“You Can’t Always Get What You Want”:**Prevalence and Predictors of the Aspiration–Attainment Gap****After the School-to-Work Transition**

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Highlights

- We investigate the aspiration–attainment gap as a measure of successful educational transitions
- We aim to explain why some youth are unable to realize their occupational aspirations
- Slightly less than half (45.9%) of the students in our sample experienced a gap
- Aspirations, as the strongest predictor of the gap, mediated the effect of other predictors (esp. parental SES and grades)
- Some predictors both increased the risk of a gap by raising aspirations and decreased the risk by increasing attainment

Abstract

This study examined the prevalence and predictors of the *aspiration–attainment gap* (AAG) after the school-to-work transition. We operationalized the AAG as the discrepancy between the socioeconomic status (SES) of young people’s *realistic* occupational aspirations and that of the position they actually attained. As a case in point, we investigated non-college-bound students transitioning into a vocational education and training (VET) position in Germany. Our aims were twofold: first, to establish how many students experience an AAG of what size; second, to identify characteristics that predict whether students experience an AAG. In this regard, we considered sociostructural characteristics, cognitive ability and school grades, and Big Five personality traits as predictors (i.e., potential determinants) of the AAG. Analyses in a representative sample ($N = 2,478$) of intermediate secondary school (*Realschule*) students/graduates from the German National Educational Panel Study (NEPS; Starting Cohort 4) revealed that 45.9% of students experienced an AAG. Two-part regression models showed that the level of aspirations was the strongest predictor of the experience and size of an AAG. Aspirations also mediated the effect of several other predictors, most importantly parental SES and school grades. Some individual resources proved to have contradictory effects: They indirectly increased the risk of experiencing an AAG by raising aspirations, but at the same time they lowered this risk by directly increasing attainment. Overall, our results suggest that the AAG during the transition from school to VET is a widespread experience among students in Germany that is worthy of further investigation.

Keywords: aspirations, attainment, school-to-work transition, vocational education and training (VET)

Introduction

A successful school-to-work transition plays a pivotal role in shaping youths' subsequent occupational careers (e.g., Schoon & Heckhausen, 2019; Tomasik et al., 2009). However, especially in today's highly competitive education systems and labor markets, this transition is sometimes difficult, and some youth inevitably fall short of their own expectations and goals. These youth experience a gap between their aspirations and their actual attainment, or what some have termed an *aspiration–attainment gap* (AAG; e.g., Buttaro et al., 2010; Paat, 2015, 2016).

As we argue in the present study, the AAG is an important concept that complements other perspectives on successful school-to-work transitions and that deserves far greater research attention than it has hitherto received. We conceive of the AAG as the difference between the SES associated with the aspired position and that associated with the attained position. As a case in point, we investigate the AAG among non-college bound youth who transitioned from secondary school to a vocational education and training (VET) in Germany. Our aims are twofold: First, to establish how widespread the thus-conceived AAG is in this population (*prevalence*). Second, to identify characteristics that predict which students experience an AAG or not (*predictors*). In this regard, we consider a broad range of candidates that previous research has shown to predict aspirations, attainment, or both: socio-structural characteristics, cognitive ability and school achievement, and personality traits.

Theoretical Background

Why the AAG is an Important Characteristic of Successful Transitions

Research on school-to-work transition has traditionally focused on identifying predictors of *attainment*, more specifically, of successful transitions in terms of fast and smooth access to the labor market and the SES associated with the attained position (e.g., Blossfeld, 2017; Kleinert & Jacob, 2013; Schoon & Polek, 2011). Another line of research has identified precursors and consequences of *aspirations* during the school-to-work transition (e.g., Mello,

2008; Schoon & Eccles, 2014). By comparison, the degree to which youth are able to realize their aspirations—the AAG—has received little attention.

We submit that focusing on the AAG offers a valuable complement to the range of outcomes that research on school-to-work transition has traditionally investigated. First, the ability to realize one's aspirations can serve as an additional indicator of a successful transition. Different from attainment indicators that focus on *normative* definitions of success (e.g., obtaining a position, grades, prestige, income, level of education, or retention; see, e.g., Damian et al., 2015; Nießen et al., 2020), the AAG reflects a more *subjective* definition of success that depends on the fit between individuals' aspirations and the position they are able to attain. Second, experiencing an AAG may have adverse consequences for a range of outcomes. From the perspective of discrepancy theories (e.g., Higgins, 1987; Michalos, 1985), level of aspiration theory (e.g., Starbuck, 1963), and person–environment (P–E) fit theories (e.g., Edwards & Shipp, 2007), gaps between aspirations and actual attainment may hamper motivation, performance, and well-being (e.g., Carr, 1997; Hardie, 2014). Third, differences in the ability to realize one's aspirations may constitute an additional aspect of social inequality that is worthy of investigation. Experiencing an AAG may reflect individual or group-specific disadvantages and structural barriers to realizing aspirations. Because the AAG is a joint function (specifically, the difference) of aspirations and attainment, investigating the AAG as a characteristic of successful transition may reveal additional insights regarding social inequality in the school-to-work transition that are not evident in aspirations or attainment alone.

In sum, the AAG is an important concept, both in its own right and because of its consequences. For these reasons, we believe that it is important to understand how many youths are able to realize their aspirations during the school-to-work transition; and how those that are able to realize their aspirations differ from those who are not. In other words, it is important to establish the *prevalence* and *predictors* of the AAG. However, so far, we know

very little about the AAG after the school-to-work transition, let alone in relation to VET students in Germany.

How and why Might an AAG Emerge After the School-to Work Transition? Theoretical Perspectives

We are not aware of a theory of school-to-work transitions or career development that focuses specifically on the AAG. However, there are several pertinent theoretical perspectives that can inform our current work on the AAG. These perspectives suggest two main processes that might lead to the emergence of an AAG must be considered: individual self-selection processes and institutional selection processes (i.e., by schools or employers).

Individual self-selection processes refer to students' resources and behaviors that (indirectly) influence the risk of experiencing an AAG through the goals they set for themselves and pursue. According to *social cognitive career theory* (SCCT; Lent, 2002) and Gottfredson's (2002) *theory of circumscription, compromise and self-creation* (CCS), occupational aspirations are the result of learning experiences, which are influenced by multiple factors, including social background (e.g., gender, social class, ethnicity), individual abilities and predispositions (i.e., heritable factors, such as cognitive ability, personality traits). Occupational aspirations are thought to mediate the influences of social background and individual-level abilities and predispositions on occupational attainment (for detailed information on SCCT and CCS, see, e.g., Brown, 2002).

Institutional selection processes refer to characteristics and behaviors of students that influence employers' perceptions of their aptitude, and thus employers' decisions whether to offer students a VET position. Economic theories, such as signaling theory (Spence, 1974), highlight "the signaling power of education" (Spence, 1973, p. 356). Educational certificates and grades act as market signals about applicants' expected productivity (Spence, 1974) and trainability (Thurow, 1975). Other directly or indirectly visible individual characteristics (e.g.,

ethnicity, gender, abilities, and personality traits) can also be the subject of evaluation on the VET market.

Together, these theories suggest that occupational attainment strongly depends on sociostructural characteristics, educational achievement, and predispositions. These factors can influence occupational attainment directly by fostering it, and indirectly through occupational aspirations. The next section provides an overview of pertinent evidence.

Previous Evidence on the Predictors of Aspirations and Attainment

Although little research has addressed the occupational AAG directly, previous research on the predictors of and the link between aspirations and attainment can inform hypotheses about the predictors of the occupational AAG at entry to VET. As the AAG is the discrepancy between aspirations and attainment, any characteristic associated with either variable must also be associated with the AAG.

The Link Between Aspirations and Attainment

In line with the theories reviewed above, previous research has highlighted the role of occupational aspirations for occupational attainment (e.g., Ashby & Schoon, 2010; Mello, 2008; Schoon & Parsons, 2002) with the typical finding that higher aspirations predict higher attainment (e.g., Schoon & Lyons-Amos, 2016, 2017). For example, in a study of low-achieving school leavers in Germany, Holtmann et al. (2017) found that higher career aspirations led to stronger efforts to apply for a VET position—a crucial step in obtaining an apprenticeship. Young people with higher aspirations have also been found to attain higher social status and income (e.g., Rojewski, 2005; Schoon & Polek, 2011).

Socio-Structural Characteristics as Predictors of Aspirations and Attainment

Previous investigations have also revealed strong associations of family background (parental SES, ethnic origin, and cultural capital) and gender with young people's educational and occupational attainment (e.g., Becker & Schubert, 2011; Duncan & Brooks-Gunn, 1997; Klein et al., 2009). Young people from higher-SES families have been found to have higher

aspirations (e.g., Schoon & Polek, 2011) and higher occupational attainment compared with their less socially privileged counterparts (e.g., Schoon, 2010). Young people in Germany with a migration background reported higher aspirations but had lower occupational attainment compared with native Germans (e.g., McElvany et al., 2018). This phenomenon has been referred to as the *immigrants' aspiration–achievement paradox* (e.g., Kao & Tienda, 1998; Salikutluk, 2013). And finally, females have been found to have higher aspirations than males (e.g., Schoon & Polek, 2011; Wicht et al., 2021).

Cognitive Ability and School Grades as Predictors of Aspirations and Attainment

Cognitive ability and school grades are further key predictors of occupational attainment. Cognitive ability, which is not directly observable, is a measure of students' *potential* to perform in a job. It is positively associated with occupational aspirations (e.g., Schoon & Polek, 2011), and ranks among the strongest predictors of both educational and occupational attainment (e.g., Deary et al., 2007; Kuncel et al., 2004; Schoon, 2010). School grades, on the other hand, represent a directly observable measure of *actual* achievement in the form of educational certificates. Higher school grades are associated with lower educational AAGs (Buttaro et al., 2010; Paat, 2015) and higher occupational attainment (e.g., Kay et al., 2016; Mello, 2008). Large-scale studies and meta-analyses have shown that grades and cognitive ability are only moderately correlated (e.g., $r = .32$, Lechner et al., 2017; $r = .44$, Roth et al., 2015), indicating that they capture different information about young people's potential to attain desired occupational positions.

Personality Traits as Predictors of Aspirations and Attainment

Personality traits, such as the Big Five (Costa & McCrae, 1992; Goldberg, 1992), feature prominently in classic theories of career choice (e.g., Holland, 1997). In particular, higher Openness has been shown to be involved in the formation of higher aspirations (e.g., Rottinghaus et al., 2002). Moreover, a growing body of evidence also demonstrates the predictive power of the Big Five for educational and occupational attainment (for a recent review, see

Lechner et al., 2019). For example, initial evidence suggests that personality plays an important role for access to VET, even over and above SES, migration background, gender, and cognitive ability. Students who are characterized by higher Conscientiousness and Extraversion have been found to be more likely to obtain a VET position (Nießen et al., 2020) or to find a job after completing their studies (Gilar et al., 2015). In addition, Conscientiousness has been found to be an important selection criterion for employers (e.g., Caldwell & Burger, 1998; Dunn et al., 1995; Moy & Lam, 2004).

The Present Study

Although the evidence reviewed above has cast light on the determinants and consequences of aspirations and attainment, the degree to which youth are able to *realize* their aspirations—that is, whether they experience an AAG or not—has hardly been the subject of prior research. In the present study, we therefore focused on the occupational AAG as a complementary measure of successful transitions from school to work, more specifically, to VET. Using representative longitudinal data about young people’s transitions from intermediate secondary schools (*Realschule*) to VET in Germany, we sought to answer two questions. First, we aimed to establish how many adolescents were (un-)able to realize their occupational aspirations in the transition to VET—that is, what percentage of students experienced an AAG, and how large this gap was (*prevalence*). Second, we aimed to uncover the reasons why some adolescents may experience an AAG (*predictors*). More specifically, we investigated (a) whether sociostructural characteristics, cognitive ability, school grades, and personality traits predicted the AAG directly (direct effects); (b) whether these variables did so indirectly, that is, mediated via occupational aspirations (indirect effects); or (c) whether they did so both directly and indirectly. Our research questions are depicted in Figure 1.

The transition from school to VET is the typical school-to-work transition for *Realschule* graduates because they are eligible only to take up VET. Their aspirations are therefore an important issue, reflecting possible differences in the *horizon of perceived possibilities*

(Schoon & Heckhausen, 2019, p. 140). Given that individuals who underwent VET generally stay in the occupation for which they have trained, the SES associated with that occupation will not change much in their further life course. Therefore, the attained VET position is a suitable measure for a young person's first occupational attainment (for more details of the highly structured education system and dual system of VET in Germany, see Appendix A).

Based on the research reviewed earlier, our hypotheses concerning the predictors of the AAG were the following: We expected, first, that higher occupational aspirations would be associated with a higher likelihood of experiencing an AAG because they carry a higher risk of failure. Second, we expected that sociostructural characteristics that reflect higher resources (higher parental SES and cultural capital), and female gender would be associated with higher aspirations and higher attainment, and hence a higher likelihood of realizing aspirations. We expected that students with a migration background would express higher aspirations than native Germans but would show lower attainment and hence have a higher likelihood of experiencing an AAG. Third, we expected that higher cognitive ability and school grades would be associated with higher aspirations and a higher probability of realizing aspirations because of higher attainment. Fourth, we expected that students with higher Conscientiousness, Emotional Stability, and Extraversion and with lower Openness and Agreeableness would have a higher probability of realizing their aspirations, because these characteristics are associated with higher attainment. We also tested possible associations between the Big Five and aspirations in an exploratory fashion in order to generate novel hypotheses for future research.

Figure 1*Schematic Depiction of the Research Questions and the Time Assessment of the Variables*

Note. SES = socioeconomic status, VET = vocational education and training.

Material and Methods

Sample

Our analyses are based on the German National Educational Panel Study (NEPS), Starting Cohort 4 (Blossfeld & Roßbach, 2011; <https://doi.org/10.5157/NEPS:SC4:9.1.1>),¹ which provides in-depth information on students' transition from school to VET. These data comprise a large and representative sample of initially 15,110 ninth graders in 540 regular

¹ From 2008 to 2013, NEPS data were collected as part of the Framework Program for the Promotion of Empirical Educational Research funded by the German Federal Ministry of Education and Research (BMBF). Since 2014, NEPS has been carried out by the Leibniz Institute for Educational Trajectories (LIfBi) at the University of Bamberg in cooperation with a nationwide network. NEPS data and documentation are provided to researchers in the form of scientific use files. Access to the data is subject to conclusion of a data use agreement (for details, visit: <https://www.neps-data.de/data-center/data-access/data-use-agreements.aspx>). The studies involving human participants were reviewed and approved by the German Federal Commissioner for Data Protection and Freedom of Information (BfDI) and in coordination with the German Standing Conference of the Ministers of Education and Cultural Affairs (KMK) and—in the case of surveys at schools—with the Educational Ministries of the respective Federal States. All data collection procedures, instruments, and documents were checked by the data protection unit of the Leibniz Institute for Educational Trajectories (LIfBi). The necessary steps are taken to protect participants' confidentiality according to national and international regulations of data security. Participation in the NEPS study is voluntary and based on the informed consent of participants. This consent to participate in the NEPS study can be revoked at any time. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

schools (i.e., the sample of students excluding those who attended special needs schools [*Förderschulen*]). The first survey was carried out in ninth grade in the classroom via paper-and-pencil interviewing (PAPI) in autumn 2010 (Wave 1), and followed by a second survey in ninth grade in spring 2011 (Wave 2). From tenth grade onwards, subsequent surveys took place annually in the classroom via PAPI (Waves 3–8). Persons who had left the general education system were interviewed biannually (Waves 3–6) and later annually (Wave 7 onwards) using computer-assisted telephone interviewing (CATI). We used data from Wave 1 to Wave 9.

We deliberately restricted our analysis to school leavers from intermediate secondary schools (*Realschule*; International Standard Classification of Education Level 2A [ISCED-97]; Schneider, 2008). Both substantive and design-related considerations guided this choice of excluding school leavers from the other two typical school types in Germany. First, students from *Hauptschule* (a type of school at lower secondary level; ISCED-97 Level 2B), may leave the general school system after ninth grade, and hence could have already been accepted for a VET position at the time aspirations were measured in the current data, which might have caused bias in our analyses. Second, the current release of the NEPS data (at the time when this study was being conducted) did not allow for investigating the AAG of students attending academically oriented secondary schools (German: *Gymnasium*; ISCED-97 level 3A) because they have not yet started VET or tertiary education. Moreover, the transition from school to VET is not the typical transition for these students (in 2018, only about 21% of *Gymnasium* graduates started a VET position, whereas 79% went on to attend a higher education institution [Statistisches Bundesamt, 2019]), and unlike occupations learned in VET, university studies do not correspond to specific occupations that can be coded with an SES.

In the initial sample of 15,110 ninth graders, 5,341 (32.5%) were attending *Realschule* in Wave 1, over half of whom (2,849; 53.3%) transitioned from *Realschule* to a fully qualifying VET position (i.e., a position that leads to full vocational qualification) during the

observation period (Waves 3–9). We excluded 371 of these students because they either did not provide information on their occupational aspirations, or their reported aspirations were too vague to be coded. The final analytical sample thus consisted of 2,478 students, who were, on average, 15.2 years old at the time of their initial interview in ninth grade ($SD = 0.6$, Min = 12, Max = 18).

Measures

Table 1 displays the descriptive statistics of all variables in the present sample. The correlations between the variables are depicted in Appendix B. Associations between the predictor variables of our study were mostly small, thereby allaying concerns about possible multicollinearity.

Table 1

Descriptive Statistics of the Variables

Variables	Min.	Max.	<i>M</i> or %	<i>SD</i>	Cronbach's alpha	Wave	<i>N</i>
Aspirations	11.56	88.96	47.33	16.72	-	2	2,478
Attained VET position	11.56	83.50	39.70	13.32	-	5–9	2,478
AAG	0.00	–71.00	–9.25	14.46	-	-	2,478
Parental SES	13.34	88.96	46.62	18.30	-	1–2	2,226
Cultural capital	1	6	3.59	1.35	-	1–2	2,317
Ethnic origin	1	3	-	-	-	1–2	2,478
German	1	1	81.11	-	-	1–2	2,010
First-generation migrant	2	2	4.60	-	-	1–2	114
Second-generation migrant	3	3	14.29	-	-	1–2	354
Gender	1	2	-	-	-	1–2	2,478
Male	1	1	53.55	-	-	1–2	1,327
Female	2	2	46.45	-	-	1–2	1,151
Cognitive ability	0	12	8.41	2.35	.63	2	2,348
School grades ^a	1.25	5.50	3.15	0.60	-	2	2,463
Extraversion	1	5	3.45	0.88	.63	1	2,348
Agreeableness	1	5	3.48	0.66	.36	1	2,341
Conscientiousness	1	5	3.21	0.85	.48	1	2,368
Emotional Stability	1	5	3.24	0.84	.40	1	2,360
Openness	1	5	3.41	0.94	.41	1	2,366
Search duration	1	54	4.54	6.58	-	-	2,478

Note. VET = vocational education and training; AAG = aspiration–attainment gap; SES = socioeconomic status.

^a Higher values reflect higher grades.

Aspiration–Attainment Gap

Our measure of the AAG was the difference between the SES of students' occupational aspirations and of the VET position they actually attained. With regard to occupational aspirations, we used students' realistic aspirations measured in ninth grade, that is, before the transition to VET after completion of tenth grade (Wave 2). Realistic occupational aspirations (also called expectations; e.g., Ashby & Schoon, 2012; Rehberg, 1967; Reynolds & Pemberton, 2001) refer to the specific occupations that students expect to attain in the future, taking into account their perceived opportunity structure, including individual resources and external constraints (Rehberg, 1967). These aspirations were assessed with the open-ended question: "And considering everything you know now: What [occupation] will you actually [take up] in the future?" (NEPS, 2019, p. 907).² With regard to the attained VET position, we used each student's first stable (i.e., lasting at least three months) and fully qualifying VET position after general schooling (i.e., after leaving *Realschule*) using information from Waves 5–9 (i.e., all waves available at the time of conducting the present study).

In order to map the SES associated with the aspired occupation and with the attained VET position, students' answers were coded with the International Socio-Economic Index (ISEI-08; Ganzeboom et al., 1992). ISEI represents occupational status as a function of the expected income of a specific occupation and the years of education required to qualify for that occupation (Züll, 2016). Examples of occupations with the lowest ISEI scores include gardeners (11.56) and cleaners (14.20), whereas examples of occupations with the highest ISEI scores include doctors (88.70) and judges (88.96).

² If the students' expectations matched their actual chances on the training market, there should be no major gap between their aspirations and what they attained. Realistic aspirations should not be mistaken for *idealistic* aspirations (also simply called aspirations; e.g., Ashby & Schoon, 2012; Rehberg, 1967; Reynolds & Pemberton, 2001) that represent wishes and dreams about what one desires ideally. In the latter case, an AAG would be expected. For comparison, the question that precedes the measurement of realistic aspirations in the questionnaire surveys the idealistic aspirations: "Regardless of your current situation, what [occupation] would you most like to [take up] in the future?" (NEPS, 2019, p. 907).

We computed the AAG as the difference score between the ISEI of the attained VET position and the ISEI of students' realistic occupational aspirations:

$$\text{AAG} = \text{ISEI}_{\text{attained VET position}} - \text{ISEI}_{\text{aspired occupation}}$$

Using ISEI, we were able to directly compare the SES of the attained VET position and the SES of the aspired occupation. Negative values on this measure indicate that students were unable to fully realize their aspirations, and thus experienced an AAG.

For our analyses, we computed a binary AAG variable assigning students to one of two groups: (a) a reference group with a difference score ≥ 0 , that is, adolescents who did not experience a gap; and (b) the focal group of adolescents with a difference score < 0 , that is, adolescents who experienced a gap. In addition to the binary AAG variable, we also used the aforementioned continuous AAG variable (difference score) measuring the size of the AAG for the focal group of students whose attained VET position fell short of their aspirations.

Sociostructural Characteristics (Waves 1–2)

We used measures of students' parental SES, cultural capital, ethnic origin, and gender to capture their sociostructural background. Parental SES was measured with ISEI-08, which has the same metric as students' aspirations. Cultural capital was measured with the number of books available in the household, with a scale ranging from 1 (*0–10 books*) to 6 (*more than 500 books*), which is the most widely used proxy of cultural capital (Sieben & Lechner, 2019).³ Students' ethnic origin was determined by information on the country of birth of the students, their parents, and their grandparents. We distinguished between native German (reference category), first-generation migrant, and second-generation migrant. Students' gender was measured with a binary indicator (1 = male, 2 = female).

³ We checked in advance whether the effects were linear. Because this was the case, we treated the variable as continuous.

Cognitive Ability and School Grades (Wave 2)

We included measures of students' cognitive ability and school grades. Cognitive ability was measured with the NEPS reasoning test, NEPS-MAT, a figural reasoning task that assesses general cognitive ability with 12 items (see Pohl & Carstensen, 2012), with possible sum scores ranging from 0 to 12.

We recorded students' average school grade in German and math based on their final report card at the end of Grade 9. We recoded grades such that higher values reflected higher grades. Recoded grades have a theoretical range from 1 (*low/bad*) to 6 (*high/good*).

Personality Traits (Wave 1)

We used the Big Five personality traits Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Openness to Experience (Costa & McCrae, 1992; Goldberg, 1992). The Big Five is currently the most widely used and empirically best validated model of personality. In NEPS, the Big Five traits were assessed with 11 items—10 items from the 10-Item Big Five Inventory (BFI-10; Rammstedt & John, 2007), an established 10-item short scale, and an additional item for Agreeableness. Students answered all items on a 5-point response scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). As a measure of the internal consistency (reliability) of the Big Five scale scores, we used the Spearman-Brown formula. In the present sample, reliabilities ranged between .36 (Agreeableness) and .63 (Extraversion). These scores can be deemed sufficient for (ultra-)short scales because the items are intended to cover heterogeneous facets of the Big Five dimensions (Rammstedt & John, 2007). In general, as previous research has demonstrated, the BFI-10's test–retest reliabilities are much higher than its internal consistencies (on average $r_{tt} = .75$; see Rammstedt & John, 2007). In addition, the BFI-10's predictive validity is almost as high as, and occasionally even higher than, the predictive validity of longer Big Five inventories (Rammstedt et al., 2020; Thalmayer et al., 2011).

Search Duration (Waves 5–9)

We additionally examined the effect of search duration (i.e., the number of months it took students to obtain a VET position after school graduation) on the AAG because of two reasons: On the one hand, longer search durations might increase students' chances of obtaining a coveted VET position, which matches their aspirations (see job search theory; e.g., Lippman & McCall, 1976). On the other hand, after a certain threshold, the negative signaling effect of time spent in unemployment, and the downward adjustment of expectations might force students to accept VET positions that fall short of their aspirations (see signaling theory; e.g., Spence, 1974).

Analyses

In a first step, we descriptively examined how many students experienced an AAG (using the binary AAG variable), and how large the gap was among those who experienced it (using the continuous AAG variable).

In a second step, we estimated two-part linear regression models (e.g., Neelon & O'Malley, 2019) to identify factors that predicted the AAG (see Figure 1). The two-part models enabled us to look at two different processes: first, the factors that predicted whether or not students would experience an AAG (Part I); second, the factors that predicted the size of the AAG among those who experienced it (Part II). The first part was estimated by a linear probability model, and the second part by a linear regression model. Within the two-part model, we applied path models to disentangle whether the different factors under study predicted students' AAG directly or indirectly through their occupational aspirations (see Figure 1). In doing so, we calculated the direct, indirect, and total effects of the predictor variables on the AAG. We obtained indirect effects through the product-of-coefficient method. The total effects are the sum of the direct and indirect effects. We used bias-corrected bootstrap (10,000 replications) to calculate the standard errors of all effects, because this procedure does not require assumptions about the sampling distribution of the estimated effects (MacKinnon,

2008). In order to account for the clustering of observations within schools, we used a Huber-White sandwich estimator to obtain cluster-robust standard errors (Williams, 2000).

We ran the analyses with Mplus version 8.1 (Muthén & Muthén, 1998–2017). To deal with missing values of independent variables, we used full information maximum likelihood (FIML) estimation. Therefore, correlations between the predictors were allowed. To facilitate comparisons of effects sizes, we standardized all continuous independent variables (i.e., parental SES, cultural capital, cognitive ability, school grades, Big Five personality traits, search duration) so that the regression coefficients indicate the effect on the dependent variable of a change of one standard deviation in the independent variables.

Results

Describing the AAG

Figure 2 shows the distribution of the AAG. As the peak at zero shows, 1,000 (or 40.4%) of the students in our sample were able to realize their aspirations by attaining a VET position with exactly the same SES as that associated with their aspired occupation, and 340 (13.7%) attained a VET position with an even higher SES than that of the occupation to which they had aspired. In other words, 54.1% of the students realized, or even exceeded, their aspirations in their VET position. However, 1,138 students (45.9%) were unable to realize their occupational aspirations in their attained VET position, as indicated by an $AAG < 0$.

The average size of the AAG among those who experienced it (i.e., $AAG < 0$) was -20.14 ISEI scores ($SD = 15.37$), with the largest gap amounting to -71.00 points. However, most of the AAG values were not as extreme as the maximum value might suggest, with 90% of all AAG values ranging between -3.00 and -43.00 . As Appendix C shows, larger values for the AAG were very rare.

Figure 2*Percentages of the Distribution of the Aspiration–Attainment Gap*

Note. As a metric variable, the peak in the middle includes both the zeros and a few additional observations with values close to zero. The shaded gray area to the left of the peak is the focus of our analyses, and represents what we defined as the AAG. $N = 2,478$.

To garner deeper insights into how the distribution of the AAG shown in Figure 2 arose, we additionally inspected the distribution of aspirations and the attained VET positions, which together compose the AAG, among those who experienced an AAG. The average ISEI score of students' aspirations was 55.81 ($SD = 16.83$). The occupations with ISEI scores closest to that average value are life science and health associate professionals and safety and quality inspectors (55.40 and 55.96, respectively; for the scores for each International Standard Classification of Occupations [ISCO-88] occupational title, see Ganzeboom & Treiman, 1996). The ISEI scores of the occupational aspirations of 90% of all students ranged between

32.50 (stock clerks) and 79.74 (architects, town and traffic planners [incl. landscape architects]). The ISEI score of the highest occupational aspiration reported by any student (judge) was 88.96. On average, students reported having attained VET positions with an ISEI score of 35.65 ($SD = 11.79$). The ISEI scores of 90% of the attained positions ranged between 21.64 (home-based personal care workers [incl. attendants]) and 52.72 (social work associate professionals). These occupations can indeed be attained through VET. Importantly, higher ISEI scores—especially those associated with professions that cannot be attained through VET but require tertiary education, such as the highest attained VET position reported (chemist; ISEI score 83.50)—were extremely rare, leading us to conclude that such high values were inconsequential for our analyses and could safely be ignored.

Predicting the AAG

Next, we present the findings from the two-part regression model predicting the AAG.

Predicting Who Experienced an AAG (Model Part I)

Table 2 displays the regression coefficients (average marginal effects [AMEs]) from a model predicting the probability of experiencing an AAG. Positive associations indicate that a variable is linked to a higher risk of experiencing an AAG, whereas negative associations indicate that it is linked to a lower risk. Recall that we standardized all continuous independent variables so that the coefficients for these predictors indicate by how much the risk of experiencing an AAG changes (in %) for a one standard deviation increase in the predictor. Unstandardized coefficients can be found in Table D1 in Appendix D.

The first column of Table 2 presents the total effects of the predictors on the risk of experiencing an AAG—that is, the sum of the direct and indirect effects. Few effects were statistically significant, and most effect sizes were small to moderate. Two sociostructural characteristics showed total effects on the risk of an AAG: Having a migration background was linked to a 9.6%–13.6% higher risk of experiencing an AAG, and a 1 SD (or 1.4 raw scale points) higher cultural capital was linked to a 3.3% higher risk. In addition, higher

Openness predicted a 2.7% higher risk of experiencing an AAG (for a 1 *SD* increase in Openness, i.e., 0.9 scale points), and lower school grades predicted a 2.3% higher risk of an AAG (for 1 *SD* lower grades, i.e., 0.6 grade points). The maximum difference between a student scoring at the lowest possible school grade (i.e., 1) and the highest possible grade (i.e., 6) was $(6-1)*3.8\% = 19.0\%$, which is sizeable, and larger than that of all other variables. The maximum difference for Openness was 11.6%, which was larger than that of migration background and similar to that of cultural capital (12.0%).

However, closer inspection revealed that behind several of these total effects—even those that were small and statistically non-significant—there were several direct and indirect effects. Most of these direct and indirect effects were in opposite directions, so that the effects offset each other (indicating suppression effects). Next, we disentangle direct effects from indirect effects through aspirations to gain a better understanding of each predictor's role.

The second column of Table 2 displays the direct effects of the predictors, and the effect of aspirations (which was a mediator in our models). The level of aspirations was by far the strongest predictor of the risk of experiencing an AAG: An increase in aspirations of 1 *SD* (i.e., 16.7 ISEI scores) corresponded to a 24.8% higher probability of experiencing an AAG. In other words, the higher students' aspirations were, the greater was their risk of not realizing them. Male gender was also associated with a higher risk of experiencing an AAG (12.0% higher probability); 1 *SD* lower school grades resulted in a 3.4% higher probability; 1 *SD* (i.e., 6.6 months) longer search durations resulted in a 3.0% higher probability; 1 *SD* (i.e., 18.3 ISEI scores) lower parental SES resulted in a 2.4% higher probability; and 1 *SD* (i.e., 0.7 scale points) lower Agreeableness resulted in a 2.0% higher probability of experiencing an AAG. The maximum difference between a person with the lowest possible level of the respective predictor and a person with the highest possible level changed the order of the single predictors in terms of strength slightly: With 116.1%, higher aspirations had by far the largest influence on the risk of an AAG, followed by lower grades (28.5%), longer search durations

(26.5%), lower Agreeableness (12.0%), male gender (12.0%), and lower parental SES (7.7%). Because the direct effects correspond to the effects on the AAG when controlling for aspirations, they can be interpreted as effects related to students' attainment of a VET position.

The last column of Table 2 shows the indirect effects through aspirations. Via aspirations, female gender turned out to be most strongly related to a higher risk of experiencing an AAG (13.1% higher probability), followed by having a migration background (7.4%–8.2% higher probability). Moreover, via aspirations, 1 *SD* higher parental SES predicted a 3.8% higher probability of experiencing an AAG; 1 *SD* higher cultural capital predicted a 2.3% higher probability; 1 *SD* higher school grades predicted a 1.2% higher probability; 1 *SD* (i.e., 0.8 scale points) higher Emotional Stability predicted a 1.2% higher probability; and 1 *SD* higher Openness predicted a 1.1% higher probability. The maximum difference between a student with the lowest possible level of the respective predictor and a student with the highest possible level barely changed the order of the single predictors in terms of strength: Once again, higher parental SES, mediated by aspirations, had the strongest effect on the risk of experiencing an AAG (15.5% higher probability). With a 9.5% higher probability of experiencing an AAG, higher school grades, mediated by aspirations, were somewhat more predictive of experiencing an AAG than higher cultural capital (8.5% higher probability), a migration background, higher Emotional Stability (5.6% higher probability), and higher Openness (4.8% higher probability).

Regarding the effects of the various characteristics on the level of aspirations (i.e., the mediator), we found that aspirations were higher in some social groups than in others. Sociostructural characteristics, in particular, were associated with occupational aspirations: Higher parental SES, higher cultural capital, a migration background, and female gender predicted higher aspirations. With respect to the Big Five, only higher Emotional Stability and higher Openness were related to higher aspirations. Furthermore, higher school grades had a positive effect on the level of aspirations. Detailed results can be found in Appendix E.

Table 2*Predicting the Risk of Experiencing an AAG (Model Part I)*

	Total effects			Direct effects			Indirect effects through aspirations		
	AME	95% CI	<i>p</i>	AME	95% CI	<i>p</i>	AME	95% CI	<i>p</i>
Aspirations				.248	[.232, .263]	<.001			
Sociostructural characteristics									
Parental SES	.014	[−.007, .035]	.191	−.024	[−.043, −.004]	.014	.038	[.027, .050]	<.001
Cultural capital	.033	[.012, .054]	.003	.010	[−.009, .028]	.301	.023	[.012, .034]	<.001
First-generation migrant*	.136	[.040, .232]	.005	.054	[−.028, .137]	.199	.082	[.036, .131]	.001
Second-generation migrant*	.096	[.034, .158]	.002	.023	[−.032, .075]	.410	.074	[.045, .104]	<.001
Female*	.011	[−.030, .053]	.600	−.120	[−.156, −.083]	<.001	.131	[.112, .152]	<.001
Cognitive ability and school grades									
Cognitive ability	−.007	[−.027, .013]	.500	−.016	[−.033, .001]	.066	.009	[−.001, .019]	.070
School grades ^a	−.023	[−.043, −.002]	.029	−.034	[−.052, −.017]	<.001	.012	[.002, .021]	.014
Personality traits									
Extraversion	.014	[−.007, .035]	.183	.009	[−.010, .029]	.334	.005	[−.006, .015]	.365
Agreeableness	−.014	[−.033, .006]	.172	−.020	[−.037, −.002]	.028	.006	[−.004, .016]	.246
Conscientiousness	−.016	[−.039, .007]	.176	−.007	[−.026, .012]	.455	−.009	[−.019, .002]	.104
Emotional Stability	.012	[−.012, .035]	.305	.001	[−.020, .020]	.958	.012	[.001, .022]	.029
Openness	.027	[.005, .049]	.015	.016	[−.004, .036]	.119	.011	[.001, .021]	.031
Search duration				.030	[.010, .049]	.002			

Note. AAG = aspiration–attainment gap; CI = confidence interval; SES = socioeconomic status. $N = 2,478$ ($n = 1,138$ for AAG < 0; $n = 1,340$ for no AAG). Coefficients significant at the $p < .05$ level are in bold type. Continuous coefficients are standardized with regard to X (the independent variables) but not Y (the dependent variable, i.e., the AAG). Variables marked with an asterisk (*) are not standardized.

^a Higher values reflect higher grades.

Predicting the Size of the AAG (Model Part II)

Model Part II predicted the size of the AAG among the 1,138 students who experienced an AAG (i.e., attainment < aspirations). Table 3 shows the regression (path) coefficients from a model predicting the size of the AAG. Recall that all continuous independent variables were standardized; unstandardized coefficients can be found in Table D2 in Appendix D. A positive association means that the gap increases in size, whereas a negative association means that the gap decreases in size.

The first column of Table 3 presents the total effects of the predictors on the size of the AAG. Of the sociostructural characteristics, precisely the two variables that had no effect

in Model Part I showed an association with the size of the AAG in the case of total effects:

Gender had the largest effect on the size of the AAG, followed by parental SES. The AAGs of females were 3.6 ISEI scores larger than those of males, and a 1 *SD* higher parental SES was linked to a 1.0 ISEI scores larger AAG. Of the Big Five, 1 *SD* (i.e., 0.9 scale points) lower Conscientiousness was associated with 1.0 ISEI scores larger AAGs.

However, once again behind several of these (significant or non-significant) total effects there were several direct or indirect effects, some of which were in opposite directions. The second column of Table 3 displays the direct effects of the predictors on the size of the AAG (which, because of how the model is constructed, are equivalent to the predictors' effects on attainment while controlling for aspirations). In contrast to Model Part I, sociostructural characteristics did not predict the size of the AAG. As with Model Part I, aspirations again had the strongest effect, meaning that 1 *SD* higher initial aspirations corresponded to 8.5 ISEI scores larger AAGs. Moreover, 1 *SD* lower Emotional Stability was associated with 0.7 ISEI scores larger AAGs, and 1 *SD* shorter search durations were associated with 1.0 ISEI scores larger AAGs.

The last column of Table 3 shows the indirect effects mediated by aspirations. With respect to the indirect effects, we found the exact same pattern of significant predictors as we did in Part I, because these characteristics predicted occupational aspirations (see Appendix E). All sociostructural characteristics indirectly contributed—via aspirations—to the size of the AAG, indicating that, mediated by aspirations, larger AAGs were indirectly predicted by 1 *SD* higher parental SES (1.3 ISEI scores larger AAGs), 1 *SD* higher cultural capital (0.8 ISEI scores larger AAGs), being female (4.5 ISEI scores larger AAGs), and a migration background (2.5–2.8 ISEI scores larger AAGs). Furthermore, 1 *SD* higher school grades (0.4 ISEI scores larger AAGs), 1 *SD* higher Emotional Stability (0.4 ISEI scores larger AAGs), and 1 *SD* higher Openness (0.4 ISEI scores larger AAGs) were indirectly related to larger AAGs via aspirations. Emotional Stability had a direct negative effect on the size of the

AAG related to students' attainment of a VET position and, via aspirations, a positive indirect effect on the size of the AAG, resulting in a non-significant total effect—that is, a suppression effect.

Table 3

Predicting the Size of the AAG of Those Who Experienced a Gap (Model Part II)

	Total effects			Direct effects			Indirect effects through aspirations		
	<i>b</i>	95% CI	<i>p</i>	<i>b</i>	95% CI	<i>p</i>	<i>b</i>	95% CI	<i>p</i>
Aspirations				8.519	[7.890, 9.186]	<.001			
Sociostructural characteristics									
Parental SES	1.019	[0.224, 1.826]	.013	−0.288	[−0.951, 0.371]	.394	1.307	[0.919, 1.705]	<.001
Cultural capital	0.214	[−0.592, 0.991]	.599	−0.584	[−1.282, 0.104]	.099	0.798	[0.429, 1.181]	<.001
First-generation migrant*	1.398	[−1.933, 4.965]	.420	−1.419	[−4.449, 1.874]	.377	2.817	[1.261, 4.438]	<.001
Second-generation migrant*	1.563	[−0.354, 3.549]	.120	−0.969	[−2.748, 0.841]	.290	2.532	[1.540, 3.591]	<.001
Female*	3.633	[2.117, 5.178]	<.001	−0.872	[−2.343, 0.590]	.241	4.505	[3.880, 5.200]	<.001
Cognitive ability and school grades									
Cognitive ability	−0.069	[−0.825, 0.723]	.861	−0.385	[−1.062, 0.340]	.280	0.315	[−0.034, 0.659]	.073
School grades ^a	0.707	[−0.005, 1.413]	.052	0.306	[−0.344, 0.977]	.359	0.401	[0.077, 0.726]	.014
Personality traits									
Extraversion	0.049	[−0.727, 0.821]	.900	−0.113	[−0.771, 0.537]	.736	0.162	[−0.182, 0.526]	.366
Agreeableness	0.622	[−0.157, 1.414]	.122	0.414	[−0.278, 1.111]	.241	0.208	[−0.140, 0.565]	.248
Conscientiousness	−0.969	[−1.782, −0.166]	.018	−0.676	[−1.426, 0.064]	.073	−0.294	[−0.651, 0.062]	.108
Emotional Stability	−0.289	[−1.017, 0.463]	.449	−0.688	[−1.340, −0.003]	.046	0.399	[0.047, 0.760]	.027
Openness	0.096	[−0.677, 0.835]	.804	−0.285	[−1.025, 0.412]	.435	0.381	[0.036, 0.731]	.031
Search duration				−1.004	[−1.599, −0.344]	.002			

Note. AAG = aspiration–attainment gap; CI = confidence interval; SES = socioeconomic status. $N = 2,478$ ($n = 1,138$ for AAG < 0; $n = 1,340$ for no AAG). Coefficients significant at the $p < .05$ level are in bold type. Continuous coefficients are standardized with regard to X (the independent variables) but not Y (the dependent variable, i.e., the AAG). Variables marked with an asterisk (*) are not standardized.

^a Higher values reflect higher grades.

Discussion

The present study proposes a new perspective on successful school-to-work transitions by focusing on students' ability, or inability, to realize their occupational aspirations, that is, the aspiration–attainment gap (AAG)—or the absence thereof. We are among the first to investigate this gap in intermediate secondary school (*Realschule*) students in Germany who transitioned to their first VET position after finishing compulsory schooling in Grade 10.

Distribution of the Occupational AAG

Our first aim was to ascertain the *prevalence* of how many students in our sample experienced an AAG after the transition from school to VET, and how large this gap was among those who experienced it. Our analyses showed that about one half of the students were able to realize or even exceed their occupational aspirations, which means that their *realistic* occupational aspirations were indeed quite realistic in terms of SES. However, there was a substantial percentage of students (45.9%) whose VET positions fell short of their occupational aspirations—that is, who experienced an AAG. This is problematic for two reasons. First, experiencing an AAG is associated with lower well-being, job satisfaction, and higher levels of depressive symptoms (e.g., Carr, 1997; Hardie, 2014). Second, a discrepancy between aspirations and attainment is likely to have unfavorable long-term effects on career development (as surmised, e.g., by Tomasik et al., 2009). The average discrepancy between the SES of the occupational aspirations and the attained VET position among those who experienced an AAG was -20.14 ; extreme AAG values (i.e., deciles above 90%, that is, values larger than -43) were rare.

One explanation for the few extremely high AAG values that we observed might be that students with the highest aspirations (≤ 88.96) had exaggerated and unrealistic ideas about their possibilities. For example, it is very unlikely that someone with an intermediate school-leaving qualification will become a judge. Another reason might be that some students hope to attain a seemingly unattainable profession (e.g., doctor) via second-chance education, for instance by going to university after completing their VET (e.g., as a nurse or a paramedic). In Germany, the number of those who start tertiary education without completing the upper level of *Gymnasium* and passing the *Abitur* examination (i.e., who have acquired their higher education entrance qualification through VET in combination with work experience; for more details, see Nickel et al., 2020) has risen steadily over the last two decades, but still represents only a small percentage. In 2018, the proportion of third-level students without

Abitur was 2.2%, and the proportion of tertiary graduates without *Abitur* was 1.8% (Nickel et al., 2020). Moreover, people who undergo VET usually stay in the occupation for which they have trained. In addition, it is not easily possible for non-college-bound students to continue their education after completing VET with subsequent tertiary education. For these reasons, we consider the AAG to be a generally undesirable phenomenon.

What Explains the Occupational AAG?

Our second aim was to identify *predictors* (i.e., possible determinants) of the occupational AAG. The initial level of aspirations emerged as the strongest predictor. A 1 *SD* (about 17 ISEI scores) increase in aspirations corresponded to an almost 25% higher risk of experiencing an AAG, and to an about 9 ISEI scores larger AAG among those who experienced it. At first glance, these effects seem to be inconsistent with previous findings showing that higher aspirations predict higher occupational attainment (e.g., Rojewski, 2005; Schoon & Polek, 2011). Whereas their positive effects on attainment portray higher aspirations as something generally desirable, our results alert to the fact that higher aspirations also entail a higher risk of not realizing these aspirations. Simply put, higher aspirations may foster attainment, but at the same time they may render students more prone to failure. This may indicate that high *realistic* aspirations are often not a truly realistic reflection of students' actual abilities and their chances on the labor market, especially among students who are disadvantaged and lack key resources and abilities.

A second key finding was that aspirations—besides predicting the AAG incrementally, over and above all other predictors in our model—also mediated the effects of several other predictors on the AAG. Thus, aspirations played a dual role in determining whether someone experienced an AAG or not. Sociostructural characteristics, in particular, were indirectly related to the AAG via occupational aspirations. This is in line with our expectations and consistent with previous findings in the literature whereby higher parental SES (e.g., Kay et al., 2016; Salikutluk, 2013; Schoon & Polek, 2011), higher cultural capital (e.g., Wicht,

2016), a migration background (e.g., McElvany et al., 2018; Salikutluk, 2013), and being female (e.g., Guo et al., 2015; Schoon & Polek, 2011; Wicht et al., 2021) are related to higher aspirations (see Appendix E). Higher school grades were also indirectly associated with the risk and size of an AAG, which is in line with evidence from previous studies that higher educational achievement is related to higher aspirations (e.g., Kay et al., 2016; Salikutluk, 2013). In both model parts (higher risk of an AAG, and the size of the AAG when it was experienced), the same variables predicted the AAG.

A third main finding was that there were differences between direct, indirect, and total effects in the sense that direct and indirect effects were often in opposite directions—that is, their algebraic signs were reversed. In other words, some non-existing and non-significant total effects masked the presence of direct and indirect effects. Total effects alone are therefore potentially misleading because some predictors in our model predicted the AAG in opposite ways—indirectly, via aspirations (indirect effects), and incrementally, over and above aspirations (direct effects). The central findings with regard to this issue are the following: On the one hand, after statistically controlling for aspirations (i.e., holding aspirations constant), higher parental SES, female gender, and higher Emotional Stability predicted higher attainment, and hence a lower risk of experiencing an AAG (or a greater chance of experiencing a smaller AAG). On the other hand, by raising aspirations, the same characteristics indirectly increased the risk of experiencing an AAG (or of experiencing a larger AAG). The bottom line is that some characteristics and resources that as direct effects are advantageous for the AAG (i.e., that predict a lower risk or smaller gaps) turned out to be disadvantageous in terms of their indirect effects (i.e., higher risk or larger gaps), often to the extent that direct and indirect effects cancelled each other out and resulted in a zero total effect. This demonstrates that higher aspirations of students with, for example, higher parental SES are not necessarily beneficial.

What are the reasons for the divergent indirect and direct effects of many characteristics? As outlined in the theory section, individual characteristics may be relevant for the levels of both aspirations and attainment. The levels of these variables reflect individual self-selection processes and/or institutional selection processes that might underlie differences in the risk of experiencing an AAG. In the case of the direct effects, the findings suggest that a more disadvantaged social background (lower family resources, e.g., parental SES), a lower level of educational achievement (in terms of educational qualifications or school grades), and lower personal resources (lower levels of individual psychosocial and self-regulatory resources, e.g., Emotional Stability and Agreeableness) predicted higher risks of an AAG. This is in line with our expectations that in the selection process these characteristics might act as signals to employers of VET institutions that applicants are less suitable (e.g., Caldwell & Burger, 1998; Nießen et al., 2020; Protsch & Dieckhoff, 2011). Because these characteristics were either associated with lower aspirations or not associated with aspirations at all, students who displayed them did not have exaggerated aspirations.

By contrast, in the case of indirect effects, by raising aspirations, higher individual resources and higher school grades were the characteristics that predicted higher risks of experiencing an AAG and larger AAG sizes. One possible interpretation is that a privileged social background (e.g., higher parental SES, cultural capital), higher school achievement (i.e., grades), and higher psychosocial and self-regulatory resources (i.e., Emotional Stability, Openness) might encourage higher aspirations (see Schoon & Heckhausen, 2019), even though these aspirations might be unattainable. Thus students with these characteristics were more likely to harbor aspirations that may be unrealistically high.

A fourth main finding is that the risk of experiencing an AAG could be better predicted than the size of the AAG. This could be due to the fact that the sample variance of those who experienced an AAG was restricted, and that the sample size was smaller (54% of the original sample). Lower parental SES, male gender, lower school grades, and lower

Agreeableness were directly associated with a higher risk of an AAG, whereas, for the prediction of the size of the AAG, lower Emotional Stability was the only one of our focal predictors to be associated with larger AAG sizes. The direction of the effects are in line with our expectations and with earlier findings that lower parental SES (e.g., Croll & Atwood, 2013; Damian et al., 2015; Kay et al., 2016), male gender (e.g., Buttaro et al., 2010; Mello, 2008; but cf. Damian et al., 2015; Paat, 2015, who reported the opposite), lower school grades, (e.g., Buttaro et al., 2010; Paat, 2015), lower Agreeableness, and lower Emotional Stability (e.g., Damian et al., 2015; Hogan & Holland, 2003) predict lower attainment.

The reason why cognitive ability had no influence—either directly or indirectly—on the AAG remains unclear and needs further investigation. The possibility that the effect of school grades might have suppressed the effect of cognitive ability does not appear plausible, because both measures showed a correlation of only .10. Obviously, visible school achievement, as opposed to unobservable cognitive ability, is decisive in the selection process. This is in line with signaling theory (e.g., Spence, 1974). On a side note, school grades were the only variable that showed direct, indirect, and total effects on the risk of an AAG.

Given the lack of previous studies on the predictive relationship between the Big Five and aspirations, our finding that higher Emotional Stability and higher Openness (for Openness, see Rottinghaus et al., 2002) were associated with higher aspirations is an important contribution to research on aspirations. Apart from the study by Rottinghaus et al. (2002), we could find only one other study that used at least two of the global Big Five dimensions, namely Extraversion and Emotional Stability (Marjoribanks, 1992), but did not find any effects of 12-year-old children's personalities on their educational and occupational aspirations.

Furthermore, the results of the present analyses show that longer search durations (i.e., the time between school graduation and entering the first VET position) also predicted a higher risk of experiencing an AAG. We interpret this as reflecting a negative signaling effect of time spent in unemployment (see signaling theory; e.g., Spence, 1974). By contrast, the

magnitude of AAGs that occurred in students with shorter search durations tended to be greater. This might be due to the fact that these students picked the first available VET position and did not have the resources to wait for something better. Future research is required to scrutinize these patterns more closely. Moreover, the fact that nearly half of the students experienced an AAG highlights the importance of career information and guidance appropriate for non-college-bound students in order to facilitate their transition to VET and beyond.

Limitations and Directions for Future Research

Although this study was the first to analyze the occupational AAG in terms of the discrepancy between the SES of individuals' occupational aspirations and their attained VET positions, some limitations should be mentioned. First, we focused on the transition to VET of school leavers from intermediate secondary schools [*Realschulen*] in Germany. Future research should extend our analyses of the AAG to school leavers from other school types, such as academically oriented secondary schools (e.g., in Germany, the *Gymnasium*), who transition to either VET or tertiary education. Moreover, although starting VET is the first step in the labor market, and determines subsequent career options, our analyses examined only this specific educational transition. Further research is needed to extend these findings and to figure out whether our results are generalizable to other education systems and transitions such as from VET to the labor market.

Next, only short measures to capture the Big Five personality traits and cognitive ability were available in the data. Although the BFI-10 (Rammstedt & John, 2007) predicts a broad range of criteria, and sometimes does so even better than longer Big Five scales (e.g., Rammstedt et al., 2020; Thalmayer et al., 2011), the internal consistency of the personality dimensions and of the cognitive ability test, NEPS-MAT (Pohl & Carstensen, 2012) were relatively low in the present sample, as is often the case for short scales. Thus, effects of personality and cognitive ability are likely to be conservative estimates. Future studies might garner

further insights by using more extensive scales to measure the Big Five and cognitive ability, ideally scales that also allow for a more fine-grained facet-level perspective.

Finally, although there are strong reasons to assume that an AAG is detrimental to job satisfaction, work motivation, and career progression, an important task for future research is to establish the extent to which the AAG actually has such negative consequences for individuals who experience it, and how profound and long-lasting these consequences may be. However, experiencing an AAG might also be a driving force that spurs the person on to return to education or choose a different career track. Hence, more longitudinal research is needed. For example, future research could analyze both the AAG's influence on the further occupational biography (success in terms of completion of VET, dropout from VET, etc.) and the personal influence (concerning loss of talent, well-being, motivation, etc.).

Conclusion

Our analyses revealed that the AAG is quite prevalent: A substantial share of our sample of non-college-bound students (45.9%) in Germany were unable to attain a VET position that matched their prior aspirations in terms of the SES it confers. However, not all youth were equally likely to experience an AAG: The level of aspirations emerged as the strongest predictor, and it also mediated the effect of other predictors, most importantly higher parental SES and higher school grades. Some individual resources proved to be doubly important: On the one hand, they indirectly increased the risk of experiencing an AAG by raising aspirations; on the other hand, they lowered this risk by directly increasing attainment. Furthermore, our results caution that higher aspirations are not necessarily beneficial: Although they may foster attainment, they also entail a higher risk of failure, especially if aspirations exceed students' actual chances on the labor market, given their set of resources and abilities. This is the case particularly in highly structured education systems (in the less structured context of societies such as the United States, where social climbing is more likely, being overambitious can be helpful to achieve goals [e.g., Heckhausen & Chang, 2009]).

The AAG is of particular relevance for practitioners and political decision makers, because failure to meet one's own expectations may lead to diminished work motivation, dissatisfaction, etc. In this respect, the realization of occupational aspirations is important for shaping future occupational careers and for reducing social inequality. The present investigation makes an important contribution both to examining the distribution of the occupational AAG and determining the role of different types of possible influences that operate simultaneously on the occupational AAG of non-college-bound students in the context of the highly structured transition system at entry to VET in Germany. To conclude, our findings show that the AAG is a widespread phenomenon that is not randomly distributed but can be predicted partly from students' sociostructural and individual characteristics. It thus merits closer examination in future research.

References

- Ashby, J. S., & Schoon, I. (2010). Career success: The role of teenage career aspirations, ambition value and gender in predicting adult social status and earnings. *Journal of Vocational Behavior*, 77(3), 350–360. <https://doi.org/10.1016/j.jvb.2010.06.006>
- Ashby, J. S., & Schoon, I. (2012). Living the dream? A qualitative retrospective study exploring the role of adolescent aspirations across the life span. *Developmental Psychology*, 48(6), 1694–1706. <https://doi.org/10.1037/a0027297>
- Becker, R., & Schubert, F. (2011). Die Rolle von primären und sekundären Herkunftseffekten für Bildungschancen von Migranten im deutschen Schulsystem [The role of primary and secondary effects of background for migrants' educational opportunities in the German school system]. In R. Becker (Ed.), *Integration durch Bildung* [Integration through education] (pp. 161–194). VS Verlag für Sozialwissenschaften. https://doi.org/10.1007/978-3-531-93232-3_8
- Blossfeld, P. (2017). Labor market entry in Germany before and after the financial crisis: An analysis of duration of labor market entry, quality of first job and fixed-term employment. In I. Schoon & J. Bynner (Eds.), *Young people's development and the Great Recession: Uncertain transitions and precarious futures* (pp. 208–232). Cambridge University Press. <https://doi.org/10.1017/9781316779507.010>
- Blossfeld, H.-P., & Roßbach, H.-G. (Eds.) (2011). Education as a lifelong process – The German National Educational Panel Study (NEPS). VS Verlag für Sozialwissenschaften. <https://doi.org/10.1007/978-3-658-23162-0>
- Brown, D. (2002). *Career choice and development* (4th ed.). Jossey-Bass.
- Buttaro, A., Battle, J., & Pastrana, A. J. (2010). The aspiration-attainment gap: Black students and education. *The Journal of Negro Education*, 79(4), 488–502.

- Caldwell, D. F., & Burger, J. M. (1998). Personality characteristics of job applicants and success in screening interviews. *Personnel Psychology*, 51(1), 119–136.
<https://doi.org/10.1111/j.1744-6570.1998.tb00718.x>
- Carr, D. (1997). The fulfillment of career dreams at midlife: Does it matter for women's mental health? *Journal of Health and Social Behavior*, 38(4), 331–344.
<https://doi.org/10.2307/2955429>
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five Factor Inventory (NEO-FFI): Professional manual*. Psychological Assessment Resources.
- Croll, P., & Attwood, G. (2013). Participation in higher education: Aspirations, attainment and social background. *British Journal of Educational Studies*, 61(2), 187–202.
<https://doi.org/10.1080/00071005.2013.787386>
- Damian, R. I., Su, R., Shanahan, M., Trautwein, U., & Roberts, B. W. (2015). Can personality traits and intelligence compensate for background disadvantage? Predicting status attainment in adulthood. *Journal of Personality and Social Psychology*, 109(3), 473–489.
<https://doi.org/10.1037/pspp0000024>
- Deary, I. J., Strand, S., Smith, P., & Fernandes, C. (2007). Intelligence and educational achievement. *Intelligence*, 35(1), 13–21. <https://doi.org/10.1016/j.intell.2006.02.001>
- Duncan, G. J., & Brooks-Gunn, J. (1997). *Consequences of growing up poor*. Russell Sage Foundation Press.
- Dunn, W. S., Mount, M. K., Barrick, M. R., & Ones, D. S. (1995). Relative importance of personality and general mental ability in managers' judgments of applicant qualifications. *Journal of Applied Psychology*, 80(4), 500–509. <https://doi.org/10.1037/0021-9010.80.4.500>
- Edwards, J. R., & Shipp, A. J. (2007). The relationship between person-environment fit and outcomes: An integrative theoretical framework. In C. Ostroff & T. A. Judge (Eds.), *The*

organizational frontiers series. Perspectives on organizational fit (pp. 209–258). Lawrence Erlbaum Associates Publishers.

Ganzeboom, H. B. G., De Graaf, P. M., & Treiman, D. J. (1992). A standard international socioeconomic index of occupational status. *Social Science Research*, 21(1), 1–56.

[https://doi.org/10.1016/0049-089X\(92\)90017-B](https://doi.org/10.1016/0049-089X(92)90017-B)

Ganzeboom, H. B. G., & Treiman, D. J. (1996). Internationally comparable measures of occupational status for the 1988 International Standard Classification of Occupations. *Social Science Research*, 25(3), 201–239. <https://doi.org/10.1006/ssre.1996.0010>

Gilar, R., de Haro, J. M., & Castejon, J. L. (2015). Individual differences in predicting occupational success: The effect of population heterogeneity. *Journal of Work and Organizational Psychology*, 31(2), 101–107. <https://doi.org/10.1016/j.rpto.2015.03.002>

Goldberg, L. R. (1992). The development of markers for the Big-Five factor structure. *Psychological Assessment*, 4(1), 26–42. <https://doi.org/10.1037/1040-3590.4.1.26>

Gottfredson, L. S. (2002). Gottfredson's theory of circumscription, compromise, and self-creation. In D. Brown (Ed.), *Career choice and development* (4th ed., pp. 85–148). Jossey-Bass.

Guo, J., Marsh, H. W., Parker, P. D., Morin, A. J. S., & Yeung, A. S. (2015). Expectancy-value in mathematics, gender and socioeconomic background as predictors of achievement and aspirations: A multi-cohort study. *Learning and Individual Differences*, 37, 161–168.

<https://doi.org/10.1016/j.lindif.2015.01.008>

Hardie, J. H. (2014). The consequences of unrealized occupational goals in the transition to adulthood. *Social Science Research*, 48, 196–211.

<https://doi.org/10.1016/j.ssresearch.2014.06.006>

Heckhausen, J., & Chang, E. S. (2009). Can ambition help overcome social inequality in the transition to adulthood? Individual agency and societal opportunities in Germany and the

United States. *Research in Human Development*, 6(4), 235–251.

<https://doi.org/10.1080/15427600903281244>

Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94(3), 319–340. <https://doi.org/10.1037/0033-295X.94.3.319>

Hogan, J., & Holland, B. (2003). Using theory to evaluate personality and job-performance relations: A socioanalytic perspective. *Journal of Applied Psychology*, 88(1), 100–112. <https://doi.org/10.1037/0021-9010.88.1.100>

Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments*. Psychological Assessment Resources.

Holtmann, A. C., Menze, L., & Solga, H. (2017). Persistent disadvantages or new opportunities? The role of agency and structural constraints for low-achieving adolescents' school-to-work transitions. *Journal of Youth and Adolescence*, 46, 2091–2113. <https://doi.org/10.1007/s10964-017-0719-z>

Jorgensen, T. D., Pornprasertmanit, S., Schoemann, A. M., & Rosseel, Y. (2019). *semTools: Useful tools for structural equation modeling*. <https://CRAN.R-project.org/package=semTools>

Kao, G., & Tienda, M. (1995). Optimism and achievement: The educational performance of immigrant youth. *Social Science Quarterly*, 76(1), 1–19.

Kao, G., & Tienda, M. (1998). Educational aspirations of minority youth. *American Journal of Education*, 106(3), 349–384. <https://doi.org/10.1086/444188>

Kay, J. S., Shane, J., & Heckhausen, J. (2016). High-school predictors of university achievement: Youths' self-reported relationship with parents, beliefs about success, and university aspirations. *Journal of Adolescence*, 53, 95–106. <https://doi.org/10.1016/j.adolescence.2016.08.014>

Klein, M., Schindler, S., Pollak, R., & Müller, W. (2009). Soziale Disparitäten in der Sekundarstufe und ihre langfristige Entwicklung [Long-term development of social

- disparities in secondary education]. In J. Baumert, K. Maaz, & U. Trautwein (Eds.), *Bildungsentscheidungen* [Educational decisions] (Vol. 12, pp. 47–73). VS Verlag für Sozialwissenschaften. https://doi.org/10.1007/978-3-531-92216-4_3
- Kleinert, C., & Jacob, M. (2013). Demographic changes, labor markets and their consequences on post-school-transitions in West Germany 1975–2005. *Research in Social Stratification and Mobility*, 32(1), 65–83. <https://doi.org/10.1016/j.rssm.2013.01.004>
- Kuncel, N. R., Hezlett, S. A., & Ones, D. S. (2004). Academic performance, career potential, creativity, and job performance: Can one construct predict them all? *Journal of Personality and Social Psychology*, 86(1), 148–161. <https://doi.org/10.1037/0022-3514.86.1.148>
- Lechner, C. M., Anger, S., & Rammstedt, B. (2019). Socio-emotional skills in education and beyond: Recent evidence and future research avenues. In R. Becker (Ed.), *Research handbook on sociology of education*. Edward Elgar Publishing.
- Lechner, C., Danner, D., & Rammstedt, B. (2017). How is personality related to intelligence and achievement? A replication and extension of Borghans et al. and Salkever. *Personality and Individual Differences*, 111, 86–91. <https://doi.org/10.1016/j.paid.2017.01.040>
- Lent, R. W., Brown, S. D., and Hackett, G. (2002). Social cognitive career theory. In D. Brown (Ed.), *Career choice and development* (4th ed., pp. 255–311). Jossey-Bass.
- Lippman, S. A., & McCall, J. J. (1976). The economics of job search: A survey. *Economic Inquiry*, 14(2), 155–189.
- Marjoribanks, K. (1992). Ability and personality correlates of children's attitudes and aspirations. *Psychological Reports*, 71(3), 847–850. <https://doi.org/10.2466/pr0.1992.71.3.847>
- McElvany, N., Ferdinand, H. D., Gebauer, M. M., Bos, W., Huelmann, T., Köller, O., & Schöber, C. (2018). Attainment-aspiration gap in students with a migration background: The role of self-efficacy. *Learning and Individual Differences*, 65, 159–166. <https://doi.org/10.1016/j.lindif.2018.05.002>
- MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis*. Erlbaum.

- Mello, Z. R. (2008). Gender variation in developmental trajectories of educational and occupational expectations and attainment from adolescence to adulthood. *Developmental Psychology*, 44(4), 1069–1080. <https://doi.org/10.1037/0012-1649.44.4.1069>
- Michalos, A. C. (1985). Multiple discrepancies theory (MDT). *Social Indicators Research*, 16, 347–413. <https://doi.org/10.1007/BF00333288>
- Moy, J. W., & Lam, K. F. (2004). Selection criteria and the impact of personality on getting hired. *Personnel Review*, 33(5), 521–535. <https://doi.org/10.1108/00483480410550134>
- Muthén, L. K., & Muthén, B. O. (1998–2017). *Mplus user's guide* (8th ed.). Muthén & Muthén.
- Neelon B., & O'Malley A. J. (2019). Two-part models for zero-modified count and semicontinuous data. In A. Levy, S. Goring, C. Gatsonis, B. Sobolev, E. van Ginneken, & R. Busse (Eds.), *Health services evaluation. Health services research*. Springer. https://doi.org/10.1007/978-1-4939-8715-3_39
- NEPS (2019). *NEPS Starting Cohort 4 – Grade 9. School and vocational training – Educational pathways of students in Grade 9 and higher* (Scientific Use File Version 10.0.0) [Questionnaire]. Leibniz Institute for Educational Trajectories (LIfBi).
- Nickel, S., Thiele, A.-L., & Leonowitsch, I. (2020). *Update 2020: Studieren ohne Abitur in Deutschland. Überblick über aktuelle Entwicklungen* [Update 2020: Studying in Germany without *Abitur*. Overview of current developments] (CHE Working Paper No. 228). CHE gemeinnütziges Centrum für Hochschulentwicklung. <https://www.che.de/download/studieren-ohne-abitur-in-deutschland-update-2020/?wpdmdl=14552&ind=1585603866648>
- Nießen, D., Danner, S., Spengler, M., & Lechner, C. M. (2020). Big Five personality traits predict successful transitions from school to vocational education: A large-scale study. *Frontiers in Psychology*, 11, 1827. <http://doi.org/10.3389/fpsyg.2020.01827>

- Paat, Y.-F. (2015). Children of Mexican immigrants' aspiration-attainment gap and educational resilience. *Diaspora, Indigenous, and Minority Education*, 9(1), 37–53.
<https://doi.org/10.1080/15595692.2014.980804>
- Paat, Y.-F. (2016). Strain, psychological conflicts, aspirations-attainment gap, and depressive tendencies among youth of Mexican immigrants. *Social Work in Public Health*, 31(1), 19–29. <https://doi.org/10.1080/19371918.2015.1087910>
- Pohl, S., & Carstensen, C. H. (2012). *NEPS technical report – Scaling the data of the competence tests* (NEPS Working Paper No. 14). Otto-Friedrich-Universität, Nationales Bildungspanel.
- Protsch, P., & Dieckhoff, M. (2011). What matters in the transition from school to vocational training in Germany. *European Societies*, 13(1), 69–91.
<https://doi.org/10.1080/14616696.2010.540352>
- Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of Research in Personality*, 41(1), 203–212. <https://doi.org/10.1016/j.jrp.2006.02.001>
- Rammstedt, B., Lechner, C. M., & Danner, D. (2020). Short scales do not fall short: A comparison of three (extra-)short forms of the Big Five. *European Journal of Psychological Assessment*. Advance online publication. <https://doi.org/10.1027/1015-5759/a000574>
- Rehberg, R. A. (1967). Adolescent career aspirations and expectations: Evaluation of two contrary stratification hypotheses *The Pacific Sociological Review*, 10(2), 81–90
<https://doi.org/10.2307/1388426>
- Revelle, W. (2018). *psych: Procedures for personality and psychological research*.
<https://CRAN.R-project.org/package=psych>
- Reynolds, J. R., & Pemberton, J. (2001). Rising college expectations among youth in the United States: A comparison of the 1979 and 1997 NLSY. *Journal of Human Resources*, 36(4), 703–726. <https://doi.org/10.2307/3069639>

- Rojewski, J. W. (2005). Occupational aspirations: Constructs, meanings, and application. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (pp. 131–154). John Wiley.
- Rosseel, Y (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36. <http://www.jstatsoft.org/v48/i02/>
- Roth, B., Becker, N., Romeyke, S., Schäfer, S., Domnick, F., & Spinath, F. M. (2015). Intelligence and school grades: A meta-analysis. *Intelligence*, 53, 118–137.
<https://doi.org/10.1016/j.intell.2015.09.002>
- Rottinghaus, P. J., Lindley, L. D., Green, M. A., & Borgen, F. H. (2002). Educational aspirations: The contribution of personality, self-efficacy, and interests. *Journal of Vocational Behavior*, 61(1), 1–19. <https://doi.org/10.1006/jvbe.2001.1843>
- Salikutluk, Z. (2013). *Immigrants' aspiration paradox: Theoretical explanations and determinants of the aspiration gap between native and immigrant students* (Working Paper No. 150). Mannheimer Zentrum für Europäische Sozialforschung.
- Schneider, S. (2008). Applying the ISCED-97 to the German educational qualifications. In S. L. Schneider (Ed.), *The International Standard Classification of Education (ISCED-97): An evaluation of content and criterion validity for 15 European countries* (pp. 76–102). MZES.
- Schoon, I. (2010). Childhood cognitive ability and adult academic attainment: Evidence from three British cohort studies. *Longitudinal and Life Course Studies*, 1(3), 241–258.
- Schoon, I., & Eccles, J. S. (Eds.). (2014). *Gender differences in aspirations and attainment: A life course perspective*. Cambridge University Press.
<https://doi.org/10.1017/CBO9781139128933>
- Schoon, I., & Heckhausen, J. (2019). Conceptualizing individual agency in the transition from school to work: A socio-ecological developmental perspective. *Adolescent Research Review*, 4, 135–148. <https://doi.org/10.1007/s40894-019-00111-3>

- Schoon, I., & Lyons-Amos, M. (2016). Diverse pathways in becoming an adult: The role of structure, agency and context. *Research in Social Stratification and Mobility*, 46(Part A), 11–20. <https://doi.org/10.1016/j.rssm.2016.02.008>
- Schoon, I., & Lyons-Amos, M. (2017). A socio-ecological model of agency: The role of psycho-social and socioeconomic resources in shaping education and employment transitions in England. *Longitudinal and Life Course Studies*, 8(1), 35–56. <https://doi.org/10.14301/llcs.v8i1.404>
- Schoon, I., & Parsons, S. (2002). Teenage aspirations for future careers and occupational outcomes. *Journal of Vocational Behavior*, 60(2), 262–288. <https://doi.org/10.1006/jvbe.2001.1867>
- Schoon, I., & Polek, E. (2011). Teenage career aspirations and adult career attainment: The role of gender, social background and general cognitive ability. *International Journal of Behavioral Development*, 35(3), 210–217. <https://doi.org/10.1177/0165025411398183>
- Sieben, S., & Lechner, C. M. (2019). Measuring cultural capital through the number of books in the household. *Measurement Instruments for the Social Sciences*, 1, Article 1. <https://doi.org/10.1186/s42409-018-0006-0>
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355–374. <https://doi.org/10.2307/1882010>
- Spence, M. A. (1974). *Market signaling. Informational transfer in hiring and related screening processes*. Harvard University Press.
- Starbuck, W. H. (1963). Level of aspiration theory and economic behavior. *Behavioral Science*, 8(2), 128–136.
- Statistisches Bundesamt (2019). *Bildung und Kultur. Integrierte Ausbildungsberichterstattung. Anfänger, Teilnehmer und Absolventen im Ausbildungsgeschehen nach Sektoren/Konten und Ländern. 2018* [Education and culture. Integrated training reporting. Beginners, participants, and graduates in trainings by sectors/accounts and federal states. 2018].

Statistisches Bundesamt (Destatis). <https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Schulen/Publikationen/Downloads-Schulen/integrierte-ausbildungsberichterstattung-5211201187004.html;jsessionid=7233AE3D0D1BB0C6935D93C5814295F4.internet8711>

Thalmayer, A. G., Saucier, G., and Eigenhuis, A. (2011). Comparative validity of brief to medium-length Big Five and Big Six personality questionnaires. *Psychological Assessment* 23(4), 995–1009. <https://doi.org/10.1037/a0024165>

Thurow, L. C. (1975). *Generating inequality. Mechanisms of distribution in the U.S. economy*. Basic Books.

Tomasik, M. J., Hardy, S., Haase, C. M., & Heckhausen, J. (2009). Adaptive adjustment of vocational aspirations among German youths during the transition from school to work. *Journal of Vocational Behavior*, 74, 38–46. <https://doi.org/10.1016/j.jvb.2008.10.003>

Wicht, A. (2016) Occupational aspirations and ethnic school segregation: Social contagion effects among native German and immigrant youths. *Journal of Ethnic and Migration Studies*, 42(11), 1825–1845. <https://doi.org/10.1080/1369183X.2016.1149455>

Wicht, A., Miyamoto, A., & Lechner, C. M. (2021). Are girls more ambitious than boys? Vocational interests partly explain gender differences in occupational aspirations. *Journal of Career Development*. Advance online publication. <https://doi.org/10.1177/0894845321991665>

Williams, R. L. (2000). A note on robust variance estimation for cluster-correlated data. *Biometrics*, 56(2), 645–646. <https://doi.org/10.1111/j.0006-341X.2000.00645.x>

Züll, C. (2016). *The coding of occupations* (Version 2.0). GESIS Survey Guidelines. GESIS – Leibniz Institute for the Social Sciences. https://doi.org/10.15465/gesis-sg_en_019

Appendix A

Country Context

The German school system is characterized by a high degree of stratification and early tracking. In fourth grade (at age 10), after typically four years of primary school, students are selected into different school types: *Hauptschule*, “a type of school at lower secondary level providing a basic general education, usually comprising Grades 5 to 9” (Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany [KMK], 2019); *Realschule* (intermediate secondary school), “a type of school at lower secondary level providing a more extensive general education, usually comprising Grades 5–10” (KMK, 2019); and *Gymnasium*, “a type of school covering both lower and upper secondary levels (Grades 5–12 or 5–13) providing an in-depth general education aimed at the general higher education entrance qualification” (KMK, 2019).

Hauptschule graduates may leave the (general) education system after ninth grade (at age 15), *Realschule* graduates leave after tenth grade (at age 16), and graduates from *Gymnasium* after twelfth or thirteenth grade (at age 18 or 19). Whereas graduates from *Gymnasium* are entitled to study at a university or a university of applied sciences (*Fachhochschule*; or to take up vocational education and training [VET]), *Hauptschule* and *Realschule* graduates are eligible only to take up VET (however, *Realschule* graduates with a certain grade point average may attend upper *Gymnasium* level to obtain a higher education entrance qualification). In general, about half of all school leavers in Germany transition to VET; the other half starts tertiary education, or continues general schooling in order to obtain a higher education entrance qualification (Statistisches Bundesamt, 2019).

In the context of the German dual training system, which provides initial vocational training before labor market entry (Protsch & Soga, 2016), VET combines an on average 3-year company-based training in a specific occupation or trade with a vocational-school-based

education in occupation-related subjects, such as accounting, hygiene, or medical engineering (e.g., Heckhausen & Tomasik, 2002). For example, in some dual training structures, trainees attend vocational school 2 days a week; in others, 2-week periods of in-company training alternate with 2-week periods at a vocational school.

Access to VET itself is highly stratified by school attainment (Protsch & Solga, 2016) because not all VET programs are accessible for all graduates. There are low-skilled occupations, such as baker, landscape gardener, or plumbing and heating installer, that require only a basic school-leaving qualification (*Hauptschulabschluss*). Skilled occupations, such as mechatronics technician, industrial mechanic, or management assistant in wholesale, require an intermediate school-leaving qualification (*Mittlere Reife*). Professional occupations, such as bank clerk, insurance clerk, or IT specialist, require a higher education entrance qualification (*Abitur*). As a consequence, sorting students into different educational trajectories—that is, vocational or academic tracks—as early as age 10 make different options possible in the further life course (Becker, 2019). This results in large differences and social inequalities in labor market opportunities and career prospects, given that upward occupational career mobility is very rare in Germany (Protsch & Solga, 2016).

References

- Becker, R. (2019). *Research handbook on sociology of education*. Edward Elgar Publishing.
- Heckhausen, J., & Tomasik, M. J. (2002). Get an apprenticeship before school is out: How German adolescents adjust vocational aspirations when getting close to a developmental deadline. *Journal of Vocational Behavior*, 60(2), 199–219.
<https://doi.org/10.1006/jvbe.2001.1864>
- Protsch, P., & Solga, H. (2016). The social stratification of the German VET system. *Journal of Education and Work*, 29(6), 637–661.
<https://doi.org/10.1080/13639080.2015.1024643>

Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany (KMK). (2019). *Basic structure of the education system in the Federal Republic of Germany: Diagram.*

https://www.kmk.org/fileadmin/Dateien/pdf/Dokumentation/en_2019.pdf

Statistisches Bundesamt (2019). *Bildung und Kultur. Integrierte*

Ausbildungsberichterstattung. Anfänger, Teilnehmer und Absolventen im Ausbildungsgeschehen nach Sektoren/Konten und Ländern. 2018 [Education and

culture. Integrated training reporting. Beginners, participants, and graduates in trainings by sectors/accounts and federal states. 2018]. Statistisches Bundesamt

(Destatis). [https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-](https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Schulen/Publikationen/Downloads-Schulen/integrierte-ausbildungsberichterstattung-5211201187004.html;jsessionid=7233AE3D0D1BB0C6935D93C5814295F4.internet)

[Forschung-Kultur/Schulen/Publikationen/Downloads-Schulen/integrierte-](https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Schulen/Publikationen/Downloads-Schulen/integrierte-ausbildungsberichterstattung-5211201187004.html;jsessionid=7233AE3D0D1BB0C6935D93C5814295F4.internet)

[ausbildungsberichterstattung-](https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Schulen/Publikationen/Downloads-Schulen/integrierte-ausbildungsberichterstattung-5211201187004.html;jsessionid=7233AE3D0D1BB0C6935D93C5814295F4.internet)

[5211201187004.html;jsessionid=7233AE3D0D1BB0C6935D93C5814295F4.internet](https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Schulen/Publikationen/Downloads-Schulen/integrierte-ausbildungsberichterstattung-5211201187004.html;jsessionid=7233AE3D0D1BB0C6935D93C5814295F4.internet)

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Appendix B

Correlations Between the Variables

	Aspirations	Attained VET position	AAG	Parental SES	Cultural capital	Ethnic origin	Gender	Cognitive ability	School grades ^a	Extraversion	Agreeableness	Conscientiousness	Emotional Stability	Openness
Attained VET position	.42 ***													
AAG	.69 ***	−.30 ***												
Parental SES	.14 ***	.10 ***	.07 ***											
Cultural capital	.13 ***	.06 **	.07 ***	.28 ***										
Migration background	.08 ***	.02	.08 ***	−.17 ***	−.16 ***									
Female	.24 ***	.25 ***	.05 *	−.11 ***	−.02	.04								
Cognitive ability	.04	.05 *	.00	.07 **	.13 ***	−.08 ***	−.10 ***							
School grades ^a	.04 *	.07 ***	−.02	−.07 **	.07 ***	−.11 ***	.05 **	.10 ***						
Extraversion	.04	.01	.05 *	.06 **	.03	.05 *	−.01	−.07 **	.05 *					
Agreeableness	.06 **	.05 **	−.00	−.03	−.01	.03	.13 ***	.01	−.04	−.11 ***				
Conscientiousness	.02	.06 **	−.05 *	−.11 ***	−.02	−.00	.18 ***	−.12 ***	−.21 ***	.01	.25 ***			
Emotional Stability	.01	−.01	.02	.07 ***	.04	−.02	−.21 ***	.04	−.02	.29 ***	.03	.05 **		
Openness	.12 ***	.06 **	.08 ***	.04 *	.12 ***	.07 **	.18 ***	.04	.04 *	.03	.14 ***	.10 ***	.03	
Search duration	.06 **	.04 *	.05 *	−.02	−.04 *	.05 *	.09 ***	−.03	.10 ***	−.02	−.03	−.03	−.05 *	.05 *

Note. VET = vocational education and training; SES = socioeconomic status; AAG = aspiration–attainment gap. $N = 2,478$ ($N_{\text{parental SES}} = 2,226$, $N_{\text{cultural capital}} = 2,371$, $N_{\text{cognitive ability}} = 2,348$, $N_{\text{school grade}} = 2,463$, $N_{\text{Extraversion}} = 2,348$, $N_{\text{Agreeableness}} = 2,341$, $N_{\text{Conscientiousness}} = 2,368$, $N_{\text{Emotional Stability}} = 2,360$, $N_{\text{Openness}} = 2,366$).

^a Higher values reflect higher grades.

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

Appendix C

Decentiles of the Variables Aspirations, Attained VET Position, and AAG for Those Who Experienced a Gap

Variables	10%	20%	30%	40%	50%	60%	70%	80%	90%
Aspirations	32.50	36.92	46.38	51.50	52.72	56.00	67.94	74.00	79.74
Attained VET position	21.64	25.26	28.48	29.16	31.72	36.35	43.19	44.94	52.72
AAG	−3.00	−5.00	−8.00	−12.00	−16.00	−23.00	−28.00	−33.00	−43.00

Note. VET = vocational education and training; AAG = aspiration–attainment gap. $N = 1,138$.

Appendix D

Table D1

Unstandardized Regression Coefficients for Predicting the Risk of Experiencing an AAG (Model Part I)

	Total effects			Direct effects			Indirect effects through aspirations		
	AME	95% CI	<i>p</i>	AME	95% CI	<i>p</i>	AME	95% CI	<i>p</i>
Aspirations				.015	[.014, .016]	<.001			
Sociostructural characteristics									
Parental SES	.001	[.000, .002]	.191	–.001	[–.002, .000]	.014	.002	[.001, .003]	<.001
Cultural capital	.024	[.009, .040]	.003	.007	[–.006, .021]	.301	.017	[.009, .025]	<.001
First-generation migrant	.136	[.040, .232]	.005	.054	[–.028, .137]	.199	.082	[.036, .131]	.001
Second-generation migrant	.096	[.034, .158]	.002	.023	[–.032, .075]	.410	.074	[.045, .104]	<.001
Female	.011	[–.030, .053]	.600	–.120	[–.156, –.083]	<.001	.131	[.112, .152]	<.001
Cognitive ability and school grades									
Cognitive ability	–.003	[–.012, .006]	.500	–.007	[–.014, .000]	.066	.004	[.000, .008]	.070
School grades ^a	–.038	[–.072, –.004]	.029	–.057	[–.087, –.027]	<.001	.019	[.004, .035]	.014
Personality traits									
Extraversion	.016	[–.008, .040]	.183	.011	[–.012, .033]	.334	.005	[–.006, .017]	.365
Agreeableness	–.021	[–.050, .009]	.172	–.030	[–.056, –.003]	.028	.009	[–.006, .025]	.246
Conscientiousness	–.019	[–.045, .009]	.176	–.009	[–.031, .014]	.455	–.010	[–.022, .002]	.104
Emotional Stability	.014	[–.014, .041]	.305	.001	[–.024, .024]	.959	.014	[.002, .027]	.029
Openness	.029	[.005, .052]	.015	.017	[–.004, .038]	.119	.012	[.001, .022]	.031
Search duration				.005	[.002, .007]	.002			

Note. AAG = aspiration–attainment gap; CI = confidence interval; SES = socioeconomic status. $N = 2,478$ ($n = 1,138$ for AAG < 0; $n = 1,340$ for no AAG). Coefficients significant at the $p < .05$ level are in bold type.

^a Higher values reflect higher grades.

Table D2*Unstandardized Regression Coefficients for Predicting the Size of the AAG of Those Who Experienced a Gap (Model Part II)*

	Total effects			Direct effects			Indirect effects through aspirations		
	<i>b</i>	95% CI	<i>p</i>	<i>b</i>	95% CI	<i>p</i>	<i>b</i>	95% CI	<i>p</i>
Aspirations				0.557	[0.520, 0.594]	<.001			
Sociostructural characteristics									
Parental SES	0.058	[0.014, 0.102]	.010	−0.020	[−0.055, 0.015]	.266	0.078	[0.055, 0.102]	<.001
Cultural capital	0.237	[−0.370, 0.816]	.435	−0.409	[−0.917, 0.087]	.110	0.646	[0.345, 0.952]	<.001
First-generation migrant	1.838	[−1.550, 5.300]	.287	−1.245	[−4.240, 1.913]	.426	3.083	[1.362, 4.856]	<.001
Second-generation migrant	1.875	[−0.047, 3.835]	.062	−0.895	[−2.606, 0.866]	.312	2.770	[1.682, 3.920]	<.001
Female	3.668	[2.176, 5.212]	<.001	−1.261	[−2.678, 0.181]	.083	4.930	[4.241, 5.645]	<.001
Cognitive ability and school grades									
Cognitive ability	−0.039	[−0.362, 0.298]	.817	−0.186	[−0.467, 0.116]	.210	0.147	[−0.016, 0.307]	.073
School grades ^a	1.054	[−0.128, 2.223]	.081	0.324	[−0.727, 1.416]	.549	0.730	[0.138, 1.316]	.014
Personality traits									
Extraversion	0.109	[−0.781, 0.986]	.808	−0.094	[−0.815, 0.629]	.800	0.202	[−0.230, 0.656]	.367
Agreeableness	0.879	[−0.303, 2.084]	.150	0.533	[−0.486, 1.560]	.307	0.346	[−0.235, 0.941]	.248
Conscientiousness	−1.196	[−2.140, −0.247]	.013	−0.819	[−1.677, 0.017]	.058	−0.377	[−0.834, 0.081]	.108
Emotional Stability	−0.297	[−1.151, 0.589]	.508	−0.817	[−1.560, −0.035]	.037	0.520	[0.059, 0.992]	.027
Openness	0.195	[−0.614, 0.967]	.631	−0.249	[−1.017, 0.474]	.511	0.444	[0.040, 0.849]	.032
Search duration				−0.138	[−0.226, −0.042]	.003			

Note. AAG = aspiration-attainment gap; CI = confidence interval; SES = socioeconomic status. $N = 2,478$ ($n = 1,138$ for $AAG < 0$; $n = 1,340$ for no AAG). Coefficients significant at the $p < .05$ level are in bold type.

^a Higher values reflect higher grades.

Appendix E

Regression Coefficients for the Mediator Aspirations Regressed on Sociostructural Characteristics, Cognitive Ability, School Grades, and Personality Traits

	<i>b</i> ₁	95% CI	<i>b</i> ₂	95% CI	<i>p</i>
Sociostructural characteristics					
Parental SES	0.141	[.100; .181]	.153	[.109; .197]	<.001
Cultural capital	1.159	[.622, 1.709]	.094	[.050, .138]	<.001
First-generation migrant*	5.536	[2.447, 8.787]	.331	[.146, .525]	.001
Second-generation migrant*	4.974	[3.030, 6.952]	.297	[.181, .415]	<.001
Female*	8.852	[7.638, 10.032]	.529	[.456, .599]	<.001
Cognitive ability and school grades					
Cognitive ability ^a	0.264	[−.030, .544]	.037	[−.004, .076]	.071
School grades	1.311	[.237, 2.348]	.047	[.009, .084]	.014
Personality traits					
Extraversion	0.364	[−.425, 1.164]	.019	[−.022, .061]	.364
Agreeableness	0.621	[−.427, 1.676]	.024	[−.017, .066]	.246
Conscientiousness	−0.677	[−1.489, .143]	−.034	[−.076, .007]	.107
Emotional Stability	0.934	[.103, 1.786]	.047	[.005, .090]	.028
Openness	0.796	[.074, 1.510]	.045	[.004, .085]	.030

Note. CI = confidence interval; SES = socioeconomic status. *N* = 2,478 (*n* = 1,138 for AAG [aspiration–attainment gap] < 0; *n* = 1,340 for no AAG). Coefficients significant at the *p* < .05 level are in bold type. In the case of *b*₂ coefficients, continuous coefficients are standardized with regard to X (the independent variables) but not Y (the dependent variable, i.e., the AAG). Variables marked with an asterisk (*) are not standardized.

^a Higher values reflect higher grades.