p < .001$; CFI = 0.96; TLI = 0.92; RMSEA = 0.04; SRMR = 0.05. The results (Figure 2) showed that low intentions of dropping out of upper secondary school predicted successful educational transitioning beyond upper secondary school. Thus, the less adolescents had the intention to drop out of upper secondary school, the more likely they were to have a successful educational transition beyond their upper secondary education.

Other direct effects on successful educational transitioning were not found; that is, peer acceptance, maternal or paternal support, and students' motivational characteristics or school satisfaction did not directly predict students' success in the transition after controlling for the other predictors in the model. However, some significant indirect effects via drop-out intentions were detected. First, goal progress predicted successful transitioning via the intention to drop out (standardized indirect effect = .04, *s.e.* = 0.02, *p* = .01). Also, significant indirect effect of fathers' support on successful transitioning via the intention to drop out (standardized indirect effect = .04, *s.e.* = 0.02, *p* = .02) was found. Furthermore, a weak but significant indirect effect was found also of mothers' support on successful transitioning via motivational variables and via intentions of dropping out (standardized indirect effect = .002, *s.e.* = 0.001, *p* = .02). In addition, the indirect effect of peer acceptance via the intention to drop out was nearly significant (standardized indirect effect = .02, *s.e.* = 0.008, *p* = .053). Other indirect effects were not found.

Discussion

Inspired by SDT this study examined the extent to which affective support from mothers and fathers as well as peers' acceptance serve as antecedents to autonomous and controlled motivation in adolescents' educational goals, and, furthermore, whether these factors are associated with the students' satisfaction with their educational track and their degree of success in educational transitioning beyond upper secondary school (e.g., whether or not the students completed an upper secondary education, academic or vocational, and continued studying thereafter, and/or started working, and whether they were satisfied with their choice). The results indicated that adolescents' own individual motivational process plays an important role in whether they attain their educational goals. However, their interpersonal environment also significantly affects their goal attainment—it has an effect via

their motivation and directly affects their school satisfaction and success in educational goals.

In the following part, we discuss the results in more detail.

First, the results showed that when adolescents pursued their educational goals out of autonomous motivation, they also invested more effort in their goal. In turn, goal effort facilitated adolescents' progress in their educational goal. By contrast, controlled motivation was not related to goal effort or goal progress in the educational goal pursuit. These results are in accordance with our Hypotheses 1a and 1b, and with previous theoretical notions (Sheldon, 2002) and empirical evidence (Koestner et al., 2008), in that autonomous motivation was found to be particularly beneficial for achieving educational goals. More specifically, autonomous motivation in the context of a challenging transition helps individuals focus their personal resources on the demands and challenges of that particular transition (Freund & Baltes, 2000; Nurmi et al., 2002; Salmela-Aro & Nurmi, 1997b). However, although we did not find an association between controlled motivation and goal progress, this does not necessarily mean that controlled motivation does not have any impact on goal pursuit. We measured only one possible self-regulation process—that of effort as a mechanism between controlled motivation and goal progress. Nonetheless, controlled motivation possibly rather influences individuals' cognition and affect in challenging situations (as also suggested by Koestner, Otis, Powers, Pelletier, & Gagnon, 2008). For example, Gaudreau and colleagues (2012) found that controlled motivation negatively influenced coping, which, in turn, predicted lower education-related goal attainment. Several studies have also reported the negative association between controlled motivation and indicators of well-being (see, e.g., Ryan & Deci, 2000). Moreover, we did not examine the stability of autonomous versus controlled motivation in this research. In some studies, controlled motivation is defined as responsiveness to a specific situation (Zuckerman, Gioioso, & Tellini, 1988) and is therefore seen to exert a less stable influence on an

individual's behavior over time and across situations than does autonomous motivation (Koestner et al., 2008).

Second, as expected (Hypothesis 2), adolescents' individual motivational processes were influenced by their interpersonal environment. Particularly, high maternal affective support and peer acceptance were related to high autonomous and low controlled motivation with regard to adolescents' educational goal. This finding is consistent with SDT theory, which argues that the interpersonal environment can facilitate or forestall one's autonomous motivation by supporting versus thwarting the basic psychological need for autonomy, competence and relatedness (Ryan & Deci, 2000). Moreover, the results revealed that even when the joint variance of social relationships is controlled for, supportive parenting and peer acceptance each have a unique positive effect on students' autonomous motivation. However, it is important to note that the effect sizes of maternal support and peer acceptance on adolescents' autonomous and controlled motivation were rather small (.03 and .02, respectively). The small effect sizes concerning parents and peers may be due to the fact that we assessed parents' affective support and peer acceptance in general. Affective parental or peer support focusing particularly on education and educational goals might have produced larger effect sizes. Nonetheless, it is also possible that there are some other salient predictors that were not included in our model, and associations between other predictors and adolescents' motivation shaping their educational goals should be examined in more detail in the future.

Third, the results further showed that greater progress in adolescents' educational goals was reflected in their high levels of school satisfaction and in low intentions of dropping out of upper secondary school (academic or vocational). In turn, a low intention to drop out of upper secondary school directly predicted the achievement of a successful educational transition beyond upper secondary school. These findings support our hypotheses

(Hypothesis 3a and 4) and resemble those of previous research on the consequences of goal appraisal in life-stage transitions (e.g., Nurmi et al., 2002; Salmela-Aro & Nurmi, 1997b; Vasalampi et al., 2009; Vasalampi et al., 2012). For example, in a previous study concerning the transition to university, Vasalampi and colleagues (2012) showed that the higher young adults in school appraised their progress toward their educational goal, the more likely they were to ultimately be successful in their transition to university. These findings further suggest that inner resources are particularly important for goal attainment when people pursue challenging goals in which external factors play a significant role (see also Locke & Latham, 2002).

Moreover, the variable for the intention to drop out also acted as a mediating mechanism between adolescents' interpersonal environment or motivation and the outcome of the challenging transition. The results revealed small but significant indirect effects of goal progress and of fathers' support on success in the transition via low intentions of dropping out. Furthermore, a weak but significant indirect effect of mothers' support on success in the transition via students' high motivation and low intention to drop out was found. These findings support our hypotheses (Hypotheses 3b and 4) and suggest that too much lack of interpersonal support may increase students' thoughts of quitting or changing study field during their upper secondary education, which, in turn, also increases the risk of not succeeding in the transition beyond upper secondary school.

However, previous studies have been inconsistent in their findings regarding the role of parents during children's adolescence. Some studies have demonstrated that the influence of parents on their adolescent children decreases as these young people progress along their educational trajectory (Larson & Richards, 1991; Steinberg & Silverberg, 1986), whereas others have shown that affective support from parents is a critical resource throughout their children's adolescence (e.g., Wang & Eccles, 2012). Although the effect sizes of support

from mothers and fathers were quite small in general, the effect size of mothers' support was larger than for that from fathers. This confirms the results of Wang and Eccles (2012) that examining the effect of the support from mothers and fathers separately is important because parents appear to play different roles in their children's educational transitions (see also Duineveld et al., 2017). While mothers influenced their adolescent children's educational goals particularly via the children's motivation, fathers' support was directly associated with school satisfaction and low intentions of dropping out of school. Thus, adolescents benefit from affective support regardless of which parent it comes from; at the same time, these findings indicate that adolescents' interactions with their mother and father differ: father-child interactions are more focused on achievement, mastery, and skill development than is the case in mother-child interactions (Collins & Russell, 1991; Guay, Ratelle, Larose, Vallerand, & Vitaro, 2013). Mothers, on the other hand, may spend more time actively interacting with their children in daily life, thus influencing their children's individual motivational processes related to their education more so than fathers do (Grolnick & Ryan, 1989).

Interestingly, the role of peers in students' educational goal was twofold: high peer acceptance was associated with adolescents' autonomous motivation in their educational goal, as well as with their school satisfaction and low intentions of dropping out of school. Adolescents have previously been shown to share their educational goals with their peers (Kiuru, Nurmi, Aunola, & Salmela-Aro, 2009), and they resemble each other in many academic characteristics, such as educational expectations (Kiuru, Aunola, Vuori, & Nurmi, 2007) and college attendance (Hallinan & Williams, 1990). Peers also have a longitudinal effect on one another's educational trajectories. For example, Kiuru and colleagues (2012) found that peers' educational expectations at age 16 predicted adolescents' educational attainment at age 26. Our results broaden those of previous research by showing that peers

not only influence students' goals but also affect their inner motives for reaching such goals; and our results showed that peer support is important when adolescents are facing critical transitions. Furthermore, our results reveal that peer acceptance has a unique effect after controlling for effects of maternal and paternal affective support, although the effect size of peer acceptance was small. One explanation for this result may relate to the fact that, in this study, we were not able to control for the attitudes of or similarities between peers but rather assessed peer acceptance in general.

Practical Implications

As for practical implications, the present study indicates that adolescents' intention to drop out of school should be considered seriously. Students with such an intention should be, first, identified, and second, be provided support for their educational and vocational choices. According to our present results, the students who have the intention to discontinue or change their study field while in upper secondary school are more likely to not continue their education or enter to working life when faced with the challenging transition thereafter. In other words, such intentions are likely to have a behavioral outcome. Particularly at risk may be the students who do not receive support from their significant others, such as parents and peers. Those students may need assistance beyond informal guidance from their parents and peers at the end of comprehensive school in order to choose a field along the educational or vocational track that is in accordance with their own autonomous motivation. However, it is important that the educational choice is based on the adolescent's own internal motivation. When making efforts to externally motivate an adolescent toward a particular educational goal that is not in line with the individual's own interests, the risk that the adolescent might drop out of school later on is increased because controlled educational goals are not as likely to be progressed as autonomous educational goals are.

Limitations

This study has several limitations that should be considered when generalizing the results. First, the models were not fully cross-lagged models and as such did not allow the testing of firm causal hypotheses. Second, only the effects of peers and parents were examined. In future, examining the impact of other types of environments on adolescents' educational transitions is important. For example, adolescents may be more likely to invest more effort in their educational goals if their teachers are sufficiently supportive during their upper secondary education. Third, the reliabilities of the autonomous and controlled motivation scales were somewhat low and may have thus decreased the statistical power of the path models. Finally, the participants were asked to state only one personal goal related to their education, future career, or occupation. Therefore, controlling for which of these three areas—education, occupation, or career—was related to each individual's reported main goal was impossible. For future research, separately examining the role of the interpersonal environment in autonomous versus controlled motivation regarding each of these areas would be of interest. Possibly, some goals may be more optimal for autonomous motivation than others.

Conclusions

This study broadens previous research in the field of SDT theory by showing that perceived affective support in general can influence adolescents' educational outcomes via motivational processes. However, perceived affective support can also directly affect adolescents' satisfaction with their educational choice. Thus, the present study increases our understanding about interpersonal environment in adolescents' educational attainment by showing that maternal and paternal support, as well as peer acceptance, each play a unique but somewhat different role in adolescents' educational goals during challenging educational transitions.

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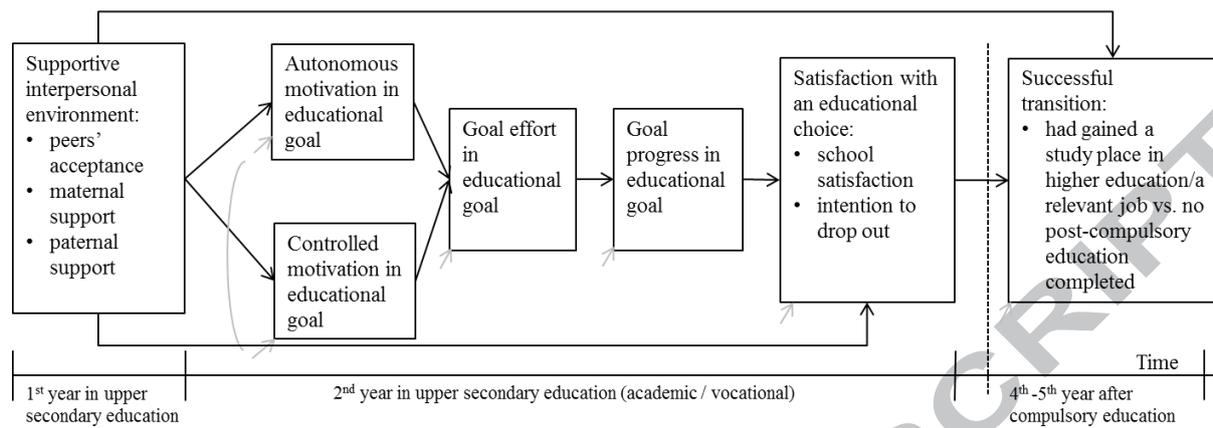


Figure 1. Hypothesized path model.

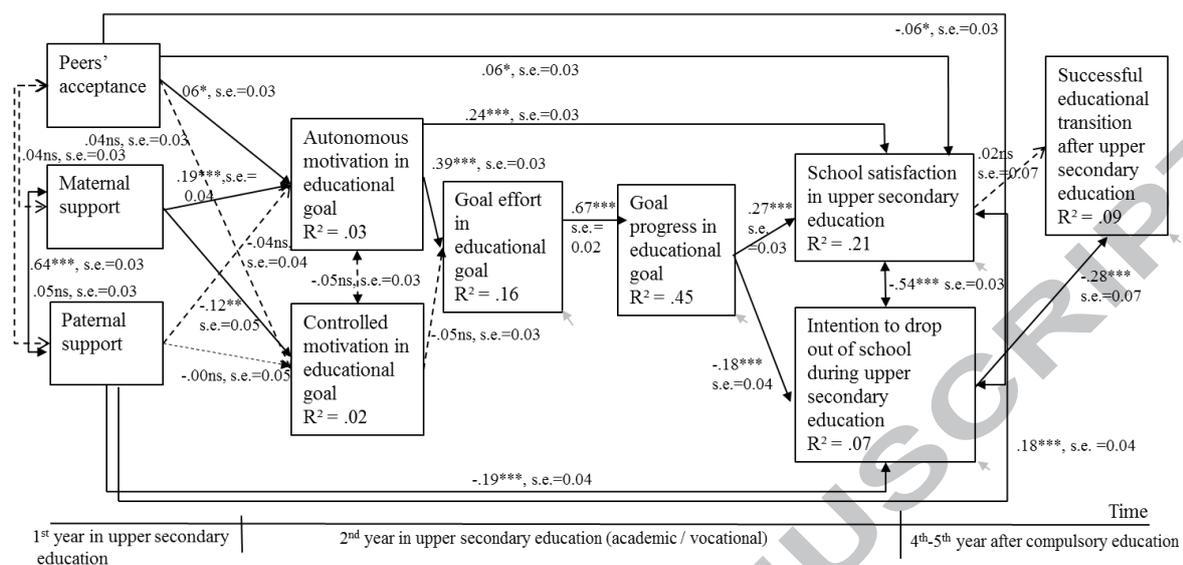


Figure 2. Final model.

Note. Statistically non-significant paths are marked with dotted lines.

Table 1

Correlations, Means (M), Standard Deviations (SD), and Effect Sizes (R²) for the Observed Variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. Peer acceptance (T1)	1.00									
2. Maternal support (T1)	.04	1.00								
3. Paternal support (T1)	.05	.64***	1.00							
4. Autonomous motivation (T2)	.07*	.17***	.08*	1.00						
5. Controlled motivation (T2)	.05	-.08*	-.03	-.07*	1.00					
6. Goal effort (T2)	.00	.14***	.12**	.40***	-.08*	1.00				
7. Goal progress (T2)	-.03	.14***	.12**	.33***	-.08*	.67***	1.00			
8. School satisfaction (T2)	.08**	.22***	.22***	.41***	-.10**	.34***	.36***	1.00		
9. Intention to drop out (T2)	-.17*	-.18***	-.20***	-.24***	.16***	-.16***	-.20***	-.58***	1.00	
10. Successful transition (T3)	.04	.06	.08	.18**	-.10	.17***	.17**	.20***	-.30***	1.00
<i>M</i>	1.92	5.44	5.06	5.78	2.46	4.78	4.99	3.92	1.54	2.12
<i>SD</i>	1.56	1.16	1.36	0.99	1.46	1.20	1.20	0.75	0.64	0.99

Note. * $p < .05$, ** $p < .01$, *** $p < .001$; T1 = first year in upper secondary education, T2 = second year in upper secondary education. The level of peer acceptance was represented by the number of positive nominations each adolescent received, standardized by school size. The scales of maternal and paternal support, autonomous and controlled motivation, goal effort, and goal progress ranged from 1 to 7; the scale of school satisfaction ranged from 1 to 5; and the scales of intention to drop out and successful transitioning ranged from 1 to 4.

Highlights:

- Autonomous motivation plays an important role in educational goal attainment
- Different interpersonal environments have unique roles in goal attainment
- Mothers' support facilitates adolescents' autonomous motivation
- Fathers' support correlates with school satisfaction and low intention to drop out
- Peer acceptance is related to adolescents' motivation and school satisfaction