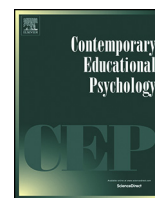




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## Empirical study

# Skipping to the bigger pond: Examining gender differences in students' psychosocial development after early acceleration

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## ABSTRACT

Whereas studies that have analyzed factors that affect academic achievement have predominantly revealed positive effects of skipping a grade, controversial results have been found for students' social-emotional and motivational development. Therefore, the aim of this study was to examine the effects of skipping a whole grade on students' school satisfaction, peer relations, school anxiety, and academic self-concept. Moreover, we conducted moderation analyses to investigate whether skipping a grade affects boys and girls differently. Data were obtained from  $N = 4926$  German students who were repeatedly surveyed once a year in Grades 4, 5, and 6. A total of  $N = 96$  students from this sample had skipped a grade in elementary school. We applied full matching separately for male and female students in order to minimize selection bias. When analyzing motivational variables, we added class-mean achievement scores as covariates within the matching process. Equally for boys and girls, the results showed no significant effect of skipping on school satisfaction, yet we found a negative effect on peer relations that persisted across the 3 years of measurement. However, after skipping a grade girls were significantly disadvantaged compared to boys on some motivational dimensions.

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## 1. Introduction

Various measures are available for fostering high-achieving students (Mönks & Pflüger, 2005; Southern & Jones, 2004), and there is a long-established and ongoing debate about which ones work best. Whereas interventions that are subsumed under the term *acceleration* are characterized by enhancing the pace of students' educational careers (e.g., skipping a grade, early school entrance), there are other methods by which instruction is enriched or gifted or high-achieving students are split into separate school tracks. When comparing meta-analytic findings on different interventions, however, most studies have indicated substantial positive effects of acceleration on academic achievement ( $d = 0.88$ , when compared with students of an equivalent age), whereas the positive effects that have been found for enrichment programs ( $d = 0.39$ ) and ability grouping for gifted students ( $d = 0.30$ ) usually lag behind these results (Hattie, 2009). Yet, besides the mutual agreement of educational

researchers on the advantages of accelerative procedures regarding scholarly achievement (Colangelo, Assouline, & Gross, 2004), the potential risks that are associated with grade-based acceleration concerning students' social and motivational development generally exceed those of other ways of fostering gifted children (Robinson, 2004; Siegle, Wilson, & Little, 2013; Wood, Portman, Cigrand, & Colangelo, 2010). One category of conceivable challenges involves the process of becoming socially integrated into a class: Skipping a whole grade individually involves leaving a familiar scholarly and social setting and entering a new class in which social relationships are tight and circles of friends have already been established. Social integration into the new class may be additionally hampered by the permanent difference in age and maturity between the accelerated child and his or her new classmates. Having skipped a grade may also fuel teachers' and other students' expectations about the student's scholarly performance and hence, may result in pre-conceptions and increase the accelerated child's perceived pressure to perform.

Further risks result from the change in the child's frame of reference and from social comparison mechanisms. Transition into a group of students who have already received an additional year of instruction and who probably have an advantage in biological maturity could lead to a reduction in the student's academic self-concept, the so-called *big-fish-little-pond effect* (BFLPE or contrast effect; Marsh, 1987, 2005; Marsh & Craven, 2002; Marsh et al., 2008).

\* Data were provided by the Research Data Centre at the Institute for Educational Quality Improvement, Berlin, and collected under the direction of Rainer H. Lehmann.

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Evidence for the BFLPE has been produced in numerous studies that have investigated different types of student samples and varying scholarly contexts in different countries (e.g., Marsh & Hau, 2003; Marsh et al., 2008, 2014; Wouters, De Fraine, Colpin, Van Damme, & Verschueren, 2012). It implies that—given similar individual abilities—students who are members of high-achieving classes have lower self-perceptions of their academic competences and abilities than students in learning groups whose mean achievement level is low. Thus, whenever a student changes classes and the standard of social comparison shifts downward or upward (i.e., the difference between one's own and the mean achievement level of the class changes), academic self-concept is expected to shift—namely, a shift downward if the average ability level in class increases as is the case with acceleration. A complementary theoretical approach implies the occurrence of an assimilation effect, which is a positive effect of the fame and glory of being admitted to the high-achieving class (Marsh, 1987; Marsh, Kong, & Hau, 2000; Trautwein, Köller, Lüdtke, & Baumert, 2005). However, there is less evidence for an assimilation effect, also called the *basking-in-reflected-glory effect* (BIRGE), than for the BFLPE. This might be explained by recent research indicating that the BFLPE and the BIRGE operate simultaneously and in opposite directions, yet mostly with an overall effect that shows that contrast effects are stronger than assimilation effects (Marsh et al., 2000; Preckel & Brüll, 2010; Trautwein, Lüdtke, Marsh, & Nagy, 2009). Consequently, Marsh and Craven (2002) began to define the BFLPE as the net effect of a higher contrast and a lower assimilation effect. However, contrast effects have recently been shown to outweigh assimilation effects only for those students in between-school or within-school streaming (i.e. grouping students across all subjects according to their overall achievement level), whereas in the context of course-by-course tracking (grouping into different levels of courses according to students' subject-specific abilities), the opposite pattern was found (Chmielewski, Dumont, & Trautwein, 2013). Given this classification, skipping a grade might be comparable to changing the learning group in the context of within-school streaming rather than course-by-course tracking. Skipping a whole grade involves being accelerated in all subjects (*grade-based acceleration*) instead of being placed in higher-level classes in one or just a few subjects (*subject-based acceleration*). Accordingly, skipping a grade might, after all, be accompanied by a prevalent contrast effect, leading to a decline in academic self-concept in line with the BFLPE theory.

Still, given that the transition has to be mastered alone as opposed to when an entirely new class is assembled, and given that grade skippers differ on average from others (e.g., in cognitive abilities and age), we have to keep in mind that skipping a grade may represent a special condition for which the results found in studies that have examined academic self-concept in other scholarly settings may not hold without qualification. Also, gifted children may be less likely than nongifted children to be stricken by mental distress, anxiety, and high levels of neuroticism (Martin, Burns, & Schonlau, 2010; Zeidner & Shani-Zinovich, 2011). However, concerning acceleration in elementary school, educators have often questioned the emotional maturity of students who have skipped a grade and have expressed concerns about their readiness regarding working strategies, autonomy, and motor skills (Robinson, 2004). Furthermore, there are authors who have discussed gender issues when addressing the subject of acceleration and giftedness. Some of them argue that girls might be more capable of managing the social integration into the new group after being accelerated because of their earlier maturity as compared with boys (Gagné & Gagnier, 2004; Janos et al., 1988); that is, for example, female accelerated students might have fewer problems making friends and sharing common interests with older peers. Others have suggested that gifted girls are more likely to suffer from drawbacks in motivational characteristics than their male counterparts (for an overview, see Dai,

2002). One possible explanation is that gifted girls tend to be more sensitive to social-evaluative pressures that occur, for example, in the context of scholarly competition (Dai, 2000; Roberts, 1991). Another explanation refers to differences in causal attribution regarding academic failure: Gifted girls have been shown to see their academic setbacks as dispositional rather than situational (Dweck, 1999); that is, they are more likely to question their own abilities (*internalization*) rather than to attribute academic failure to insufficient preparation or environmental circumstances (*externalization*). However, immediately after realizing some type of academic acceleration students can be expected to do some more mistakes in school than usual (due to knowledge gaps, heightened demands or unknown values and rules).

### 1.1. Empirical studies on the effects of acceleration on social-emotional characteristics and academic self-concept

Despite the drawbacks that may theoretically be expected after skipping a grade, most of the research on acceleration that has been published so far points to rather small social and emotional consequences, and the few significant differences that have been found have primarily been in favor of the accelerated students. Besides, such results have not been affected by the type of comparison group that was used: same-age comparison (comparisons with students who have remained in the former class level and are thus the same age) or same-grade comparison (comparisons with students who are attending the new advanced grade level and are thus older). However, in comparison with the already limited research on the effects of acceleration on achievement outcomes, the number of studies on psychosocial effects is even smaller, especially when restricted to studies that have examined the skipping of an entire grade. Moreover, summarizing the results on social-emotional effects poses a challenge because the constructs that are investigated tend to be highly heterogeneous, and when they are examined in more detail, the findings tend to vary across the different outcome measures.

#### 1.1.1. Studies on acceleration

Steenbergen-Hu and Moon's (2011) meta-analysis, which was based on 22 studies published from 1984 to 2008, yielded no significant effects of acceleration on students' social-emotional development, regardless of which type of comparison group was used (same-age, older, or mixed-age peers). However, only one of the studies specifically investigated the effects of skipping a grade (Plucker & Taylor, 1998). A further meta-analysis conducted by Kulik (2004) showed highly contradictory results regarding the effects of acceleration on students' liking of school, little negative or no effects when examining the differences in students' participation in cocurricular school activities, and small negative effects of acceleration on self-acceptance and personal adjustment with similar results when using same-age or older control groups. However, the studies were small in number, most of them implemented in the 1960s and 1970s and, again, just one of them analyzed individual grade skipping. Besides, this study was limited to male participants only and might also be considered outdated (Pevac, 1965). Further, for both meta-analyses, we have to keep in mind that academic components of students' self-concept were pooled with other self-concept variables, although effects may vary between subconstructs.

Further insights are provided by research on the longitudinal data from the Study of Mathematically Precocious Youth (SMPY; for an overview, see Lubinski, 2004). Results from the SMPY basically paint a favorable picture of acceleration, for example, by revealing that after participating in accelerative programs, most of the highly able students who were surveyed reported positive feelings about the acceleration when reflecting on their experiences in adulthood (Lubinski, Webb, Morelock, & Benbow, 2001). Moreover, students

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