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Fish Swimming into the Ocean:

How Tracking Relates to Students' Self-Beliefs and School Disengagement at the End of Schooling

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Abstract

In this study, we analyzed how secondary school tracking relates to students' self-beliefs (i.e., their academic self-concepts in different domains and their beliefs regarding their labor market chances) and school disengagement during a time period that has received little attention in educational psychological research on tracking: when students are at the end of schooling and on the verge of entering the labor market. In doing so, we disentangled two distinguishing features of tracking: tracks as social contexts (operationalized via track level and the mean achievement of students' schoolmates) and tracks as pathways to different future opportunities (operationalized via educational certificates). Using questionnaire, achievement, and administrative school data from 2,155 students from 29 low-track schools, 23 intermediate-track schools, and 35 comprehensive schools in Berlin, Germany, we found educational certificates to be the most important factor shaping students' self-beliefs and school disengagement. Irrespective of their individual achievement, their schoolmates' achievement, and their track level, students who received the intermediate school-leaving certificate had higher academic self-concepts, believed that their certificate would give them better chances of success on the labor market, and were less disengaged from school than students who received the low school-leaving certificate. In contrast, students' track level did not serve as a predictor for the outcomes considered. The achievement of students' schoolmates (i.e., the big-fish-little-pond effect) was only relevant for students' academic self-concepts and not for students' self-beliefs regarding labor market entry or their school disengagement.

Keywords: tracking, academic self-concept, BFLPE, self-beliefs, educational certificates

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All public school systems are faced with the challenge of how to efficiently organize learning processes while at the same time responding to each student's needs. Tracking—the grouping of students with similar achievement levels into different schools, study programs, or courses—is a common response to this challenge, in particular in secondary schooling. As a result, students develop and are socialized in different educational contexts (Pallas, Entwisle, Alexander, & Stluka, 1994). Because these contexts may provide different opportunities for learning and attainment, they may consequently contribute to educational inequality (Gamoran, 1992); hence, tracking practices have been heatedly debated in both policy and research. Indeed, studies have shown that track assignment is biased by the social backgrounds of students (Lucas & Berends, 2002; Maaz, Trautwein, Lüdtke, & Baumert, 2008) and that students in lower tracks often learn less and have fewer post-secondary opportunities (Becker, Lüdtke, Trautwein, Köller, & Baumert, 2012; Brunello & Checchi, 2007; Oakes, 1985). From an educational psychological perspective, however, scholars have argued that being placed in a low track does not just have detrimental effects; in fact, when outcomes other than academic achievement or attainment are considered—namely students' academic self-concepts—the effects may be positive (Liu, Wang, & Parkins, 2005; Schwarzer, Lange, & Jerusalem, 1982; Trautwein, Lüdtke, Marsh, Köller, & Baumert, 2006; Trautwein, Lüdtke, Marsh, & Nagy, 2009). This argument is based on the big-fish-little-pond-effect (BFLPE), which posits that students' academic self-concepts are not just influenced by their individual achievement but also by their peers' achievement levels due to social comparison processes (Marsh, 1987). Accordingly, students feel more competent when they are surrounded by low-achieving peers, as is the case in lower tracks. This has led

researchers to conclude that it is more beneficial for students' academic self-concepts to be a "big fish in a small pond" than to be a "small fish in a big pond" (Marsh, 1987; Marsh & Hau, 2003; Seaton, Marsh & Craven, 2009). Educational psychological research on the BFLPE has thus focused on the effects of tracks as *social contexts*. In the present paper, we argue that this perspective should be broadened. As sociologists have pointed out (Gamoran, 1986; Lucas, 1999; Pallas et al., 1994), tracks not only constitute different immediate social contexts, but also provide students with different educational credentials that may be related to diverging future opportunities. This feature of tracking is particularly evident at the end of schooling, when students are on the verge of entering the labor market and are thus being exposed to the world beyond school. Whereas this time point in students' academic careers has been extensively studied by sociologists and developmental psychologists (e.g., Allmendinger, 1989; Brzinsky-Fay, 2007; Buchmann, & Kriesi, 2011; Heckhausen, Chang, Greenberger, & Chen, 2013; Protsch & Solga, 2015a; Schoon, McCulloch, Joshi, Wiggins, & Bynner, 2001), it has not been a prominent topic in educational psychology. Moreover, because they have mainly studied the effects of tracking on academic self-concepts, educational psychologists have focused on quite specific self-beliefs. Self-beliefs generally refer to a person's beliefs about his or her attributes and abilities (Valentine, DuBois and Cooper, 2004); by contrast, academic self-concepts are a more specific kind of self-belief and refer to a person's beliefs about his or her abilities in a particular academic domain and are commonly studied at the level of school subjects such as mathematics, English, or science (Marsh, 1990). However, there may well be other self-beliefs worth looking at when investigating the effects of tracking, especially when studying how students feel when they are about to finish school.

In the present paper, we extend previous research in educational psychology on tracking by bringing the sociological perspective into view and analyzing students' self-

beliefs at the end of schooling. Speaking in terms of the BFLPE metaphor, we analyze what happens to the fish when they have to leave their pond and swim into the ocean. We do so within the context of the German educational system, which is a prime example of a rigid tracking system (Bol & Van de Werfhorst, 2013) and is thus particularly suited to studying tracking effects. In Germany, students are sorted into schools of different tracks right after elementary school. These school tracks can be regarded as different social contexts in which students learn and are socialized. In addition, school tracks often lead to different school-leaving certificates, which are related to different further educational and occupational pathways. Hence, in the German education system, students in different school tracks encounter different social contexts and different future opportunities. But although these two features of tracking used to be quite strongly tied together, reforms have been introduced in recent years to increase the permeability of the education system. These reforms have made it increasingly possible for students to receive different school-leaving certificates in different school tracks. In other words, students belonging to the same school track can receive different school-leaving certificates and students with the same school-leaving certificate may have experienced very different social contexts because they attended schools of different tracks. In our study, which uses data from the state of Berlin, we make use of this unique characteristic of the German tracking system in order to disentangle these two features of tracking and their effects on students' self-beliefs. In doing so, we not only focus on students' academic self-concepts, but also consider students' self-beliefs regarding their perceived future chances, namely students' self-beliefs about their labor-market entry opportunities. As a student's perception of limited future opportunities might lead him or her to disengage from school as a self-protective mechanism, we additionally investigate students' school disengagement to gain a more complete picture of the effects of tracking.

Two Distinguishing Features of Tracking

The practice of tracking can be found in almost all school systems around the world, mostly at the secondary level.[1] Even though the nature and extent of tracking varies greatly between countries, states, and/or school districts, all types of tracking have two distinguishing features. First, tracking creates distinct social contexts for students. The degree to which this is the case is mainly the result of the organizational level of tracking (Trautwein et al., 2006). That is, school systems can track students either between or within schools. In the former type of system, students of different achievement levels go to completely different schools, which often differ greatly in curricula. In the latter, all students go to the same school but are grouped together full-time for all subjects or part-time for some subjects, which allows students to take different course levels in different subjects. In some countries, there are also combinations of between- and within-school tracking. Taken together, the organizational level of tracking substantially determines whom students interact with on an everyday basis and thus the social context for students.

Second, tracking has an impact on students' future occupational and academic careers (Trautwein et al., 2006). This is particularly the case in countries such as Germany, where tracks typically lead to different educational certificates that substantially influence students' future occupational and educational paths. But even in countries where tracking is less salient and "visible," tracks are often associated with students' future opportunities. For instance, in the U.S., high schools offer college preparatory or advanced placement courses, which can be thought of as high tracks and which influence students' chances of getting accepted at a good university.

Previous educational psychological research on the effects of tracking on students' self-beliefs has focused on how tracks function as social contexts and hence shape students' self-beliefs (Alicke, Zell, & Bloom, 2010; Chmielewski, Dumont, & Trautwein, 2013;

Huguet et al., 2009; Marsh, 1990; Marsh et al., 1995; Thijs, Verkuyten, & Helmond, 2010; Trautwein et al., 2006). We summarize the findings from this research strand in the following section. Drawing on sociological research, we then turn to the second feature of tracking and discuss how the different future opportunities that tracks provide may also affect students' self-beliefs.

How Tracks Influence Students' Self-Beliefs as Social Contexts

Most of the research on how tracks influence students' self-beliefs as social contexts has focused on students' academic self-concepts. It is well established that a student's academic self-concept is shaped not only by his or her performance but also by social comparisons (Marsh, Chessor, Craven, & Roche, 1995). Two important social comparison mechanisms through which academic self-concept is known to be affected in tracking contexts are contrast and assimilation effects (Marsh et al., 1995; Marsh, Kong, & Hau, 2000). The *contrast effect* refers to the finding that students compare their own achievement with that of their class- or schoolmates, which leads them to feel more negative about their own competencies in a high-achieving group than in a low-achieving group (Marsh et al., 1995; Marsh, Kong, & Hau, 2000). This social comparison mechanism lies at the heart of the BFLPE (Marsh, 1987), which has been the subject of a great number of studies in the past 40 years (e.g., Bassis, 1977; Marsh, Hau, & Craven, 2004; Marsh et al., 2008; Marsh, Trautwein, Lüdtke, Baumert, & Köller, 2007; Nagengast & Marsh, 2012; Schwarzer et al., 1982; Seaton, Marsh, & Craven, 2010; Tymms, 2001; Zeidner & Schleyer, 1998). Empirically, the BFLPE is evident when there is a negative association between a group's mean achievement (usually on the school or class level) and a student's academic self-concept after controlling for the student's individual achievement; this has been replicated numerous times across many different educational systems (Marsh & Hau, 2003; Seaton et al., 2009). With respect to tracking, the BFLPE implies that a student's academic self-concept will benefit when in a

lower track, because he or she is surrounded by students with low competencies and thus has fewer opportunities for upward comparisons. The positive consequences of tracking on academic self-concepts for students assigned to a low track have been shown in a large number of studies (Liem, Marsh, Martin, McInerney, & Yeung, 2013; Liu et al., 2005; Mulkey, Catsambis, Steelman, & Crain, 2005; Reuman, 1989; Schwarzer et al., 1982; Sung, Huang, Tseng, & Chang, 2014; Trautwein et al., 2006; Wouters, De Fraine, Colpin, Van Damme, & Verschueren, 2012).

The second social comparison mechanism that affects students' academic self-concept in tracking contexts is the *assimilation effect*, also known as the *basking in reflected glory* or *labeling effect* (Cialdini et al., 1976; Marsh et al., 1995; Marsh et al., 2000). It is based on the assumption that tracks can be viewed as institutionalized educational categories that convey information to society at large about students' competencies (Pallas et al., 1994). Consequently, it states that being a member of a high track can make students feel positive about their own competencies, because they identify with the high track as a highly valued social group. Similarly, students in lower tracks may feel bad about their own competencies because it implies membership of a group with low prestige. In fact, some research has even proposed that students in lower tracks feel stigmatized (Solga, 2004). The assimilation effect should thus affect a student's academic self-concept in the opposite direction to the contrast effect. There are studies that have found the academic self-concepts of high-track students to be higher than those of low-track students (Chiu et al., 2008; Oakes, 1985), which can be seen as an empirical indication of assimilation effects. However, contrast and assimilation effects are not easy to study, as both effects occur at the same time.[2] There are some studies that have sought to disentangle both counterbalancing effects by simultaneously investigating how students' academic self-concept is affected by their track's mean achievement (as an operationalization of contrast effects) and their track membership (as an operationalization of

assimilation effects) while controlling for students' individual achievement, but they have found mixed results (Marsh et al., 2000; Preckel & Brüll, 2010; Trautwein et al., 2006; Trautwein et al., 2009). A recent internationally comparative study by Chmielewski et al. (2013) suggested that the relative strength of these two counterbalancing social comparison mechanisms depends on the organizational level of tracking, as this determines whom students compare themselves to. With the exception of tracking systems in which students were grouped only for certain subjects, contrast effects outweighed assimilation effects, showing that, in most countries, students do indeed benefit from being in a lower track with respect to their academic self-concepts.

However, there are also a few studies that have investigated the consequences of tracking for other types of self-beliefs, and these have found disadvantages for low-track students and advantages for high-track students. For instance, Fuligni, Eccles, and Barber (1995) found that tracking in mathematics had a positive impact on intermediate- and high-track students' career-related self-concepts (as well as their future educational expectations), even though they did not find any differences in academic self-concept between students in different tracks. Van Houtte, Demanet, and Stevens (2012) showed that students in high tracks had higher self-esteem than students in vocational tracks, with the differences being more pronounced in within-school tracking than in between-school tracking systems. In order to explicitly test potential labeling or stigmatization processes associated with being in a low-track school, Knigge and Hannover (2011) investigated students' "collective identity" in different school tracks in Germany. They found that low-track school students had a negative collective identity and students at high-track schools had a very positive one. That is, students in low-track schools had a more negative perception of what other people thought of their achievements, their motivation, and their social competence. Interestingly, this negative collective identity was accompanied by low school-related motivation. Along similar lines,

some researchers have argued that students who believe they cannot succeed in school will disengage and reduce their efforts (Carbonaro, 2005; Kelly & Carbonaro, 2012). Indeed, Van Houtte and Stevens (2009) found that vocational track students had a weaker sense of school belonging than academic track students. The authors argued that students in lower tracks distance themselves from school in order to deal with their low social status.

How Tracks May Influence Self-Beliefs Through Diverging Future Opportunities: The Importance of Educational Credentials

In addition to being distinct social contexts, tracks also differ greatly with respect to the opportunities they provide for students' futures, mainly through the educational credentials they offer. This feature of tracking is particularly evident when students are at the end of schooling and are getting ready to enter the labor market or further education. We thus argue that in order to gain a complete picture of the influence of tracking on students' self-beliefs, it is important to take into account the educational credentials that students receive in different tracks and analyze how they affect students' self-beliefs.

The importance of the wider social recognition attached to a person's educational credentials as a key outcome of schooling and a resource for the future is particularly emphasized in the sociology of education (Bills, 2003; Meyer, 1977). After all, employers and higher education institutions usually use previous educational credentials as criteria for selecting their employees or students. Following Bourdieu (1986), an academic qualification can be thought of as an "institutionalized objectification of cultural capital," which "confers on its holder a conventional, constant, legally guaranteed value" (p. 51). Surprisingly, the (educational) psychological research has not devoted much attention to the meaning of educational certificates for individuals. Only recently did a study by Kuppens, Easterbrook, Spears, and Manstead (2015) investigate education-based social identity and its association with well-being and social attitudes. The results clearly indicated that people identified with

their level of education and that less educated people did not feel good about their level of education, which was interpreted by the authors as evidence of a social stigma. Solga (2004) has also argued that the "low education" category can be considered a social stigma in societies that are heavily dependent on human capital. In her view, "less-educated youths find themselves in latent and manifest crisis situations" that are accompanied by "negative identity constructions" (p. 102). She further assumes that these students will use self-protective mechanisms, such as disengaging from school, to avoid further stigmatization. In fact, this form of disengagement can be seen as a form of social creativity in order to maintain a positive social identity, as posited by social identity theories (Kelly, 2009). Because this reasoning is also in line with the above-mentioned findings on the lack of school belonging among low track students by Van Houtte and Stevens (2009), in the present paper we explicitly investigate students' school disengagement in addition to their self-beliefs. Moreover, we believe it is important to consider self-beliefs that relate to students' future opportunities—and not only focus on academic self-concepts, which are very much tied to the school context. This is why we analyze students' self-beliefs regarding labor market entry in the present paper.

The German Tracking System

Before specifying our research questions and describing our empirical approach, it is important to provide the reader with some background information about the German tracking system[3] and to highlight why this system is an ideal context in which to study the influence of tracking on students' self-beliefs.

Germany is often used as a prototypical example of a rigid between-school tracking system. That is, students are selected into schools of different tracks at the end of elementary school, which lasts for 4 to 6 school years depending on the federal state. Even though there is considerable variation across federal states with respect to the number and quality of these

school tracks and despite the fact that some de-tracking reforms have taken place in recent years, Germany's traditional multi-tiered system of *Hauptschule*, *Realschule,* and *Gymnasium* is still evident in most states (Neumann, Becker, & Maaz, 2013).[4] The Hauptschule is the low-track school, providing a slow-paced and vocationally oriented curriculum. The Realschule is the intermediate-track school and also provides a vocational oriented curriculum. The Gymnasium, the high-track school, provides students with an academic curriculum preparing them for higher education. In addition, there are comprehensive schools for students of all achievement levels.[5] In the present study, which uses data from the state of Berlin, we focus on low-track, intermediate-track, and comprehensive schools.

Just as there are different school tracks, there are different school-leaving certificates: the *Hauptschulabschluss* (the lowest school-leaving certificate, received either after 9th or 10th grade depending on the state), the *Mittlerer Schulabschluss* (the intermediate school-leaving certificate, received after 10th grade), and the *Abitur* (the highest school-leaving certificate, received after 12th or 13th grade). These different certificates play a crucial role in determining a person's future occupational opportunities (e.g., Protsch & Solga, 2015b). The Abitur is the formal prerequisite for university enrollment. By contrast, the low and the intermediate school-leaving certificates only allow entry into the vocational educational system. The most typical form of initial vocational training, the dual apprenticeship, combines on-the-job training with education at a vocational school and can be seen as the key "entry ticket" into the labor market in Germany for non-tertiary graduates (Shavit & Müller, 2000). However, even though both the low and intermediate school-leaving certificates qualify students for vocational education, it has become difficult for those with the low school-leaving certificate to successfully apply for an apprenticeship, as employers increasingly prefer candidates with the intermediate school-leaving certificate or even the

Abitur (Buch, Hell, & Wydra-Somaggio, 2011; Buchmann, C. & Park, 2009; Kohlrausch & Solga, 2012).

In the past, school tracks and school-leaving certificates were much more intrinsically tied together: Successful students at low-track schools usually received the low-school-leaving certificate, students at intermediate-track schools received the intermediate school-leaving certificate, and students at high-track schools received the higher school-leaving certificate. For the most part, this is still true; the majority of students still finish school with the certificate traditionally connected to the curriculum level of their school track. Yet, as a result of reforms to increase the permeability of the education system, the school-leaving certificates are no longer exclusively attached to a school track, meaning that different certificates can be obtained within the same school track depending on the students' performance (see Table 1). This unique characteristic of the German tracking system makes it an ideal context to disentangle these two features of tracking—tracks as social contexts and tracks as pathways to different future opportunities—and their effects on students' self-beliefs.

The Present Study

Previous research on the BFLPE and on the influence of tracking on students' academic self-concepts, which has been a very prominent line of research within educational psychology (e.g., Liem et al., 2013; Liu et al., 2005; Marsh, 1987; Marsh & Hau, 2003; Seaton, Marsh & Craven, 2009; Trautwein et al., 2006; Trautwein et al., 2009), has shown that being surrounded by low-achieving peers, as occurs in low tracks, makes students feel positive about their own competencies due to contrasting social comparisons. However, it has also been argued that being a member of a low track may also make a student feel negative about him- or herself as a result of assimilating social comparisons (Marsh et al., 1995; Marsh et al., 2000; Preckel & Brüll, 2010; Trautwein et al., 2006; Trautwein et al., 2009). In

most school systems around the world, contrast effects are larger than assimilation effects (see Chmielewski et al., 2013), which has led many authors to conclude that students benefit from being in a low track with respect to their academic self-concepts (Liu et al., 2005; Trautwein et al., 2006; Trautwein et al., 2009). This research on contrast and assimilation effects has taken a close look at how tracks affect students' academic self-concepts as social contexts; it has thus placed emphasis on the social mechanisms of tracking. However, tracks not only constitute distinct social contexts for students, but also provide students with different future opportunities, in particular through educational credentials. This feature of tracking, which has been particularly emphasized by sociologists, but which has not been on the educational psychological research agenda, may also have an impact on students' self-beliefs.

Based on these theoretical considerations, we aim to expand educational psychological research on the effects of tracking on students' self-beliefs by focusing on a time point in students' academic careers at which the diverging future opportunities for students become most apparent: when students are at the end of schooling and are about to enter the labor market. In addition to analyzing students' academic self-concepts in different domains, we also investigated students' self-beliefs, which relate to their future opportunities, namely students' self-beliefs regarding labor market entry. Moreover, we investigated students' school disengagement, as it has been suggested that this may be a result of low self-beliefs (Solga, 2004; Van Houtte & Stevens, 2009). Our study was conducted in the German educational system, as this context is ideally suited to studying tracking effects in general and disentangling the two features of tracking in particular. More precisely, Germany has schools of different tracks that constitute different social contexts—this is the first feature of tracking. Students also receive different school-leaving certificates, which largely determine students' future opportunities—the second feature of tracking. As these two features of tracking are no

longer as intrinsically connected as they traditionally were, it is possible to disentangle their respective effects on students' self-beliefs. Due to the large differences between the German federal states regarding their tracking systems and the varying labor market conditions in different regions, both of which may bias our results, we only used data from the state of Berlin. Furthermore, we only focused on school tracks that students typically leave after 10th grade—low-track schools, intermediate-track schools, and comprehensive schools. Students graduating from these schools receive either the low or the intermediate school-leaving certificate. We excluded students attending high-track schools from our analyses, because they continue with school for two or three years longer, only then receiving their school-leaving certificate, the Abitur; this would make a comparison with students from other school tracks difficult. The dataset we used offered us a unique advantage: Instead of relying on self-reported measures of educational credentials, we could access school administrative data on the actual school-leaving certificates students received.

We sought to answer two research questions. In our first research question, we focused on the first feature of tracking and analyzed how tracks as social contexts influence students' academic self-concepts, students' self-beliefs regarding labor market entry, and students' school disengagement. In doing so, we analyzed contrast effects (operationalized via school average achievement) and assimilation effects (operationalized via track level). In line with previous studies, we expected to observe substantial contrast effects for students' academic self-concepts. With respect to the other two outcomes— students' self-beliefs regarding labor market entry and school disengagement—we did not have any specific hypotheses. As for assimilation effects, previous research indicates no or very weak assimilation effects on students' academic self-concepts for a between-school tracking system like Germany. However, it may be the case that students see their school track only as a temporary "pond" while they are at school, but use all students of their age cohort for social

comparisons as soon as they leave school. This anticipated change in their reference group may make the school track they belong to more salient, resulting in larger assimilation effects (for a similar argument on college students, see Bassis, 1977). This may be even more so the case for assimilation effects on students self-beliefs regarding labor market entry. Regarding students' school engagement, we expected students in low-track schools to be more likely to disengage from school than students in intermediate-track and comprehensive schools. In our second research question, we focused on the second feature of tracking, namely students' future opportunities: We analyzed how the school-leaving certificates received by students affected their academic self-concepts, their self-beliefs regarding labor market entry, and their school disengagement over and above contrast and assimilation effects. We expected students' school-leaving certificates to be critically important for all three outcomes and to favor students with the intermediate school-leaving certificate compared to those with the low school-leaving certificate.

Method

Sample

The study draws on data from a representative sample of 9th graders in the city of Berlin, who were surveyed as part of a longitudinal study evaluating Berlin‘s secondary school system, the BERLIN-study (Maaz, Baumert, Neumann, Becker, & Dumont, 2013). The BERLIN-study is a joint project by the Max-Planck-Institute for Human Development (MPIB, Berlin, Principal Investigator: Prof. Dr. Jürgen Baumert), the German Institute for International Educational Research (DIPF, Frankfurt am Main/Berlin, Principal Investigator: Prof. Dr. Kai Maaz) and the Leibniz Institute for Science and Mathematics Education (IPN, Kiel, Principal Investigator: Prof. Dr. Olaf Köller). The sampling was similar to other national and international large-scale studies (e.g., PISA, see OECD, 2014): We used a two-stage random sampling procedure, first randomly sampling schools (stratified by school

track) and then randomly sampling individual students within schools. The resulting representative sample consisted of 2,155 students in 87 schools including 29 low-track schools, 23 intermediate-track schools, and 35 comprehensive schools. 699 out of the 781 students attending a low-track school received a low school-leaving certificate, while 82 received an intermediate school-leaving certificate. Out of the 550 students attending intermediate-track schools, 147 students left school with a low school-leaving certificate and 403 with an intermediate school-leaving-certificate. As for the 824 students in comprehensive schools, 464 obtained a low school-leaving certificate and 360 an intermediate school-leaving certificate.

We used questionnaire and standardized achievement test data from two measurement points at the end of 9th grade and the end of 10th grade. The data were collected in schools by trained research assistants in May and June 2011 and in March 2012, respectively. Additionally, objective data on demographic variables (e.g., students' gender) and on the school-leaving certificates students obtained were collected from administrative school data after 10th grade.

Instruments

Outcome variables.

Academic self-concept. Students' academic self-concepts were assessed at the end of 9th grade on three different dimensions: mathematical, verbal, and general. The items were taken from the German version (Schwanzer, Trautwein, Lüdtke, & Sydow, 2005) of the self-description questionnaire by Marsh (1992). Each scale was comprised of four items (math: e.g., "I am good at mathematics"; verbal: e.g., "I am good at reading"; general: e.g., "Compared with others, I am not as gifted" – reversed), which students had to reply to on a 4-point-Likert scale (1 = *strongly disagree* to 4 = *strongly agree*). The internal consistencies were sufficient for all three dimensions (α_{math} = .86; α_{German} = .71; $\alpha_{general}$ = .74).

Self-beliefs regarding labor market entry. In order to investigate what self-beliefs students held regarding their chances of success on the labor market after they finished school, we focused on the dual apprenticeship market, as this is the main entry point to the labor market for young people without a university degree. The following single-item measures were specifically developed to fit our research focus: "It is difficult to get an apprenticeship position with my school-leaving certificate," "My qualifications are convincing for employers when looking for an apprenticeship position," and "I am certain that I will make a good impression during job interviews." Students were asked to rate their agreement on these three statements on a 4-point-Likert scale (1 = *strongly disagree* to 4 = *strongly agree*). The first item explicitly addressed students' beliefs regarding the value of their school-leaving certificate for finding an apprenticeship—which is the prerequisite for getting a skilled job in Germany (Shavit & Müller, 2000). The second item also looked at students' beliefs related to finding an apprenticeship, but asked about their qualifications more generally. The third item addressed students' beliefs regarding their performance at job interviews in general. Our aim was to assess specific aspects related to students' chances on the labor market instead of asking about their perceived chances more broadly. For the same reason, we did not aggregate them to a common factor, but used them as separate outcome variables. The items were administered at the end of 10th grade and thus right before students entered the apprenticeship market.

School disengagement. Students' tendency to disengage from school and scholastic activities was measured via four items (e.g., "If I could, I would have left school long ago") with students having to respond on a 4-point-Likert scale (1 = *strongly disagree* to 4 = *strongly agree*). The scale was based on the cynicism subscale of the well-established Maslach Burnout Inventory (Maslach, Jackson, & Leiter, 1996), which was adapted for

application to the school setting. It showed good internal consistency (α = .80). The items were administered close to the end of 10th grade.

Predictor variables.

Academic achievement. Students' academic achievement was measured in 9th grade via standardized tests in three domains—mathematics, reading comprehension in German, and reading comprehension in English as a foreign language. The tests were based on the German assessments of PISA (Prenzel, Artelt, Baumert, Blum, Hamman, Klieme, & Pekrun, 2007) and the national state comparison tests (Böhme et al., 2010). Mathematics was assessed with 48 items, reading comprehension in German with 28 items, and reading comprehension in English as a foreign language with 82 items. All tests were administered in a multi-matrix-design, i.e., each student was administered only a small subset of items (see Gonzales & Rutkowski, 2010, for more information). The tests conformed to the Rasch model and its extension as a partial-credit model, and allowed partially correct answers (Wu, Adams, Wilson, & Haldane, 2007). Weighted likelihood estimates (WLE; Warm, 1989) were used as person estimates of students' ability. IRT scaling was conducted with ConQuest 2.0 (Wu et al., 2007). Reliability was high for all three domains (mathematics: r_{eap} = .90; reading comprehension in German: r_{eap} = .89; reading comprehension in English r_{eap} = .90). School average achievement was computed from the individual student scores (see also *Statistical Analyses*).

School track. As mentioned above, students belonged to one of the following three school tracks: *Hauptschule*—the low-track school , *Realschule*—the intermediate track school and *Gesamtschule*—the comprehensive school.

Type of school-leaving certificate. In each of the three school tracks, students could obtain the same two school-leaving certificates when they left school after 10th grade: *Hauptschulabschluss*—the low school-leaving certificate, and *Mittlerer Schulabschluss*—the

intermediate school-leaving certificate. Information on the certificates that students obtained came from the official report cards provided by the school officials at the end of 10th grade.

Control variables.

Gender. Information on students' gender (0 = *female*, 1 = *male*) came from administrative data reported by the school officials. 54 percent of students in our sample were boys.

Socio-economic background. Students were asked to specify their parents' current occupations, which were categorized according to the International Standard Classification of Occupations (ISCO-08; ILO, 2012) and then transformed into the International Socio-Economic Index of Occupational Status (ISEI; Ganzeboom, De Graaf, Treiman, & De Leeuw, 1992). The ISEI is a standard measure capturing a person's socio-economic background ranging from 16 to 90, with a higher score indicating a higher status. When scores were available for both the father's and mother's occupation, the higher score was included in the analyses. In our sample, students' parents had an ISEI of $M = 42.88$ ($SD = 18.80$).

Immigrant background. A student was classified as having an immigrant background if at least one parent was born outside Germany based on the self-report data from the student questionnaire (0 = *no immigrant background*, 1 = *immigrant background*). 51.8 percent of students in our sample had an immigrant background.

Statistical Analyses

Handling of missing data.

We gained information on demographic variables through administrative school data for all 2,155 students in our sample. However, not all students participated in the assessment. In 9th grade, 80.3% of students participated, while in 10th grade 72.5% of students participated. Overall, we had questionnaire data on at least one measurement point for 87.1%

of our sample. Missing data is a notorious problem in large-scale field studies in general, and in particular for longitudinal studies. Imputation-based methods—specifically multiple imputation—are currently seen as the best way to deal with this problem: They make use of all available data, make weaker assumptions on missing data mechanisms than list- or pairwise deletion, account for the uncertainty of the value estimation, and are more robust and consistent, even when model assumptions are violated (Graham, 2009). Accordingly, we multiply imputed our data using the R package MICE ("multivariate imputation by chained equations"; van Buuren & Groothuis-Oudshoorn, 2011), thus creating 10 data sets. We integrated between- and within-imputation variance following Rubin (1987), which is automatized in Mplus through the analysis option type = imputation (Muthén & Muthén, 1998–2013).

Model estimation.

We used structural equation modeling (SEM) to analyze our two research questions. Scales with multiple items (i.e., students' academic self-concepts and school disengagement) were treated as latent factors; the model fits for the respective measurement models were good : math self-concept: CFI = .99, RMSEA = .015, SRMR = .006; verbal self-concept: CFI = .99, RMSEA = .041, SRMR = .016; general academic self-concept: CFI = .99, RMSEA = .024, SRMR = .011; school disengagement: CFI = .99, RMSEA = .013, SRMR = .007. For the math and verbal self-concepts, the respective domain-specific achievement scores were used as predictors. For all other outcome variables, the mean of students' achievement scores in math, reading, and English as a foreign language was used.

For each of the outcome variables described above, three regression models were estimated, adding more predictor variables with each model (see Table 3). In Model 1, the outcome variables were predicted on the basis of individual achievement, school mean achievement, and track level. Since there were three school tracks, we used two dummy

variables (intermediate-track school and comprehensive school), with the low-track school being the reference category. This model allowed us to analyze contrast and assimilation effects, which were the focus of our first research question. In Model 2, we analyzed our second research question by adding students' obtained school-leaving certificates to the model. For better interpretability, instead of entering them into the model as interaction terms, we created dummy variables indicating both the school-leaving certificate students obtained and the school track students belonged to. This resulted in five dummy variables: low school-leaving certificate at an intermediate-track school, low school-leaving certificate at a comprehensive school, intermediate school-leaving certificate at a low-track school, intermediate school-leaving certificate at an intermediate-track school, and intermediate school-leaving certificate at a comprehensive school, with students expecting a low school-leaving certificate and attending a low-track school as the reference group. To ensure the robustness of the results, we also included gender, SES, and immigrant background as control variables in Model 3.

All models were estimated in Mplus 7.1 (Muthén & Muthén, 1998–2013) using the complex sampling option (type = complex), in which standard errors are corrected to account for the multilevel structure of the data (using schools as the clustering variable). We decided to use this approach instead of multilevel modeling because it permits the use of dummy indicators for combinations of school track and school-leaving certificates (as described above) to facilitate interpretation. Sampling weights on both the school and the individual level were used to account for differential sampling probabilities in order to ensure the representativeness of our sample.

Results

The correlations of all variables considered in the analyses are presented in Table 2. The results of the three models addressing our research questions can be found in Table 3. In

the following, we will describe the findings for each outcome separately, i.e., for students' academic self-concepts, students' self-beliefs regarding labor market entry, and students' school disengagement. For all latent models, the model fit indices were below the established cut-off criteria (CFI > .95; RMSEA < .06; SRMR < .08; Hu & Bentler, 1999).

Students' Academic Self-Concept

We first looked at the prediction of students' academic self-concepts on the basis of individual achievement, school mean achievement, and track level in order to analyze contrast and assimilation effects (Model 1), and found relatively consistent results for all three domains: Students' academic self-concepts were not only shaped by their individual achievement but also by the achievement of their schoolmates—as indicated by the statistically negative coefficients of school mean achievement, showing that the higher the average achievement level at a school, the lower students' academic self-concepts net of their individual achievement (math: $\beta = -.11$, $p < .05$; verbal: $\beta = -.16$, $p < .01$; general: $\beta = -.12$, $p < .05$). Therefore, as predicted, contrast effects were present for all three domains. Regarding the influence of the track level, we found no statistically significant differences in students' math and general academic self-concepts, indicating that we could not observe any positive assimilation effects of belonging to a higher track. Only for the verbal domain did we find that students attending intermediate-track schools had a statistically significantly higher academic-self-concept than students attending low-track schools ($\beta = .31$, $p < .05$). No differences were found between low-track and comprehensive schools. Taken together, the contrast effects of school mean achievement played a much larger role in predicting students' academic self-concepts than the assimilation effects of the track level, which is in line with our hypotheses.

Regarding the influence of the school-leaving certificates that students obtained at the end of 10^{th} grade (Model 2), students with an intermediate school-leaving certificate had

higher academic self-concepts in all three domains than students expecting a low school-leaving certificate, no matter which school track they belonged to and independent of their own and their school's mean achievement (math: Intermediate SLC at low-track school: $\beta = .35$, $p < .01$, Intermediate SLC at intermediate-track school: $\beta = .29$, $p < .05$, Intermediate SLC at comprehensive school: $\beta = .32$, $p < .01$; verbal: Intermediate SLC at low-track school: $\beta = .63$, $p < .001$, Intermediate SLC at intermediate-track school: $\beta = .54$, $p < .001$, Intermediate SLC at comprehensive school: $\beta = .57$, $p < .01$; general: Intermediate SLC at low-track school: $\beta = .40$, $p < .05$, Intermediate SLC at intermediate-track school: $\beta = .40$, $p < .01$, Intermediate SLC at comprehensive school: $\beta = .33$, $p < .01$). These results were robust even when we added students' gender, parental SES, and immigrant status as further predictors (Model 3). Therefore, our hypothesis that students anticipating the low school-leaving certificate have a lower academic self-concept than students expecting to obtain an intermediate school-leaving certificate was confirmed.

Students' Self-Beliefs Regarding Labor-Market Entry

Turning to students' self-beliefs regarding labor market entry, which were measured via three single items, we did not find any evidence for contrast or assimilation effects. That is, school mean achievement and the school track students belonged to did not serve as statistically significant predictors after controlling for individual achievement, which did serve as a predictor for all three items (see results for Model 1). As for the influence of school-leaving certificates (Model 2), students with intermediate school-leaving certificates believed that they would find it less difficult to secure an apprenticeship position with their school-leaving certificate compared to students with low school-leaving certificates—independent of their individual achievement, their school's mean achievement, and the school track they belonged to (Intermediate SLC at low-track school: $\beta = -.44$, $p < .01$; Intermediate SLC at intermediate-track school: $\beta = -.37$, $p < .01$, Intermediate SLC at comprehensive

school: β = -.52, $p < .001$). With respect to the item "My qualifications are convincing for employers when looking for an apprenticeship," we did not find any differences between students with different school-leaving certificates. As for students' belief regarding the impression they would make during a job interview, students who obtained an intermediate school-leaving certificate while attending a low-track school had a statistically significantly higher self-belief than students going to a low-track school who obtained a low school-leaving certificate (β = .33, $p < .05$). No other statistically significant differences were found. Our hypothesis on students' self-beliefs regarding their labor market entry was thus only partially confirmed. The findings stayed the same when the control variables were entered into the model (Model 3). Interestingly, students' socio-economic background turned out to be a statistically significant predictor for the last two items, indicating that students from more privileged backgrounds had higher self-beliefs (controlling for all other predictors).

Students' School Disengagement

In this case, too, we did not find any evidence for contrast or assimilation effects on students' school disengagement. This was indicated by the fact that school mean achievement and track level did not serve as statistically significant predictors after controlling for individual achievement, which negatively predicted students' school disengagement (Model 1). Whereas we did not expect to find contrast effects, contrary to our hypothesis, the school track students belonged to did not matter for their school disengagement. However, we did find large differences between students with different school-leaving certificates: Model 2 shows that students with an intermediate school-leaving certificate were much less likely to disengage from school than students with a low school-leaving certificate (Intermediate SLC at low-track school: β = -.54, $p < .01$; Intermediate SLC at intermediate-track school: β = -.37, $p < .01$; Intermediate SLC at comprehensive school: β = -.55, $p < .001$,). These findings

remained robust when the control variables were entered (Model 3). Therefore, our hypothesis that students with a low certificate disengage from school was confirmed.

In order to illustrate the main findings for all outcome variables considered, we depict the regression coefficients from Model 3 for the six different groups of students in Figure 1 (students' academic self-concepts), Figure 2 (students' self-beliefs regarding labor market entry), and Figure 3 (students' school disengagement). These clearly show that systematic differences in student outcomes exist between students with different school-leaving certificates and not between students attending schools of different tracks.

Discussion

In the present paper, we analyzed how tracking relates to students' self-beliefs (students' academic self-concepts in different domains and their self-beliefs regarding labor-market entry) and students' school disengagement during a time period that has received little attention in the educational psychological research on tracking: when students are at the end of schooling and on the verge of entering the labor market. In doing so, we aimed to disentangle the effects of two distinguishing features of tracking: On the one hand, tracks constitute distinct social contexts for students, and on the other hand, tracks provide students with different future opportunities. Whereas the first feature has been studied within the BFLPE research (e.g., Chmielewski et al., 2013; Preckel & Brüll, 2010; Trautwein et al., 2006), the second feature, which is much more prominent in sociology, has not yet received much attention in studies on the effects of tracking on students' self-beliefs. Our aim was thus to extend previous research in educational psychology by bringing the sociological perspective into play. We used data from the state of Berlin, Germany, which provided an ideal context to disentangle these two features of tracking. This is because Germany has schools of different tracks that constitute different social contexts—the first feature of tracking. Students also receive different school-leaving certificates, which largely determine

students' future opportunities—the second feature of tracking. But even though school-leaving certificates are associated with the curriculum of a particular school track, it is possible to receive the low and intermediate school-leaving certificates at different school tracks: at low-track schools, intermediate-track schools, and comprehensive schools. This allowed us to disentangle the two features of tracking.

Overall, our results clearly point to the importance of educational certificates and thus the second feature of tracking in shaping students' self-beliefs and school disengagement. Irrespective of their individual achievement, their schoolmates' achievement, and their track level, students who received the intermediate school-leaving certificate had higher academic self-concepts, believed they would have better chances of success on the labor market with their certificate, and were less disengaged from school than students who received the low school-leaving certificate. In contrast, the school track students belonged to did not serve as a predictor for the outcomes considered. Thus, no assimilation effects could be observed. Contrast effects could only be shown for students' academic self-concepts (thus replicating the BFLPE), but not for students' self-beliefs regarding labor market entry or their school disengagement. In the following, we will discuss our findings in more depth, address the limitations of our study, and outline potential avenues for future research.

Our Findings in Light of Research on Tracking Effects

Regarding the effects of tracking on students' self-beliefs, there is a large consensus in educational psychology that being surrounded by lower achieving students, as is the case in low tracks, has positive consequences for students' academic self-concepts because students have fewer chances for upward social comparisons (Liu et al., 2005; Marsh et al., 1995; Trautwein et al., 2006; Trautwein et al., 2009). Our study shows that this may be only part of the story. First, there are a number of other self-beliefs in addition to academic self-concept; these have received far less attention but may also be relevant to look at. In

particular, when considering the time point when students are about to leave school, other types of self-beliefs may become more important than subject-specific competence beliefs. In our study, we did not find any positive consequences of being surrounded by low achieving peers for students' self-beliefs regarding labor-market entry. There is reason to think that this may also be true for other self-beliefs. For instance, research looking at student's career-related self-concepts (Fuligni et al., 1995) and students' global self-esteem (Van Houtte et al., 2012) has found negative effects of belonging to a lower school track. Therefore, a sole focus on students' academic self-concepts may be too limited to fully assess the effects of tracking on students' self-beliefs.

Second, tracks are not only characterized by the social contexts they provide students. Our study shows that it is important to also take into account how tracks influence students' future trajectories; this influence often becomes visible through different educational credentials or certificates. Based on our findings, there is reason to believe that students identify with the level of education they have received, which leads students with a low educational certificate to feel less competent and to disengage from school. Even though both school-leaving certificates could be obtained in all three school tracks in our sample, most students left school with the certificate associated with the school track they belonged to. Therefore, researchers aiming to study tracking effects in a particular educational context should take into account how strongly a track determines the educational certificate or credentials a student will receive at the end of schooling. This is particularly relevant for school systems like Germany, in which different school-leaving certificates exist. However, similar features can be found in all tracking systems. For instance, in the U.S., highly selective colleges consider courses taken in high school, including the number of college-preparatory and AP classes, and the AP test scores, when admitting students. Thus, in a more

informal way, high school transcripts and test scores in the US may constitute educational credentials.

Implications for Research on the BFLPE

The findings of our study also have implications for research on the BFLPE. With more than 70 articles published in leading APA journals in just the past decade, the BFLPE is one of the most prominent phenomena in educational psychology and has even been called a "pan-human theory" (Seaton et al., 2009). In fact, the BFLPE has been shown to persist after high school (Marsh et al., 2007) and to generalize to outcomes other than academic self-concept (Marsh, 1991; Marsh & O'Mara, 2010; Nagengast & Marsh, 2012). We think our results strengthen Dai's (2004) argument that "the BFLPE is only part of this much larger story about personal and academic development" (p. 303) by showing that the educational certificates students obtained were at least as important for their academic self-concepts as the academic achievement of their peers. Also, we did not find a negative coefficient for either school mean achievement on students' self-beliefs regarding labor market entry or for students' school disengagement. This implies that even though students in lower tracks, who are surrounded by low achieving peers, may feel positive about their competence in school subjects such as math and reading, they still hold realistic beliefs about their lower chances on the labor market.

Limitations

There are several limitations of our study that need to be addressed. In terms of students' self-beliefs beyond academic self-concept, we only focused on students' self-beliefs regarding their immediate chances on the labor market when looking for an apprenticeship. There may well be other self-beliefs worth looking at in order to fully understand how students perceive their own academic standing and their future chances at the end of schooling. Moreover, we had to rely on single item measures for students' self-beliefs

regarding labor market entry. This makes our results less reliable and thus represents a clear limitation of our study. Hence, it seems worthwhile for future studies to develop multi-item measures to more accurately assess students' future-directed self-beliefs. Additionally, the variables analyzed in the present study were measured at different time points. Whereas students' academic self-concepts were measured at the end of 9th grade, students' self-beliefs regarding labor market entry and their disengagement from school were measured in 10th grade. We do not know whether and how these different measurement points influenced our findings, which is a clear limitation of our study. For instance, it is possible that students feel more disengaged from school in 10th grade than in 9th grade because they are tired of school. Last but not least, our data set does not allow for causal inference and we can only make theoretical assumptions about the mechanisms underlying our findings. We interpret our findings to mean that students anticipate receiving a certain certificate, which then has an influence on their self-beliefs and the way they engage in school. However, one could also argue that a lower academic self-concept and a high level of school disengagement might lead to different educational attainment. While we cannot rule out these effects, we did control for students' achievement and do not believe that differences in self-beliefs and school disengagement can fully explain the school-leaving certificates obtained. Most likely, the association we observed between students' obtained school-leaving certificates and their self-beliefs/their school disengagement may represent a "vicious circle": For instance, anticipating a low school-leaving certificate may result in a lower self-belief and disengagement from school, which then in turn makes it even more likely that a student will receive this certificate. Similarly, a student expecting to finish school with the intermediate school-leaving certificate may have higher self-beliefs and may be more engaged in school, which then increases his or her chances of actually receiving this certificate. Like all other tracking research, our study faces the problem of causality on a more general level—track

assignment is nonrandom by definition and often produces groups with differing socioeconomic compositions. Therefore, a very cautious interpretation of our findings is that they could also be a result of selection into tracks. That is to say, it could be the case that students in the low track were already low on the considered outcome measures. However, we not only considered how students' self-beliefs and school-disengagement differed according to the track they belonged to; we also looked at variation within tracks by analyzing a school's mean achievement and students' school-leaving certificates. More generally, the fact that our findings were robust after adding control variables to our model also speaks to their validity.

Avenues for Future Research

Finally, we would like to outline several avenues for future research in response to our study. First, we would like to see the educational psychological research agenda on tracking moving beyond the BFLPE. As has been argued by Van Houtte and Stevens (2009), who stated that "future research should deal explicitly with relative deprivation and stigmatizing effects of being tracked and the stigmatizing character of certain school types" (p. 964), this should include an in depth-analysis of stigmatization and labeling effects. Our study can be seen as a first step in this direction. By disentangling the effect of school track and educational certificates, we were able to show that it is not the track level and therefore the label of the track, but rather the educational certificates associated with a school track that lead to stigmatizing effects. In a similar vein, we believe that Karlson's (2015) finding that "adolescents actively revise their educational expectations in response to their track placement in high school—an ability signal whose value (…) derives from its relation to adolescents' perceived chances for success in future schooling" may actually be driven by the educational credentials students typically receive in different tracks. We encourage tracking researchers to pay attention to the fact that tracks may not only constitute social contexts, but

also contribute to inequalities in future educational and occupational career paths and related self-beliefs by awarding different educational credentials. Second, it would be worthwhile to examine how expectations on the part of teachers and others may influence students' academic self-beliefs and their engagement in school. For instance, previous research has shown that teachers expect less from students in lower tracks (e.g., Kelly & Carbonaro, 2012), which could negatively affect students' own perceptions of their competencies and future chances. Third, in line with Kuppens et al. (2015), our findings also suggest that an individual's level of education is an important part of his or her social identity. Analyzing the meaning of people's education-based social identities may be a very promising research avenue within educational psychology. Fourth, on a more general note, our study is an example of how helpful the integration of other disciplinary perspectives can be. We believe that by bringing the sociological perspective into play, we were able to offer a more complete picture of the consequences of tracking for students' self-beliefs. Finally, longitudinal studies that go beyond students' time at school and follow them into their working lives are needed to clarify the long-term role of students' self-beliefs for their occupational trajectories.

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Footnotes

[1] Some authors have also used the term tracking for the implicit grouping of students into schools by social background due to factors such as area of residence, namely *implicit school-level tracking* (Trautwein et al., 2006). In the present paper, we do not use this terminology and only use the term tracking for the deliberate sorting of students into different groups according to their achievement.

[2]As contrast and assimilation effects occur at the same time, the BFLPE should actually be regarded as the net effect of these two counterbalancing processes, with contrast effects outweighing assimilation effects (Huguet et al., 2009; Marsh et al., 2000; Marsh et al., 2008).

[3]For more information on the German school system, see Lohmar and Eckhardt (2014).

[4]Germany also has separate schools for students with special educational needs, called *Sonderschule* or *Förderschule.*

[5] Comprehensive schools, in addition to being a between-school track themselves, also practice within-school tracking. In our paper, we focus only on between-school tracks because these provide the main social context for students and determine whom students interact with on an everyday basis.

Table 1

School Tracks and School-Leaving Certificates in Germany

	School-leaving certificate		
	Hauptschulabschluss (low)	Mittlerer Schulabschluss (intermediate)	Abitur (high)
School track			
Hauptschule (low)	**x**	**x**	
Realschule (intermediate)	**x**	**x**	
Gymnasium (high)	x	x	x
Comprehensive schools	**x**	**x**	(x)

Note. (x) = Not all multitrack schools offer the Abitur. School tracks and school-leaving certificates in bold are considered in the present study.

Table 2

Correlations of all variables considered in the present study

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Individual achievement																
2	School mean achievement	*.65*															
3	Low SLC at intermediate-track school	*-.05*	*.10*														
4	Low SLC at comprehensive school	*-.12*	*.05*	*-.16*													
5	Intermediate SLC at low-track school	-.03	*-.20*	*-.05*	*-.09*												
6	Intermediate SLC at intermediate-track school	*.29*	*.30*	*-.17*	*-.32*	*-.09*											
7	Intermediate SLC at comprehensive school	*.36*	*.32*	*-.15*	*-.29*	*-.08*	*-.30*										
8	Sex (1 = boy)	*-.08*	*-.07*	-.02	.00	.00	-.02	-.04									
9	Socioeconomc background	*.28*	*.31*	*-.08*	-.03	-.01	.05	*.21*	.02								
10	Immigrant background	*-.24*	*-.26*	.06	*.06*	-.02	-.03	*-.10*	.00	*-.17*							
11	Math self-concept	*.22*	*.11*	-.05	*-.15*	*.05*	*.12*	*.15*	*.24*	.07	-.03						
12	Verbal self-concept	*.23*	*.07*	-.05	*-.10*	*.08*	*.12*	*.12*	*-.15*	*.14*	-.01	-.01					
13	General academic self-concept	*.31*	*.15*	-.06	*-.14*	.05	*.17*	*.14*	*.19*	*.17*	-.05	*.31*	*.36*				
14	Self-belief regarding labor market entry: It is difficult…	*-.31*	*-.23*	.07	*.21*	-.04	*-.17*	*-.25*	.06	*-.16*	*.07*	*-.24*	*-.22*	*-.25*			
15	Self-belief regarding labor market entry: My qualifications…	*.20*	*.13*	-.05	*-.11*	.03	*.07*	*.16*	*-.06*	*.17*	-.04	*.11*	*.22*	*.20*	*-.21*		
16	Self-belief regarding labor market entry: I am certain…	*.16*	*.13*	-.02	-.05	.04	*.08*	*.07*	-.05	*.16*	-.06	.04	*.23*	*.15*	*-.14*	*.48*	
17	School disengagement	*-.20*	*-.12*	*.08*	*.17*	*-.06*	*-.11*	*-.21*	*.08*	*-.12*	-.02	*-.19*	*-.26*	*-.23*	*.32*	*-.17*	*-.12*

Note. SLC = School-leaving certificate; Statistically significant correlations are shown in italics; correlations involving scales with multiple items (i.e., students' academic self-concepts and school disengagement) and individual and school mean achievement all represent latent correlations.

Table 3

Predicting students' academic self-concepts, self-beliefs regarding labor market entry, and school disengagement

	Academic self-concept						Self-beliefs regarding labor market entry							
	Math self-concept		Verbal self-concept		General academic self-concept		"It is difficult to receive an apprenticeship with my school degree."		"My qualifications are convincing when looking for apprenticeship."		"I am certain that I will make a good impression during job interviews."		School disengagement	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
Model 1														
Individual achievement	.38***	0.03	.26***	0.04	.36***	0.04	-.28***	0.04	.20***	0.04	.14**	0.05	-.21***	0.04
School mean achievement	-.11*	0.04	-.16**	0.06	-.12*	0.06	-.06	0.05	.02	0.05	.06	0.05	.02	0.05
Intermediate-track school	.10	0.06	.31*	0.12	.19	0.12	-.01	0.11	-.10	0.11	-.03	0.12	-.02	0.11
Comprehensive school	.01	0.10	.22	0.14	.04	0.10	.09	0.10	-.09	0.10	-.09	0.10	.02	0.09
R^2	.12		.06		.11		.10		.04		.03		.04	
Model 2														
Individual achievement	.34***	0.04	.21***	0.04	.30***	0.04	-.17***	0.04	.15**	0.05	.11*	0.05	-.10*	0.05
School mean achievement	-.14**	0.04	-.19**	0.06	-.13*	0.06	-.02	0.05	.01	0.05	.06	0.05	.05	0.06
Low SLC at intermediate-track school	.05	0.14	.29	0.16	.10	0.16	.05	0.14	-.11	0.13	-.05	0.14	.04	0.16
Low SLC at comprehensive school	-.04	0.10	.21	0.14	.03	0.11	.18	0.09	-.14	0.10	-.07	0.11	.08	0.10
Intermediate SLC at low-track school	.35**	0.13	.63***	0.16	.40*	0.217	-.44**	0.16	.23	0.16	.33*	0.13	-.54**	0.20
Intermediate SLC at intermediate-track school	.29*	0.12	.54***	0.15	.40**	0.13	-.37**	0.13	.08	0.12	.07	0.12	-.37**	0.14
Intermediate SLC at comprehensive school	.32**	0.12	.57**	0.17	.33**	0.13	-.52***	0.13	.23	0.13	.03	0.11	-.55***	0.15
R^2	.14		.09		.12		.16		.06		.03		.09	

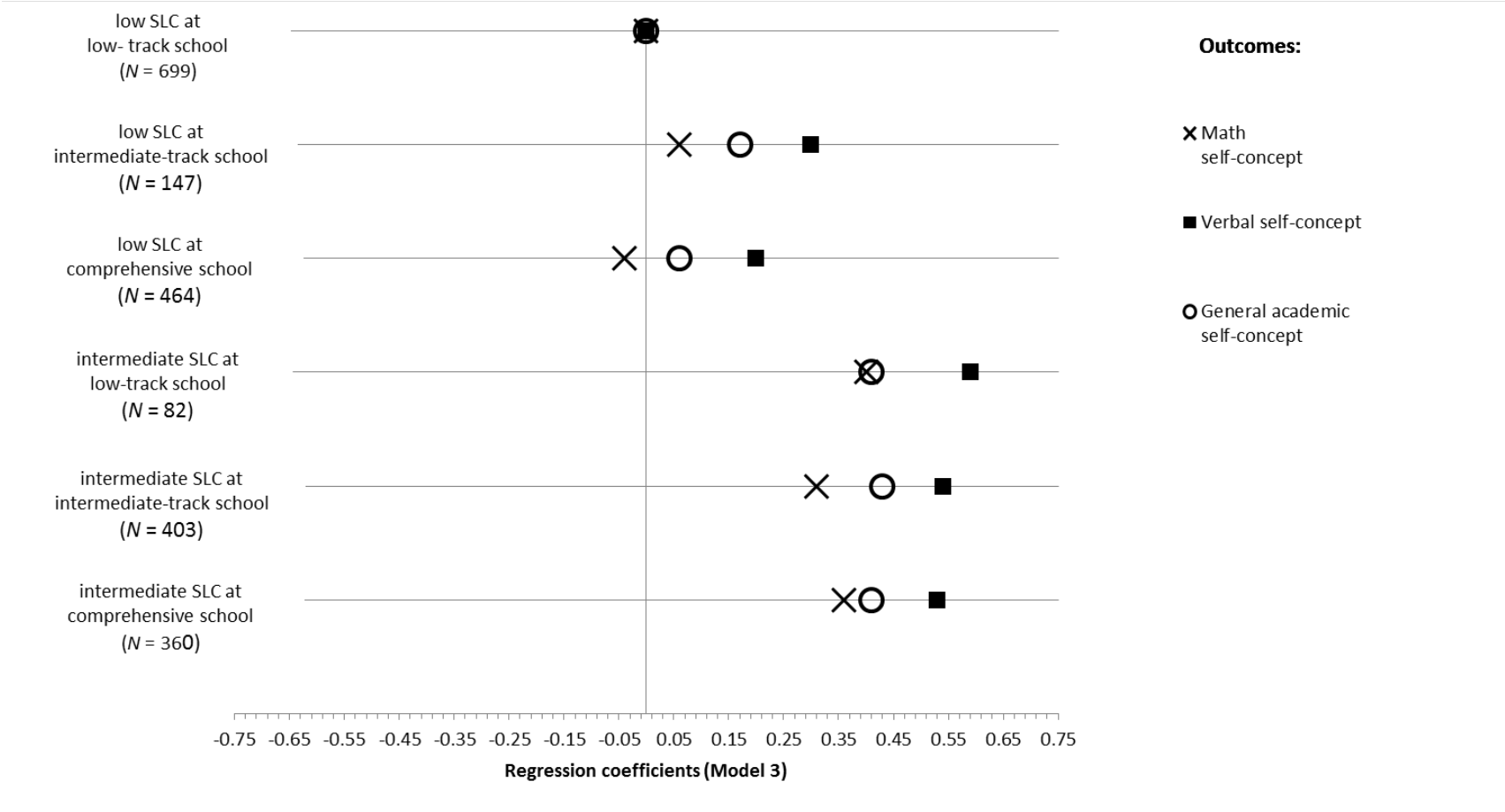
(table continued on next page)

Table 3 *(continued)*

Model 3														
Individual achievement	.31***	0.04	.19***	0.05	.30***	0.04	-.16***	0.04	.13**	0.05	.10	0.05	-.10*	0.05
School mean achievement	-.11*	0.05	-.21**	0.06	-.15**	0.06	-.01	0.06	-.02	0.06	.02	0.05	.03	0.06
Low SLC at intermediate-track school	.06	0.13	.30	0.16	.17	0.16	.04	0.14	-.09	0.14	.00	0.15	.11	0.16
Low SLC at comprehensive school	-.04	0.10	.20	0.14	.06	0.11	.19	0.10	-.14	0.10	-.05	0.11	.14	0.10
Intermediate SLC at low-track school	.40**	0.14	.59***	0.16	.41*	0.19	-.42*	0.16	.20	0.16	.31*	0.13	-.53**	0.20
Intermediate SLC at intermediate-track school	.31**	0.12	.54***	0.15	.43**	0.13	-.36**	0.13	.08	0.12	.09	0.12	-.30*	0.13
Intermediate SLC at comprehensive school	.36**	0.12	.53**	0.18	.35**	0.13	-.50***	0.13	.20	0.12	.02	0.11	-.47***	0.14
Sex (1 = boy)	.45***	0.05	-.25***	0.06	.41***	0.06	.08	0.07	-.10*	0.05	-.09	0.06	.13	0.07
Socioeconomc background	-.01	0.04	.12**	0.04	.10**	0.04	-.06	0.05	.12**	0.05	.12***	0.03	-.07	0.04
Immigrant background	.06	0.07	.03	0.08	.03	0.06	-.03	0.07	.04	0.07	-.01	0.07	-.16*	0.07
R^2	.19		.11		.17		.17		.07		.05		.11	

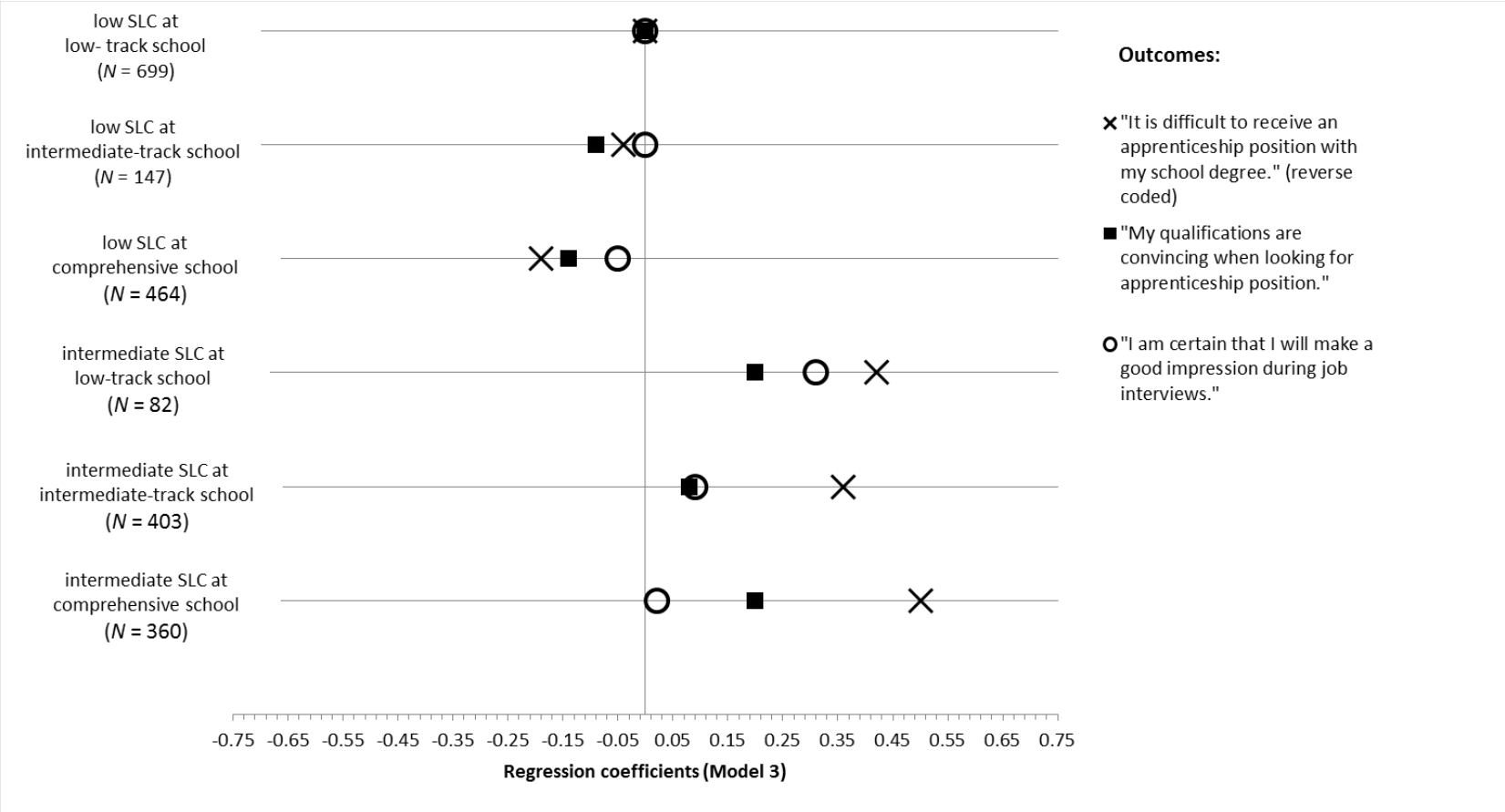
Note. SLC = School-leaving certificate; all continuous variables were standardized beforehand. ***$p < .001$. **$p < .01$. *$p < .05$

Figure 1. Regression coefficients for the school track/school-leaving-certificate categories from Model 3 for students' academic self-concepts



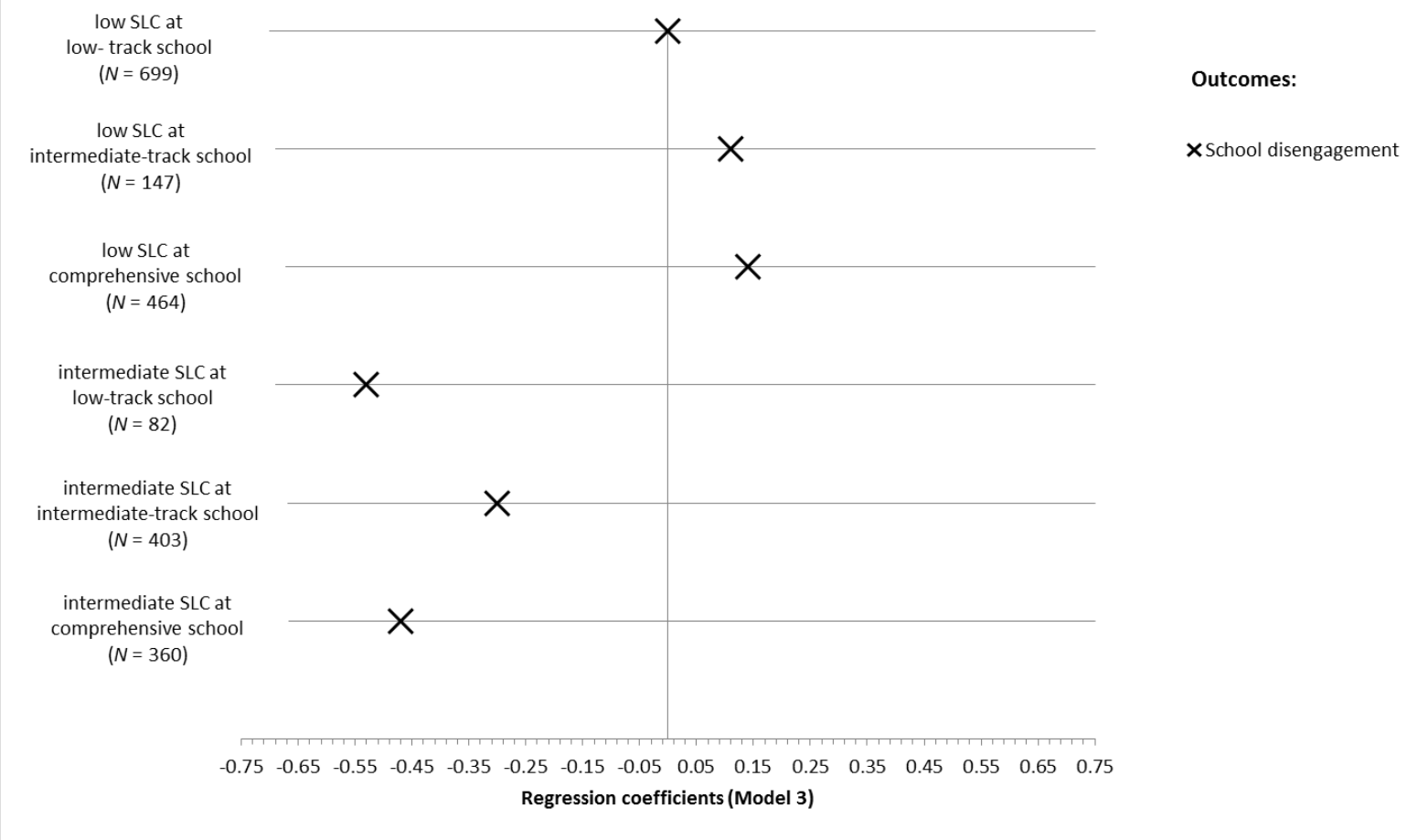
Note. SLC = School-leaving certificate; the category "low SLC at low-track school" represents the reference category.

Figure 2. Regression coefficients for the school track/school-leaving-certificates categories from Model 3 for students' self-beliefs regarding labor market entry



Note. SLC = School-leaving certificate; the category "low SLC at low-track school" represents the reference category. To facilitate interpretation, reversed-coded items were coded in the same direction.

Figure 3. Regression coefficients for the school track/school-leaving-certificates categories from Model 3 for students' school disengagement



Note. SLC = School-leaving certificate; the category "low SLC at low-track school" represents the reference category.