



Changes in achievement values from primary to lower secondary school among students with and without externalizing problems[☆]



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ABSTRACT

This study examined the effect of students' externalizing problems on changes in values that they attach to math across the transition from primary to lower secondary school. Data pertaining to externalizing problems and to intrinsic, attainment, and utility values in math were gathered using the self-ratings of students in Grades 6 and 7. The analysis involved a comparison between students who reported persistent high externalizing problems before and after the transition ($n = 63$; 59% boys) and those who had low or non-existent externalizing problems before and after the transition ($n = 1352$; 50% boys). The results of a mixed-design analysis of covariance (ANCOVA) showed uniformly that students with high externalizing problems had lower intrinsic, attainment, and utility values in math than students with low or no externalizing problems. As the students progressed across the lower secondary transition, the attainment value in math showed a steeper decreasing trend in students with high levels of externalizing problems compared to the declining trajectory of students without such problems. We also found that the utility value decreased across transition, but the declining trend was steeper for students manifesting a high level of externalizing problems, particularly for boys. Overall, the results provide a better understanding of developmental trajectories of achievement values during the transition from primary to lower secondary school. Declining trends in achievement values are pronounced among students with a high level of externalizing problems, and boys with such problems are the most vulnerable group of students.

1. Introduction

A large number of studies have focused on the transition from primary to middle or secondary schools (for a review, see Eccles et al., 1993), which typically takes place between the ages of 10 to 13 years, depending on the educational system. The evidence indicates that this transition is challenging for many students due to increasing academic demands, the exposure to a larger student body and unfamiliar teachers, and educational practices that do not optimally meet early adolescents' changing emotional, cognitive, and social needs (Eccles et al., 1993; Simmons & Blyth, 1987). A much smaller amount of research has examined the unfolding of the transition as a function of individual students' characteristics. For instance, we know very little about how students with externalizing problems navigate the

transition. Yet these students have typically faced considerable academic, social, and motivational challenges in their earlier school careers and thus may be at risk for less successful negotiation of the changes associated with this educational transition. Consequently, the present study seeks to examine the extent to which externalizing problems moderate the changes in students' learning motivation, defined in terms of students' achievement values in math, during the transition from primary to lower secondary school. The study was based on a longitudinal data set following students across the secondary school transition in the Finnish educational context.

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1.1. Secondary school transition among students with externalizing problems

Research shows that there are systematic differences between primary and secondary classrooms and schools (Eccles & Roeser, 2009). In Finland, as in many other countries, students entering the lower secondary grades often move from a smaller primary school environment to a larger secondary school. This change in school setting is also accompanied by transformations in social relationships with their peers (Hardy, Bukowski, & Sippola, 2002; Pellegrini & Bartini, 2000) and teachers. In primary schools, classroom teachers are responsible for the instruction of all or most subjects, whereas in secondary schools, students are instructed by a number of subject-specific teachers who are experts in their respective fields. In addition, these secondary school teachers tend to emphasize achievement orientation and performance goals more than their primary school counterparts (Anderman & Midgley, 1997). Because of the high number of students that they instruct, they are not likely to get to know their students as well as primary classroom teachers do and provide them with the same extent of individual support, resulting in a high demand for students to perform academically in an independent manner. The entrance into lower secondary school introduces students to new classroom compositions and exposes them to a larger student body, calling for adaptation that, for some students, can be challenging and difficult.

Not surprisingly, the literature documents significant negative changes in adolescents' adaptation following the secondary school transition. These changes include decreases in academic achievement (Alsbaugh, 1998), increases in psychological distress and worrying (Chung, Elias, & Schneider, 1998; Zeedyk et al., 2003) and declines in self-esteem, self-efficacy, and self-concept of ability (Bouffard, Boileau, & Vezeau, 2001; Seidman, Allen, Aber, Mitchell, & Feinman, 1994; Wigfield, Eccles, Mac Iver, Reuman, & Midgley, 1991). The research on transition effects does not, however, only describe negative changes. Crockett et al. (1989, p. 182) suggest that moving out of elementary school may also “generate, mobilize, or enhance the development of internal resources and abilities.” Adolescents expect leaving primary school to be somewhat stressful, but they generally consider it to be a desirable change; positive remarks by students outnumber negative comments after students have completed the entrance to lower secondary school (Berndt & Mekos, 1995; see also Gillison, Standage, & Skevington, 2008).

Prior research suggests that minority students and students with other vulnerabilities (e.g., family poverty, low parental education, and low school quality) may struggle more across the secondary school transition than other students (Benner & Graham, 2009; Burchinal, Roberts, Zeisel, & Rowley, 2008; Espinoza & Juvonen, 2011). The specific interest of the present study is on examining the transition of students with externalizing problems, which refer to a range of disruptive behaviours, such as aggressiveness, defiance, oppositional behaviour, and attention deficit problems. Externalizing problems are often defined as comprising two primary externalizing domains: conduct problems and hyperactivity/inattention (Campbell, Shaw, & Gilliom, 2000; Hinshaw, 1992; McMahon, 1994). Students with high levels of such problems frequently have primary school histories that include poor relationships with teachers (Henricsson & Rydell, 2004; Pakarinen et al., 2017) and peers (Laird, Jordan, Dodge, Pettit, & Bates, 2001), increasing internalizing problems, poor academic competence (Moilanen, Shaw, & Maxwell, 2010), low persistence in learning tasks and little interest in key academic subjects, such as reading (Metsäpelto et al., 2015, 2017).

These findings are in line with suggestions that externalizing problems increase vulnerability to poor functioning in many domains of adolescents' lives (Moilanen et al., 2010). Students manifesting externalizing problems may, thus, experience even greater declines in adaptation and learning motivation after the transition than are experienced by most students. Such negative development is expected to

particularly affect students who manifest a high degree of persistent problem behaviours. The present study will focus specifically on students displaying a high or very high level of externalizing problems before and after transition to lower secondary school. Although, on average, externalizing problems decrease from preschool age to young adulthood (Bongers, Koot, van der Ende, & Verhulst, 2003), the more severe problem behaviours are resistant to change and can predict a high degree of adjustment problems later in life (Campbell et al., 2000; Moffitt, Caspi, Harrington, & Milne, 2002).

1.2. Changes in achievement values across the secondary transition

According to Elder (1998), transitions, and the success with which individuals negotiate them, represent significant developmental milestones that—in case of a concatenation of disadvantages—may serve to negatively influence development and lead to an accumulation of problems. One indicator of emerging difficulties in the secondary school transition is a declining motivation to learn. In this study, we will focus on students' achievement values, which refer to students' enjoyment while performing an activity (intrinsic value), the personal importance of doing well in a task (attainment value), and importance of the activity for current and future goals (utility value) (Eccles & Wigfield, 2002; Wigfield & Eccles, 2000). Achievement values are often linked to specific academic domains, with one of the key domains studied in relation to school transitions being math (Burchinal et al., 2008; Friedel, Cortina, Turner, & Midgley, 2010; Midgley, Feldlaufer, & Eccles, 1989). Although math performance builds largely on complex cognitive abilities (Taub, Keith, Floyd, & McGrew, 2008), it is also promoted by motivational processes such as a student's valuing of the math tasks, which fosters sustained engagement and persistence in those tasks (cf. Lau & Roeser, 2002).

Previous studies show that achievement values in math are negatively affected by school transitions, which may partly be explained by changes in the learning environment. For instance, Feldlaufer, Midgley, and Eccles (1988) reported that after transition to junior high school, students perceived their math teachers to be less supportive than the teachers they had the previous year. Using a longitudinal sample of 9- to 17-year olds, Gottfried, Fleming, and Gottfried (2001) found that intrinsic motivation in math showed the greatest decline across the transition from primary to middle school in comparison to other subjects (e.g., science and reading). In another study, Wigfield and Eccles (1994) used a large sample of young adolescents to examine how the transition to lower secondary school affected students' valuing of different school subjects. Both the importance and the liking of English and math declined immediately after the transition, and for math, the students' importance and liking ratings continued to decrease during the first year of lower secondary school. The liking and perceived importance of English, however, were found to increase in the long run, which is indicative of the rebound effect. Together, these prior findings indicate that achievement values in math may be especially vulnerable to negative transition effects. They also suggest that the timing of data collection waves in longitudinal follow-up studies influences the findings on transition effects.

As children progress through the school system, they face an increasing emphasis on competition and evaluation, which may lead them to devalue tasks and activities in which they do not perform well (Wigfield & Cambria, 2010). Children exhibiting higher externalizing problems tend to have difficulties in developing math skills (e.g., Adams, Snowling, Hennessy, & Kind, 1999; Zimmermann, Schütte, Taskinen, & Köller, 2013), which may lead to a decreasing trajectory of intrinsic value in math. Furthermore, as part of the gradual process of disconnecting from school that eventually increases the risk of having low educational aspirations and dropping out of school (McLeod & Kaiser, 2004), students displaying externalizing problems may also have specific difficulties in sustaining utility and attainment value in math. The transition to lower secondary grades may thus entail

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