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Predictors of a Protean Career Orientation and Vocational Training Enrollment in the Post-School Transition

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Highlights

- Examined predictors of subjective and objective post-school transition outcomes
- Occupational self-efficacy beliefs predicted more vocational identity clarity
- Perceived career barriers predicted less vocational identity clarity
- Vocational identity clarity predicted a higher probability of VET enrollment
- Vocational identity clarity predicted a weaker protean career orientation

Abstract

The post-school transition is a critical transition for adolescents and understanding when and how it results in beneficial outcomes is a pressing issue. We integrate career construction theory and social cognitive career theory and investigate a sequential model of predictors and outcomes at various stages in the post-school transition process. We focus on a protean career orientation as an important subjective transition outcome and whether adolescents continue with high school or vocational education and training (VET) as an important objective transition outcome. We propose that personal and contextual socio-cognitive factors during school (i.e., occupational self-efficacy beliefs and perceived career barriers) relate to the transition outcomes indirectly through their effects on vocational identity clarity. We tested our hypotheses among a sample of 819 Swiss adolescents, based on a time-lagged study with three waves over a period of three years. Results of structural equation modeling showed that occupational self-efficacy beliefs positively, and perceived career barriers negatively related to vocational identity clarity. A clear vocational identity in turn predicted a higher probability of VET enrollment compared to high school enrollment after school. Unexpectedly, a clearer vocational identity related to a weaker protean career orientation. Implications for post-school transition research and the protean career literature are discussed.

Key words: post-school transition; protean career orientation; VET enrollment; vocational identity clarity; occupational self-efficacy; career barriers

Predictors of a Protean Career Orientation and Vocational Training Enrollment in the Post-School Transition

The post-school transition, that is, leaving compulsory school and entering an apprenticeship or high school, is the first major career transition in many western countries and is considered as an important developmental task in adolescence (e.g., Dietrich, Parker, & Salmela-Aro, 2012). Past research has illustrated that a successful post-school transition has important implications for later career and personal development. For example, success in this transition is positively related to work-related outcomes, such as job satisfaction (e.g., Pinquart, Juang, & Silbereisen, 2003) as well as well-being outcomes, such as life satisfaction (e.g., Litalien et al., 2013).

Although existing research has provided important insights into the consequences of a successful post-school transition, important research gaps remain. First, in the current work context in which careers become increasingly dynamic and less predictable (Hirschi, 2018), “new” career attitudes that emphasize an agentic orientation towards career development, such as a protean career orientation (PCO) become increasingly important (Hall, 2004). Specifically, a PCO refers to an agentic attitude toward one’s career, in which the person aspires to be self-directed in his or her career choices and guided by intrinsic values (Hall, 2004). However, how such a career orientation is affected by career transitions generally, and the post-school transition specifically, is not well understood (Hall, Yip, & Doiron, 2018). Second, few studies have investigated objective career transition outcomes, such as the career path that adolescents take after compulsory school (e.g., high school or vocational education and training). Yet, knowing how objective outcomes beyond career attitudes or career choices can be predicted is important given that different career paths are related to unique requirements and challenges. Finally, few studies have investigated the post-school transition process over a longer time span, covering several years. Yet, a life-span approach to career construction suggests that this transition should be understood as a process beginning in school, and continuing through and beyond the transition when leaving compulsory school (Lent, Hackett, & Brown, 1999; Savickas, 2002; Super, 1996).

We aim to address the identified research gaps by investigating theoretically relevant predictors of a PCO as an important, yet under researched outcome of the post-school transition in a large sample of Swiss adolescents in the transition from compulsory school to high school or vocational education and training (VET). The data were collected using a time-lagged design across three measurement points over three years. In addition, we go beyond existing research that has predominately focused on subjective transition outcomes and investigate the objective transition outcome in terms of whether adolescents start high school or VET after finishing compulsory school. In doing so, we integrate core assumptions of career construction theory (CTT; Savickas, 2002) with social cognitive career theory (SCCT;

Lent, Brown, & Hackett, 1994), both highlighting factors that foster or constrain career agency, and investigate a sequential model of predictors that are relevant at various stages of the post-school transition process (i.e., from compulsory school to after the transition has occurred). More precisely, based on CCT and the presumption that a clear vocational identity gives meaning and direction to career development in career transitions, we assume that having established a clear vocational identity before the post-school transition is an important predictor of career orientations and objective transition outcomes after school. Furthermore, we build on key assumptions of SCCT (Lent et al., 1994; Lent et al., 1999; Lent, Brown, & Hackett, 2000) and investigate socio-cognitive factors as indirect antecedents of transition outcomes. More precisely, we examine occupational self-efficacy beliefs as a personal and perceived career barriers as a contextual factor that indirectly relate to the transition outcomes through facilitating or hindering, respectively, the development of a clear vocational identity. Figure 1 shows a graphical depiction of our research model.

Our study makes three contributions. First, by integrating core assumptions of CCT with SCCT, we contribute to post-school transition research and provide new insights into the functioning of vocational identity clarity as an important mechanism linking socio-cognitive variables during school to important subjective and objective transition outcomes after school. Second, by investigating transition outcomes that have received little research attention (i.e., career orientations; objective transition outcomes), we contribute to protean career research where there is a lack of research on predictors generally, and especially among adolescents (Hall et al., 2018). We also contribute to CCT and SCCT by providing a better understanding about the relevance of some of their key constructs for objective outcomes of the post-compulsory school transition. Finally, by incorporating longer time lags in our study design, we contribute new knowledge about antecedents of important outcomes of the post-school transition, encompassing several years of the transition process.

Protean Career Orientation and VET Enrollment as Transition Outcomes

Protean career orientation. Increasing globalization and the ongoing fourth industrial revolution, characterized by an increase in digitization and automation of work, continue to make careers less linear, stable, and guided by organizational career management (Hirschi, 2018). In this context, an inner value compass and self-direction in career management (i.e., a PCO), become increasingly important. Indeed, past research illustrates that a PCO is positively related to self-directed career management activities as well as job and career satisfaction (Hall et al., 2018). Moreover, a PCO reflects a whole-life perspective on career management, where people self-direct their careers in accordance with intrinsic values that can encompass work but also other life domains (Direnzo, Greenhaus, & Weer, 2015), thereby contributing to a broader sense of well-being and satisfaction with life as a whole.

Past research highlights that demographic factors, such as education (Segers, Inceoglu, Vloeberghs, Bartram, & Henderickx, 2008), and dispositional factors, such as self-regulation focus (Hofstetter & Rosenblatt, 2017), are antecedents of a PCO, at least among adult or college student samples. At the same time, theorizing as well as empirical evidence on predictors of PCO remains scarce (Hall et al., 2018), especially among younger populations (e.g., high school or VET students) in career transitions. In fact, career transitions represent critical episodes for the examination of a PCO, given that during career transitions, people can rely less on external career guidance (e.g., from schools), making the need for self-direction particularly essential (Waters, Briscoe, Hall, & Wang, 2014). Especially, the post-school transition, which is the first major career transition in most people's lives, likely represents such a critical event. Investigating the degree of PCO and its predictors during the post-school transition can thus provide important insight into the early antecedents of this career orientation.

VET enrollment. The different career paths that adolescents pursue after compulsory school set the stage for later career and life course development. However, although theoretically often discussed (Lent et al., 1994; 1999), the empirical investigation of such objective transition outcomes remains scarce. Existing research on objective transition outcomes mostly investigated demographic factors as antecedents of different career paths after compulsory school. For example, Becker and Glauser (2018) found among Swiss adolescents, that those with higher socio-economic backgrounds were more likely to be enrolled in high school after compulsory school compared to VET. More research exists on antecedents of career decision-making, highlighting the importance of factors such as career interests or career exploration (Hirschi & Läge, 2007). However, because adolescents might not always realize their career choices or decisions for various reasons (Lent et al., 1994), it is crucial to investigate the real career paths that adolescents take after compulsory school. In our study context, we are specifically interested to examine whether adolescents start with high school or a VET program after compulsory school as an objective transition outcome.

Vocational Identity Clarity as an Antecedent of Post-School Transition Outcomes

The development and implementation of a clear vocational identity is an integral part of overall identity development and as such a core developmental task of adolescence (Erikson, 1968; Havighurst, 1956; Savickas, 2002; Super, 1996), which comes particularly salient towards the end of compulsory school. A clear vocational identity refers to the clarity of an adolescent's work and career-related beliefs, interests, goals, values, and abilities as well as suitable occupations (Holland, Daiger, & Power, 1980). A number of studies showed that reaching a clear vocational identity promotes adjustment and well-being in adolescents (e.g., Diemer & Blustein, 2007; Gushue, Scanlan, Pantzer, & Clarke, 2006; Skorikov & Vondracek, 2007).

According to CCT (Savickas, 2002), a clear vocational identity is important because it can give meaning and direction to career development, and as such, represents a critical element of agentic control over career development in novel and uncertain situations, such as the post-school transition. Because a clear vocational identity thus facilitates career agency combined with the awareness of one's career-related values and goals, we assume that a clear vocational identity is an important predictor of a PCO. More precisely, we argue that if adolescents become aware of their career-related interests, goals, needs and values (i.e., establishing a clear vocational identity), they should more likely develop a values-driven and self-directed attitude towards their career (i.e., establishing a strong PCO). Past empirical research supports the predictive value of concepts related to vocational identity clarity for PCO, such as career insights (Vos & Soens, 2008), self-awareness (Verbruggen & Sels, 2008), career decidedness (Creed, Macpherson, & Hood, 2011), and behaviors related to identity awareness in terms of self-exploration (Briscoe, Henagan, Burton, & Murphy, 2012). However, no study has so far investigated vocational identity clarity as a predictor of PCO in students in the post-school transition.

Hypothesis 1 (H1): Vocational identity clarity at the end of compulsory school positively predicts a protean career orientation after the post-school transition.

Moreover, based on CCT, we assume that a clear vocational identity is also a relevant predictor for objective transition outcomes, specifically whether adolescents continue with high school or with a VET program after compulsory school. Because choosing a VET program in a particular occupation requires a relatively detailed and extensive knowledge of the properties of the specific chosen occupation and how this relates to one's career-related interests, goals, and abilities, having established a clear vocational identity should facilitate the process of choosing and ultimately enroll in a VET program. Moreover, getting accepted into a specific VET position typically requires similar behaviors as when applying for a job in the regular job market, like sending application letters, doing a short internship in the selection process, and having job interviews. As such, a very unclear vocational identity can manifest as a significant barrier to getting a VET, while a clear vocational identity can function as an important facilitator for successfully attaining a VET. Thus, we expect that the stable and conscious notions about work-related interests, abilities, and suitable occupations (i.e., a clear vocational identity) should enable adolescents to choose a specific occupation and to be more successful in securing a VET position in this occupation. Overall, these arguments are in line with goal theories indicating that clear goals (e.g., the stable and conscious goal of becoming a carpenter) are more likely to be translated into corresponding behavior (e.g., searching for and enrolling in a carpentry apprenticeship) compared to less clear goals (Tosi, Locke, & Latham, 1991). Moreover, empirical evidence supports the relation between a clear vocational identity and career decision-making. For

example, a clear vocational identity was positively related to constructs of career decision-making, such as career decidedness (i.e., how sure one is with respect to one's career choice) among Swiss secondary students (Hirschi & Läge, 2008) and US college students (Lewis & Savickas, 1995).

Conversely, applying for and successfully entering high school is mostly limited to passing a scholastic exam, and thus, having established a clear vocational identity is not particularly relevant. Moreover, at least for some adolescents, high school enrollment can be a way for adolescents who have not yet developed a clear idea of their vocational interests and goals to postpone, at least temporally, making a specific career choice. Indeed, Mortimer, Zimmer-Gembeck, Holmes, and Shanahan (2002) found that a delay in vocational identity development was related to delay in vocational decision making among US adolescents.

We are aware that an unclear vocational identity or delaying an occupational choice are not the only reasons for why adolescents continue with high school after compulsory school. For example, adolescents may choose high school because it is a requirement for entering the occupation that fits their vocational identity (e.g., in the case of occupations that require a university degree). Conversely, adolescents may start a VET without a clear vocational identity (e.g., because an adolescent receives a VET offer from someone in the family or personal network). Thus, there is no necessary link between vocational identity clarity and the objective transition outcome. However, as we argue above, we would expect on average more vocational identity clarity for adolescents who enter VET, because having a clear vocational identity can strongly facilitate VET enrollment, which is not the case for high school enrollment.

Hypothesis 2 (H2): Vocational identity clarity at the end of compulsory school positively predicts enrollment in a VET program versus high school after compulsory school.

Occupational Self-Efficacy Beliefs and Perceived Career Barriers as Indirect Predictors of Transition Outcomes

In light of our proposition that a clear vocational identity before the post-school transition is a relevant antecedent of a PCO and VET enrollment, it seems important to consider how a clear vocational identity at the post-school transition may develop. In what comes next, we build on SCCT to examine how personal (i.e., occupational self-efficacy beliefs) and contextual socio-cognitive factors (i.e., perceived career barriers) during compulsory school can facilitate or hinder, respectively, the emergence of vocational identity clarity, and therefore indirectly relate to PCO and VET enrollment.

Occupational self-efficacy beliefs as an antecedent of vocational identity clarity.

Developing realistic self-efficacy expectations in general and occupational self-efficacy

expectations in specific are prominent tasks of the compulsory school years (Lent et al., 1999). Self-efficacy is mostly studied as a domain-specific cognition (e.g., academic self-efficacy, occupational self-efficacy), and occupational self-efficacy refers to the competence that a person feels concerning the ability to successfully fulfill the tasks involved in a (future) job (Rigotti, Schyns, & Mohr, 2008).

According to SSCT, occupational self-efficacy beliefs exert a strong influence on career interests and goals (Lent et al., 1994). Because establishing clear vocational interests and goals are core elements of a clear vocational identity, occupational self-efficacy beliefs are likely to be also highly relevant for the emergence of a clear vocational identity. First, adolescents who generally feel more confident to deal with work- and career-related tasks (i.e., who hold more favorable occupational self-efficacy beliefs) likely are more confident to explore various career-related aspects of the self (e.g., gathering what kind of work-related tasks one finds interesting) as well as of the environment (e.g., gathering information about various career paths), ultimately fostering the emergence of a clear vocational identity. Indeed, according to the model of proactive motivation (Parker, Bindl, & Strauss, 2010), favorable self-efficacy beliefs reflect “can do” aspects of motivation and are important predictors for proactive career behaviors such as self- and environmental career exploration (Hirschi, Lee, Porfeli, & Vondracek, 2013). Such career exploration behaviors are generally considered important precursors to develop a clear vocational identity (Marcia, 1980). Second, based on goal setting theory research, self-efficacy facilitates goal commitment because self-efficacy beliefs relate to higher goal-directed effort and persistence when facing obstacles (Locke, Latham, & Smith, 1990). Consequently, adolescents who hold a more positive notion of their competencies to deal with work- and career-related challenges should more easily commit to a vocational identity which is an important aspect of establishing vocational identity clarity (Marcia, 1980).

Past research has investigated concepts closely related to occupational self-efficacy beliefs and supports their relevance for the emergence of a clear vocational identity. For example, Lee, Porfeli, and Hirschi (2016) found among American high school students that personal agency beliefs, which included favorable perceptions of one’s capabilities to achieve goals, were positively related to vocational identity exploration behaviors (e.g., learning about various jobs that one likes) one year later. Similarly, Negru-Subtirica, Pop, and Crocetti (2015) found that career confidence (as an aspect of career adaptability), reflecting trust in one’s abilities and anticipation of success when dealing with problems, predicted vocational identity exploration and commitment in Romanian high school students three and six months later. In addition, several studies indicate that beliefs reflecting confidence in one’s competence to make a career choice, that is, career decision-making self-efficacy, fosters vocational identity development. For example, Gushue et al. (2006)

found cross-sectional evidence that higher levels of career decision-making self-efficacy was positively related to vocational identity differentiation in Latino high school students. Similarly, Koumoundourou, Kounenou, and Siavara (2012) found cross-sectional evidence among Greek high school students that career decision-making self-efficacy mediated the link between core self-evaluations and vocational identity, especially among boys.

Hypothesis 3 (H3): Occupational self-efficacy beliefs during compulsory school positively predict vocational identity clarity at the end of compulsory school.

Career barriers as an antecedent of vocational identity clarity. Vocational development generally and vocational identity development specifically is a process that reflects individual as well as contextual influence (Savickas, 2002). According to SCCT, specifically career barriers represent an important contextual factor that constrain agency in career development and as such can be detrimental to vocational development (Lent et al., 1994).

Career barriers refer to negative contextual influences, such as events or conditions in the environment that make career progress difficult, as for example unfavorable labor market conditions (Lent et al., 2000). Importantly, not only objective features of the context (i.e., objective career barriers) but also how such features are perceived (i.e., subjective career barriers) can hinder career development. In fact, Lent et al. (2000) stress that the effect of a particular objective barrier often depends at least partly on the manner in which the individual appraises it, underlining the importance to study perceived career barriers.

According to SCCT, perceived career barriers impede the development of stable career-related interests and goals because individuals are unlikely to expend considerable resources to pursue career interest and goal striving if they perceive barriers to their attainment. Similarly, we assume that perceived career barriers also hinder the emergence of a clear vocational identity. For example, adolescents might refrain from expending the time and energy needed for the development of a clear vocational identity (e.g., exploring career interests and occupations) if they perceive barriers that make the realization of their vocational aspirations unlikely. Past empirical evidence supports the contention that perceived career barriers can impede vocational identity development among adolescents, at least with cross-sectional designs. For example, Gushue et al. (2006) found a negative relation between perceived career barriers and vocational identity differentiation among Latino high school students. Similarly, Urbanaviciute, Pociute, Kairys, and Liniauskaite (2016) found a negative relation between perceived career barriers and commitment to a vocational identity among Lithuanian university students.

Hypothesis 4 (H4): Perceived career barriers during compulsory school negatively predict vocational identity clarity at the end of compulsory school.

Vocational identity clarity as a mediating mechanism linking predictors before to outcomes after the post-school transition. Extending a step further, we suggest that vocational identity clarity is a mediating mechanism relating predictors before to outcomes after the post-school transition. Specifically, we assume that students' occupational self-efficacy beliefs and perceptions of career barriers during compulsory school are related to students' subjective (i.e., PCO) and objective transition outcome (i.e., VET enrollment) after the post-school transition through the clarity of the vocational identity they hold at the end of compulsory school. That is, building on hypotheses one to four, we expect:

Hypothesis 5 (H5): There is a significant positive indirect effect from students' occupational self-efficacy beliefs during compulsory school on students' protean career orientation (H5a) and enrollment in VET versus high school (H5b) after the post-school transition through the clarity of vocational identity at the end of compulsory school.

Hypothesis 6 (H6): There is a significant negative indirect effect from students' perceived career barriers during compulsory school on students' protean career orientation (H6a) and the enrollment in VET versus high school (H6b) after the post-school transition through the clarity of vocational identity at the end of compulsory school.

Study Context

We tested our hypotheses in a sample of Swiss adolescents. In Switzerland, after nine years of regular compulsory school, about 70 percent of students continue with a VET program (State Secretariat for Education, Research and Innovation SERI, 2018), and as such, VET represent a primary route to train and educate the future work force in Switzerland (Hirschi, 2012). Switzerland has a well-established VET system, which offers training in private and public organizations and companies in more than 200 different vocations (Federal Office for Professional Education & Technology, 2018). In general, VET programs are dual-track programs (i.e., part-time classroom instruction at a vocational school combined with a part-time apprenticeship at a host company), and most VET programs take three years for completion. The remaining 30 percent of adolescents continue with general high school or specialized middle schools. A regular high school program generally lasts three to four years, and the primary focus is on preparing students for a college. Thus, Switzerland is characterized by well-defined options for careers in various directions and domains after mandatory school, and as such represents a promising context to study antecedents and outcomes of the post-school transition.

Method

Procedure and Participants

We collected three waves of data over a period of three years from two cohorts using a cohort-sequential design, including the transition from school to VET or high school. The first measurement (T1) took place at the end of eighth grade (cohort 1 in 2013, cohort 2 in 2014); the second measurement (T2) took place at the end of ninth grade, and the third measurement (T3) took place one year after completion of compulsory school. Among our focal constructs, occupational self-efficacy and perceived barriers were assessed at T1, vocational identity clarity was assessed at T2, and the two transition outcomes were assessed at T3.

At T1, we contacted school principals in the German-speaking part of Switzerland, which then asked students currently in eighth grade to participate in our study. This procedure led to 842 students who filled out the questionnaire (Cohort 1: $n = 312$; Cohort 2: $n = 530$). Data were collected during class hours in a computer room via online survey. Students were supervised by their teachers during participation and were free to decline participation. The participating students had the opportunity to win one of six gift vouchers with a total value of approximately 800 USD. At T2 and T3, we contacted students who provided valid contact information at T1 ($n = 734$; 87.2%) via email or postal letter and a link to the online survey. Two hundred eighty students (38.1%) responded at T2, and 193 students (26.3%) at T3, which are in the commonly observed range for this type of data collection (Baruch & Holtom, 2008). To constitute our final sample of $N = 819$, we excluded 20 students (2.4%) who pursued an alternative career path (e.g., who made a gap year). We also excluded three students (< 1%) that had missing values on all focal study variables.

Because students pertained to two different cohorts, we tested for potential cohort differences with respect to focal study variables (i.e., occupational self-efficacy beliefs, perceived career barriers, vocational identity clarity, PCO, VET enrollment), demographic background variables (i.e., gender, age, socio-economic background), and schooling variables (i.e., scholastic level, as students in Switzerland are commonly divided into basic and higher scholastic levels within grades). Results of F - and chi-square tests indicated no differences between cohorts on all focal study variables and demographics background variables. The only significant difference that emerged was that in cohort 1 (T1 at 2013), there was a higher proportion of students with higher scholastic requirements (75.1% vs. 64.2%, $p = .003$). Taken together, because only very few differences emerged between the two cohorts, we combined their data into one sample, but controlled for the cohort to which adolescents pertained in the analyses presented further below.

At T1, students (48.5% female) were on average 15 years old ($M = 14.98$, $SD = 0.68$), and a majority (68.9%) were assigned to a higher scholastic level. With respect to their socio-economic backgrounds, more than half of students (58.3%) indicated VET or a higher

vocational education as the highest education of their parents. About a quarter of students (24.1%) indicated a university degree and 12.1% a high school degree as the highest education of their parents; 4.8% indicated that their parents had no formal education.

Measures

Occupational self-efficacy. Occupational-self efficacy, assessed at T1, was measured with the German-language six-item short scale from (Rigotti et al., 2008). Participants were asked to imagine what they think it will be like when they will work (e.g., in a VET program), and then responded to items such as “Through my past experiences, I am well prepared for my professional future” on a six-point scale ranging from 1 (*not at all true*) to 6 (*completely true*). This scale showed positive correlations with positive work expectations and goal engagement among Swiss eighth grade students, and work engagement, job satisfaction and job performance among Swiss adolescents in VET (Valero & Hirschi, 2016; Valero, Hirschi, & Strauss, 2015).

Perceived career barriers. Career barriers, assessed at T1, were measured by six-items, assessing the perception of economic and social barriers towards one’s career development. Economic barriers refer to, for instance, few available career options, whereas social barriers refer to, for instance, lack of social career support. We opted to develop our own scale because no established measure for career barriers for our target group (i.e., adolescents in compulsory school) was available. The content of the items was informed by the conceptualization of career barriers in adolescence in SCCT (Lent et al., 1994, 2000) and in the My Vocational Situation scale (Holland et al., 1980). More precisely, we developed three items, assessing the perception of economic career barriers (i.e., “It is difficult to find an apprenticeship or a job in my desired profession”; “In my desired profession, it is difficult to get a secure job”; “It is difficult to earn a sufficient income in my desired profession”) and three items assessing the perception of social career barriers (i.e., “Important others (e.g., parents, friends) find my desired profession inappropriate”; “My family is narrowing me down in my choice of profession”; “My desired profession is not really supported by my friends and relatives”). Participants were asked to indicate their agreement with each statement based on a five-point response scale ranging from 1 (*not true*) to 5 (*true*). As we describe later in more detail, we modeled career barriers as a higher-order factor defined by economic career barriers and social career barriers as lower-order factors.

Vocational identity clarity. Vocational identity clarity, assessed at T2, was measured with the German version (Jörin, Stoll, Bergmann, & Eder, 2004) of the scale by Holland et al. (1980). The scale can validly be used to assess vocational identity clarity among adolescents (Hirschi & Herrmann, 2013), and consists of seven items (e.g., “I am not sure whether my current choice (education, activity, professional goal) is really is the right one for me”). Participants indicated the degree to which these statements resembled their

personal situation from 1 (*not at all*) to 5 (*completely*). To arrive at a measure of vocational identity clarity we reverse scored the scale. The measure is well-established in the international literature and shows positive correlations with, for example, career decidedness and career planning among adolescents (e.g., Hirschi & Läge, 2007).

Protean career orientation. Protean career orientation, assessed at T3, was measured with the seven-item scale from Porter, Woo, and Tak (2016), which is a short form of the Protean Career Attitudes scale from Briscoe, Hall, and Frautschy DeMuth (2006). The scale was translated into German by one of the authors and a doctoral student in a parallel translation and the final version was derived in a reconciliation meeting (cf. van de Vijver & Leung, 1998). Participants were asked to indicate their agreement with statements such as “Freedom to choose my own career path is one of my most important values” on a five-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale showed positive correlations with career satisfaction and career planning among German university students (Herrmann, Hirschi, & Baruch, 2015), but has not been frequently used among adolescents. However, a confirmatory factor analysis, specifying a single factor, provided good fit to the data ($\chi^2 = 19.86$, $df = 14$, $p = .13$; $CFI = .95$; $TLI = .92$; $RMSEA = .05$, 90% CI = .00-.10). Standardized factor loadings ranged from .24 to .75 (all $p < .01$).

Objective transition outcome. The objective transition outcome, assessed at T3, was measured by asking participants to indicate their current vocational or school situation (0 = currently in high school, 1 = currently in VET).

Control variables. To isolate the effects of our focal variables on T2 vocational identity clarity and the T3 transition outcomes, we considered several factors in the analyses. Specifically, we included gender and parents' highest level of education (no postsecondary education vs. having postsecondary education) as control variables because previous research has demonstrated relations between these variables and different career trajectories (e.g., pursuing high school or VET) (Becker & Glauser, 2018; Goldberg & Perry-Jenkins, 2004; Tang, Fouad, & Smith, 1999). Furthermore, although all participants pertain to the same age group and were in the same grade, they can differ slightly in age (e.g., due to delayed school entry or repeated classes). We therefore included age as a control variable. We also controlled scholastic level of an adolescent. Finally, we controlled for the cohort to which participants pertained, to account for systematic cohort differences, for example due differences in the broader social context between cohorts (e.g., differences in the labor market situation.)

Results

Missing Data, Attrition Analyses, and Consideration of Control Variables

Missing data among the sampled 819 participants were estimated using the full information maximum likelihood (FIML; see e.g., Graham, 2009) procedure in Mplus. In research situations with longitudinal dropout, it is recommended using FIML with all available data because a significant amount of missing information can be recovered from those waves at which information on participants is available (for a similar procedure, cf. Orth, Erol, Ledermann, & Grob, 2018). Moreover, even if data are not missing completely at random, FIML produces less biased and more reliable results compared to other methods of dealing with missing data, such as listwise deletion (Allison, 2003; Orth et al., 2018; Schafer & Graham, 2002). Finally, FIML yields parameter estimates that are very close to those estimates that would have resulted if no longitudinal dropout had occurred (Orth et al., 2018; Widaman, 2006; Wothke, 2000).

Although FIML produces more valid estimates than many alternative methods dealing with missing data (Allison, 2003), we nevertheless examined if attrition was a problem for our sample. Therefore, we compared students who participated at the first measurement point only ($n = 508$) to students who participated at two or three measurement points ($n = 311$) on the following T1 variables: occupational self-efficacy, perceived career barriers, gender, age, scholastic level, and socioeconomic status in terms of the highest attained educational level of their parents. Results of F - and chi-square tests indicated that students who participated in two or three waves were significantly younger ($M = 14.92$ years, $SD = 0.63$) than students that participated only at the first measurement point ($M = 15.02$ years, $SD = 0.70$), $F(1,784) = 3.93$, $p = .05$. Moreover, more female students (57.2%), $\chi^2(1) = 15.70$, $p < .001$, and more students with a higher scholastic level (74.8%), $\chi^2(1) = 6.95$, $p = .01$, participated in at least two waves. However, students did not differ in their socio-economic status and, importantly, in our focal predictor variables, namely, occupational self-efficacy beliefs and perceived career barriers.

Given that attrition varied systematically across some demographic variables (i.e., gender, age, level of schooling), we controlled for these variables together with the other variables specified above (i.e., cohort and socio-economic status). The inclusion of these control variables combined with the FIML estimator helped us generate findings less impacted by attrition. In addition, it is important to note that including participants that participated in at least two waves only ($n = 311$), as well as removing controls from the analyses did not change results, which supports the robustness of our study findings.

Measurement Model Testing

Before testing our hypotheses, we evaluated the empirical distinctiveness of our study variables, using confirmatory factor analysis. Therefore, we first assessed the complete measurement model, including occupational self-efficacy beliefs and perceived career

barriers at T1, vocational identity clarity at T2, and the two transition outcomes at T3 (PCO and objective transition outcome), with all the variables except the objective transition outcome as latent variables and indicated by their respective scale items. Moreover, as reported above, we modeled career barriers as a higher-order factor defined by two latent lower-order factors (i.e., economic career barriers and social career barriers). Constructs that were measured at the same time point, that is at T1 (i.e., occupational self-efficacy expectations, career barriers) and at T3 (i.e., PCO, objective transition outcome) were allowed to correlate. This model showed a good fit to the data ($\chi^2 = 425.84$, $df = 316$, $p < .001$; $CFI = .94$; $TLI = .93$; $RMSEA = .02$, 90% CI = .02-.03). Standardized factor loadings ranged from .30 to .82 for all measures (all $p < .01$). Importantly, this measurement model fitted the data better than a three-factor model, combining the two predictors at T1 and the two transition outcomes at T3 into one factor each ($\chi^2 = 844.83$, $df = 321$, $p < .001$; $CFI = .71$; $TLI = .69$; $RMSEA = .05$, 90% CI = .04-.05), $\Delta\chi^2$ ($\Delta df = 5$, $N = 819$) = 125.92, $p < .001$, or a single-factor model ($\chi^2 = 1130.20$, $df = 324$, $p < .001$; $CFI = .56$; $TLI = .52$; $RMSEA = .06$, 90% CI = .05-.06), $\Delta\chi^2$ ($\Delta df = 8$, $N = 819$) = 209.75, $p < .001$.

Because the career barriers scale was a newly developed measure, we specifically evaluated the fit of the proposed second-order factor structure and obtained good fit to the data ($\chi^2 = 27.39$, $df = 7$, $p < .001$; $CFI = .97$; $TLI = .94$; $RMSEA = .06$, 90% CI = .04-.08). Factor loadings for the economic career barriers items were .76, .78, and .44, respectively, and factor loadings for the social career barriers were .67, .60, and .47, respectively (all $p < .01$). We further compared this second-order factor structure with two alternative models: (1) a more parsimonious model where economic and social career barriers were combined into one factor, and (2) a less parsimonious model where economic and social barriers were modelled as two correlated first-order factors. The proposed measurement model fitted the data better than the one factor model, $\chi^2 = 496.27$, $df = 318$, $p < .001$; $CFI = .90$; $TLI = .89$; $RMSEA = .03$, 90% CI = .02-.03), $\Delta\chi^2$ ($\Delta df = 2$, $N = 819$) = 41.25, $p < .001$, and equally well as the less parsimonious measurement model specifying economic and social barriers as two correlated first-order factors, $\chi^2 = 426.27$, $df = 314$, $p < .001$; $CFI = .94$; $TLI = .93$; $RMSEA = .02$, 90% CI = .02-.03), $\Delta\chi^2$ ($\Delta df = 2$, $N = 819$) = 2.24, $p = .33$. This indicates that our proposed measurement model with career barriers as a second-order factor is preferable over alternative models.

Structural Model Testing

Means, standard deviations, Cronbach alpha's reliability coefficients, and bivariate correlations of all focal study variables are presented in Table 1. Occupational self-efficacy beliefs at T1 were significantly correlated with vocational identity clarity at T2 and PCO at T3, while perceived career barriers were negatively correlated with vocational identity clarity at T2 but not significantly related to PCO or the objective transition outcome at T3. Vocational

identity clarity at T2 was significantly and negatively correlated with both PCO and the objective transition outcome at T3.

To test the hypotheses we applied structural equation modeling and tested both a partial mediation model (M1) and a full mediation model (M2) for the potential indirect effects of vocational identity clarity on the outcomes. In M1, the direct effects of occupational self-efficacy and perceived career barriers at T1 on the transition outcomes at T3 were included. In M2, these direct effects were removed, to test a more parsimonious full-mediation model. In both, M1 and M2, gender, age, scholastic level, socio-economic status, and cohort were included as control variables on vocational identity clarity at T2 and the transition outcomes at T3. Furthermore, in both models the two predictors and the two transition outcomes, respectively, were allowed to freely correlate. Model estimations were conducted using the Mplus 7 software (Muthén & Muthén, 2012).

Both the partial mediation model and the full mediation model yielded good fit to the data. For M1, $\chi^2(423) = 553.00$, $p < .001$, $CFI = .93$, $TLI = .92$; $RMSEA = .02$, 90% CI = .02-.02); for M2, $\chi^2(427) = 580.11$, $p < .001$, $CFI = .92$, $TLI = .91$; $RMSEA = .02$, 90% CI = .02-0.03). Comparing the fit of these two models, the partial mediation model M1 provided better fit to the data than the full mediation model M2, $\Delta\chi^2(\Delta df = 4, N = 819) = 17.62$, $p < .01$, indicating that removing the direct paths of occupational self-efficacy beliefs and perceived career barriers on the transition outcomes worsened model fit. In fact, there was a significant positive direct effect of self-efficacy at T1 on PCO ($b = 0.11$, $p = .02$) and a significant negative direct effect on VET enrollment ($b = -0.35$, $p = .02$) at T3. The direct effects of barriers on the outcomes were not significant. Thus, in what comes next, the unstandardized path coefficients of M1 (i.e., the partial mediation model) are reported.

Vocational identity clarity at T2 significantly negatively predicted PCO at T3 ($b = -0.11$, $p = .01$), thus contrary to the expected direction and refuting Hypothesis 1. Vocational identity clarity at T2 was significantly positively related to enrollment in VET vs. going to high school ($b = 0.46$, $p = .001$), supporting Hypothesis 2. The effect of occupational self-efficacy at T1 on vocational identity clarity at T2 was significant and positive ($b = 0.29$, $p = .02$), supporting Hypothesis 3. The effect of perceived career barriers at T1 on vocational identity clarity at T2 was significant and negative, ($b = -.077$, $p = .01$), providing support for Hypothesis 4¹. In an exploratory way, we tested an additional model including the latent interaction between occupational self-efficacy beliefs and perceived career barriers. However, this interaction did not significantly predict vocational identity clarity ($b = -0.09$, $p = .95$).

Testing Indirect Effects

For testing the indirect effects, we used a Sobel test and a bootstrapping approach. In the bootstrapping test, the 95-percent bias-corrected bootstrap (BCB) confidence intervals (CIs) from 1,000 bootstrap samples were obtained. Notably, all indirect effects were derived

while controlling for the effects of gender, age, scholastic level, socioeconomic status, and cohort in vocational identity clarity at T2 and the transition outcomes at T3.

Results provide some evidence for indirect effects of occupational self-efficacy beliefs on both transition outcomes, however, only when considering results of the Sobel test (PCO: indirect effect = -0.03, $p = .07$, 95% BCB CI = [-0.14; 0.00]; objective transition outcome: indirect effect = .10, $p = .04$, 95% BCB CI = [-0.02; 0.40]). At the same time, the bootstrapping results, which are considered as more reliable and having more statistical power (MacKinnon, 2008) were not significant (i.e., the CIs included zero), suggesting that these indirect effects are not sufficiently substantial and reliable for interpretation, thereby refuting H5a and H5b.

With respect to perceived career barriers, the results indicate that career barriers at T1 had a positive indirect effect on PCO and the objective transition outcome at T3 through vocational identity clarity at T2. The indirect effects of environmental career barriers was significant for PCO (indirect effect = 0.09, $p = .05$, 95% BCB CI = [0.01, 0.34]) and the objective transition outcome (indirect effect = -0.35, $p = .05$, 95% BCB CI = [-1.23; -0.02]). We note that the positive indirect effect of perceived career barriers on PCO through vocational identity clarity was in the opposite direction than hypothesized, providing no support for H6a. However, the negative indirect effect of perceived career barriers on VET enrollment through vocational identity clarity supports H6b.

Discussion

The current study examined predictors of important, yet understudied, subjective and objective outcomes of the transition from school to work (i.e., PCO, VET enrollment), based on a cohort-sequential design covering several years of the post-school transition process. Results supported some, albeit not all of our hypotheses. First, as expected, adolescents with a clearer vocational identity at the end of compulsory school were more likely to be enrolled in a VET program one year later after compulsory school (i.e., after the post-school transition). Generally speaking, this finding supports a core contention of CCT, namely that establishing a clear vocational identity is critical to exert agentic control over career development, such as taking an occupational choice and consequently enroll in a training in this occupation. Thereby, our study sheds light on a relevant psychological factor that can affect the decision about whether to continue with high school vs. VET after school, over and above other factors, mostly demographic or schooling factors (e.g., socioeconomic background, scholastic level) that have been studied before.

Second, as hypothesized, occupational self-efficacy beliefs were positively and perceived career barriers were negatively related to the development of a clear vocational identity through the last two years of compulsory school. These findings generally support a

core contention of SCCT stressing the important role that personal and contextual socio-cognitive factors play for career development and the successful mastery of important developmental tasks, such as developing a clear vocational identity. Third, as hypothesized perceived career barriers indirectly related to the objective transition outcome, such as that adolescents who perceived more career barriers during compulsory school were more likely to be enrolled in high school two years later after compulsory school. Specifically, this suggests that adolescents who perceived more career barriers during compulsory school, had established a less clear vocational identity at the end of compulsory school, and in turn, were more likely to be enrolled in high school. Although this indirect effect was small, it is important to note that it unfolded over a time span of two years, and while controlling for relevant socio-demographic factors, thereby highlighting its meaningfulness.

Contrary to our expectation, a clear vocational identity at the end of compulsory school related to *less*, and not more, PCO after the post-school transition. At least two explanations might account for this counterintuitive and unexpected finding. First, establishing a PCO might not have a high priority for adolescents at this early career stage closely after the post-school transition. At least in countries with well-structured educational and vocational systems, such as in Switzerland, there might not be a high need of being self-directed and values-driven during vocational training or high school. In fact, in most VET programs learning contents are closely coordinated between settings (school vs. company) and a strong emphasis is put on the fit between the acquired competencies and the competencies actually in demand in the labor market and in the specific professions (State Secretariat for Education, Research and Innovation SERI, 2018). Such a VET environment, combined with a clear notion of one's desired vocational future (i.e., a clear vocational identity) provides a good basis for career development, thereby reducing the need to further develop a self-directed and values-oriented career approach (PCO), ultimately explaining why those with a clearer vocational identity were less likely to have developed a PCO. Conversely, those adolescents with a less clear vocational identity might still be exploring their vocational paths as they are less certain about their desired vocational futures, and as a consequence, develop more likely a self-directed and values-driven career attitudes reflected in a PCO. Second, a PCO might indeed be a facilitator, rather than an outcome of a clear vocational identity. The desire to self-direct a career (i.e., a PCO) might motivate to clarify career-related skills, preferences, and interests, which can then increase vocational identity clarity. Indeed, Hirschi, Jaensch, and Herrmann (2017) found among German university students that PCO predicted a clear vocational identity, but not the other way around, thereby suggesting that PCO is "more likely an enabler than a consequence of career meta-competencies" (Hirschi et al., 2017, p. 216), such as a clear vocational identity.

Also contrary to our expectations the indirect effect of career barriers on PCO was positive, suggesting that the more career barriers adolescents perceived during compulsory school, the more PCO they had developed after compulsory school. That is, the more barriers adolescents perceived during compulsory school, the less clear their vocational identity was at the end of high school, which in turn fostered a PCO after compulsory school (see above). Although unexpected, this positive indirect effect of career barriers on PCO is in line with Lent and colleagues' (2000) suggestion that career barriers can also be perceived as a challenge, thereby prompting positive reactions and ultimately facilitating the development of favorable career attitudes. In fact, PCO can be understood as an adaptive career orientation that becomes particularly relevant when facing career-related challenges (Waters et al., 2014). Specifically, the perception of barriers in one's career likely makes the insecure nature of careers more salient, thereby proving a potent source of motivation for taking charge over one's career development, and eventually fostering a PCO. In line with this interpretation, other research found that perceived career barriers were positively related with proactive career behaviors six months later among German university students (Hirschi et al., 2013).

Finally, we found no evidence for the expected indirect effect of students' occupational self-efficacy beliefs on the transition outcomes. Rather, occupational self-efficacy beliefs during school were directly related to PCO and VET enrollment after school, such as that students with more favorable occupational self-efficacy beliefs reported of more PCO and were more likely to be enrolled in high school two years later. Although unexpected, this finding supports the contention of SCCT that occupational self-efficacy beliefs also have direct effects on career outcomes, because career interests, and similarly a vocational identity, cannot always be implemented for various reasons (e.g., limited opportunities in the domain of interest), and thus, people make a career choice also based on what they think they are good at. Similarly, holding favorable occupational self-efficacy beliefs may relate to the objective transition outcome of whether adolescents enroll in high school or VET, independently from other factors such as a clear vocational identity.

Interestingly, higher occupational self-efficacy beliefs were related to a higher probability to enroll in high school. This is surprising given that one might expect that high self-efficacy beliefs to master occupational challenges should induce adolescents to enroll in the occupational VET track. Yet, our finding that occupational self-efficacy beliefs predicted high school enrollment may reflect the fact that students with higher occupational self-efficacy beliefs may be adolescents who hold more favorable self-efficacy beliefs in general. Hence, the assessed general ability to cope with challenging vocational situations could be a proxy for how well adolescents think they can generally handle challenges, including

challenging scholastic situations. This could make them more confident to enroll in a career track characterized by relatively high scholastic requirements, such as high school.

To summarize, this study makes the following theoretical contributions: First, we contribute to CCT and SCCT research by linking some of their key concepts, and illustrating their relevance for contemporary career attitudes such as a PCO, and objective transition outcomes, such as VET vs. high school enrollment. Specifically, we provide new insights into the functioning of vocational identity clarity as an important mechanism linking socio-cognitive variables during school to important subjective and objective transition outcomes after school. Second, we also contribute to PCO research and theory building by highlighting early antecedents of a PCO among adolescents in an important career transition. Specifically, our findings are in line with SCCT and social cognitive theory (Bandura, 2001) and indicate that a sense of self-efficacy, which is a pivotal factor for human agency in general, is also critical for the emergence of a PCO. Furthermore, we showed that perceived career barriers which are commonly understood as a negative context factor, can be a facilitator of agentic career orientations, such as a PCO, possibly because barriers act as a motivator to take charge over career development. Finally, our findings provide preliminary evidence that fostering a clear vocational identity uniformly in adolescents could - beside its manifold beneficial effects - also have unintended (or negative) consequences, such as lower PCO, although more research on this topic is needed.

Limitations and Future Research

Although this study has several strengths, such as a large sample of adolescents in an important career transition and the inclusion of an objective transition outcome, some limitations must be considered when interpreting our results. First, although a time-lagged study design ensures temporal precedence of our variables of interest, we still cannot rule out the possibility of reversed causality, and thus, future research could adopt a more rigorous longitudinal design that measures variables at multiple time points to examine potential reciprocal effects. Moreover, future research could investigate changes in our focal constructs over time. Such a longitudinal approach might also further illuminate the relation between vocational identity clarity and PCO. For example, although a clear vocational identity during compulsory school might diminish a PCO shortly after the transition, it might foster the development of a PCO in the long run, when self-direction in one's career might become more important. Relatedly, future research could investigate boundary conditions of the effect of vocational identity clarity on PCO, such as the autonomy that the work context provides to the individual. Possibly, a clear vocational identity translates into a PCO only if one has enough job autonomy (e.g., autonomy in decision making) to realize a "career with a heart" (Hall, 1996). Relatedly, future research could also investigate boundary conditions of the relation between vocational identity clarity and the objective transition outcome. For

example, past research showed that adolescents from lower socio-economic backgrounds are more likely to continue with a VET track (e.g., Becker & Glauser, 2018). Similarly, the relation between vocational identity clarity and VET enrollment could be stronger for students from families with lower socio-economic backgrounds. For example, parents who have completed a VET might function as a role model and strengthen the effect of their children's vocational identity clarity on VET enrollment.

Second, in our study, we investigated the effects of adolescents' overall clarity of vocational identity on transition outcomes. However, we did not differentiate between various identity statuses (i.e., identity achievement, identity foreclosure, identity moratorium, identity diffusion, cf. Marcia, 1980). An important avenue for future research would be to investigate whether the relations between vocational identity and the transition outcomes that we unraveled in our study differ across identity statuses. For example, the strongest relations with transition outcomes may emerge for an achieved vocational identity, that is, an identity which was built upon active exploration and characterized by a strong commitment.

Third, there are limitations related to some of our measures. Specifically, we measured career barriers with a self-developed measure. Although informed by relevant theories (i.e., SCCT) and related measures (i.e., the My Vocational Situation Scale), this scale should be further validated to illustrate that it indeed measures perceptions of career barriers validly and reliably, also for adolescents without clear desired profession. Relatedly, this is the first study to our knowledge that assessed PCO among adolescents in VET or high school and more research is needed to assess the suitability of this construct and measure for this population. However, the use of structural equation modeling where measurement error is taken into account might at least somewhat reduce this concern. Nevertheless, results should be replicated with other samples of young adolescents and by using PCO scales that are specifically adapted to young samples with few work experience (e.g., Liberato Borges, Andrade, Ziebell de Oliveira, & Guerra, 2015).

As a final and related limitation is the specificity of the sample. We studied adolescents at the transition from school to work in the Swiss educational context. The age of the participants and the local educational system and economic situation should be taken into account when generalizing our findings to other populations and educational systems. Therefore, future research should explore antecedents of our investigated subjective and objective transition outcomes in samples from educational systems where the transition from school to work typically takes place later or in countries where visiting college is the norm for the majority of youth.

Practical Implications

From a practical perspective our study has the following implications: For practitioners, such as teachers or career counselors, fostering vocational self-efficacy beliefs

as well as addressing career barriers can be a primary objective for the facilitation of a smooth post-school transition. In doing so, career interventions can facilitate success experiences among adolescents, given that personal mastery experiences are among the most prominent sources of self-efficacy beliefs (Lent et al., 1999). This could be done, for example through job shadowing or inviting role modeling by adults (e.g., invite job practitioners in classes) as well as other adolescents (e.g., invite apprentices in classes). Moreover, interventions can guide adolescents in identifying and reflecting on career barriers, as well as support them in developing strategies in how to deal with perceived career barriers. Additionally, organizations and associations could reflect on objectively existing (or subjectively perceived) career barriers that may hinder or impede adolescents' job entry, and to the extent that it is possible, alleviate them (e.g., improving career prospects through further training opportunities after VET). Finally, for public policies, our findings indicate that providing information about various career options during compulsory school could help adolescents clarify their vocational identities, and also make VET more attractive if adolescents see VET as a way to implement their vocational identity. Positioning VET as a valuable alternative vis-à-vis high school is important in the face of current trends in several countries to position vocational education as a valuable alternative to college-bound education (e.g., Eichhorst, Rodríguez-Planas, Schmidl, & Zimmermann, 2015). However, our findings also suggest that practitioners should be aware of potential downsides of a clear vocational identity in adolescents. More specifically, just focusing on the decidedness aspect of clarity might be important (e.g., by reflecting on strengths, interests, and goals), but not sufficient to promote transition success. In fact, fostering openness and self-direction along with a clear vocational identity might also be a goal of career counseling or career interventions in schools, thereby eventually also fostering the development of a PCO.

Conclusion

In conclusion, this study contributes to the post-school transition and protean career literatures by demonstrating relevant antecedents of a PCO and objective transition outcomes. Our results illustrate the critical role of socio-cognitive personal (i.e., occupational self-efficacy beliefs) and contextual factors (i.e., career barriers) during school for the emergence of a PCO, and in their predictive utility of whether adolescents start high school or VET after compulsory school. Moreover, our findings provide evidence that vocational identity clarity at the end of compulsory school can act as a double-edged sword that, while fostering a transition to a vocational training program, can also hinder the emergence of a PCO across the post-school transition. Our study provides robust evidence for these effects based on a time-lagged study over three years while controlling for several socioeconomic factors, and provides avenues for future research and theorizing on subjective and objective outcomes of the post-school transition.

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Footnotes

¹ To rule out the possibility that autoregressive effects may have affected our findings, we conducted an additional analysis for Cohort 2 ($n = 525$), where we have assessed vocational identity clarity also at T1 and PCO also at T2. We controlled for the effects of T1 vocational identity on T2 vocational identity, and for the effects of T2 PCO on T3 PCO. All effects remained robust except for the effect of career barriers on vocational identity clarity, which was not significant when controlling for T1 vocational identity clarity ($b = 0.48, p = .21$). However, the effect of T1 occupational self-efficacy on T2 vocational identity clarity remained significant, when controlling for T1 vocational identity clarity ($b = 0.47, p = .01$). Also the effect of T2 vocational identity clarity on T3 PCO remained significant, when controlling for T2 PCO ($b = -0.17, p = .05$).

Tables

Table 1.

Means, Standard Deviations, Cronbach Alpha Coefficients, and Correlations of Study Variables.

			<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1	T1	Gender	0.52	0.50									
2	T1	Age	14.98	0.68	.04								
3	T1	Scholastic level	0.69	0.46	-.07	-.32***							
4	T1	Socioeconomic status	0.48	0.50	.00	-.08	.08						
5	T1	Cohort	0.64	0.48	.05	-.01	-.19**	-.04					
6	T1	Occupational self-efficacy	4.42	0.71	.14***	.01	.04	.13**	-.01	.74			
7	T1	Career barriers	1.93	0.63	.01	.00	-.18***	-.03	.02	-.15***	.66		
8	T2	Vocational identity clarity	3.81	0.96	.03	.01	-.13	.02	.08	.23***	-.19***	.89	
9	T3	Protean career orientation	3.89	0.51	-.01	-.16*	-.01	.02	.06	.19**	-.03	-.24*	.65
1	T3	VET enrollment	0.76	0.43	.19	-.27*	-.41*	-.24	.04	-.19	.10	.37***	-.04
0													

Notes. $N = 819$; VET: vocational education and training; the italics on the diagonal are the Cronbach alpha coefficients (except for the objective transition outcome and the controls); T1= first measurement point at eighth grade, T2 = second measurement point at ninth grade, T3 = third measurement point one year after completion of compulsory school: gender: 0 = female, 1 = male; schoolastic level: 0 = lower level, 1 = higher level; socioeconomic status: 0 = parents without postsecondary education, 1 = parents with postsecondary education; cohort: 0 = cohort 1, 1 = cohort 3; VET enrollment: 0 = enrolled in high school after compulsory school, 1 = enrolled in VET after compulsory school

* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Figures

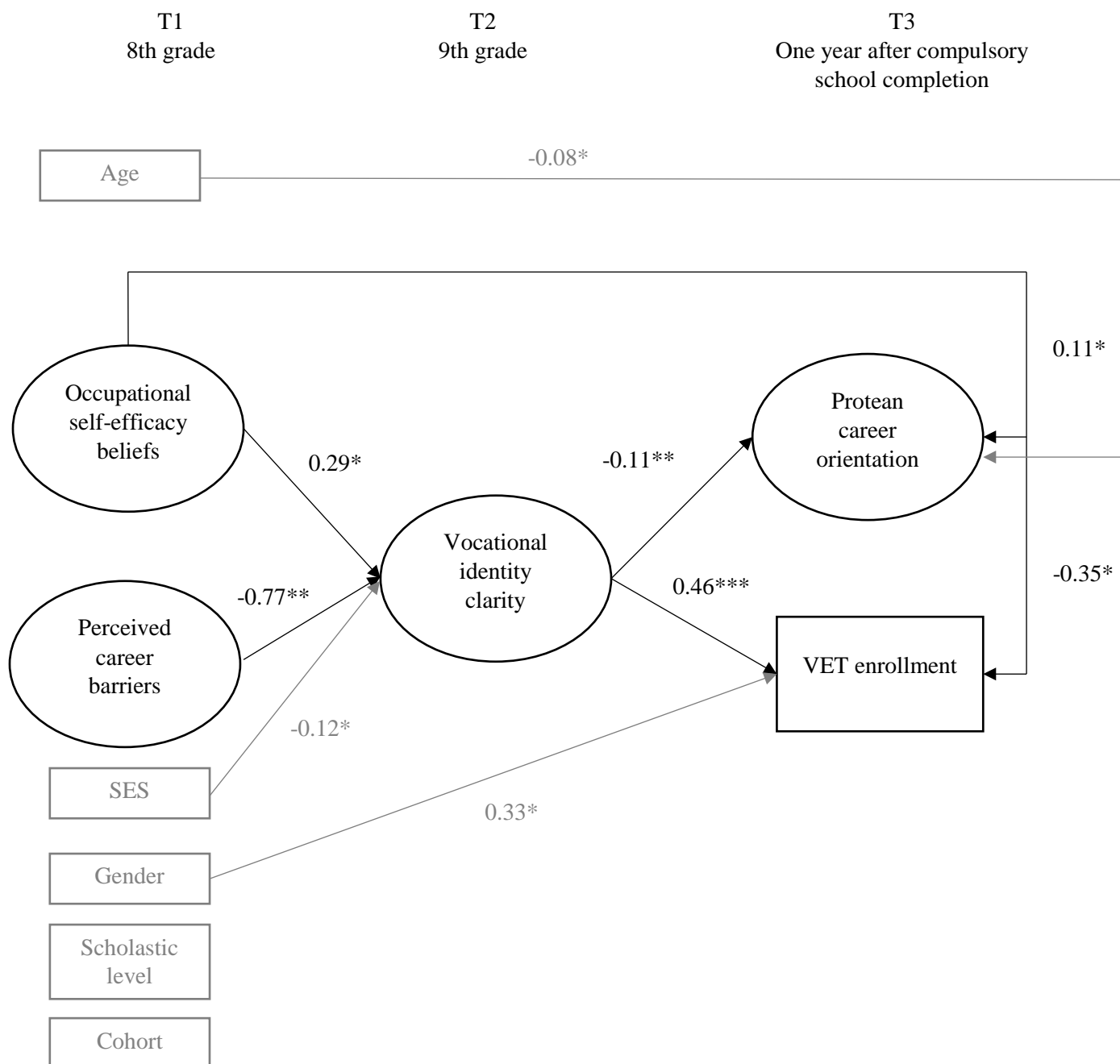


Figure 1. $N = 819$. Unstandardized estimates are presented. VET (vocational education and training) enrollment: 0 = enrolled in high school after compulsory school, 1 = enrolled in VET after compulsory school. SES (socio-economic status): 0 = parents without postsecondary education, 1 = parents with postsecondary education. We controlled for gender, age, scholastic level, socioeconomic status, and cohort in vocational identity clarity at T2 and the transition outcomes at T3. For ease of representation, only statistically

significant paths are included. Correlations among the predictors and outcome variables, respectively, were allowed but not shown. * $p < .05$, ** $p < .01$, *** $p < .001$ (all one-tailed).