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The Role of Academic Performance, Self-Concept of Ability and Gender in Adolescents' Educational Plans in Finland

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Introduction

Transition phases in school career are critical time points in terms of planning and guiding future educational pathways. Plans and decisions made during these transitions may have a long-term influence on individuals' future educational choices, occupational careers and life-span development overall. Previous literature shows that students' self-concepts of ability, that is, how students' see their abilities in certain academic areas or subjects, act as important predictor of their future plans and choices: individuals are more likely to choose educational paths in which they believe in their abilities (e.g. Eccles, 2009; Simpkins et al., 2006). In addition to these ability perceptions, students' actual academic performance affects their educational choices (e.g. Chow et al., 2012). Although gender differences in performance and self-concept of ability have been reported (e.g. Wigfield & Eccles, 2002), more research is needed on whether performance and self-concepts are similarly related with each other among boys and girls and whether the role of these

predictors is the same for both sexes in respect to future educational plans. This research aims to further contribute to this area in the context of Finnish school system.

The Finnish school system differs from its counterpart in many European countries and the United States. Finnish education policy has systematically highlighted the importance of raising the general standard of education and promoting educational equality. According to this policy all students should go to common comprehensive schools, share the same curriculum, and learn together as long as possible (Lavonen & Laaksonen, 2009). Therefore, at age 7, all Finnish children start compulsory comprehensive school which divides into a lower (grades 1-6) and an upper level (grades 7-9). After comprehensive school, the large majority of adolescents continue their secondary education for further three years, either in upper secondary school or in vocational school. The selection between these options is very much based on students' school success but there is also room for their own motivation (e.g. Viljaranta, Nurmi, Aunola, & Salmela-Aro, 2009). Those students who complete upper secondary school typically go on to universities or polytechnics. Those who complete vocational school either enter the labour market or go on to polytechnics. Therefore, the transition from grade 9 to further education is a critical one and the preceding grades 7 to 9 can be seen as important phase of the development of not only academic skills or academic self-concepts but also future plans.

In this research we wanted to examine whether there are gender differences, first, in the cross-lagged associations between either mathematics or Finnish language related performance and self-concepts and, second, in the role that self-concepts and performance play in relation to Finnish students' educational plans at the time they are facing a transition from compulsory education to secondary education at the age of 16.

Method

Participants

This study is a part of the larger ongoing Jyväskylä Entrance into Primary School (JEPS) study, which aims to examine the development and role of students' motivation and academic performance during compulsory comprehensive education (between ages 6-16). The sample of the study consists of students from two medium-sized districts in central Finland.

For this presentation, 280 students (134 girls, 146 boys) were surveyed once at grade 7 (age 13-14) and again at grade 9 (age 15-16). At both time points students filled in a questionnaire concerning their math and Finnish language performance (grades) and related self-concepts of ability. At grade 9 they also reported their future educational intentions.

Measures

Performance. In Grade 7 and Grade 9 students were asked to report their grade (4-10) in mathematics and Finnish language from the preceding term (i.e. from the preceding autumn).

Self-concept of ability. In Grade 7 and Grade 9 students filled in a questionnaire (based on the ideas presented by Eccles & Wigfield, 1995) where they were asked 1) How good are you at mathematics / Finnish language?, 2) How good do you think you are at mathematics / Finnish language compared to the other students in your class?, and 3) How hard are tasks related to mathematics / Finnish language for you?. The response scale was from 1 to 5. The Cronbach alpha reliability for self-concept in mathematics were.87 in Grade 7 and .89 in Grade 9. The reliability for self-concept in reading was .81 in Grade 7 and .81 in Grade 9.

Educational plans.

Short term educational plans were examined at Grade 9 by asking participants to fill in a questionnaire about what kind of secondary education they were aiming at participating. These answers were coded using 4 categories: 4 = upper secondary school (academic track, N = 114; 52,8 %), 3 = vocational school (vocational track, N = 98; 45,4 %), 2 = 10th grade (extra courses in comprehensive school in order to enhance grades, N = 3; 1,4%), or 1 = no further education (N = 1; 0,5%).

Long term educational plans were examined at Grade 9 by asking the participants to state the highest level of education they expected to attain by choosing from one of the following alternatives: (4) university degree (N = 69; 37,5%), (3) polytechnic degree (N = 53; 28,8%), (2) final certificate from vocational school (N = 49; 26,6%), (1) certificate from upper secondary school (N=12) or no further qualifications after comprehensive school (N=1) (N = 13; 7,1%).

Analyzing procedure

Path analyses were used to examine the cross-lagged relationships between performance and self-concept of ability in mathematics and Finnish language, separately. Educational plans were added to the model as outcome measures. Multigroup models examined gender moderation in the aforementioned associations. The analyses were done by using Mplus program (Muthén & Muthén, 1998-2012).

The cross-lagged path analyses were conducted in three phases. First, four alternative cross-lagged associations of academic performance with self-concept of ability were tested: 1) a stability model without predictive paths, 2) an autoregressive model for academic performance with a predictive path from self-concept of ability at Grade 7 to academic performance at Grade 9, 3) an autoregressive model for self-concept of ability with a predictive path from academic performance at Grade 7 to self-concept of ability at Grade 9, and 4) a reciprocal model with both predictive

paths. The concurrent associations between the investigated constructs were also included in the tested models. Models 1–3 were nested under Model 4, while Model 1 was also nested under Models 2 and 3. Second, the outcome measure of educational/career plans was added to the model that turned out to be the best of the four nested models according to χ^2-difference test, AIC, BIC and aBIC. Third, gender differences in the associations between academic performance, self-concept of ability and educational/career plans were examined by using multigroup option. Only the final models are presented here. For model fit indices, standardized estimates for estimated paths, and bootstrapped confidence intervals for testing statistical significance of indirect paths, see Figures 1, 2, 3 and 4.

Results

Mathematics. The results concerning mathematics showed, first, that adolescents' academic performance and self-concepts of ability positively predicted each other from grade 7 to grade 9. Second, both academic performance and self-concepts predicted short-term educational plans: the higher performance at Grade 9 and higher self-concept at Grade 7 in mathematics predicted higher short-term educational plans (Figure 1). However, self-concept at Grade 9 did not predict short-term educational plans. Also, no gender differences were found in these relations. Third, the results concerning long-term educational plans showed that again both academic performance and self-concepts predicted long-term educational plans: the higher performance at Grade 9 predicted higher long-term educational plans. Self-concept, in turn, predicted long-term educational plans so that the higher was the mathematics self-concept at Grade 9, the lower were students' long-term educational plans (Figure 2). No gender differences were found in these relations.

Finnish language. The results concerning Finnish language showed, first, that adolescents' academic performance and self-concepts of ability positively predicted each other from grade 7 to

grade 9, although self-concept at Grade 7 predicted academic performance at Grade 9 only among boys. Second, both academic performance and self-concepts predicted short-term educational plans: the higher performance at Grade 9 and higher self-concept at Grade 7 in Finnish language predicted higher short-term educational plans (Figure 3). Together these results indicate that self-concept of ability contributes to short-term educational plans directly among both girls and boys, whereas among boys self-concept of ability affected future plans also statistically significantly indirectly via their performance level: the higher their self-concept of ability related to Finnish language at grade 7, the higher was performance at grade 9, which then predicted higher short-term educational plans. Self-concept at Grade 9 did not predict short-term educational plans. Third, in the case of long-term educational plans the results showed somewhat similar pattern than in the case of short-term educational plans: both academic performance and self-concepts predicted long-term educational plans but some gender differences occurred: Self-concept of ability at Grade 7 predicted long-term educational plans directly and positively among both boys and girls, whereas among boys self-concept of ability at Grade 7 affected future plans also indirectly via their performance level at Grade 9. In addition, self-concept at Grade 9 predicted positively girls' long-term educational plans (Figure 4). When the indirect effect from performance level at Grade 7 to long-term educational plans via self-concept at Grade 9 was tested, the results showed that this effect was statistically significant among girls. In addition, higher performance at Grade 9 predicted higher long-term educational plans among both boys and girls.

Discussion

The present study aimed to examine whether the role that academic performance and self-concept of ability play when adolescents are planning their future education is similar for boys and girls in two different school subjects, that is, in mathematics and Finnish language, in the context of Finnish school system. The results showed that the role of performance and self-concept is similar for boys and girls in the case of mathematics but not in Finnish language. In Finnish language girl' self-

concept of ability directly predicted their future plans, which was partly true also among boys.

However, among boys their self-concept of ability predicted their plans also indirectly via their

performance, whereas among girls their performance predicted their plans indirectly via self-

concept of ability. These results indicate, for example, that boys and girls differ in their rationales

for planning their future education but also that boys and girls might benefit from different kinds of

support aimed to enhance either their performance or self-concepts during critical educational

transitions.

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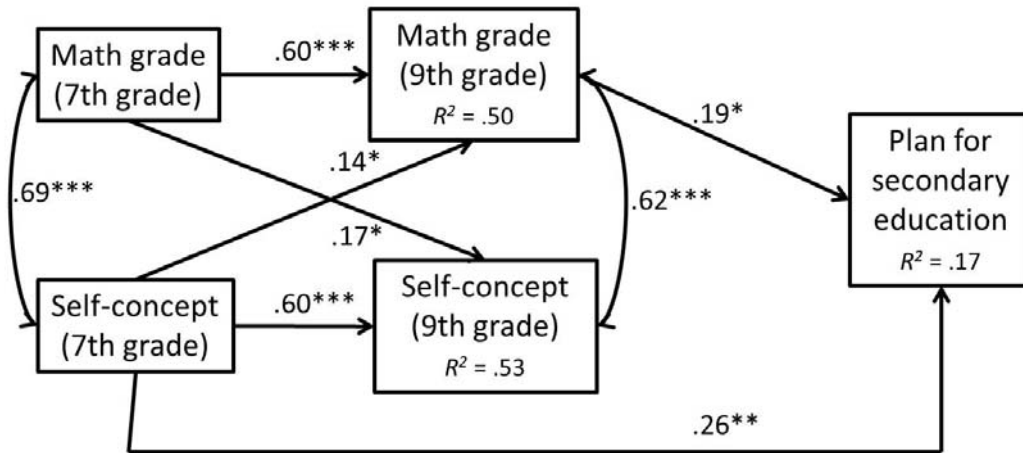
Figure 1. Model for mathematics: predicting short-term educational plans.

$X^2(2) = 0.76$, $p = 0.68$, $CFI = 1.00$, $TLI = 1.02$, $RMSEA = 0.00$ [, SRMR = 0.01; N = 264
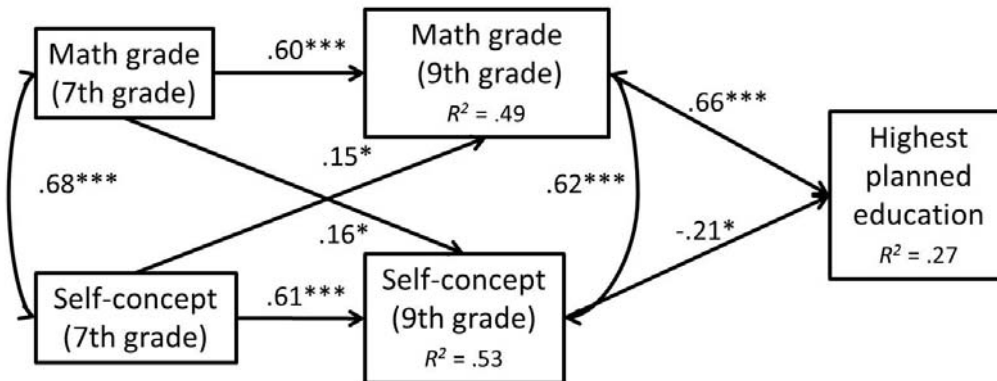
Note. *** p < .001, ** p <.01, * p < .05

Figure 2. Model for mathematics: predicting long-term educational plans.

$X^2(2) = 2.16$, $p = 0.34$, $CFI = 1.00$, $TLI = 1.00$, $RMSEA = 0.02$, SRMR = 0.02; N = 264
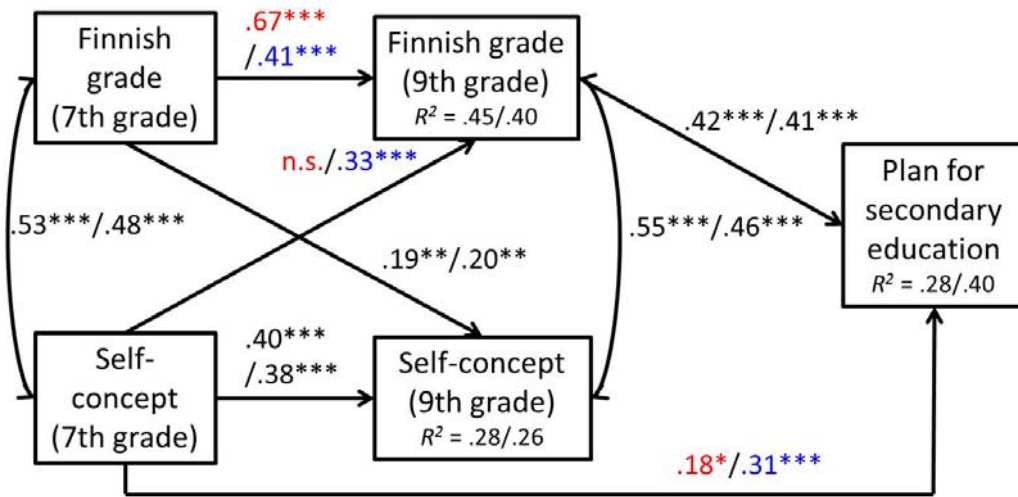
Note. *** p < .001, ** p <.01, * p < .05

Figure 3. Model for mathematics: predicting short-term educational plans.

$X^2(9) = 6.85$, $p = 0.65$, $CFI = 1.00$, $TLI = 1.02$, $RMSEA = 0.00$ [90% lv 0.00; 0.08], SRMR = 0.04

The estimates are first presented for girls, then for boys. $N_{girls} = 120$, $N_{boys} = 128$.

Bootstrapped confidence intervals for testing statistical significance of indirect path from Self-concept Grade 7 to Plan for secondary education via Finnish grade Grade 9 among boys: 0.13 (0.08; 0.19, p < .01).
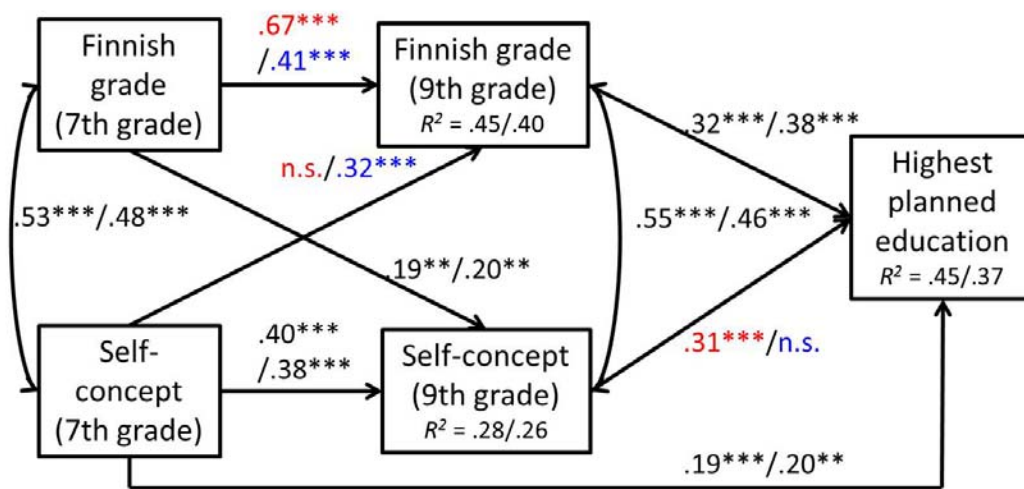
Note. *** p < .001, ** p <.01, * p < .05

Figure 4. Model for mathematics: predicting long-term educational plans.

$X^2(8) = 4.79$, $p = 0.78$, $CFI = 1.00$, $TLI = 1.03$, $RMSEA = 0.00$, $SRMR = 0.03$

The estimates are first presented for girls, then for boys. $N_{girls} = 120$, $N_{boys} = 128$.

Bootstrapped confidence intervals for testing statistical significance of indirect path from Self-concept Grade 7 to Highest planned education via Finnish grade Grade 9 among boys: 0.12 (0.04; 0.21), p < .01.

Bootstrapped confidence intervals for testing statistical significance of indirect path from Finnish grade Grade 7 to Highest planned education via Self-concept Grade 9 among girls: 0.06 (0.01; 0.10), p < .05.

Note. *** p < .001, ** p <.01, * p < .05