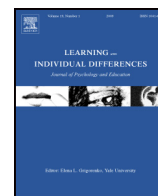




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# How an early transition to high-ability secondary schools affects students' academic self-concept: Contrast effects, assimilation effects, and differential stability

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## ABSTRACT

The aim of this study was to examine the operation of contrast and assimilation effects, and the development of academic self-concept of two groups of students in the education system of the German federal state Berlin. One group of students ( $N = 1757$ ) experienced an early transition to high-ability secondary schools while the other group ( $N = 3168$ ) experienced the regular transition after sixth grade. Academic self-concept was measured twice in both groups. The early transition was found to bear an assimilation effect on academic self-concept which was stronger than the contrast effect immediately after early transition but weaker at the end of the first school year after early transition. The early transition did not affect the normative stability of academic self-concept. Students who transitioned early displayed higher levels of academic self-concept at both measurement points but demonstrated a more substantial decline in academic self-concept over time than students experiencing regular transition. In the context of the debate on tracking and acceleration practices in education systems, this study contributes to the understanding of consequences of an early transition to high-ability secondary schools.

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Academic self-concept, defined as a student's perception of his or her academic competence, constitutes a prominent construct which has been investigated in numerous studies (e.g., Marsh & Craven, 1997, 2006). Academic self-concept has been found to facilitate a wide range of desirable outcomes. For example, academic self-concept has been demonstrated to share positive reciprocal relations with academic achievement (Marsh & Craven, 2006), and has been found to be related to interest (Marsh, Trautwein, Lüdtke, Köller, & Baumert, 2005), motivation (Skaalvik & Rankin, 1995), attributions of success and failure (Marsh, 1984), aspirations (Nagengast & Marsh, 2012), and effort (Trautwein, Lüdtke, Schnyder, & Niggli, 2006). Academic self-concept thus plays a pivotal role in educational psychology, as the enhancement of academic self-concept might contribute to the promotion of other desirable outcomes.

## 1. Formation of academic self-concept

Social comparison processes are known to play a pivotal role in the formation of academic self-concept (e.g., Marsh, 1990; Marsh &

Craven, 2002; Möller, Pohlmann, Köller, & Marsh, 2009) which were found to entail two effects: contrast and assimilation effects.

### 1.1. Contrast effects

Contrast effects on students' academic self-concept have been investigated primarily in the context of research on the big-fish-little-pond effect (BFLPE; e.g., Marsh, 1987). In this case, social comparison processes are assumed to yield differential effects on the individual (student) level and the group or context (class-average or school-average) level. Given that students compare their own achievement in one school subject with the achievement of other students in the same subject, high achievement leads to high levels of academic self-concept on the individual level. In addition, students compare their own achievement with the average achievement of the group to which they belong (within-group comparison; Liu, Wang, & Parkins, 2005), leading to a negative effect of achievement on academic self-concept on the context level. Equally able students display low levels of academic self-concept in high-ability contexts, but high levels of academic self-concept in low-ability contexts. A student who is consistently confronted with better achieving students (i.e., with high class-average or school-average levels of achievement) might develop a poor academic self-concept, as this student always perceives his or her own accomplishments to be inferior to those of

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the other students. Conversely, the same student might perceive his or her accomplishments as above average in low-ability contexts, strengthening his or her academic self-concept. The BFLPE has been validated empirically in numerous studies (Marsh & Craven, 2002; Marsh, Köller, & Baumert, 2001; Marsh et al., 2008), demonstrating its generalizability across countries and cultures (Marsh & Hau, 2003; Nagengast & Marsh, 2012; Seaton, Marsh, & Craven, 2009; Wang, 2013), subjects (general school: Marsh & Hau, 2003; math: Seaton et al., 2009; science: Nagengast & Marsh, 2012), gender (Marsh, Trautwein, Lüdtke, Baumert, & Köller, 2007), and achievement levels (Marsh & Craven, 2002; Marsh & Hau, 2003; Marsh et al., 2007; Seaton et al., 2009).

### 1.2. Assimilation effects

Although the contrast effect assumes that social comparison processes made at the context level yield negative effects on students' academic self-concept, social comparison processes operating on the context level also might entail positive consequences on students' academic self-concept, which are known as assimilation effects. In this case, students compare the achievement of the group to which they belong (i.e., the average achievement of the school or class they attend) with the achievement of other groups (i.e., the average achievement of other schools or classes) irrespective of their own accomplishments within the group (across-group comparison; Liu et al., 2005). Thus, belonging to a high-ability group might enhance students' academic self-concepts simply because students bask in the glory of their high-ability learning environment and might infer that they, as part of a high-achievement group, individually also possess a high level of ability leading to a high level of academic self-concept (Marsh, Kong, & Hau, 2000). Thus, contrast and assimilation effects are assumed to yield simultaneous but opposite impacts on students' academic self-concept. While the assimilation effect assumes a positive influence of a high average achievement of the learning environment on students' academic self-concept, the contrast effect assumes a negative impact. Thus, belonging to a prestigious and high-ability learning environment might yield both positive and negative influences on students' academic self-concept.

### 1.3. Juxtaposing contrast and assimilation effects

While research has provided consistent support for the operation of contrast effects (Marsh et al., 2008), conclusions regarding the existence and relative strength of the assimilation effect are still mixed. The assimilation effect has been conceptualized as the weaker effect in the joint operation of contrast and assimilation effects. Marsh et al. (2000) found positive effects of students' perceived school status on students' academic self-concept in a longitudinal study with students in Hong Kong. However, this assimilation effect was accompanied by a stronger negative contrast effect as higher school-average achievement led to lower academic self-concept. Consequently, the BFLPE has been conceived as the net effect of counterbalancing positive assimilation and negative contrast effects (see also Trautwein, Köller, Lüdtke, & Baumert, 2005).

Recent research findings have indicated that the existence and strength of assimilation effects might depend on the salience of students' group membership. Strong assimilation effects are expected if group membership is highly visible in that the students are constantly well aware of the relative standing and prestige of the group to which they belong. In addition, assimilation effects are facilitated if students have regular opportunities to interact with students of other ability groups and therefore are permanently reminded of the relative standing of their own group (Trautwein, Lüdtke, Marsh, Köller, & Baumert, 2006). This conjecture matches findings from the study of Köller, Schnabel, and Baumert (2000) conducted in the high-ability track of upper secondary schools in Germany where students choose between

advanced and regular math courses. Only a minority of the students opt for advanced courses. Participation in advanced math courses was found to yield a positive effect on students' math self-concept, supporting an assimilation effect which was found to be stronger than the negative effect of school-average math achievement (i.e., the contrast effect). In the study of Preckel and Brüll (2010) with fifth-grade students in high-ability track secondary schools in Germany, a subsample of students attended special classes for gifted students within their schools. These students were pre-selected based on their IQ, school grades, parents' suggestions, and teachers' evaluations. Attending special classes for gifted students was found to yield a positive effect on math self-concept. This assimilation effect ( $\beta = .63$ ) was accompanied by a negative contrast effect ( $\beta = -.72$ ) of similar size and so this study evinced evidence of a strong assimilation effect which was not inferior to the contrast effect.

Recently, Chmielewski, Dumont, and Trautwein (2013) investigated the effects of three types of tracking (i.e., between-school tracking, within-school tracking, and course-by-course tracking) on students' academic self-concept. Assimilation effects, which were even stronger than contrast effects, could be found in course-by-course tracking systems while no assimilation effects could be demonstrated in within-school and between-school tracking systems. In course-by-course tracking systems, students are allocated to different groups for certain subjects within one school, so the same students can attend high-ability and low-ability courses for different subjects in the same year within the same school. This characteristic might enhance the operation of assimilation effects, as students are constantly reminded whether they attend a high-ability or low-ability course in a specific school subject, and become thus aware of their standing relative to the other students of their grade level.

In a longitudinal study conducted within the education system in Singapore, Liu et al. (2005) demonstrated temporal variations in the occurrence and relative strength of assimilation effects. Assimilation effects were apparent immediately after the students had been streamed into different ability tracks within secondary schools. Accordingly, students attending the higher-ability track demonstrated higher levels of academic self-concept than students from the lower-ability track. At the end of the third year of secondary school, the assimilation effect was replaced by a contrast effect, as higher-ability track students displayed lower levels of academic self-concept relative to lower-ability track students. The authors conjectured that the segregation of students into different ability tracks was highly visible immediately after the transition to secondary school, facilitating the assimilation effect. With time, students might narrow their focus to the ability track they attend and rely on within-group comparisons leading to the predominance of contrast effects.

So far, support for strong assimilation effects which can outweigh contrast effects has been demonstrated for tracking or ability grouping practices taking place within the same school or school type. The aim of this study is to investigate contrast and assimilation effects in the education system of the German federal state of Berlin to gain insight into their co-occurrence when students attend different school types.

## 2. The education system in Berlin

The education system in Berlin is exceptional in Germany as there are two ways for the transition from elementary to secondary school. The majority of students in Berlin pursue the regular school career and stay at elementary school until grade 6 to transfer to secondary school between grades 6 and 7. The transition to secondary school after grade 6 goes along with an ability tracking procedure. As in all other federal states in Germany, students change to the high- (academic), middle- (intermediate), or low-ability tracks of secondary school depending on their accomplishments in elementary school. A minority of students in Berlin (approximately 8% each school year) transfer to

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