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Parents, friends, and classmates: reference groups and dropout from vocational education and training in Germany

Matthias Siembab^{1*}

*Correspondence:
matthias.siembab@bibb.de

¹ Federal Institute for Vocational Education and Training (BIBB), Friedrich-Ebert-Allee 114-116, 53113 Bonn, Germany

Abstract

This study examines the influence of social contexts on the decision to either complete or leave the first vocational education and training (VET) position among young German apprentices—an aspect that has received little attention in dropout research. In particular, the role of three reference groups—parents, friends and classmates at vocational school—in shaping this decision is examined. Using longitudinal data from the German National Educational Panel Study, the analysis addresses two key research questions: (1) Which reference groups are associated with the dropout decision? (2) And how do they influence the decision-making process? For this purpose, the study primarily investigates apprentices' perceptions of the normative expectations and career ambitions of these groups, and compares the occupational achievements of apprentices and their parents. Two main results are found: (a) Parents and friends have a normative function; apprentices are more likely to complete their VET successfully if they believe that their parents and friends expect them to do so. (b) Both classmates and parents serve a comparative function; if apprentices perceive high career ambitions among their classmates, this may be intimidating and increase the risk of dropping out—in favor of switching to another training occupation. In addition, having parents with a higher occupational status seems to encourage apprentices to pursue a more demanding career path in the case of a change in training occupation. This study supports the notion that a multitude of actors contribute to the success of VET. Therefore, it could be beneficial for career guidance and counseling efforts to extend beyond individual counseling and consider actors who, although indirectly involved in VET, act as important reference groups for apprentices.

Keywords: Vocational education and training, Dropout, Social context, Reference groups, NEPS, Germany

Introduction

Early leaving from vocational education and training (VET) remains a persistent challenge in the German education and labor market, with a quarter of all apprenticeship contracts in the dual system being terminated prematurely (Federal Institute for Vocational Education and Training 2022). For training companies, this always leads to a loss of resources (Wenzelmann and Lemmermann 2012), while the consequences for former

apprentices vary depending on the subsequent pathways they pursue (Krötz 2024). About half of premature terminations result in a permanent withdrawal (“dropout”) from the VET system (Holtmann and Solga 2023; Uhly 2023; Wydra-Somaggo 2021). This can have adverse consequences particularly for former apprentices, including stigmatization and increased vulnerability in the labor market (Solga 2008). In contrast, the other half may be seen rather as career adjustments (“stopouts”), since they continue their education by changing their training occupations or companies, as well as by attending university (Holtmann and Solga 2023; Krötz 2024). Regardless of the dropout direction, it is important from a policy perspective to investigate the causes of early VET terminations to prevent avoidable disruptions in the career and life trajectories of young people and to minimize resource losses for training companies.

Previous research on the causes of VET dropout and stopout has examined a variety of relevant factors (for literature reviews, see Böhn and Deutscher 2022; Uhly 2015). These include individual resources, such as school qualifications, competencies, migration background (Beicht and Walden 2013; Bessey and Backes-Gellner 2015; Holtmann and Solga 2023; Rohrbach-Schmidt and Uhly 2015; Stalder and Schmid 2016), socio-psychological characteristics (Findeisen et al. 2022; Michaelis and Findeisen 2022) and financial aspects (Bessey and Backes-Gellner 2015; Neuber-Pohl 2021; Seidel 2019). Other studies have examined VET dropout in the context of career choice and the compromises individuals make during this process (Beckmann et al. 2023; Holtmann and Solga 2023). Additionally, some studies have focused on the structural characteristics of training occupations and companies (Beckmann 2023; Christ 2013; Rohrbach-Schmidt and Uhly 2015; Uhly 2015).

Following theories on career development and occupational attainment, the decision to leave VET may also be influenced by social contextual factors that shape specific learning experiences and occupational interests and orientations (e.g. Lent et al. 2002; Sewell et al. 1970). Some empirical studies suggest a relationship between dropout behavior and the attitudes, expectations, and/or academic performance of certain reference groups, such as parents, friends, or peers within the institutional educational context. However, the evidence of these studies on VET dropout behavior is limited due to their qualitative study designs (Grønborg 2015) or their focus on higher education dropouts (Bank et al. 1990; Ost 2010; Restubog et al. 2010).

The current lack of empirical research on the role of social contexts in VET dropout behavior (Böhn and Deutscher 2022) is surprising, since contextual factors have been found to play a crucial role in other phases of the school-to-work transition. Especially regarding the formation of occupational orientations, many studies highlight the importance of parents (e.g. Buchmann and Kriesi 2012; Polavieja and Platt 2014), the peers in the school context (Alm and Bäckman 2015; Siembab and Wicht 2020; Wicht 2016), as well as the socio-spatial contexts young people are embedded in, such as their neighborhoods (Kauppinen 2008; Wicht and Ludwig-Mayerhofer 2014) or local VET and labor markets (Flohr et al. 2020; Malin and Jacob 2018).

The present study examines how social contexts influence the decision to leave the first VET position and the subsequent educational pathways of young German apprentices. In particular, it focuses on the role of reference groups, which are assumed to have a substantial influence in this life stage—namely parents, friends, and classmates from

vocational schools (Stocké et al. 2019). The study revolves around two research questions: (1) Which of these reference groups is associated with the decision to either complete or leave the first VET position? (2) And how do these groups influence the decision-making process? These two questions are addressed by examining primarily the perceptions of apprentices regarding the normative expectations and the career ambitions of the reference groups in question, and by comparing the occupational achievements of apprentices and their parents. For this purpose, longitudinal data from the German National Educational Panel Study (NEPS, Starting Cohort 4) are used. The case of Germany, with its highly standardized and stratified VET system, is particularly interesting for studying dropout behavior because the choice of occupation and successful completion of training have crucial implications for an individual's future employment and life course (e.g. Allmendinger 1989). Therefore, the results of this study should be particularly applicable to VET systems with characteristics similar to the German system. At the same time, existing research on reference groups suggests that the findings may be transferable to other educational contexts and national settings (see “[Theoretical framework: the role of reference groups in VET drop-out behavior](#)” section).

Theoretical framework: the role of reference groups in VET dropout behavior

Despite the scarcity of research on the role of social context in VET dropout behavior, there are prominent theoretical approaches to the influence of social contexts on career development that can also be fruitfully applied here. The *Wisconsin Model of Status Attainment* (Sewell et al. 1969, 1970) suggests that beyond academic performance, young people's occupational careers are influenced by their social environment. “Significant others”, especially parents, peers and teachers, may either model or explicitly communicate how they expect young people to behave, thus shaping their educational and occupational aspirations and attainment (Saltiel 1985; Sewell et al. 1969; Woelfel and Haller 1971). Moreover, *Social Cognitive Career Theory* (Lent et al. 1994, 2002) addresses social supports and barriers, such as (lack of) parental encouragement to engage in certain school activities (e.g. math and science courses), which influence career choices by shaping learning experiences and, in turn, affect young people's occupational interests, self-efficacy and outcome expectations (Ferry et al. 2000; Fouad et al. 2010; Lent et al. 2003). According to these theoretical approaches, an individual's decision to leave VET may also be influenced, for example, by the success expectations of parents and friends or by the performance of classmates at vocational school.

In order to examine more closely the social influences on individuals' decisions to leave their first VET position prematurely, the following section draws on Kelley's (1968) analytical distinction between normative and comparative reference groups. It is assumed that these functions can overlap, meaning a single group can influence individual decision-making both by defining norms and expectations and through modeling behavior (Cohen 1987). Furthermore, it is important to take into account that certain reference groups may be more inclined towards particular functions (Biddle et al. 1980; Kelley 1968).

With these assumptions in mind, the focus of this study is to identify which reference groups are crucial in the decision-making process of either completing or leaving VET prematurely, and to examine the mechanisms through which they exert their

influence. Specifically, the discussion will concentrate on three reference groups, which are believed to have an important impact on young apprentices' dropout decisions: parents, friends, and classmates at vocational school (Stocké et al. 2019).

Normative reference groups: following standards of "close others"

First, reference groups serve a *normative function* (Kelley 1968) by establishing norms that determine what attitudes and behaviors are appropriate. In this role, they are also often referred to as *definers* (e.g. Cohen 1987; Saltiel 1985; Woelfel and Haller 1971). Individuals assume that these reference groups observe and evaluate their behavior in light of these norms—and, if necessary, enforce conformity to these norms through the use of punishments or rewards. Accordingly, individuals follow these normative expectations in order to gain or maintain acceptance by their reference group (Kelley 1968) and to avoid sanctions (Biddle et al. 1980). From a rational choice perspective, individuals' conformity can be seen as driven by the expected social benefits or the perceived social costs of (not) following the expectations of others (Jonsson and Mood 2008). Therefore, in the context of VET dropout decisions, a social environment that expects an individual to successfully complete VET increases the potential costs of non-completion and thus decreases the probability of dropout.

Normative reference group effects have been examined in various contexts. For example, normative expectations of both parents and peers (defined as adolescent nonrelatives) have been shown to play a crucial role in school achievement as well as drinking behavior of adolescents (Biddle et al. 1980). In addition, individuals' decisions about marriage and childbearing are shaped by the normative expectations that parents have for their children in these areas (Putney and Bengtson 2002; Starrels and Holm 2000).

Reference group influences have also been studied with regard to educational and career orientations. The aspirations and expectations of parents, teachers, and friends significantly shape the educational aspirations of students (e.g. Davies and Kandel 1981; Roth 2017; Zimmermann 2020). Other findings from studies on career orientations suggest that the attitudes and expectations of parents, teachers, and classmates contribute to a normative school climate that guides adolescents in forming their career orientations (Siembab and Wicht 2020). Beckmann (2021) also finds a correlation between the career orientations of classmates and male students, although the effect is less significant. A specific study on dropout behavior, particularly in the context of higher education, demonstrates that students' dropout intentions and behaviors are closely linked to the expectations held by parents and peers regarding their persistence in college (Bank et al. 1990).

Selection of normative reference groups

Which reference groups are particularly relevant when it comes to setting and enforcing normative expectations in decision-making regarding VET dropout? The starting point for the following argumentation is the fundamental role of the socialization process, during which each individual internalizes the cultural values and norms of a society (Parsons 1951). The family, and especially the parents, play a crucial role in this context, by setting and communicating the rules for their children's behavior (Arnett 2007), thus shaping the personality of individuals from birth through adolescence (Parsons and

Bales 1956). Other studies agree, stressing the role of parents as “definers” (e.g. Biddle et al. 1980; Saltiel 1985)—also regarding their children’s educational plans (Davies and Kandel 1981).

It is during the period between leaving school and entering adulthood—the so-called ‘emerging adulthood’ period from late teens to mid-20s (Arnett 2007; Seiffge-Krenke 2015)—that the relationship with one’s parents evolves (Lindell and Campione-Barr 2017). Young people become more autonomous and have a less hierarchical relationship with their parents. During this period, they experience a “relative lack of norms” and face numerous uncertainties about their future while they are engaged in exploring their identity (Lindell and Campione-Barr 2017). Consequently, the role of parents in the socialization process shifts from establishing norms to providing emotional support (Guan and Fuligni 2016) and actively engaging in identity formation (Sestito and Sica 2014).

From early adolescence, the socializing influence of age-mates becomes increasingly important. Young people spend more time with them than with their families—both at school with their classmates and in their leisure time with their friends (Arnett 2007). Friends play a particularly important role: friendships are formed on the basis of perceived mutual similarities and are characterized by high levels of intimacy, trust and loyalty (Arnett 2007). As friendships are voluntary, they can dissolve at any time if there is disagreement with the attitudes (values, norms) or resulting behaviors of the other person. To maintain the friendship, individuals must invest in the relationship, possibly by adjusting their own attitudes and behaviors to meet the normative expectations of the other (Laursen and Veenstra 2021). In contrast, relationships with non-friends are less intimate and members are less intrinsically interested in the continuation of the group, so normative influence is generally lower here (Laursen and Veenstra 2021).

Like in the case of parents, the influence of classmates and friends changes after adolescence, during the stage of emerging adulthood. On the one hand, contact with classmates becomes less intense as daily interaction during school is no longer present (Arnett 2007). During VET, such contact takes place in vocational school, but only 1 or 2 days a week at most. In terms of friendships, on the other hand, there is some evidence that their influence is becoming more important. Relationships with friends at this stage of life become more intense, emotional and involve issues of great personal significance (Arnett 2007; Collins and van Dulmen 2006).

Given these considerations, it is expected that the normative influence will be stronger when the relationship to the reference group is closer. Consequently, the normative expectations of parents and, to some extent, friends should be strongly associated with the decision to complete or prematurely leave VET. The normative influence of classmates in vocational school is likely to be less pronounced due to the less close or emotional relationship.

Comparative reference groups: conforming or contrasting to “similar others”

Second, apart from their role in setting and enforcing normative standards, reference groups can also be considered as the standards themselves. Individuals may use the attitudes and behaviors of these groups as benchmarks for evaluating their own situation, according to this *comparative function* (Kelley 1968). From these comparisons, they

draw conclusions about the expected utility and the probability of success of specific educational or occupational decisions (Jonsson and Mood 2008), such as staying in or leaving VET.

There are two mechanisms that can be associated with the comparative function of reference groups: social contrast and social assimilation. On the one hand, social contrast processes describe how students tend to view their own abilities as inferior when they are in the presence of or compare themselves to those with higher abilities (Jonsson and Mood 2008). As a result, they may perceive a lower benefit and a reduced probability of success in pursuing higher-level education, leading them to subsequently lower their educational aspirations (Jonsson and Mood 2008; Rosenqvist 2018). Beckmann (2021) also finds evidence of social contrast effects in relation to occupational aspirations: Women are less likely to consider STEM careers when their peers have high mathematical confidence. Furthermore, women are at higher risk of not completing a STEM degree at university if they are surrounded by high-achieving peers (Fischer 2017).

On the other hand, individuals might also benefit from upward comparisons through processes of *social assimilation*. This viewpoint is based on the assumption that individuals strive for achievement (Festinger 1954). From this perspective, comparing oneself to higher-achieving individuals is seen by individuals as inspiring and motivating, and ultimately serves the purpose of self-improvement, i.e. the enhancement of one's own performance (Festinger 1954; Wood 1989). Empirical evidence supports this view: Individuals conform to their (higher-achieving) reference groups in several areas, including academic achievement (Mussweiler et al. 2004; Seaton et al. 2008), educational aspirations (Frank et al. 2008; Yuan and Olivos 2023), and occupational aspirations (Beckmann 2021). In addition, there is evidence that high-achieving peers have a positive effect on persistence in science majors at university (Ost 2010).

Selection of comparative reference groups

Which reference groups do individuals choose as a point of comparison for their VET dropout behavior? The basic assumption of social comparison theory is that individuals primarily compare themselves with “similar others” (Festinger 1954; Wood 1989). This similarity may be in the dimension being evaluated, such as academic or occupational achievement, or in key status characteristics such as age, occupation, or family ties (Wood 1989; Tesser 1986).

To make statements about the expected mechanism of social comparison, it is necessary to consider additional factors. First, the closeness of the relationship between the individual and the comparison group is important. The closer the relationship, i.e. the more intense and friendly the contact, the more likely it is that individuals will adapt to the comparison group through assimilation processes (Mussweiler 2003). For more distal groups, the social contrast effect is stronger (Hallinan and Williams 1990; Rosenqvist 2018; Yuan and Olivos 2023). Second, it plays an important role whether the comparison is forced or selectively chosen (Mussweiler et al. 2004; Seaton et al. 2008). When students have to compare themselves to the average performance of the whole class (a group whose composition they cannot influence), they tend to focus on potential differences, leading to the social contrast mechanism. However, when students are given the opportunity to select their comparison targets, they tend to choose those who are

similar to them and do not threaten their self-concept, resulting in assimilation processes (Seaton et al. 2008).

Applying these criteria to the three comparison groups studied in this article, we can make the following expectations. Individuals should perceive their parents as a comparison group because of their mere family membership and physical closeness, especially if they still live with them at home. Therefore, when comparing themselves to their parents, individuals should focus on similarities that lead to assimilation processes (Mussweiler 2003). High levels of parents' occupational achievement or ambition will thus correlate with a higher probability of completing one's first VET position. In some cases, this may even lead to individuals leaving VET to pursue a better career by attending university or moving to a more demanding training occupation, e.g. associated with a higher socio-economic status (upward dropouts).

Following the similarity assumption, friends and classmates at vocational school are also likely to be chosen as comparison groups because they are similar in age to the individual and (in the case of classmates) are learning the same or a similar occupation (see "[The German school and VET system](#)" section). However, the mechanism of comparison should be different for these two groups. On the one hand, given the selective nature of friendships, the influence of friends should follow the assimilation mechanism. This means that the career ambitions of friends are expected to show the same associations as those hypothesized for parents. On the other hand, forced comparisons, such as those related to the occupational achievements or ambitions of classmates at vocational school, may trigger social contrast processes that are expected to correlate with a higher risk of leaving the first VET position early. Since classmates at vocational schools should primarily serve as a point of comparison for the current training occupation, this should typically result in a horizontal change to another training occupation (occupational stopout). Therefore, permanent withdrawals from the VET system (dropouts) should be the exception.

The German school and VET system

In the German school system, students can obtain one of three school-leaving qualifications, all of which enable them to enter the VET system and potentially shape their future career paths. The lower secondary school-leaving certificate (Hauptschulabschluss), obtained after grade 9 (at the age of 15 years), qualifies for occupations requiring low or medium qualifications; the intermediate school-leaving qualification (Realschulabschluss) after grade 10 (at the age of 16 years) enables access to qualified professions with medium social status. The Abitur (the highest level of education), obtained after 12th or 13th grade, qualifies students for university studies (Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs 2019).

The path into VET is pursued by around a third of German school-leavers after grade 9 or 10 (Federal Institute for Vocational Education and Training 2022). VET in Germany is organized within either the school-based system or the dual system (a combination of firm-based and school-based training) and lasts, depending on the training occupation, between 2 and 3.5 years. Schooling during VET typically occurs in so-called "Fachklassen", grouping apprentices together who reside in the same region and are being trained

in the same or a similar occupation (Hackel et al. 2017), i.e. young apprentices have to interact regularly with their classmates at vocational school.

The present study

The present study explores the impact of social contexts on VET dropout behavior among young German apprentices. Specifically, it investigates the role that reference groups, namely parents, friends, and classmates at vocational schools, play in the decision-making process to complete or prematurely terminate the first VET position (Krötz 2024). The study contributes to the literature in two ways: First, it examines which of the mentioned reference groups are relevant to dropout decisions and, second, how these groups are associated with the decision-making process. The information used on the reference groups is mainly based on perceptual measures, i.e. the apprentices were asked to assess (a) the extent to which each group expected them to successfully complete their current training and (b) the career ambitions of each group. In part, (c) objective information on the occupational status of the apprentices and their parents is also taken into account (see “Measures” section).

Drawing on the sociological and socio-psychological theoretical frameworks of Reference Group Theory (Kelley 1968), the Wisconsin Model of Status Attainment (Sewell et al. 1969), and Social Cognitive Career Theory (Lent et al. 2002), the study distinguishes between normative and comparative reference group functions that shape learning experiences and, in turn, affect young people’s dropout decisions. It is expected that apprentices will consider different reference groups as relevant depending on whether it concerns the normative or comparative function.

Moreover, as early leaving from VET is a multidirectional process, the study examines how the two reference group functions relate to the different dropout directions identified in recent research (e.g. Krötz 2024; Bessey and Backes-Gellner 2015). Specifically, the present study distinguishes between five educational pathways with respect to the first VET episode: (1) *successful completion* of the first VET episode, (2) *downward dropouts*, i.e. a permanent withdrawal from the VET system, (3) *horizontal stopouts* (also known as occupational stopouts), i.e. switching to another training occupation and (4) *upward stopouts*, i.e. pursuing tertiary education at university or switching to a more demanding training occupation. For reasons of comparability with other studies, another type of horizontal dropouts is also identified: (5) *company stopouts* describe changing the training company. However, since this is likely to be influenced mainly by workplace factors (e. g. Krötz and Deutscher 2022) that are beyond the scope of this study, no specific associations with reference groups are expected.

For this purpose, large-scale longitudinal data from the German National Educational Panel Study (NEPS) are used. The analysis sample comprises 4279 young adults, including both apprentices in firm-based and school-based VET. The NEPS provides detailed data on the educational careers of apprentices, as well as respondents’ subjective reports of the training- and career-related attitudes and expectations of the mentioned reference groups.

In the light of previous theory and research, the following hypotheses regarding the relationship between reference groups and young apprentices’ VET dropout decisions are examined:

H1a (parents' normative function): The more apprentices perceive that their parents expect them to successfully complete their current VET, the higher the probability of completing the first VET position.

H1b (friends' normative function): The more apprentices perceive that their friends expect them to successfully complete their current VET, the higher the probability of completing the first VET position.

H1c (classmates' normative function): The more apprentices perceive that their classmates at vocational school expect them to successfully complete their current VET, the higher the probability of completing the first VET position.

H2a (parents' comparative function: social assimilation): The higher the occupational status of parents relative to the occupational status of apprentices' current VET position, the higher the probability of completing the first VET position. This also increases the probability of upward stopouts.

H2b (friends' comparative function: social assimilation): The higher apprentices perceive their friends' career ambitions, the higher the probability of completing the first VET position. This also increases the probability of upward stopouts.

H2c (classmates' comparative function: social contrast): The higher apprentices perceive their classmates' career ambitions, the lower the probability of completing the first VET position. Instead, this increases the probability of occupational stopouts.

Data and methods

Data and sample

The empirical analyses are based on representative large-scale data from the German National Educational Panel Study (NEPS), Starting Cohort 4 (SC4), version 12.0.0, (Blossfeld and Roßbach 2019; Ludwig-Mayerhofer et al. 2019; NEPS Network 2021). This cohort consists of 16,425 students who were in the ninth grade of a regular school in Germany in the Fall of 2010 and have since been regularly surveyed about their educational and occupational careers. The data collection followed a stratified sampling strategy, meaning that the sample was drawn from different subpopulations based on the different school types within the German general education system. In particular, students from lower school types such as "Hauptschulen" were oversampled to ensure a sufficient sample size for the analysis of this cohort's pathways through the VET system (Aßmann et al. 2019). The respondents were interviewed via paper-and-pencil interviewing (PAPI) while attending school and via computer-assisted telephone interviews (CATI) after leaving school. The first 12 waves that were used for the analyses cover the survey period from Fall 2010 to Fall 2019.

A total of 7293 individuals were identified as having graduated from general schooling and entered their first fully qualifying VET position, whether firm- or school-based. Of these, 2671 individuals whose end of training could not be observed due to the study period or panel attrition (right-censored episodes) were excluded from the main analyses but included only for robustness checks (see "Statistical analyses" section). Furthermore, 228 individuals whose VET episodes exceeded the intended maximum duration of vocational training of 3.5 years (42 months) were also excluded. In order to avoid misclassifying potential stopouts as permanent dropouts, an additional 115 individuals were

excluded if the observation period after the premature end of the first VET episode was less than 12 months. This exclusion allowed to take into account possible occupational or company changes at the start of the new training year or university entries, which typically begin in the Fall. As a result, the final analysis sample consists of 4279 individuals who were found to have either successfully completed their first VET position or have left it prematurely.

Table 1 shows the composition of the non-imputed analysis sample in terms of relevant sociodemographic and other independent variables used in the multivariate models.

Measures

Dependent variable

The dependent variable is based on respondents' retrospective reports of whether they had left their first VET position prematurely and, if so, whether they did so (a) on their own initiative, (b) by mutual agreement with the employer, or (c) because the company or vocational school dismissed them. To measure the respondents' conscious decision, cases falling under (c) were excluded. Furthermore, the subsequent pathways following a potential premature termination of training were considered. This resulted in a dependent variable with five categories. The first category includes (1) apprentices who *completed* their first fully qualified VET position. Those who left training prematurely were then classified into the following categories. (2) *Downward (permanent) dropouts* occur when the individuals have not entered another VET position within 12 months. (3) *Occupational stopouts* refer to a change in training occupation, occurring when the first and second occupations differ at the 3-digit level of the German Classification of Occupations (KldB-2010). (4) The *upward stopouts* category combines two groups: individuals who report a university episode after leaving their first VET position and individuals who move to a training occupation with a significantly higher socioeconomic status—defined as a difference in the International Socio-Economic Index of Occupational Status (ISEI, Ganzeboom et al. 1992) that falls within the upper 75th percentile. (5) *Company stopouts* were classified as cases where the occupation of the second VET episode did not differ substantially from the first VET episode (same 3-digit classification in the Kld-2010).

Independent variables: reference group items

The NEPS data provide a range of information on reference groups. In addition to objective data on the occupations of respondents and their parents, the present study draws primarily on respondents' subjective reports of the training- and career-related attitudes and expectations of each of the following groups: parents, friends, and classmates at vocational schools (Hoenig et al. 2016). The group of classmates includes all persons in the respondent's class, regardless of whether the respondent was friends with them or not. The subjective reference group items were measured in every wave as long as the respondents were in a VET program. In cases where two or more measurements per VET episode were available, the last valid value for this episode was used.

The fact that the present study relies primarily on apprentices' perceptions, without directly surveying the reference groups, carries a risk of bias because "perceptual measures of significant others' attributes reflect not only attributes of the person being

Table 1 Descriptive statistics

Variables	N (valid)	Share	Min	Max	
<i>Dependent variable</i>		<i>Overall</i>	<i>Within early terminations</i>		
<i>Dropout decision</i>	4279		0	1	
Completion of first VET		0.82			
Permanent dropouts		0.04	0.23		
Occupational stopouts		0.08	0.43		
Upward stopouts (university or higher-ISEI occupation)		0.04	0.22		
Company stopouts		0.02	0.12		
Variables	N (valid)	Mean/share	SD	Min	Max
<i>Reference group variables</i>					
<i>Normative function</i>					
Success expectations: parents ^a	2780	4.79	0.52	1	5
Success expectations: friends ^a	2795	4.04	0.88	1	5
Success expectations: classmates ^a	2747	3.62	1.10	1	5
<i>Comparative function</i>					
Occupational status: parents ^{a,b}	3697	7.14	22.01	-60.67	67.79
Career ambitions: friends ^a	2809	3.75	0.82	1	5
Career ambitions: classmates ^a	2759	3.53	0.86	1	5
<i>Controls</i>					
Age at VET entry ^a	4278	17.47	1.46	15	24
Gender: female	4279	0.47	0.50	0	1
Migration background (ref. German)	4238	0.22	0.42	0	1
Educational degree	4028			0	1
High		0.25	0.43		
Medium		0.49	0.50		
Low		0.26	0.44		
GPA before VET entry	3723	2.67	0.55	1	6
Cultural capital (no. of books) ^a	4015	3.57	1.44	1	6
Parental education	3712			0	1
No qualification		0.36	0.48		
Vocational qualification		0.52	0.50		
Tertiary qualification		0.12	0.32		
VET in desired occupation ^a	4242	3.99	1.13	1	5
Region East-Germany (ref. West)	4273	0.13	0.34	0	1
Type of training: firm-based (ref. school-based)	4231	0.74	0.44	0	1
Participation in prevoc. program	4279	0.21	0.41	0	1
Sector of VET occupation	4217			0	1
S1: Production of goods		0.33	0.47		
S2: Personal services		0.32	0.47		
S3: Business related serv		0.26	0.44		
S4: IT-sector		0.04	0.20		
S5: Other commercial serv		0.04	0.21		

Based on non-imputed data. *N* (valid) refers to all persons who either dropped out of their first VET episode or completed it successfully. Ongoing (right-censored) episodes and episodes longer than 42 months were excluded

^a Variables were z-standardized in the multivariate analyses

^b Difference between highest parental ISEI and ISEI of apprentice's training occupation

perceived but also attributes of the perceiver” (Davies and Kandel 1981). However, recent research suggests that both parents’ actual aspirations and their children’s perceptions of those aspirations independently influence children’s educational aspirations, with parents’ actual aspirations having even stronger effects than perceptions (Schörner and Bittmann 2023). Given this, the use of perceptual measures may indeed provide a reliable (and rather conservative) estimate of reference group influences in the context of VET dropout decisions.

Normative function. Respondents’ perceptions of the normative expectations of friends and classmates at vocational school were assessed using the following item: “Most of my [friends/classmates] expect me to complete my vocational training successfully,” measured on a 5-point scale ranging from 1 “does not apply at all” to 5 “applies completely”. The wording and response categories for the parent item differ slightly from those for the other groups: “How important is it to your parents that you successfully complete your current vocational training program?” Respondents were asked to rate their answer on a scale from 1 “very unimportant” to 5 “very important”.

Comparative function. The measurement of the comparative function is based on different variables. For friends and classmates, respondents’ perceptions of the career ambitions of these two groups were used. This assumes that high ambitions are also associated with good performance in VET. The items measuring the comparative reference group function for friends and classmates are worded as follows: “Most of my [friends/classmates] think getting ahead in a career is very important,” using a 5-point scale from 1 “strongly disagree” to 5 “strongly agree”. For parents, a more objective measure was used, whereby the respondents’ occupational attainment was compared with that of their parents. This was done by calculating the difference between the highest parental socio-economic status (as captured by the International Socio-Economic Index of Occupational Status, ISEI, Ganzeboom et al. 1992) and the ISEI of the respondents’ training occupation. A higher value indicates that the parents have a higher occupational status than the respondents.¹ The underlying assumption is that higher occupational status is associated with occupational success and good performance at work.

Control variables

The analysis models include a set of control variables that have been identified in the literature as relevant factors influencing VET dropout (e.g. Beckmann et al. 2023; Beicht and Walden 2013; Holtmann and Solga 2023):

Age at VET entry indicates how old respondents were before entering VET.

Gender is coded 0 for males and 1 for females.

Migration background indicates whether respondents or their parents were born in Germany (0: no migration background) or abroad (1: migration background).

Educational degree measures the highest school leaving qualification attained before entering VET, distinguishing between low (Hauptschulabschluss, the reference cat-

¹ An alternative measure of the comparative role of parents in the NEPS study is “How important is it to your parents that you get ahead in your career someday?” The difference in wording (compared to the items on friends and classmates) may have limited its interpretability, as it essentially asks about an expectation directed at the respondent rather than allowing for an interpretation of parental career ambitions. In addition, this variable did not yield significant results in the analysis models. Therefore, it was decided to discard this item.

egory), medium (Realschulabschluss), and high (Fachhochschulreife/Abitur) educational qualifications.

Grade point average (GPA), obtained in the highest school leaving qualification before entering VET, ranges from 1 (very good) to 6 (insufficient).

Cultural capital is represented by the number of books available in the household at the time the respondent attended school. This variable ranges from 1 (none or only very few books) to 6 (enough to fill shelves).

Parental educational attainment is captured using information from both the respondents' and parents' questionnaires from wave 1 (Fall 2010). The variable distinguishes whether parents have no education (value 0), a vocational qualification (1) or a tertiary qualification (2). The highest value available for both parents is used.

Occupational sector of training occupation. Training occupations (based on the German Classification of Occupations, KldB 2010) were classified into five occupational sectors based on similarity in terms of occupational tasks, competencies, and knowledge (Matthes et al. 2015; Paulus and Matthes 2013).

East or West Germany. This variable indicates where the training took place in order to control for regional differences in the German labor market (0: West vs. 1: East).

Type of training refers to the apprentices' statements about their VET type (0: school-based training vs. 1: firm-based).

Participation in pre-vocational program indicates whether the apprentices have already participated in a pre-vocational program before starting the first VET episode (value 1) or not (value 0).

Training in desired occupation. After beginning a new VET episode, respondents were asked to assess the following statement: "This occupation is my desired occupation," ranging from 1 ("does not apply at all") to 5 ("applies completely").

Table 1 shows the descriptive statistics for all variables used in the study.

Statistical analyses

To test the research hypotheses, multinomial logistic regression models were employed, as these are able to account for the different dropout directions. Based on these models, average marginal effects (AME) were estimated (Mood 2010). Thus, the coefficients can be easily interpreted as the average change in probability, i.e. they represent how the probability of different dropout decisions (completion, permanent dropout, occupational stopout, upward stopout, company stopout) changes on average, given a one-unit change in an independent variable.

The analysis sample includes only apprentices with complete or prematurely terminated episodes, thus excluding right-censored episodes, i.e. those for which it is not known whether they successfully completed or dropped out due to panel attrition. An analysis of the right-censored episodes shows that they are not associated with the reference group variables. There are also only weak correlations with the other variables from the analysis models, mainly age, gender and educational qualifications (see Fig. 1 in the Appendix). These variables are included in the analysis models as control variables to address the problem of right censoring. In addition, to check the robustness of the reported results, discrete-time models (Allison 1982; Singer and Willett 2003) that

account for right-censoring were estimated. The directions and significances of the coefficients are largely consistent with the reported multinomial regression results (see Table 4 in the Appendix).

Selectivity analyses and multiple imputation of missing values

As Table 1 shows, most missing data is found in the independent variables of interest, namely the reference group items (approximately $n = 1800$ each). This is largely due to the design of the NEPS. Data collection focusing on reference group items started in wave six (in the Spring of 2013). By this time, especially those with lower or intermediate school certificates (who typically leave school after grade 9 or 10, see “[The German school and VET system](#)” section) were mostly in their second or third year of vocational training. Consequently, there are relatively few recorded values for the beginning of the training period of these groups, which is a critical phase in which dropouts are most frequent (Beckmann et al. 2023; Holtmann and Solga 2023). Some of the missing values for these groups may also be due to respondents leaving VET before they could be asked the reference group questions. Specifically, the proportion of non-response in the reference group items is about 54% for those with low educational certificates, compared to about 37% for those with intermediate certificates (school-leavers after grades 10 or 11), and about 9% for those with higher certificates (after grades 12 or 13).

In addition, selectivity analyses were performed to examine the non-response process more closely. Table 2 gives a description of the sample statistics for apprentices with and without valid reference group data as well as the results of a linear probability model predicting non-response in the reference group items. Significant associations are observed with most of the explanatory variables from the analysis models. A high probability of non-response in the reference group items is found among younger respondents with poor grades, low cultural capital, as well as those who are not trained in their desired occupation or who have attended a pre-vocational measure. However, the strongest relationship is found with the respondents’ educational attainment. The probability of non-response is particularly high for respondents with lower and intermediate qualifications—compared to those with higher qualifications (35 and 24 percentage points higher, respectively).

Multiple imputation was used to account for missing values for all reference group items used in the analysis models, as well as for other independent variables with missing data (Little and Rubin 2002). Overall, about 55% of the cases have at least one missing value in the dependent variables of the analysis models. White et al. (2011) recommend that the number of imputed datasets should be at least equal to the proportion of these incomplete cases. Accordingly, 80 imputed datasets were created using the MICE (multivariate imputation using chained equations) algorithm.

The use of multiple imputation requires that the reference group information is “missing at random” (MAR; Enders 2017). On the one hand, the plausibility of the MAR assumption may be supported by the fact that the probability of non-response for the key independent variables appears to be related to the observed data included in the analysis models—although it cannot be completely excluded that non-response is related to unobserved data. In addition, the imputation model includes not only all the variables

Table 2 Descriptive statistics by non-response and predictors of non-response, linear probability model

	Sample statistics				Regression B
	Response		Non-response		
	Mean/share	SD	Mean/share	SD	
Age at VET entry ^a	17.81	1.65	17.10	1.25	−0.03***
Gender: female	0.47	0.50	0.47	0.50	−0.00
Migration background (ref. German)	0.21	0.41	0.30	0.46	0.01
Educational degree (ref. high)	0.33	0.47	0.06	0.24	
Medium	0.47	0.50	0.51	0.50	0.24***
Low	0.20	0.40	0.43	0.50	0.35***
GPA before VET entry	2.67	0.53	2.74	0.56	0.02**
Cultural capital (no. of books) ^a	3.63	1.43	3.16	1.43	−0.02***
Parental education (ref. vocational qualification)	0.54	0.50	0.44	0.50	
No qualif	0.34	0.47	0.48	0.50	0.10***
Tertiary qualif	0.13	0.33	0.08	0.27	0.03
VET in desired occupation ^a	4.13	0.99	3.81	1.27	−0.07***
Region East-Germany (ref. West-Germany)	0.13	0.33	0.16	0.36	0.05*
Type of training: firm-based (ref. school-based)	0.78	0.42	0.73	0.44	0.01
Participation in prevocational program (ref. no)	0.18	0.38	0.28	0.45	0.06***
Sector of VET occupation (ref. S1: Production of Goods)	0.34	0.47	0.34	0.48	0.00
S2: Personal services	0.30	0.46	0.37	0.48	0.09***
S3: Business related serv	0.27	0.45	0.22	0.41	0.03
S4: IT-sector	0.05	0.21	0.02	0.15	−0.02
S5: Other commercial serv	0.04	0.20	0.05	0.21	0.02
Constant					0.02
R ²					0.16
N	4534		2758		5025

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ ^a Variables were z-standardized in the multivariate analyses

from the analysis models, but also additional auxiliary variables, such as the duration of the training episode and the last grade attended in general education. These variables are correlated with the missingness of the reference group variables and the dependent variable, thereby increasing the chances that the imputation model satisfies the MAR assumption (Enders 2017).

On the other hand, it should be noted that the timing of data collection may well compromise the validity of the MAR assumption and introduce bias into the results. The imputation results are largely based on individuals with higher school certificates, who generally have a lower risk of dropping out of VET. Because of this potential positive selection bias, the results of the imputation models should be interpreted with caution.

Results

Table 1 shows that 82% of the apprentices in the analysis sample successfully completed their first VET position, i.e. about 18% made a conscious decision to leave their first VET position prematurely. This refers to all respondents for whom the end of the first VET episode fell within the observation period, i.e. excluding right-censored episodes. This

proportion is generally in line with, although slightly lower than, findings from other studies, which typically report rates of between 20 and 30%, when right-censored cases are excluded (e.g., Beckmann et al. 2023; Holtmann and Solga 2023; Michaelis and Richter 2022). Discrepancies may be partly due to differences in the definition of the dependent variable or differences in the analysis periods considered by these other studies.

Among those who left their first VET position prematurely, more than half (55%) experienced a “horizontal stopout”: 43% moved to another training occupation with a similar or lower status than their previous occupation (occupational stopout), while 12% moved to another training company (company stopout). In addition, 22% reported a subsequent episode at university or a change to an occupation with a considerably higher social status (upward stopouts). In contrast, about 23% did not participate in another training episode within the first 12 months after the end of their first training episode (permanent dropout).

The results of the multinomial logistic regression models are presented in Table 3. In order to better contextualize the reference group coefficients that are of particular interest for this study, let us first consider some established explanatory variables for VET dropout behavior. For example, the risk of not completing the first VET position is, on average, about 6.7 percentage points higher for apprentices with only lower educational qualifications compared to those with intermediate qualifications. Moreover, this risk increases as the final grade deteriorates (by 4.1 percentage points per grade) and as the training occupation deviates from the desired occupation (by 8.0 percentage points per SD). Against this background, the observed associations with the perceptions of the reference groups—which range from 0.7 to 2.4 percentage points—are relatively weak and in some cases less statistically significant. Nevertheless, the results suggest that they independently contribute to explaining VET dropout behavior. Furthermore, the simultaneous estimation shows that the normative and comparative functions of reference groups seem to operate independently of each other.²

Next, the research hypotheses are tested. Hypotheses H1a to H1c address the normative function of reference groups and predict that the more the reference group expects the apprentice to successfully complete the current VET, the higher the probability of completion. The results indicate that a one standard deviation (SD) increase in perceived parental normative expectation is, on average, associated with a 1.6 percentage point increase in the probability of completing VET. The relationship is almost identical for friends’ success expectations—although it is only marginally significant, just above the $p < 0.1$ level ($p = 0.054$). Therefore, the present data provide support for hypothesis H1a (parents’ normative function) and partial support for H1b (friends’ normative function). However, the expectations of classmates at vocational school do not show a significant relationship with the probability of completing VET—which contradicts hypothesis H1c.

Regarding the other dropout directions, no specific hypotheses were formulated about the normative function of reference groups. However, there are interesting and significant associations with parents and friends: the lower respondents perceive parental success expectations, the higher the probability of changing the training occupation (0.9

² To test the robustness of the results, additional models were estimated due to the strongly skewed distribution of some reference group items (see Table 1). The models included the reference group items in a dichotomized form, which did not substantially alter the direction or significance of the coefficients. The results are available upon request.

Table 3 Predictors of VET completion and dropout directions after leaving the first VET position, multinomial regressions (AME)

	VET completion	Permanent dropout	Occupational stopout	Upward stopout	Company stopout
Age at VET entry ^a	-0.024**	0.019***	0.007	0.001	-0.002
Gender: female	0.008	-0.002	-0.016	0.006	0.005
Migration background (ref. German)	-0.035*	0.009	-0.004	0.023**	0.007
Educational degree (ref. medium)					
Low	-0.067***	0.048***	0.013	-0.005	0.011
High	0.084***	-0.024***	-0.056***	0.012	-0.016**
GPA	-0.041***	0.001	0.024**	0.004	0.013*
Cultural capital ^a	0.003	-0.008*	0.002	0.005	-0.002
Parental educational degree (ref. vocational qualification)					
No qualification	-0.026*	0.011	0.013	0.002	-0.000
Tertiary qualification	-0.005	-0.016 ⁺	0.005	0.005	0.012
VET in desired occupation ^a	0.080***	-0.014***	-0.036***	-0.027***	-0.003
Region: East-Germany	-0.026	0.012	0.005	0.012	-0.003
Firm-based training	-0.020	-0.012 ⁺	0.009	0.009	0.014**
Participation in pre-vocational program	0.008	0.005	-0.013	-0.002	0.002
Normative reference group function					
Success expectations: parents ^a	0.016*	-0.006 ⁺	-0.009*	-0.004	0.003
Success expectations: friends ^a	0.016 ⁺	-0.005	-0.007	-0.007*	0.003
Success expectations: classmates ^a	0.008	0.002	-0.011 ⁺	-0.002	0.003
Comparative reference group function					
Occupational status: parents ^{a,b}	0.005	0.002	-0.021***	0.014***	0.000
Career ambitions: friends ^a	0.006	0.002	-0.012 ⁺	-0.004	0.007
Career ambitions: classmates ^a	-0.024**	-0.003	0.017**	0.006	0.004
Largest FMI			0.688		
Average RVI			0.343		

N = 4279. 80 imputed datasets. Average marginal effects. Further controls: Sector of VET occupation

⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

^a z-standardized variables (mean = 0, SD = 1)

^b Difference between highest parental ISEI and ISEI of apprentice's training occupation

percentage points increase per SD). At the same time, the risk of permanently leaving the VET system also increases to a similar extent—although only weakly significant (at the $p < 0.1$ level). Moreover, it appears that when respondents perceive lower success expectations from their friends, they are more inclined to pursue a more demanding career path (upward stopout) (0.7 percentage points per SD). Further research would be

valuable in investigating which factors related to parents and friends are responsible for these respective outcomes.

Hypotheses H2a to H2c focus on the different mechanisms of the comparative function of reference groups. Hypothesis H2a assumes that apprentices compare themselves to their parents in terms of occupational status (measured by the ISEI) and that social assimilation processes play a role in apprentices' dropout decisions. Contrary to the hypothesis, there is no significant association with the parent-apprentice ISEI difference and the probability of successfully completing VET. With regard to other dropout directions, however, the results are partly consistent with hypothesis H2a: for apprentices whose parents have a higher ISEI than they do, the probability of following a more demanding training path (upward dropout) increases by 1.4 percentage points per SD. In addition, the results show that the higher the parental ISEI compared to the apprentice's ISEI, the lower the probability of changing to another training occupation with a similar or even lower socio-economic status than the first occupation (occupational stopout) by 2.1 percentage points per SD.

Hypotheses H2b and H2c relate to the career ambitions that apprentices perceive among their friends and classmates. With regard to the career ambitions of friends, no significant associations can be identified—neither with the probability of completing VET nor with upward stop-outs. Therefore, there is no support for H2b in the present data. In the case of classmates at vocational school, however, significant relationships can be observed between the perceived career ambitions and different dropout decisions. The higher individuals perceive the career ambitions of their classmates, the higher their risk of *not* completing the first VET position (2.4 percentage points per SD). This is accompanied by a higher probability of occupational stopouts (1.7 percentage points per SD). This result provides support for the social contrast hypothesis (H2c): a social environment at vocational school that is characterized by high achievement or ambition increases the risk of leaving VET prematurely and changing occupations rather than, for example, completing VET or pursuing a more demanding career.

Let us now examine the investigated groups separately and consider the role of the two reference group functions in the apprentices' dropout decisions. First, *parents* appear to play an essential role in apprentices' dropout decisions, as significant coefficients are observed for both the normative and comparative functions. The normative function of parents can be interpreted as follows: When apprentices perceive that their parents have high success expectations for them, this may motivate them to complete their first VET position and could even help protect against permanent dropout. This protective effect could result from parental emotional support or assistance in finding new training opportunities, and is a subject for future research.

The comparative function of parents seems to operate, as expected, through processes of social assimilation. Given family ties and the closeness of the relationship that often accompanies them, apprentices seem inclined to follow the occupational status of their parents. In the case of a change in training occupation, apprentices whose parents have a higher status tend to pursue a more demanding career path (upward stopout) rather than switching to a training occupation of similar or lower status (occupational stopout).

Moreover, it is possible that both the normative and comparative functions interact in this case. Apprentices whose parents have a higher occupational status may feel that their parents do not think the current training occupation is right for them and want to encourage them to pursue a different, more demanding career path. This is a topic for future research, which should aim to disentangle these effects, for example, by distinguishing more specifically the normative expectations of the reference groups.

Second, *friends* seem to have a normative function with regard to the decision of apprentices to leave their first training position early. Moreover, for some, friends' expectations may even have the potential to motivate apprentices to pursue a more challenging career (upward stopout). However, no substantial evidence of a comparative function could be found in the present data. For young apprentices, it appears to be more important what their friends think and expect about how successful the apprentice will be in training. Conversely, friends' career ambitions are less likely to serve as a basis of comparison for one's own dropout behavior—neither as a desirable role model to follow nor as a contrasting example.

Third, *classmates at vocational school* appear to serve as a comparative reference group due to their status as “similar others”. Since apprentices cannot easily avoid this comparison in the vocational school context, social contrast mechanisms seem to be at work, as expected. These mechanisms have the potential to “intimidate” apprentices, for example, by the strong performance or high career ambitions of their classmates (as perceived by the apprentices), thereby increasing their risk of leaving the first VET position early. As a result, they may try another training occupation that better matches their own ambitions and abilities. This occupational shift is typically horizontal (meaning it involves either no change or even a decrease in social status) and does not usually involve upward mobility, such as an increase in social status or a transition to higher education.

Finally, it can be noted that the reference group variables—as expected—show no significant effects on the probability of changing the training company (company stopout). This confirms the assumption that company stopouts are likely to be influenced mainly by workplace factors.

Discussion

Summary

The present study focused on VET dropout behavior in the German training market by investigating the influence of social contexts on the dropout decisions of young apprentices—an aspect that has received little attention in dropout research so far. In particular, the study examined the role of reference groups that are believed to have a crucial influence on the lives of young apprentices: parents, friends, and classmates at vocational schools. Within the theoretical frameworks of sociological Reference Group Theory (Kelley 1968) and socio-psychological career theories, such as the Wisconsin Model of Status Attainment (Sewell et al. 1969) and Social Cognitive Career Theory (Lent et al. 2002), the present study addressed two main questions: (1) Which reference groups are relevant to young apprentices' VET dropout decisions? (2) And in which ways do these groups affect the decision-making process—by defining normative expectations or by establishing role models with whom apprentices compare themselves? These two questions were explored by focusing mainly on the apprentices' perceptions of the normative

expectations and career ambitions of their respective reference groups (parents, friends, and classmates at vocational school), while also considering the difference in occupational achievement between apprentices and their parents.

Several key findings can be highlighted that contribute to the literature on VET dropout behavior and reference group research. First, the results showed that all three examined reference groups—parents, friends, and classmates at vocational school—are associated with VET dropout behavior. Thus, the present study demonstrated that these social contextual influences are not only important during school years (e.g., Beckmann 2021; Zimmermann 2020) or in higher education (e.g., Bank et al. 1990; Ost 2010), but are also fundamentally relevant for young people during VET.

Second, it is important to distinguish between the functions of reference groups in the decision-making process about whether to complete or leave VET prematurely—as well as between the subsequent pathways after leaving the first VET position. On the one hand, perceived normative expectations from both parents and friends contribute significantly to the probability of VET completion. Apprentices are more likely to complete their VET successfully if they believe that their parents and friends expect them to do so (*normative function*). In the case of parents, this also seems to reduce both the risk of permanent dropout from the VET system and occupational stopouts. On the other hand, apprentices' decisions seem to be influenced by both positive and negative comparisons with their reference groups (*comparative function*). In this context, having parents with higher occupational status than one's own seems to encourage apprentices to pursue a more demanding career path (*social assimilation*). Conversely, apprentices might feel intimidated if they perceive greater ambition in the career plans of their classmates at vocational school and therefore tend to move to another training occupation with a similar or lower socio-economic status (*social contrast*).

Finally, it is especially noteworthy that parents seem to continue to play a role in the occupational decision-making of apprentices even during the 'emerging adulthood' phase, despite the qualitative changes that occur in the parent–child relationship (Arnett 2007). This indicates that young apprentices need emotional support and (normative) guidance, which they can receive from close individuals such as parents and friends (Lindell and Campione-Barr 2017).

Limitations and future research

Although the present study was able to provide important insights into the association between social contexts and VET dropout behavior, it is necessary to point out some limitations that should be considered when interpreting the results and addressed in future research. First, due to the NEPS study design and the associated non-response of certain subgroups, the results presented here must be interpreted with caution. Adolescents with low or intermediate school certificates, who are typically at higher risk of dropping out of VET, were less likely to have valid values for key independent variables. As a result, the imputation models may be biased by positive selection, as valid data come mainly from apprentices with higher school qualifications and a lower risk of dropping out. Despite the use of selectivity analyses and the inclusion of auxiliary variables, it cannot be ruled out that the MAR assumption is violated, potentially leading to biased results. However, research on the occupational choices of German adolescents suggests

that those with lower school certificates may rely more on their social environment and its expectations than those with higher certificates when making career decisions (Eberhard et al. 2015). Therefore, the presented results may be somewhat conservative, i.e. the associations presented may be stronger if apprentices with lower qualifications were more adequately represented. Nevertheless, more representative samples are needed in future studies to further strengthen and refine the presented findings.

Second, there are limitations regarding the measurement of the reference group variables. On the one hand, they are based on subjective evaluations from the perspective of the apprentices, which carry the risk of bias because they may reflect not only the attributes of the reference groups, but also of the apprentices themselves (Davies and Kandel 1981). However, recent research suggests that both the actual aspirations of reference groups and individuals' perception of those aspirations independently influence individuals' aspirations, with the effects of actual aspirations being stronger than those of perceptions (Schörner and Bittmann 2023). Consequently, the coefficients regarding reference groups reported in the present study may be underestimated due to the use of perceptual measures. A direct survey of the respective reference groups could help future research to avoid potential biases and to better comprehend their influences. On the other hand, the measurements of the comparative reference group function are not entirely distinct. The variables used for friends and classmates only indirectly capture the actual performance of the respective groups, as they mainly target their career ambitions. In the case of the parent measure, the parent-apprentice difference in ISEI does not explicitly distinguish between parents' occupational performance and career ambitions. For future research, it would be helpful to have more concrete information on the performance of the reference groups or even on how apprentices assess their professional performance in comparison to their respective reference groups. This would also allow for a more precise examination of social contrast effects, such as the Big-Fish-Little-Pond effect (Davis 1966; Marsh et al. 2007; Seaton et al. 2008), in the context of VET dropout behavior, which could not be fully explored in the present study due to a lack of such data in the used NEPS data.

Third, the influence of reference groups on the dropout decision of apprentices might vary depending on the nature of the relationship with each reference group. For instance, the impact of parents might differ based on whether young individuals still live with them or the extent of financial support they receive from them (Lindell and Campione-Barr 2017). Similarly, to distinguish the influence of each group more accurately, information about the closeness of the relationship with parents, friends, and classmates could be useful (Yuan and Olivos 2023). However, such information is not (or only to a limited extent) available for the reference groups surveyed in the NEPS—and should perhaps be taken into account more thoroughly in future research.

Conclusion

The present study has addressed a gap in research on the causes of various VET dropout decisions that has been rightfully identified in some recent work (Böhn and Deutscher 2022; Krötz 2024). Although mostly subjective information from the perspective of apprentices was examined, the present study supports the notion that there are a multitude of actors that contribute to the success of VET. The results suggest that it is not

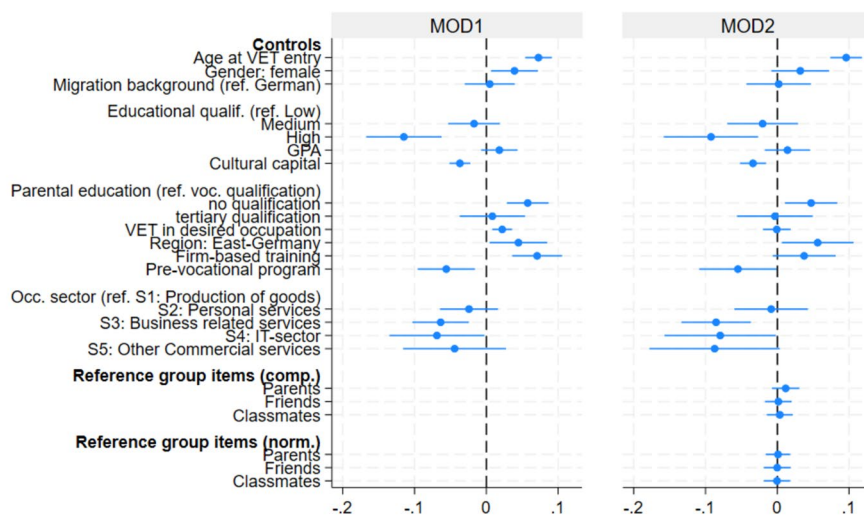
only those directly involved in VET (such as apprentices, employers, and teachers) who play a role. It is also important to consider actors who are indirectly involved in VET and serve as important reference groups for apprentices: parents, friends and classmates at vocational school.

Against the background of these findings, two policy implications can be suggested. First, parents and friends seem to set norms of training success to which young apprentices feel particularly committed. When it comes to guidance and counseling regarding VET dropout behavior, it may therefore make sense to extend these measures beyond individual counseling (Michaelis and Richter 2022; Psifidou et al. 2021) and to involve other actors from the apprentices' social environment. For example, target-group-specific information about or contacts to VET-relevant actors (vocational schools, companies) could be helpful in convincing parents of the potential training success of their children. Similar measures have recently been implemented in career orientation for students in Germany (Berger et al. 2020).

Second, the results of this study suggest that perceiving one's environment in vocational schools as high-achieving or motivated increases the probability of leaving the first VET position prematurely and transitioning to another training occupation (potentially with a lower socio-economic status). Research conducted in general education schools has identified that the relationship between teachers and students can play a mediating role in this context (Schwabe et al. 2019). To mitigate the potentially detrimental effects of these social comparison processes among classmates in vocational schools, it may be useful to implement interventions that specifically train teachers to create learning environments that focus on apprentices' own achievements rather than peer comparisons (Gilbert et al. 2022; Roy et al. 2015).

Appendix

See Fig. 1 and Table 4.



Note: Models based on non-imputed dataset; N(MOD1) = 5,026, N(MOD2) = 3,256

Fig. 1 Predictors of right-censoring, results from linear probability models

Table 4 Predictors of VET completion and dropout directions after leaving the first VET position, discrete-time multinomial models (AME)

	VET completion	Permanent dropout	Occupational stopout	Upward stopout	Company stopout
Age at VET entry ^a	-0.002 [0.337]	0.004 [0.000]	0.000 [0.912]	-0.001 [0.497]	-0.001 [0.304]
Gender: female	0.005 [0.313]	-0.001 [0.612]	-0.005 [0.087]	0.001 [0.692]	0.001 [0.667]
1st or 2nd generation immigrant (ref. German)	-0.011 [0.026]	0.003 [0.197]	0.000 [0.970]	0.007 [0.018]	0.002 [0.261]
Educational degree (ref. medium)					
Low	-0.016 [0.006]	0.012 [0.000]	0.003 [0.409]	-0.002 [0.340]	0.003 [0.144]
High	0.019 [0.000]	-0.006 [0.000]	-0.014 [0.000]	0.005 [0.180]	-0.004 [0.003]
GPA	-0.011 [0.003]	0.001 [0.781]	0.006 [0.007]	0.001 [0.540]	0.003 [0.012]
Cultural capital ^a	-0.001 [0.654]	-0.002 [0.079]	0.001 [0.359]	0.002 [0.072]	0.000 [0.731]
Parental educational degree (ref. vocational qualification)					
No qualification	-0.009 [0.043]	0.004 [0.086]	0.004 [0.143]	0.001 [0.552]	0.000 [0.946]
Tertiary qualification	-0.001 [0.854]	-0.004 [0.109]	0.001 [0.753]	0.001 [0.756]	0.003 [0.363]
VET in desired occupation ^a	0.030 [0.000]	-0.005 [0.000]	-0.014 [0.000]	-0.010 [0.000]	-0.002 [0.030]
Region: East-Germany	-0.005 [0.422]	0.002 [0.372]	0.000 [0.992]	0.003 [0.253]	-0.001 [0.430]
Firm-based training	0.007 [0.124]	-0.007 [0.004]	-0.003 [0.383]	0.000 [0.961]	0.002 [0.081]
Participation in pre-vocational program	0.001 [0.866]	0.002 [0.321]	-0.003 [0.267]	-0.001 [0.800]	0.001 [0.550]
Normative reference group function					
Success expectations: parents ^a	0.004 [0.108]	-0.002 [0.055]	-0.002 [0.071]	-0.001 [0.412]	0.001 [0.602]
Success expectations: friends ^a	0.005 [0.082]	-0.001 [0.226]	-0.002 [0.272]	-0.002 [0.061]	0.001 [0.638]
Success expectations: classmates ^a	0.002 [0.412]	0.001 [0.594]	-0.003 [0.108]	-0.001 [0.536]	0.001 [0.593]
Comparative reference group function					
Occupational status: parents ^{a,b}	0.001 [0.719]	0.001 [0.475]	-0.006 [0.000]	0.004 [0.000]	0.000 [0.901]
Career ambitions: friends ^a	0.002 [0.482]	0.000 [0.774]	-0.003 [0.084]	-0.001 [0.305]	0.002 [0.135]
Career ambitions: classmates ^a	-0.007 [0.028]	-0.001 [0.586]	0.005 [0.014]	0.002 [0.176]	0.001 [0.321]
Largest FMI			0.688		
Average RVI			0.349		

80 imputed datasets. Average marginal effects. *p* values in brackets*N* (person-months) = 162,784; *N* (Persons including those with right-censored episodes) = 7065

Further controls: Sector of VET occupation

For better readability, the coefficients have been multiplied by a factor of 10

^a z-standardized variables (mean = 0, SD = 1)^b Difference between highest parental ISEI and ISEI of apprentice's training occupation

Abbreviations

VET	Vocational education and training
NEPS	German National Education Panel Survey
STEM	Science Technology Engineering & Mathematics
GPA	Grand point average
KIdB	German Classification of Occupations
MAR	Missing at random
ISEI	International Socio-Economic Index of Occupational Status
AME	Average marginal effects

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The author performed all analyses and wrote the manuscript.

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Availability of data and materials

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Declarations

Competing interests

The author declares that he has no competing interests.

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References

- Allison PD (1982) Discrete-time methods for the analysis of event histories. *Sociol Methodol* 13:61. <https://doi.org/10.2307/270718>
- Allmendinger J (1989) Educational systems and labor market outcomes. *Eur Sociol Rev* 5:231–250. <https://doi.org/10.1093/oxfordjournals.esr.a036524>
- Alm S, Bäckman O (2015) Openness to gender atypical occupations in youth: do peer groups and school classes matter? *J Early Adolesc* 35:97–119. <https://doi.org/10.1177/0272431614527164>
- Arnett JJ (2007) Socialization in emerging adulthood. From the family to the wider world, from socialization to self-socialization. In: Grusec JE, Hastings PD (eds) *Handbook of socialization: theory and research*. Guilford, New York, pp 208–230
- Aßmann C, Steinhauer HW, Würbach A, Zinn S, Hammon A, Kiesl H, Rohwer G, Rässler S, Blossfeld H-P (2019) Sampling designs of the national educational panel study: setup and panel development. In: Blossfeld H-P, Roßbach H-G (eds) *Education as a lifelong process. The German national educational panel study (NEPS)*, 2nd edn. Springer, Wiesbaden, pp 35–55
- Bank BJ, Slavins RL, Biddle BJ (1990) Effects of peer, faculty, and parental influences on students' persistence. *Sociol Educ* 63:208. <https://doi.org/10.2307/2112838>
- Beckmann J (2021) Gendered career expectations in context: the relevance of normative and comparative reference groups. *Br J Sociol Educ* 42:1–19. <https://doi.org/10.1080/01425692.2021.1914547>
- Beckmann J (2023) Why do they leave? Examining dropout behaviour in gender-atypical vocational education and training in Germany. *J Vocat Educ Train*. <https://doi.org/10.1080/13636820.2023.2211546>
- Beckmann J, Wicht A, Siembab M (2023) Career compromises and dropout from vocational education and training in Germany. *Soc Forces* 102:658–680. <https://doi.org/10.1093/sf/soad063>
- Beicht U, Walden G (2013) *Duale Berufsausbildung ohne Abschluss—Ursachen und weiterer bildungsbiografischer Verlauf: Analyse auf Basis der BIBB-Übergangsstudie 2011*. BIBB report
- Berger M, Krajewski C, Schipp U (2020) Elternarbeit in der Berufsorientierung: Praktische Hinweise aus der NRW-Landesinitiative "Kein Abschluss ohne Anschluss". <https://www.ueberaus.de/wws/elternarbeit-in-der-beruf-sorientierung.php>. Accessed 28 Feb 2024
- Bessey D, Backes-Gellner U (2015) Staying within or leaving the apprenticeship system? Revisions of educational choices in apprenticeship training. *Jahrb Natl Stat* 235:539–552
- Biddle BJ, Bank BJ, Marlin MM (1980) Parental and peer influence on adolescents. *Soc Forces* 58:1057–1079. <https://doi.org/10.1093/sf/58.4.1057>
- Blossfeld H-P, Roßbach H-G (eds) (2019) *Education as a lifelong process. The German national educational panel study (NEPS)*, 2nd edn. Springer, Wiesbaden

- Böhn S, Deutscher V (2022) Dropout from initial vocational training—a meta-synthesis of reasons from the apprentice's point of view. *Educ Res Rev* 35:1–14. <https://doi.org/10.1016/j.edurev.2021.100414>
- Buchmann M, Kriesi I (2012) Geschlechtstypische Berufswahl: Begabungszuschreibungen, Aspirationen und Institutionen. In: Becker R, Solga H (eds) *Soziologische Bildungsforschung*. VS Verlag, Wiesbaden, pp 256–280
- Christ A (2013) Betriebliche Determinanten Vorzeitig Gelöster Ausbildungsverträge. *BWP* 42:4–5
- Cohen J (1987) Parents as educational models and definers. *J Marriage Fam* 49:339–351. <https://doi.org/10.2307/352304>
- Collins A, van Dulmen M (2006) Friendships and romance in emerging adulthood: assessing distinctiveness in close relationships. In: Arnett JJ, Tanner JL (eds) *Emerging adults in America: coming of age in the 21st century: coming of Age in the 21st century*. American Psychological Association, Washington, pp 219–234
- Davies M, Kandel DB (1981) Parental and peer influences on adolescents' educational plans: some further evidence. *Am J Sociol* 87:363–387
- Davis JA (1966) The campus as a frog pond: an application of the theory of relative deprivation to career decisions of college men. *Am J Sociol* 72:17–31
- Eberhard V, Matthes S, Ulrich JG (2015) The need for social approval and the choice of gender-typed occupations. In: Imdorf C, Hegna K, Reisel L (eds) *Gender segregation in vocational education*. Emerald, Leeds, pp 205–235
- Enders CK (2017) Multiple imputation as a flexible tool for missing data handling in clinical research. *Behav Res Ther* 98:4–18. <https://doi.org/10.1016/j.brat.2016.11.008>
- Federal Institute for Vocational Education and Training (2022) VET data report Germany 2019. Facts and analyses to accompany the federal government report on vocational education and training—selected findings, Bonn. <https://www.bibb.de/dienst/veroeffentlichungen/en/publication/download/17930>
- Ferry TR, Fouad NA, Smith PL (2000) The role of family context in a social cognitive model for career-related choice behavior: a math and science perspective. *J Vocat Behav* 57:348–364. <https://doi.org/10.1006/jvbe.1999.1743>
- Festinger L (1954) A theory of social comparison processes. *Human Relations* 7:117–140. <https://doi.org/10.1177/001872675400700202>
- Findeisen S, Jüttler A, Neuenschwander MP, Schumann S (2022) Transition from school to work—explaining persistence intention in vocational education and training in Switzerland. *Vocat Learn* 15:129–154. <https://doi.org/10.1007/s12186-021-09282-4>
- Fischer S (2017) The downside of good peers: how classroom composition differentially affects men's and women's STEM persistence. *Labour Econ* 46:211–226. <https://doi.org/10.1016/j.labeco.2017.02.003>
- Floh M, Menze L, Protsch P (2020) Berufliche Aspirationen im Kontext regionaler Berufsstrukturen. *KZfSS* 72:79–104. <https://doi.org/10.1007/s11577-020-00665-4>
- Fouad NA, Hackett G, Smith PL, Kantamneni N, Fitzpatrick M, Haag S, Spencer D (2010) Barriers and supports for continuing in mathematics and science: gender and educational level differences. *J Vocat Behav* 77:361–373. <https://doi.org/10.1016/j.jvb.2010.06.004>
- Frank KA, Muller C, Schiller KS, Riegle-Crumb C, Mueller AS, Crosnoe R, Pearson J (2008) The social dynamics of mathematics coursetaking in high school. *Am J Sociol* 113:1645–1696. <https://doi.org/10.1086/587153>
- Ganzeboom HBG, de Graaf PM, Treiman DJ (1992) A standard international socio-economic index of occupational status. *Soc Sci Res* 21:1–56. [https://doi.org/10.1016/0049-089X\(92\)90017-B](https://doi.org/10.1016/0049-089X(92)90017-B)
- Gilbert W, Guay F, Morin AJ (2022) Can teachers' need-supportive practices moderate the big-fish-little-pond effect? a quasi-experimental study with elementary school children. *Contemp Educ Psychol* 69:1–10. <https://doi.org/10.1016/j.cedpsych.2022.102060>
- Grønberg L (2015) "... It's like the immigrants stick together, the stupid ones, and the ones who want to learn something": dynamics of peer relations, social categories, and dropout in vocational educational training. *Int J Qual Stud Educ* 28:514–532. <https://doi.org/10.1080/09518398.2014.933912>
- Guan S-SA, Fuligni AJ (2016) Changes in parent, sibling, and peer support during the transition to young adulthood. *J Res Adolesc* 26:286–299. <https://doi.org/10.1111/jora.12191>
- Hackel M, Junggeburth C, Milolaza A (2017) Berufsschule im dualen System—Daten, Strukturen, Konzepte. *Wissenschaftliche Diskussionspapiere, Heft 185*. Federal Institute for Vocational Education and Training (BIBB), Bonn
- Hallinan MT, Williams RA (1990) Students' characteristics and the peer-influence process. *Sociol Educ* 63:122. <https://doi.org/10.2307/2112858>
- Hoening K, Pollak R, Schulz B, Stocké V (2016) Social capital, participation in adult education, and labor market success: constructing a new instrument. In: Blossfeld H-P, von Maurice J, Bayer M, Skopek J (eds) *Methodological issues of longitudinal surveys*. Springer, Wiesbaden, pp 291–312
- Holtmann AC, Solga H (2023) Dropping or stopping out of apprenticeships: the role of performance- and integration-related risk factors. *Z Erzieh* 26:469–494. <https://doi.org/10.1007/s11618-023-01151-1>
- Jonsson JO, Mood C (2008) Choice by contrast in Swedish schools: how peers' achievement affects educational choice. *Soc Forces* 87:741–765. <https://doi.org/10.1353/sof.0.0135>
- Kauppinen TM (2008) Schools as mediators of neighbourhood effects on choice between vocational and academic tracks of secondary education in Helsinki. *Eur Sociol Rev* 24:379–391. <https://doi.org/10.1093/esr/jcn016>
- Kelley HH (1968) Two functions of reference groups. In: Hyman HH, Singer E (eds) *Readings in reference group theory and research*. The Free Press, New York, pp 77–83
- Kröt M (2024) Structuring the complexity of drop-out from VET: a theoretical framework guiding empirical research perspectives. *ERVET* 16:1–14. <https://doi.org/10.1186/s40461-023-00155-9>
- Kröt M, Deutscher V (2022) Drop-out in dual VET: why we should consider the drop-out direction when analysing drop-out. *ERVET* 14:1. <https://doi.org/10.1186/s40461-021-00127-x>
- Laursen B, Veenstra R (2021) Toward understanding the functions of peer influence: a summary and synthesis of recent empirical research. *J Res Adolesc* 31:889–907
- Lent RW, Brown SD, Hackett G (1994) Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *J Vocat Behav* 45:79–122. <https://doi.org/10.1006/jvbe.1994.1027>
- Lent RW, Brown SD, Hackett G (2002) Social cognitive career theory. In: Brown D (ed) *Career choice and development*. Jossey-Bass, San Francisco, p 57

- Lent RW, Brown SD, Schmidt J, Brenner B, Lyons H, Treisman D (2003) Relation of contextual supports and barriers to choice behavior in engineering majors: test of alternative social cognitive models. *J Couns Psychol* 50:458–465. <https://doi.org/10.1037/0022-0167.50.4.458>
- Lindell AK, Campione-Barr N (2017) Continuity and change in the family system across the transition from adolescence to emerging adulthood. *Marriage Fam Rev* 53:388–416. <https://doi.org/10.1080/01494929.2016.1184212>
- Little RJA, Rubin DB (eds) (2002) *Statistical analysis with missing data*. Wiley, Hoboken
- Ludwig-Mayerhofer W, Pollak R, Solga H, Menze L, Leuze K, Edelstein R, Künster R, Ebralidze E, Fehring G, Kühn S (2019) Vocational education and training and transitions into the labor market. In: Blossfeld H-P, Roßbach H-G (eds) *Education as a lifelong process. The German national educational panel study (NEPS)*, vol 3, 2nd edn. Springer, Wiesbaden, pp 277–295
- Malin L, Jacob M (2018) Gendered occupational aspirations of boys and girls in Germany: the impact of local VET and labour markets. *J Vocat Educ Train* 71:429–448. <https://doi.org/10.1080/13636820.2018.1517128>
- Marsh HW, Trautwein U, Lüdtke O, Baumert J, Köller O (2007) The big-fish-little-pond effect: persistent negative effects of selective high schools on self-concept after graduation. *Am Educ Res J* 44:631–669. <https://doi.org/10.3102/0002831207306728>
- Matthes B, Meinken H, Neuhauser P (2015) Berufssektoren und Berufssegmente auf Grundlage der KldB 2010: In: Occupational sectors and occupational segments based on classification of occupations 2010. Methodenbericht, Nuremberg. https://statistik.arbeitsagentur.de/DE/Statischer-Content/Grundlagen/Methodik-Qualitaet/Methodenberichte/Uebergreifend/Generische-Publikationen/Methodenbericht-Berufssektoren-und-Berufssegmente.pdf?__blob=publicationFile&v=6. Accessed 23 Feb 2024
- Michaelis C, Findeisen S (2022) Influence of person-vocation fit on satisfaction and persistence in vocational training programs. *Front Psychol* 13:834543. <https://doi.org/10.3389/fpsyg.2022.834543>
- Michaelis C, Richter M (2022) Discontinuities in vocational education and training: the influence of early-risk factors and personality constructs on premature training termination and subsequent trajectories. *ERVET* 14:7. <https://doi.org/10.1186/s40461-022-00135-5>
- Mood C (2010) Logistic regression: why we cannot do what we think we can do, and what we can do about it. *Eur Sociol Rev* 26:67–82. <https://doi.org/10.1093/esr/jcp006>
- Mussweiler T (2003) Comparison processes in social judgement: mechanisms and consequences. *Psychol Rev* 110(3):472–489
- Mussweiler T, Rüter K, Epstude K (2004) The ups and downs of social comparison: mechanisms of assimilation and contrast. *J Pers Soc Psychol* 87:832–844. <https://doi.org/10.1037/0022-3514.87.6.832>
- NEPS Network (2021) National educational panel study, scientific use file of starting cohort grade 9. <https://doi.org/10.5157/NEPS.SC4.12.0.0>
- Neuber-Pohl C (2021) Apprenticeship non-completion in Germany: a money matter? *ERVET* 13:12. <https://doi.org/10.1186/s40461-021-00115-1>
- Ost B (2010) The role of peers and grades in determining major persistence in the sciences. *Econ Educ Rev* 29:923–934. <https://doi.org/10.1016/j.econedurev.2010.06.011>
- Parsons T (1951) *The social system*. The Free Press, Glencoe
- Parsons T, Bales RF (1956) *Family socialization and interaction process*. Routledge, London
- Paulus W, Matthes B (2013) The German classification of occupations 2010 - structure, coding and conversion table. FDZ-Methodenreport, Nuremberg. https://doku.iab.de/fdz/reporte/2013/MR_08-13_EN.pdf. Accessed 23 Feb 2024
- Polavieja JG, Platt L (2014) Nurse or mechanic? The role of parental socialization and children's personality in the formation of sex-typed occupational aspirations. *Soc Forces* 93:31–61. <https://doi.org/10.1093/sf/sou051>
- Psfidou I, Mouratoglou N, Farazouli A (2021) The role of guidance and counselling in minimising risk factors to early leaving from education and training in Europe. *J Educ Work* 34:810–825. <https://doi.org/10.1080/13639080.2021.1996545>
- Putney NM, Bengtson VL (2002) Socialization and the family revisited. *Adv Life Course Res* 7:165–194. [https://doi.org/10.1016/S1040-2608\(02\)80034-X](https://doi.org/10.1016/S1040-2608(02)80034-X)
- Restubog SLD, Florentino AR, Garcia PRJM (2010) The mediating roles of career self-efficacy and career decidedness in the relationship between contextual support and persistence. *J Vocat Behav* 77:186–195. <https://doi.org/10.1016/j.jvb.2010.06.005>
- Rohrbach-Schmidt D, Uhly A (2015) Determinanten vorzeitiger Lösungen von Ausbildungsverträgen und berufliche Segmentierung im dualen System. Eine Mehrebenenanalyse auf Basis der Berufsbildungsstatistik. *KZfSS* 67:105–135. <https://doi.org/10.1007/s11577-014-0297-y>
- Rosenqvist E (2018) Two functions of peer influence on upper-secondary education application behavior. *Sociol Educ* 91:72–89. <https://doi.org/10.1177/0038040717746113>
- Roth T (2017) Interpersonal influences on educational expectations: new evidence for Germany. *Res Soc Stratif Mobil* 48:68–84. <https://doi.org/10.1016/j.rssm.2016.12.001>
- Roy A, Guay F, Valois P (2015) The big-fish-little-pond effect on academic self-concept: the moderating role of differentiated instruction and individual achievement. *Learn Individ Differ* 42:110–116. <https://doi.org/10.1016/j.lindif.2015.07.009>
- Saltiel J (1985) A note on models and definers as sources of influence in the status attainment process: male—female differences. *Soc Forces* 63:1069–1075. <https://doi.org/10.1093/sf/63.4.1069>
- Schörner K, Bittmann F (2023) Children's aspirations, their perceptions of parental aspirations, and parents' factual aspirations—gaining insights into a complex world of interdependencies. *Eur Sociol Rev*. <https://doi.org/10.1093/esr/jcad074>
- Schwabe F, Korhals R, Schils T (2019) Positive social relationships with peers and teachers as moderators of the big-fish-little-pond effect. *Learn Individ Differ* 70:21–29. <https://doi.org/10.1016/j.lindif.2018.12.006>
- Seaton M, Marsh HW, Dumas F, Huguët P, Montiel J-M, Régner I, Blanton H, Buunk AP, Gibbons FX, Kuyper H, Suls J, Wheeler L (2008) In search of the big fish: investigating the coexistence of the big-fish-little-pond effect with the positive effects of upward comparisons. *Br J Soc Psychol* 47:73–103. <https://doi.org/10.1348/014466607X202309>

- Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs (2019) Basic structure of the education system in the Federal Republic of Germany, Berlin. https://www.kmk.org/fileadmin/Dateien/pdf/Dokumentation/en_2019.pdf. Accessed 28 June 2024
- Seidel K (2019) The intention to quit apprenticeships and the role of secondary jobs. *J Vocat Educ Train* 71:556–578. <https://doi.org/10.1080/13636820.2019.1566269>
- Seiffge-Krenke I (2015) Experiencing the transition to adulthood in Germany including emerging adults of the “forgotten half.” In: Žukauskienė R (ed) *Emerging adulthood in a European context*. Taylor and Francis, London, pp 79–93
- Sestito LA, Sica LS (2014) Identity formation of Italian emerging adults living with parents: a narrative study. *J Adolesc* 37:1435–1447. <https://doi.org/10.1016/j.adolescence.2014.02.013>
- Sewell WH, Haller AO, Portes A (1969) The educational and early occupational attainment process. *Am Sociol Rev* 34:82–92. <https://doi.org/10.2307/2092789>
- Sewell WH, Haller AO, Ohlendorf GW (1970) The educational and early occupational status attainment process: replication and revision. *Am Sociol Rev* 35:1014–1027. <https://doi.org/10.2307/2093379>
- Siembab M, Wicht A (2020) Schulformen und geschlechtstypische Berufsorientierungen: Jugendliche am Ende der neunten Klasse zwischen Gelegenheitsstrukturen auf dem Arbeitsmarkt und schulspezifischen Berufsaspirationen. *Z Soziol* 49:183–199
- Singer JD, Willett JB (2003) *Applied longitudinal data analysis: modeling change and event occurrence*. Oxford University Press (OUP), Oxford
- Solga H (2008) Lack of training, employment opportunities for low-skilled persons from a sociological and microeconomic perspective. In: Mayer KU, Solga H (eds) *Skill formation: interdisciplinary and cross-national perspectives*. Cambridge University Press, New York, pp 173–204
- Stalder BE, Schmid E (2016) Lehrvertragsauflösung und Ausbildungserfolg—kein Widerspruch: Wege und Umwege zum Berufsabschluss: mit Porträts betroffener Lernender, erstellt von Fabienne Lüthi
- Starrels ME, Holm KE (2000) Adolescents’ plans for family formation: is parental socialization important? *J Marriage Fam* 62:416–429. <https://doi.org/10.1111/j.1741-3737.2000.00416.x>
- Stocké V, Blossfeld H-P, Hoenig K, Sixt M (2019) Social inequality and educational decisions in the life course. In: Blossfeld H-P, Roßbach H-G (eds) *Education as a lifelong process. The German national educational panel study (NEPS)*, 2nd edn. Springer, Wiesbaden, pp 101–118
- Tesser A (1986) Some effects of self-evaluation maintenance on cognition and action. In: Sorrentino RM, Higgins ET (eds) *Handbook of motivation and cognition: foundations of social behavior*. Guilford, New York, pp 435–464
- Uhly A (2015) Vorzeitige Vertragslösungen und Ausbildungsverlauf in der dualen Berufsausbildung. Forschungsstand, Datenlage und Analysemöglichkeiten auf Basis der Berufsbildungsstatistik
- Uhly A (2023) Vorzeitige Lösung von Ausbildungsverträgen: (Kapitel A5.6). In: Bundesinstitut für Berufsbildung (ed) *Datenreport zum Berufsbildungsbericht 2023: Informationen und Analysen zur Entwicklung der beruflichen Bildung*. Barbara Budrich, Bonn, pp 143–153
- Wenzelmann F, Lemmermann H (2012) Betriebliche Kosten Von Vertragslösungen. *BWP* 41:4–5
- White IR, Royston P, Wood AM (2011) Multiple imputation using chained equations: issues and guidance for practice. *Stat Med* 30:377–399. <https://doi.org/10.1002/sim.4067>
- Wicht A (2016) Occupational aspirations and ethnic school segregation: social contagion effects among native German and immigrant youths. *J Ethn Migr Stud* 42:1825–1845. <https://doi.org/10.1080/1369183X.2016.1149455>
- Wicht A, Ludwig-Mayerhofer W (2014) The impact of neighborhoods and schools on young people’s occupational aspirations. *J Vocat Behav* 85:298–308. <https://doi.org/10.1016/j.jvb.2014.08.006>
- Woelfel J, Haller AO (1971) Significant others, the self-reflexive act and the attitude formation process. *Am Sociol Rev* 36:74. <https://doi.org/10.2307/2093508>
- Wood JV (1989) Theory and research concerning social comparisons of personal attributes. *Psychol Bull* 106:231–248. <https://doi.org/10.1037/0033-2909.106.2.231>
- Wydra-Somaggo G (2021) Early termination of vocational training: dropout or stopout? *ERVET* 13:1–23. <https://doi.org/10.1186/s40461-021-00109-z>
- Yuan X, Olivos F (2023) Conformity or contrast? Simultaneous effect of grademates and classmates on students’ educational aspirations. *Soc Sci Res* 114:102908. <https://doi.org/10.1016/j.ssresearch.2023.102908>
- Zimmermann T (2020) Social influence or rational choice? Two models and their contribution to explaining class differentials in student educational aspirations. *Eur Sociol Rev* 36:65–81. <https://doi.org/10.1093/esr/jcz054>

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