Individual characteristics of students in vocational education moderating the relationship between school engagement and vocational identity

Rineke Keijzer[1,2] · Erik van Schooten[2] · Roeland van der Rijst[1] · Wilfried Admiraal[1]

Abstract

In any country, there is a group of students who are at risk of dropping out of school without any qualifications. This is detrimental for many of those students, because failure to graduate increases risks of unemployment and societal exclusion. To reduce this risk, specialized curricula aim to prepare these students for their working life by fostering the development of a vocational identity, that is, how they define themselves as workers. As a prerequisite to achieving this goal, students need to attend school and feel engaged with school. The curricula seek ways to stimulate emotional school engagement, taking into account the heterogeneous target group of students they serve. To address potential consequences of individual differences, this questionnaire study (N=996) conducted in the Netherlands explored how various individual characteristics of students in these specialized curricula moderated the relationship between emotional school engagement and vocational identity. Results show that stronger school engagement always coincided with a stronger vocational identity; however, the strength of the relationship varied. Stimulating emotional school engagement was specifically important for the subgroups of students who are young, less agreeable, less motivated, and less resilient. In order to foster the vocational identity of their students, the specialized curricula are recommended to draw nuanced conclusions and formulate refined strategies to effectively respond to the heterogeneous group of students who are at risk of dropping out.

✉ Rineke Keijzer
  r.keijzer@hr.nl

1 Leiden University, Leiden, The Netherlands

2 Rotterdam University of Applied Sciences, P.O. Box 25035, 3001, HA, Rotterdam, The Netherlands

Introduction

Although in some instances dropping out of school may be a sensible decision, overall students without any qualifications will experience more problems with work and earning a living than those who do continue schooling until they obtain a school-leaving qualification. Specialized curricula in the Netherlands are directed at young people who risk leaving school without graduating or have already done so. To counteract the dropout risk, they concentrate on career perspectives of their students through internships, job skills practicing, and other job-related tasks at school. These curricula aim to foster students' vocational identity, that is, defining yourself as a worker (Skorikov & Vondracek, 2012). Forming a vocational identity is an essential developmental task for students who are preparing for their future careers (Wong & Kaur, 2018). Yet the specialized curricula can only be successful if the students attend school, which is challenging due to circumstances that distract them from school work and lead to a permanent threat of dropout. It is therefore desirable that they feel emotionally engaged with school, expressed by a sense of belonging at school and valuing school education (Finn, 1989). Emotional school engagement is acknowledged to be a prerequisite for school attendance, persistence, and graduation (e.g., Archambault et al., 2009; Elffers et al., 2012). This makes emotional school engagement an important intermediate purpose for specialized curricula that aim to stimulate the vocational identity of former dropouts or students who are at a severe risk of dropping out before obtaining any qualifications.

Educational programs and students at risk of dropping out

In the Netherlands, specialized curricula cater for adolescent and young adult students who do not have a diploma at the so-called entry-level training of senior secondary vocational education (see the oval shape and arrow in Appendix 1, which provides an overview of the Dutch education system). This entry-level education precedes the basic training, which is mandated by the government for young people up to 23 years to enter the labor market and is advised for those between 23 and 27 years. Without a diploma at basic level, social assistance is refused and the young people are sent back to school.

In 2020, three percent of students attending senior secondary vocational education attended entry-level training, which equated to 15,000 students. Programs offering entry-level training have to accept all students under 23 years, with or without a diploma. Their student population may consist of students who previously attended a school for special educational needs, newly arrived immigrants with limited language proficiency, and former dropouts who may have previously attended a higher educational level. This mixture makes entry-level training challenging for both students and teachers. Dropout is a serious threat: about 20 percent of these students leave school before graduating (Onderwijs in cijfers [Education in numbers], 2021), outnumbering the other levels by two to six times (Ministerie van Onderwijs Cultuur en Wetenschap [Ministry of Education Culture and Science], 2021).

For former dropouts with severe problems who are in need of professional care, special trajectories that are not part of the formal education system exist (which is why they are not included in the overview in Appendix 1). One such a trajectory is a rebound program, intended to prepare them to rejoin regular education, such as entry-level training. The goal of both curricula (rebound and entry-level) is for the student to continue schooling at the

next level or to start working. The latter goal contradicts the government requirement of a diploma at basic level, based on feasibility in practice.

Not having a diploma may be related to various life circumstances many target group students encounter. They may have grown up in broken families or in criminal surroundings without much support for schooling. Young parenthood might constitute an additional obstacle (Brahm et al., 2014; Sulimani-Aidan, 2017). These problems distract them from school work, may prevent them from attending school, and result in high dropout rates. Not attending school further exacerbates their life problems, potentially leading to severe challenges: no qualifications, insufficient preparation for the labor market, and unemployment. These hazardous circumstances may in turn lead to poverty, poor health, and involvement in crime (Bäckman & Nilsson, 2016). Participation in one of the programs reflects the fact that they all face a vulnerable school career.

Circumstances and background of the students vary considerably. Instead of one single intervention to strengthen school engagement among them all, it may be more effective to customize strategies that suit different subgroups. To inform teachers, mentors, or coaches of specialized curricula about how they can encourage their students' school engagement in order to foster the development of vocational identity, and in order to improve specialized curricula, insights are needed into the relationship between school engagement and vocational identity and how this relationship varies depending on individual characteristics of the students. Insights should lead to curricula that are better attuned to them and optimize their chances of developing a strong vocational identity.

Vocational identity

Vocational identity, also known as career, professional, occupational, or work identity, refers to how students define themselves in a career context (McArdle et al., 2007; Skorikov & Vondracek, 2012). Exploring and committing to occupational choices contributes to developing a vocational identity, but also to constructing an identity in general. Identity reflects acting and interacting as a particular "kind of person" (Gee, 2000, p. 99). It is personal and social in content and in the processes by which it is formed, maintained, and changed over time and place (Vignoles et al., 2012). Identity consists of several sub-identities, such as moral, social, spiritual, political, and vocational identities. Vocational identity has been theorized as a major component of this general identity (Kroger, 2007), and Skorikov and Vondracek (1998) even found that vocational identity is leading in the process of identity development of adolescents. The developmental process is particularly important during the transition from school to work (Danielsen et al., 2000; Diemer & Blustein, 2006), the phase the students of our study are in. Supporting this process can thus be stated to be an essential task for the programs they attend.

Vocational identity is a multifaceted construct, laid out in three components: (1) vocational self-image, (2) vocational future image, and (3) vocational self-efficacy, reflecting respectively self-perceived interests and capabilities (Who am I?); ambitions and exploration of possible outcomes (Who do I want to be?); and expected successfulness of working habits and values (Am I able to get there?) (Keijzer et al., 2019; Fugate et al., 2004; Lent, 2013). Vocational identity has been found to contribute to valuable outcomes, such as making sound career decisions and coping with career-related stress (Skorikov & Vondracek, 2012), setting realistic expectations and forming promising work attitudes (Turner & Lapan, 2013), and exploring and planning careers (Wallace-Broscious et al., 1994). These outcomes require effort from all individuals,

but the target group students can be assumed to need intensive support in acquiring capabilities, ambitions, and work habits, that is, developing their vocational identity. Assignments and internships during schooling help students to discover their work interests and practice their work skills (Skorikov & Vondracek, 2012). As vocational identity becomes especially important in the final stage of schooling (Noack et al., 2010; Sulimani-Aidan, 2017), vocational schools should support students to figure out what vocation suits them best.

While attending the specialized programs, the students are prepared for jobs in which they will work as assistants of, for example, plasterers, mechanics, or cooks. The OECD mentions less-skilled groups to be the first to become unemployed during economic downturns and the last to be re-employed (Carcillo et al. 2015). Furthermore, the more flexible labor markets nowadays put high demands on an employee's self-agency and volition, competences that are argued to be more challenging for vulnerable groups who have fewer choices (Blustein, 2013). A thorough preparation for their working lives in which the students can make informed decisions about career steps is important yet difficult to realize. It is therefore essential that these students attend school up to and including their graduation to provide sufficient opportunities to develop a vocational identity.

School engagement

School engagement is the extent to which a student is committed to school and education. A commonly used categorization distinguishes behavioral, cognitive, and emotional dimensions of school engagement (Fredricks et al., 2004; Wang et al., 2011). Behavioral engagement refers to students' participation in learning activities and cognitive engagement concerns their cognitive efforts to learn. Emotional engagement reflects students' affective relatedness to school and the school process, expressed in sense of belonging at school, that is, the feeling that one is part of the school environment and that school plays an important role in daily life, and valuing school, that is, appreciating an education and school-relevant goals, including a qualification (Bakadorova et al., 2020; Finn, 1989). In this study, these concepts are abbreviated to sense of belonging and valuing, respectively.

Students' emotional ties to school and schooling are agreed to be essential prerequisites for effort, achievement, and persistence (Elffers et al., 2012; Green et al., 2012). Stronger school engagement is related to lower dropout and higher graduation rates (Archambault et al., 2009; Fredricks et al., 2004; Wong & Kaur, 2018). Longer school attendance implies a longer period during which vocational identity can be stimulated. Several associations between school engagement and vocational identity have been found. Wong and Kaur (2018) showed that the exploration of specific occupational choices relates positively to undergraduates' school engagement. Coutinho and Blustein (2014) found that vocational identity protects Cape Verdean high school students with high levels of perceived ethnic discrimination from school disengagement. Keijzer et al. (2019) found both aspects of emotional school engagement, that is, sense of belonging at school and valuing school, to be significantly related to vocational identity. As malleable characteristics, sense of belonging and valuing can be particularly useful in improving curricula (Bakadorova et al., 2020). The question is how the specialized programs take up this challenge and how to address differences between their students.

Individual characteristics relating to vocational identity and school engagement

Diverse individual characteristics have been found to be associated with vocational identity or school engagement. They range from demographic characteristics to the extent students are motivated and resilient.

During the period of school-to-work transition, older students have been shown to intensify the forming of a vocational identity (Noack et al., 2010; Sulimani-Aidan, 2017). Though Janosz et al. (2008) found that a majority of students showed stable and satisfactory levels of school engagement from primary to secondary school and beyond, others showed emotional school engagement among older students to decline as a result of feelings of independence and greater self-sufficiency (Motti-Stefanidi & Masten, 2013; Wang & Eccles, 2012). This decline may in turn precede dropping out of school (Wang et al., 2011). An explanation for the decline might be that older students anticipate leaving school and entering continuing education or work, whereas their relationships with peers are assumed to intensify (McGrath & Van Bergen, 2015). For younger students, a longer period at school is still awaiting and strong connectedness to school may well help them to finish their education. Encouraging school engagement among the older groups, then, is of limited value because of this growing independence, whereas the younger subgroups could benefit from longer attendance to develop their vocational identity.

Li and Lerner (2011) and Wang et al. (2011) reported lower emotional school engagement for boys compared to girls. An explanation may be that boys attach less value to atmosphere at school and focus on achievements. Yet specifications as to sense of belonging and valuing are unknown, and relationships between the aspects of emotional school engagement and vocational identity may well be different for males compared to females.

Studies by Lindstrom et al. (2007) and Chaves et al. (2004) have shown that young adults from lower socioeconomic groups put more emphasis on working to earn money, restricting vocational identity development, compared to their upper-class peers who consider work as a means of self-expression and are more likely to explore possible careers. This sounds like a plausible goal for those with a limited budget. It may endanger their full scope of career potential, however, which is needed to be proactive and to react to labor market changes. Furthermore, students from lower socioeconomic groups generally show less emotional school engagement (Li & Lerner, 2011). Due to the need to provide adequate income, this might be explained by their efforts to concentrate on school performances instead of feeling comfortable. Students from higher socioeconomic groups might feel less concerned about future income and can allow themselves to enjoy school life itself.

Positive relationships have been shown between vocational identity and personality traits extraversion, conscientiousness, and imagination, whereas neuroticism is found to be related to the explorative aspect of vocational identity, that is, vocational future image (Baay et al., 2014; Hirschi, 2012). In a study by Luyckx et al. (2006), undergraduate female students with a strong vocational identity reported higher levels of emotional stability, conscientiousness, extraversion, imagination, and agreeableness compared to those with a less developed vocational identity.

Keijzer et al. (2019) found associations between vocational identity and aspects of self-sufficiency, including the ability to manage daily life (such as finance and activities); experiences in the judicial system (such as a community sentence); and addictive

behavior (e.g., drugs, alcohol, gaming). Career adaptability, defined as being ready for and having resources to face vocational tasks, occupational transitions, and unexpected challenges, relates positively both to the motivation of high school students (Pouyaud et al., 2012) and to the personal and social resilience reported by nurse students, that is, their ability to cope with adverse events and their perceived support from family, friends, and significant others (Tian & Fan, 2014).

Differential effects have also been found. Fredricks (2011) reported that consequences of lower emotional school engagement on graduation and employment are even more severe for youth from more disadvantaged backgrounds. This finding exemplifies a moderating effect of the relationship between an individual characteristic (background) and school engagement on outcome goals (graduation and employment). If a choice has to be made because of limited means to intervene, it should be for disadvantaged youth. This finding of a moderator effect was quite exceptional and illustrates a gap in the literature. Yet consequences for practice could be meaningful. Connections between school engagement and vocational identity (Keijzer et al., 2019; Coutinho & Blustein, 2014; Wong & Kaur, 2018), and the relationships between the individual characteristics discussed and vocational identity, emotional school engagement, or both concepts, combined with the heterogeneity of the target group students, point to possible patterns that may emerge for them between the concepts. This invites investigation of whether moderator effects apply. Insights could help to explain relationships and may be helpful for practitioners who have to decide whether to act differently for different students.

Current study

Considering the heterogeneity of the target group students, the importance of their career preparation, and the important potential contribution of emotional school engagement as an intermediate goal to foster vocational identity, it is important to investigate how various individual characteristics affect the relationship between school engagement and vocational identity. Effects may well be different for different subgroups and may not apply evenly to all. Consequently, it may mean that stimulating sense of belonging or valuing in order to foster vocational identity while following the same approach for all these students implies doing too little for some and too much for others.

Some previous studies, for example, have shown that students of lower socioeconomic status tend to show weaker feelings of school engagement (Li & Lerner, 2011), with risks of lower school attendance or even dropout (e.g., Wong & Kaur, 2018), and limited attention to vocational identity (e.g., Lindstrom et al., 2007). The relationship between school engagement and vocational identity could be lower for students from low socioeconomic groups: Feelings of school engagement may have a lower impact on their vocational identity because of their focus on their financial situation. Students of higher socioeconomic status tend to be more oriented to self-expression compared to those of lower socioeconomic status and stimulating school engagement may well affect their vocational identity. Socioeconomic status acts as the individual characteristic that changes this relationship, implying that the relationship between school engagement and vocational identity is weaker for students of lower socioeconomic status and stronger for those of higher socioeconomic status.

To provide for insights into the relationship between the two aspects of emotional school engagement and the three components of vocational identity, the current, exploratory study was guided by the following research question: "To what extent do

individual characteristics of students at risk of dropping out moderate the relationships between sense of belonging and valuing, on the one side, and vocational self-image, vocational future image, and vocational self-efficacy, on the other side?" These insights should not only extend our knowledge; they may also enable the specialized curricula to attune to differences among their students, an understudied group that may well benefit from customized approaches (Elffers et al., 2012; Gushue & Whitson, 2006). The conceptual model is presented in Fig. 1, with the individual characteristics as moderators above, the two aspects of emotional school engagement as the independent variables, and the three components of vocational identity as the dependent variables.

Based on the literature, moderator effects are not inconceivable and stronger relationships between emotional school engagement and vocational identity may be seen for the following: (a) younger target group students compared to older ones (Janosz et al., 2008; Motti-Stefanidi & Masten, 2013; Noack et al., 2010; Sulimani-Aidan, 2017; Wang & Eccles, 2012), because older students are anticipating continuing education or work, suggesting they will work toward stronger vocational identity, while at the same time feel less engaged with school; (b) youth of higher socioeconomic status compared to peers of lower socioeconomic status (Chaves et al., 2004; Lindstrom et al., 2007; Wong & Kaur, 2018), because of their orientation toward self-expression and vocational identity, combined with stronger emotional school engagement; and (c) the less motivated students (Pouyaud et al., 2012) and the less resilient students (Tian & Fan, 2014), because strong motivation and resilience may obviate the need for strong school engagement. In addition, we explored to what extent relationships between vocational identity and emotional school engagement differ with respect to gender, personality traits, and delinquent and self-sufficient behavior of students (Keijzer et al., 2019; Baay et al., 2014; Fouad, 2007; Hirschi, 2012; Li & Lerner, 2011; Luyckx et al., 2006; Wang et al., 2011).

Method

Participants and procedure

A sample of 996 students was recruited from four institutions in the metropolitan area of Rotterdam, the Netherlands. These institutions were purposely invited to participate
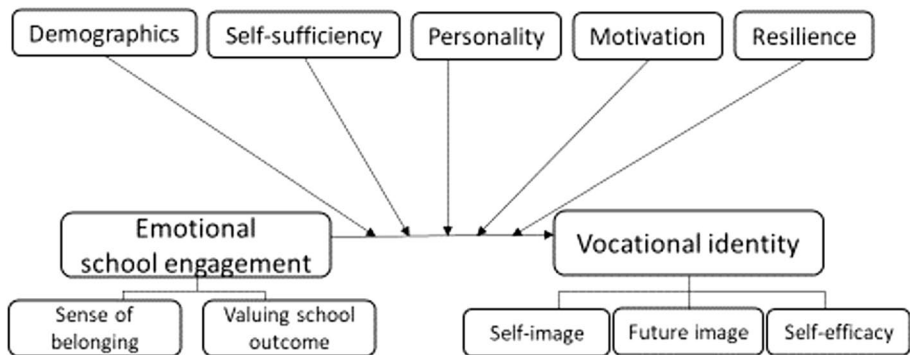

Fig. 1 Conceptual model in which individual characteristics moderate the relationship between the two aspects of emotional school engagement and the three components of vocational identity

because they are dedicated to improving the chances of youth with vulnerable school careers; they support youth in trying to get their lives back on track, urge them to persevere and complete school, and try to optimize labor market prospects. Most of the students had not yet graduated at the entry-level of senior secondary vocational education, some of them were not in any training or education, and some were dropouts or former dropouts. Drop-out rates in Rotterdam outnumber those of the three other largest cities of the Netherlands (Ministerie van Onderwijs Cultuur en Wetenschap [Ministry of Education Culture and Science], 2020).

Participants were aged between 15 and 27 years ($N=983$; $M=21.7$; $SD=3.3$). Parental consent for students under 18 years was secured. Other background characteristics of participants are reported in Table 1.

We conducted a cross-sectional study. Two out of the four institutions offered senior secondary vocational education at entry-level; all their seven sites were included. The third institution, with three sites, provided a rebound program to prepare former dropouts to rejoin regular education. The fourth institution, with only one site, was a drop-in helpdesk for young adults, many of whom were disconnected from both school and work. They were commonly referred back to school. Sites were mainly situated in deprived neighborhoods. Data collection took place over a period of 5 months.

Table 1 Main background characteristics of participants ($N=996$)

Background variable	Category	Proportion
Gender	Women	.44
Ethnicity of parents	Dutch	.25
	Surinamese or Caribbean[a]	.25
	Other	.50
Ethnicity of participants	Dutch	.70
	Surinamese or Caribbean[a]	.11
	Other	.19
Parental educational level	Secondary school or higher	.50
	Primary school	.08
	No education	.08
	Unknown	.33
Living conditions[b]	Respondent on his/her own	.13
	With child(ren)	.10
	With mother, father, or both	.80
	With sister	.23
Police	Previous contact	.42
	Current contact	.08
Sentences[b]	Community sentence	.21
	Juvenile measures[c]	.13
	Detention	.11
	No sanction	.58

[a]Former Dutch colonies

[b]Combinations possible

[c]For youth under 18 years

Measures

A self-completion paper and pencil questionnaire was designed. To verify language comprehensibility for the heterogeneous group, it was piloted among twelve target group members who were not included in the final sample. Feedback concerned interpretation of some items and results were processed in the final version of the questionnaire.

In addition to the background characteristics (see Table 1), seventeen constructs originating from the literature reviewed were included in the study. Variables, examples of items, and an overview of descriptive statistics are shown in Table 2. Items consisted of statements accompanied by 5-point Likert scales, with answers ranging from 1 (totally disagree) to 5 (totally agree). Answers to the self-sufficiency and addiction items were categorized into five emoticons ranging from very dissatisfied to very satisfied, coded 1–5, respectively. Socioeconomic status was operationalized by means of four dichotomous items about following the news. Appendix 2 contains the full questionnaire.

The three components of vocational identity, that is, vocational self-image, vocational future image, and vocational self-efficacy (Fugate et al., 2004), were measured by means of items adopted from the Career and Talent Development Self-Efficacy Scale of Yuen et al. (2010). We used additional sources (de Vos & de Jong, 2011; Flouri & Buchanan, 2002; Jackson et al., 2011; Kuijpers & Meijers, 2008; Kuijpers et al., 2011; Nauta, 2010; Nauta et al., 2002; Restubog et al., 2010), and selected some relevant items to be added.

Items for the two aspects of emotional school engagement, that is, sense of belonging and valuing, were based on studies of Fredricks et al. (2004), Archambault et al. (2009), and Elffers (2012). We used validated instruments for all other constructs, such as the Mini-IPIP Scales for the personality traits (Denissen et al., 2008; Donnellan et al., 2006); the self-sufficiency matrix for self-sufficiency, addiction, and judicial experiences (Fassaert et al., 2014); and for extrinsic and intrinsic motivation (Ryan & Connell, 1989). The items for personal and social resilience were based on the subject description of personal competence and social sources in the resilience scale for adolescents (Ungar et al., 2008; von Soest et al., 2009; Windle et al., 2011).

Data analysis

Validity and reliability check

We applied confirmatory factor analysis (CFA) and used version 7 of the Mplus program (Muthén & Muthén, 1998–2015) to verify the validity of the measurement of the seventeen constructs (see Table 2). To conduct the CFA, items were treated as categorical variables, that is, at ordinal level, since responses to each item were elicited by means of Likert scales. Item scores were used as indicators of latent traits. As an estimation procedure we used Weighted Least Squares with Means and Variances (WLSMV) because item scores are categorical. Model fit was evaluated by means of several fit indices: the Chi-square statistic (χ^2), the Comparative Fit Index (CFI), the Tucker Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA). The χ^2 statistic is sensitive to sample size and it tests exact fit, which is a very strict criterion for the social sciences (MacCallum et al., 1996). The additional fit indices compensate for these restrictions. Generally, a model fit is considered acceptable when CFI and TLI are larger than 0.90 and good when above 0.95. RMSEA is considered to indicate close fit when values are below 0.05, fair fit

Table 2 Descriptives of variables with example items and reliability of sums

Variable	Example of item	N	Missings	M	SD	Items in scale[a]	Cronbach's α	Range rit's[b]
Vocational self-image	I know what I'm good at	873	123	4.05	.60	7 (1)	.82	.20–70
Vocational future image	I want to discover what kind of work I can do	896	100	3.54	.81	3 (1)	.64	.40–52
Vocational self-efficacy	Later on, at my work, I'll stick to the rules	892	104	4.51	.56	7	.92	.54–84
Sense of belonging	I prefer being somewhere other than at school (R)	893	103	3.50	.84	5 (1)	.81	.50–74
Valuing	I'm sure that I will finish a training	890	106	4.41	.72	5	.88	.66–77
SES-following news[c]	I watch the news on TV occasionally	913	83	0.12	.33	4	.70	.35–65
Extraversion	I talk to a lot of different people at parties	895	101	3.43	.73	4	.62	.29–47
Agreeableness	I am kind to almost everyone	933	63	4.16	.61	3 (1)	.68	.42–53
Conscientiousness	I persevere until a task is finished	920	76	3.87	.58	4	.53	.23–42
Neuroticism	Sometimes I feel happy, sometimes I feel sad	936	60	3.06	1.07	2 (2)	.65	.48–48
Imagination	I come up with new ideas	908	88	3.61	.64	4	.48	.25–35
Self-sufficiency	How satisfied are you about what you do during daytime?	925	71	3.68	.79	7 (1)	.84	.43–74
Addiction	How satisfied are you about the way you deal with drugs?	913	83	4.08	1.11	5	.90	.59–86
Extrinsic motivation	I try to do well because others want me to	928	68	2.81	.94	3 (1)	.68	.32–60
Intrinsic motivation	I try to do well because I feel that's important	944	52	4.28	.67	3 (1)	.77	.55–65
Personal resilience	I am sure I can take care of myself	831	165	4.07	.60	10	.90	.50–76
Social resilience	I ask for help if I need to	881	115	4.02	.74	8 (1)	.87	.51–71

[a]Final numbers; in parenthesis number of items per scale removed according to confirmative factor analysis (see section on validity)

[b]Item rest correlation

[c]Measured by four dichotomous items, summed and divided by four, to act as one variable

when values are between 0.05 and 0.08, and mediocre fit for values between 0.08 and 0.10; values above 0.10 indicate poor fit (Bentler, 1992; Hu & Bentler, 1999).

Because initial model fit was unsatisfactory with respect to CFI and TLI ($N = 995$; $\chi^2 = 13421.919$, $df = 4049$, $p < 0.001$, CFI = 0.867, TLI = 0.860, and RMSEA = 0.048 (90% Confidence Interval 0.047–0.049)), out of the 94 original items, ten items of nine variables were removed based on low item rest correlation, large modification indices, residual variances, or non-significant factor loadings (see Table 2). Fit indices of the final model to verify validity indicated fair fit according to CFI and TLI and close fit according to RMSEA ($N = 996$; $\chi^2 = 9328.021$, $df = 3266$, $p < 0.001$, CFI = 0.909, TLI = 0.903, and RMSEA = 0.043 (90% Confidence Interval 0.042–0.044)). All remaining items showed significant loadings on the construct they were intended to measure. These results supported the validity of the measurement of the seventeen constructs.

For each of the constructs in the CFA, mean scale scores were computed over the remaining items. To estimate the reliability of these sums, Cronbach's alpha was calculated for each sum (see Table 2). As alphas for two constructs were insufficient (conscientiousness and imagination), significant moderator effects of these variables are less likely. All other alphas, ranging from 0.616 to 0.922, indicated reasonable to good reliability (Bryman, 2012). Reliability levels will be discussed in the "Limitations and future directions" section.

Main effects and moderator analyses

As a preliminary step, we examined main effects of all individual characteristics on the three components of vocational identity by means of regression analyses. Regressions analyses are based on sums over several items. Sum scores of multiple items represent many more possible values as outcome and therefore assuming interval level of the sums is justified. Subsequently, we only checked for moderator effects for the characteristics that showed a significant main effect on one of the three components, because variables showing non-significant main effects are less likely to significantly moderate the relationship between emotional school engagement and vocational identity.

Because the data are nested within institutions and sites, we checked whether regression analyses needed to be conducted multilevel. In these multilevel checks, we either included sense of belonging or valuing in the regression model. Variance levels were added when they significantly improved model fit, which implies that the intraclass correlation is significantly larger than zero. Significance of fit improvement was calculated by means of the difference in $-2*$log-likelihood of the nested models. This difference has a χ^2 distribution with one degree of freedom; because variances cannot be negative, the p-value of this χ^2 must be divided by two to obtain the real p-value (Hox, 2010).

Moderator effects were also estimated by means of regression analyses. A moderator effect implies that an individual characteristic of the students significantly influences the relationship between emotional school engagement and vocational identity; the relationship is stronger or weaker depending on the score on the individual student characteristic that is used as moderator. Moderator effects were analyzed by comparing two models: (a) a model with one of the three vocational identity variables as dependent variable and one of the two emotional school engagement variables and the individual characteristic as independent variables; and (b) the same model but with an added interaction term between the two independent variables. The interaction term represents the moderator effect. Significance of the moderator effect was calculated by computing the difference in deviance

scores between both nested models, one with and one without the interaction term. This difference has a Chi-square distribution with one degree of freedom. The significance of regression coefficients was also calculated by means of the Wald-Z statistic or critical ratio. When the difference in deviance between two models appeared significant, effect sizes were computed in terms of the proportion of variance explained by the moderator effect at each included variance level (i.e., the moderator effect on vocational identity by either sense of belonging or valuing and an individual characteristic). All continuous variables were grand mean centered before they were entered in the regression analyses.

Results

The regression coefficients and proportions of total explained variance of significant main effects of the included characteristics, as calculated in the preliminary step of the analysis, are presented in Appendix 3, Table 5. For all main effects, moderator effects were estimated for both sense of belonging and valuing. This led to analysis of 104 estimations of moderator effects of which 47 were found to be significant: 18 with sense of belonging and 29 with valuing. Most effect sizes of the moderator effects were small. To avoid interpreting negligible moderator effects and to correct for capitalization on chance, we applied a threshold of one percent explained total variance for inclusion in the findings section. This resulted in inclusion of 26 moderator effects as presented in Tables 3 and 4; the 21 moderator effects that did not pass the threshold were ignored, neutralizing capitalization on chance. Given the possible number of variables affecting vocational identity, we considered one percent to be a meaningful effect. Appendix 4, Table 6 gives an overview of the results of all moderator analyses.

For vocational future image, the intraclass correlations for sites and institutions were non-significant, so these regression analyses were conducted unilevel. For vocational self-image and vocational self-efficacy, the intraclass correlations for institutions were non-significant, but site level showed a significant intraclass correlation for both. For these two components of vocational identity, therefore, moderator effects of both sense of belonging and valuing were analyzed multilevel.

Table 3 Moderator effects (percentages of explained total variance) on vocational self-image, vocational future image, and vocational self-efficacy of sense of belonging moderated by individual characteristics (effect sizes $\geq 1.00\%$)

Individual characteristic	Sense of belonging		
	Vocational self-image	Vocational future image	Vocational self-efficacy
Dutch ethnicity father	1.23		
Dutch ethnicity mother	1.22		
Living sister		1.07	
SES-following news			1.40
Extraversion	1.16		
Agreeableness			1.26
Neuroticism	1.14		
Personal resilience			2.64

Table 4 Moderator effects (percentages of explained total variance) on vocational self-image and vocational self-efficacy of valuing moderated by individual characteristics (effect sizes $\geq 1.00\%$)

Individual characteristic	Valuing[a]	
	Vocational self-image	Vocational self-efficacy
Age	1.90	4.65
SES-following news		4.23
Extraversion		1.18
Agreeableness	1.05	4.00
Conscientiousness		1.89
Imagination		1.56
Neuroticism	2.79	
Self-sufficiency	1.57	
Addiction		2.31
Community sentence		1.15
Detention		1.92
Intrinsic motivation	1.86	1.85
Personal resilience		4.21
Social resilience		2.37
Sense of belonging		1.15

[a]A column for vocational future image is absent, since no significant moderator effects of valuing on vocational future image were found

Sense of belonging

For all participants, results showed that the stronger their sense of belonging the stronger the vocational identity, but the strength of the positive relationship varied due to individual characteristics (see Table 3). The relationship between sense of belonging and *vocational self-image* was found to be stronger for the students in our sample with non-Dutch parents (father and mother), stronger for the less extravert participants, and for those who reported lower levels of neuroticism. The relationship between sense of belonging and *vocational future image* appeared to be stronger for those who did not live with a sister in comparison with those who did. The relationship between sense of belonging and *vocational self-efficacy* was found to be stronger for the less agreeable and less personally resilient students and for those of higher socioeconomic status. For participants of lower socioeconomic status, the level of sense of belonging hardly affected their perceived vocational self-efficacy.

Figure 2 illustrates two examples of moderator effects of sense of belonging. For these plots, we used mean values, and the mean values plus and minus one standard deviation as average, high, and low values, respectively. In the left-hand picture, a stronger relationship between sense of belonging and vocational self-image is shown for the less extravert compared to the more extravert respondents. Intensity of sense of belonging hardly affected the vocational self-image perception among the most extravert respondents, whereas it did for their less extravert peers. Moreover, extraversion indicated vocational self-image for the students with low sense of belonging, but less so for those with high sense of belonging. The right-hand picture shows that for the respondents with a strong sense of belonging, no differences were found in vocational self-efficacy between students of low and high socioeconomic status. But for the students from high socioeconomic groups, a stronger
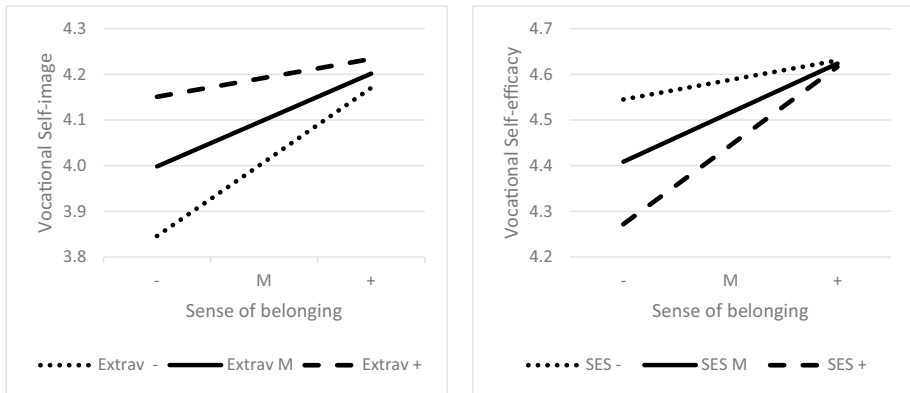
Fig. 2 Relationships between sense of belonging and vocational self-image moderated by extraversion (left-hand side) and between sense of belonging and vocational self-efficacy moderated by socioeconomic status (right-hand side) of target group students. Notes. Extrav=Extraversion. SES=Socioeconomic status. - =1 SD below mean. M=mean. + =1 SD above mean

relationship between sense of belonging and vocational self-efficacy was found. Hence, socioeconomic status was more strongly related to vocational self-efficacy for the target group students with low sense of belonging than for those with high sense of belonging.

Valuing

As with sense of belonging, results showed that for all students the stronger they value school the stronger their vocational identity, and that the strength of this relationship varied with varying scores of individual characteristics (see Table 4). The positive relationship between valuing and *vocational self-image* appeared to be stronger for the younger participants, the more self-sufficient, the less agreeable, the less neurotic, and the less intrinsically motivated students in our sample. The relationship between valuing and *vocational self-efficacy* was found to be stronger for younger subgroups, those of higher socioeconomic
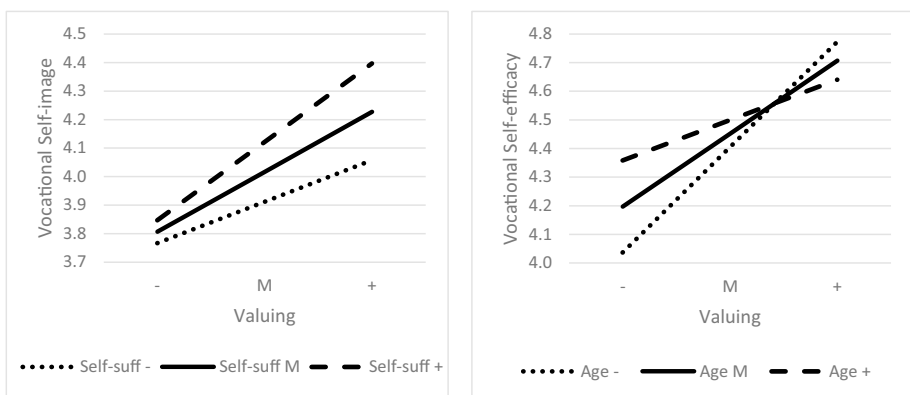

Fig. 3 Relationships between valuing and vocational self-image moderated by self-sufficiency (left-hand side) and between valuing and vocational self-efficacy moderated by age (right-hand side) of target group students. *Notes*. Self-suff=Self-sufficiency. - =1 *SD* below mean. *M*=mean. + =1 *SD* above mean

status, and for the less extravert, agreeable, conscientious, and curious participants. This relationship was also found to be stronger for the participants who reported being less satisfied about their addictive behavior, and those who had been sentenced. Stronger relationships were found between valuing and *vocational self-efficacy* for the less intrinsically motivated, and the less personally and socially resilient participants. Finally, the effect of sense of belonging on the relationship between valuing and vocational self-efficacy was stronger for the participants with a lower sense of belonging.

Figure 3 illustrates two examples of moderator effects concerning valuing. The left-hand picture shows a stronger relationship between valuing and vocational self-image for the more self-sufficient respondents compared to their less self-sufficient peers. Furthermore, self-sufficiency strongly indicated vocational self-image for the students with high valuing but not for those with low valuing. In the right-hand picture, a stronger relationship between valuing and vocational self-efficacy is shown for the younger respondents compared to their older peers. Of the participants who reported *above* mean scores for valuing, the younger group showed the highest vocational self-efficacy whereas out of the participants with *below* mean scores for valuing, the older respondents showed the highest vocational self-efficacy.

Discussion

The current study examined the extent to which individual characteristics of students with a vulnerable school career moderate the relationship between two aspects of emotional school engagement (i.e., sense of belonging at school and valuing school) on the one hand, and three components of vocational identity (i.e., vocational self-image, vocational future image, and vocational self-efficacy) on the other. For all the students in our sample, it appeared that the stronger the emotional school engagement the stronger their vocational identity. The strength of this relationship varied with different scores of individual characteristics. These insights into moderator effects of individual characteristics of target group students extended our knowledge about the relationship between emotional school engagement and vocational identity. Results support our starting point that main effects are imprecise as a basis for interventions in specialized programs because the effects do not apply evenly to all their students.

Age of the participants appeared to moderate the relationships between valuing and both vocational self-image and vocational self-efficacy. Older subgroups may be hindered, whereas younger subgroups may benefit substantially from a high level of valuing. This difference in age groups may be attributed to future expectations. Older groups may have lost confidence in their chance of gaining a qualification, or may have already experienced more sociopolitical barriers during their lives, holding them back from having high expectations (Diemer & Blustein, 2006). This finding may be explained by an increasing alienation of older students from school, as mentioned by Motti-Stefanidi and Masten (2013), though we think a moderator effect with sense of belonging, and not with valuing, would have been more plausible in that case. Surprisingly, we did not find such a moderator effect and future research may address this issue.

Stronger relationships between emotional school engagement and vocational self-efficacy for the students of higher socioeconomic status may have to do with family expectations, as families of low socioeconomic status understandably set less value on

schooling and more on stable employment (Li & Lerner, 2011; Lindstrom et al., 2007). Effects became most apparent for those with weak levels of emotional school engagement. As changing a person's socioeconomic status is hardly possible, encouraging emotional school engagement, especially because of its malleability (Bakadorova et al., 2020), deserves attention as an alternative strategy to foster vocational self-efficacy.

Moderator effects of motivation were restricted to intrinsic motivation affecting the relationship between valuing and vocational identity, showing strongest effects for those who are less intrinsically motivated. Their vocational identity could benefit more from motivational support than that offered to their peers with stronger motivation. Stronger motivation might indeed obviate the need for strong school engagement, corresponding to our suggestion. However, it cannot yet be explained why extrinsic motivation behaves differently.

Resilience moderated the relationship between sense of belonging and valuing and vocational self-efficacy. For the most resilient participants, their level of school engagement made no difference to their level of vocational identity. But for those who were less resilient, a stronger sense of belonging or stronger valuing related to stronger vocational identity.

With respect to the other individual characteristics that were explored as possible moderators, findings showed that former delinquent as well as less self-sufficient participants appeared to show stronger relationships; stronger valuing was more beneficial to their vocational identity compared to non-delinquent and more self-sufficient peers, but the moderator effect was not shown for sense of belonging. Furthermore, personality traits appeared to act as moderators: For the less extravert, agreeable, conscientious, neurotic, and open-minded students, encouraging emotional school engagement is expected to contribute to their vocational identity. However, neuroticism strongly indicated higher vocational self-image for the students with *high* valuing and *high* sense of belonging but not for those who expressed low levels of emotional school engagement, whereas the moderator effects of the other personality traits were strongest for the participants with *below* mean levels of emotional school engagement.

Limitations and future directions

Though conscientiousness and imagination showed low Cronbach's alphas, some moderator effects of these variables were found to be significant. When effects are significant despite low reliability, this implies either that effects are very large in the population or that the reliability is actually higher than the alpha indicates. Improving alpha scores may be achieved by adding items (Furr & Bacharach, 2014), which is recommended for future research.

As this was an initial exploratory study, we only explored linear relationships to investigate to what extent several individual characteristics moderated the relationship between emotional school engagement and vocational identity. Whether non-linear models would show better fit might be addressed in future research.

We applied convenience sampling; no random sample was taken from the entire population of students at risk of dropping out of school and we do not know how representative our sample was. This implies there might have been less variation in some variables in our sample than in the entire population, which could lead to lower estimates of effect sizes. Replication studies in other contexts and countries may add meaningful insights.

Another limitation of our study concerns its cross-sectional nature. This enabled us to clarify relationships but not their directions. Longitudinal research might reveal patterns of moderator effects over time and how this may affect the development of vocational identity. Differences between age groups found in our study point to the possibility of such patterns. Such differences may well exist with respect to other individual characteristics too, such as intrinsic motivation or resilience. A deeper understanding of the developmental processes their students go through could help educational and social practitioners to refine their efforts to further the vocational identity of vulnerable youth.

Insights from this self-administered questionnaire study could be extended by means of a follow-up including multiple informants, such as coaches and parents. Follow-up studies could also concentrate on qualitative aspects to interpret findings, preferably among the students themselves and relevant others. For instance, we do not know to what extent the students in our sample had encountered barriers connected to their societal positions prior to the study. They may have suffered negative experiences during apprenticeships, or they may have failed in application procedures for a part-time job. A qualitative approach could reveal motives and expectations could help to interpret findings and may contribute to understanding how and why experiences affect the relationship between emotional school engagement and vocational identity.

Practical implications

Encouraging sense of belonging or valuing may contribute substantially to the vocational identity of the target group students. Yet, effects vary for different groups; so, in order to obtain best results on vocational identity, professionals should tailor their actions, based on insights into students' individual profiles. These could be obtained by sound intake procedures to measure the levels of individual characteristics, emotional school engagement, and vocational identity. These data should serve to customize interventions to foster students' vocational identity.

Low levels of school engagement might be boosted by offering options in assignments and internships to those students for whom stronger moderator effects have been shown, for example, younger participants or those of higher socioeconomic status. For other students, for example, the older and more agreeable students, their vocational identity might hardly be fostered by encouraging valuing. For them, focusing on other characteristics they possess and that are moldable, such as self-sufficiency and social resilience, seems a more appropriate intervention. Dependent on the specific profiles, a combination of strategies could be applied. Hence, overlooking these nuances would mean missing opportunities to adapt schooling and guidance to meet personal needs and to achieve best results in fostering the vocational identity of students who are at risk of leaving school without graduating.

Conclusion

Various individual characteristics were shown to moderate the relationship between emotional school engagement and vocational identity. Findings indicate that refined approaches are needed when studying vocational identity among students with a vulnerable school career in order to arrive at justified and applicable interpretations. Including moderator effects as a way to examine and address the complexity and diversity of these

students' real lives was shown to be highly relevant and to provide for detailed and pragmatic insights.

As emotional school engagement has a strong relationship with vocational identity, schools and rebound programs are recommended to incorporate effective strategies to stimulate vocational identity by using insights about the moderator effects of a series of individual characteristics of target group students that alter this relationship. A one-size-fits-all approach does not work, and refined adjustments to suit different students would substantially increase the chance of fostering their vocational identity.

Appendix 1.

Overview Dutch education system.

Retrieved from https://www.s-bb.nl/education/dutch-educational-system

Copyright by Foundation for Cooperation on Vocational Education, Training and Labour Market (SBB) Reprinted with permission.

Appendix 2.

Questionnaire on individual characteristics moderating the relationship between school engagement and vocational identity of students attending specialized programs

This questionnaire was administered in the Netherlands. Items have been translated from Dutch into English for the purpose of this article.

Demographic background and personal characteristics

Age

Gender

Living conditions

Who are you living with?

Ethnicity self/father/mother

What is the native country of you/your father/your mother?

Education father/mother

What kind of school did your father/your mother attend?

SES-following news

I read about Dutch news in newspapers occasionally.

I read about foreign news in newspapers occasionally.

I watch the news on TV occasionally.

I listen to news on the radio occasionally.

Police

Have you ever been involved with police or judiciary?

Is there a case pending now?

Judiciary

Have you ever been sentenced?

Scales and items

Extraversion

People feel cheered up by me.

I am talkative.

I talk to a lot of different people at parties.

I am quiet (R).

Agreeableness
I like to help others.
I sympathize with others' feelings.
I am kind to almost everyone.
Conscientiousness
I am easily distracted (R).
I persevere until a task is finished.
I like to be organized.
I stick to agreements.
Neuroticism
Sometimes I feel happy, sometimes I feel sad.
I feel blue sometimes.
Imagination
I have an active imagination.
I come up with new ideas.
I am curious.
I am inventive.
Self-sufficiency
How satisfied are you about:
… your money.
… what you do during the daytime.
… your housing facilities.
… how things are at home.
… how healthy you are.
… how you feel.
… your friends?
Addiction
How satisfied are you about the way you deal with:
… smoking.
… alcohol.
… drugs.
… gambling.
… gaming?
Intrinsic motivation
I do my best because.
… I enjoy that.
… I feel that is important.
… it makes me feel proud.
Extrinsic motivation
I do my best.
… because others want me to.
… so others will like me.
… because I'll get in trouble if I don't.
Personal Resilience
I create my own life.
I am sure what to do to solve my problems.
I am sure I can.
… handle my problems myself.
… come up with solutions for my problems.

… care for myself well.
… take important decisions about my life.
… take important decisions about learning.
… take important decisions about my work.
… take important decisions about housing.
… take important decisions about my money.

Social resilience

I have a good friend.
I have someone to talk to if there's trouble.
Someone is really there for me if I need them.
I ask for help if I need to.
I know who I can ask for help.
I can depend on my family.
I can depend on my friends.
My family helps me.

Sense of Belonging at school

School is okay for me.
I like going to school.
I think it is important to go to school.
I prefer being somewhere other than at school (R).
I prefer going to school over working.

Valuing school outcome

I really want to graduate.
A qualification is important to find a job.
I'm sure that I will finish a training.
I feel like a training.
I think I would really learn a lot during a training.

Vocational Self-Image

I really want to know what I'm good at.
I know my strengths.
I know my weak points.
I know what I'm good at.
I know what I'm not good at.
I know what I can handle.
I know my limits.

Vocational Future Image

I keep coming up with new ideas about work.
I am really looking for what I think is important in work.
I want to discover what kind of work I can do.

Vocational Self-Efficacy

Later on, at my work.
… I'll be on time.
… I'll work independently.
… I'll do a good job.
… I'll finish my work on time.
… I'll use my time effectively.
… I'll stick to the rules.
… I'll stick to agreements.

Appendix 3.

Table 5 Unstandardized regression coefficients (standard errors between brackets) and proportions of total explained variance of individual characteristics predicting vocational self-image, vocational future image, and vocational self-efficacy

Individual characteristic	Vocational self-image[a]		Vocational future image		Vocational self-efficacy	
	Regression coefficients[b]	Explained variance	Regression coefficients[b]	Explained variance	Regression coefficients[b]	Explained variance
Gender[c]	0.111** (0.041)	0.0092			0.212*** (0.037)	0.0372
Age[c]	0.019* (0.008)				0.013* (0.006)	0.0064
Ethnicity father Dutch[c]	−0.106* (0.044)	0.0071	0.141* (0.064)	0.0059	−0.084* (0.042)	0.0048
Ethnicity mother Dutch[c]	−0.103* (0.044)	0.0072	−0.196** (0.061)	0.0121	−0.100* (0.041)	0.0069
Living with father[c]			0.156** (0.059)	0.0077		
Living with caregive[c]			0.557** (0.178)	0.0108		
Living with sister[c]			0.146* (0.063)	0.0059		
Living with child[c]	0.160* (0.067)	0.0077	−0.213* (0.089)	0.0064	0.170** (0.061)	0.0085
SES-following news[c]	−0.310*** (0.063)	0.0222			−0.242*** (0.058)	0.0204
Extraversion	0.129*** (0.028)	0.0234	0.082* (0.039)	0.0538	0.081** (0.026)	0.0119
Agreeableness	0.366*** (0.031)	0.1347	0.186*** (0.045)	0.1082	0.388*** (0.027)	0.1892
Conscientiousness	0.372*** (0.032)	0.1318			0.389*** (0.029)	0.1806
Neuroticism	−0.041* (0.019)	0.0059	0.055* (0.026)	0.0055		
Imagination	0.221*** (0.031)	0.0548	0.257*** (0.042)	0.1332	0.177*** (0.029)	0.0428
Self-sufficiency	0.164*** (0.029)	0.0384				
Addiction			−0.069** (0.026)	0.0139	0.040* (0.017)	0.0064
Contact with police[c]					0.155*** (0.038)	0.0188
Community sentence[c]					−0.110* (0.045)	0.0066
Detention[c]					−0.205*** (0.061)	0.0125
Judicial measure[c]					−0.236** (0.074)	0.0112
No sentence, no measure[c]					0.114** (0.038)	0.0100
Extrinsic motivation			0.154*** (0.028)	0.0441		
Intrinsic motivation	0.384*** (0.027)	0.1892	0.115** (0.041)	0.0847	0.391*** (0.024)	0.2323

Appendix 4.

Table 5 (continued)

Individual characteristic	Vocational self-image[a]		Vocational future image		Vocational self-efficacy	
	Regression coefficients[b]	Explained variance	Regression coefficients[b]	Explained variance	Regression coefficients[b]	Explained variance
Personal resilience	0.568*** (0.030)	0.3192	0.205*** (0.048)	0.0635	0.477*** (0.029)	0.2621
Social resilience	0.319*** (0.026)	0.1552	0.168*** (0.038)	0.0506	0.208*** (0.025)	0.0790
Sense of belonging	0.131*** (0.025)	0.0369	0.087* (0.034)	0.0515	0.139*** (0.022)	0.0445
Valuing school outcome	0.289*** (0.029)	0.1096	0.224*** (0.039)	0.1170	0.290*** (0.025)	0.1399

[a]For vocational self-image, main effects per individual characteristic were analyzed multilevel, since location level showed significant variance. All proportions of explained variance were analyzed unilevel.

[b]Unstandardized.

[c]Variables showing correlations between observed scores (pmcc, standardized). Correlations between observed scores are attenuated by measurement error, and therefore have lower levels than those stemming from the structural equation model. All other variables measured by Likert scales with correlations following best fitting CFA model.

*$p < 0.05$. **$p < 0.01$. ***$p < 0.001$.

Table 6 Moderator effects of valuing school outcome and sense of belonging on vocational self-image, vocational future image, and vocational self-efficacy with all individual characteristics that have shown main effects

	Vocational self-image						Vocational future image						Vocational self-efficacy					
	Valuing school outcome			Sense of belonging			Valuing school outcome			Sense of belonging			Valuing school outcome			Sense of belonging		
	Dev.[a]	Z[b]	Size[c]	Dev	Z	Size	Dev	Z	Size	Dev	Z	Size	Dev	Z	Size	Dev	Z	Size
Gender	2.897	−1.71	0.64	0.091	−0.30	0.00							2.995	−1.73	0.40	2.144	−1.47	0.37
Age	13.925	−3.56	1.90	0.223	0.50	0.00							37.388	−5.88	4.65	2.721	−1.57	0.35
Ethnicity of father	2.022	−1.42	0.33	7.437	−2.71	1.23	2.276	−2.25	0.32	0.653	0.81	0.00	0.752	−0.88	0.00	0.38	−0.61	0.00
Ethnicity of mother	4.434	−2.117	0.65	8.144	−2.84	1.22	0.938	−0.97	0.16	0.793	0.89	0.00	0.146	−0.38	0.00	0.38	−0.61	0.00
Living with father							0.294	0.54	0.16	5.626	−2.39	0.76						
Living caregiver							2.366	1.54	0.32	0.554	0.74	0.00						
Living with sister							0.687	−0.83	0.16	8.974	−3.00	1.07						
Living with child	0.002	−0.005	0.00	0.162	−0.41	0.00	6.829	−2.62	0.79	0.026	−0.16	0.00	0.002	0.04	0.00	4.656	−1.28	0.34
SES-following news	5.121	2.28	0.32	0.756	0.87	0.00							29.915	5.53	4.23	12.978	3.63	1.40
Extraversion	2.026	−1.41	0.31	9.689	−3.09	1.16	0.153	0.39	0.00	0.088	0.29	0.00	4.964	−2.25	1.18	2.989	−1.72	0.36
Agreeableness	8.093	−2.87	1.05	2.246	−1.50	0.33	4.073	−2.02	0.47	4.226	−2.06	0.46	29.613	−5.54	4.00	11.332	−3.40	1.26
Conscientiousness	4.012	−2.02	0.37	0.079	−0.27	0.00							16.592	−4.06	1.89	2.656	−1.66	0.00
Neuroticism	21.894	−4.67	2.79	8.413	−2.91	1.14	4.938	−2.24	0.64	1.655	−1.31	0.31						
Imagination	4.858	−2.19	0.99	4.328	−2.09	0.31	0.341	−0.58	0.17	0.011	0.11	0.00	9.363	−3.13	1.56	3.922	−1.97	0.72
Self-sufficiency	13.387	3.68	1.57	2.013	1.41	0.30												
Addiction							5.537	−2.33	0.78	1.768	−1.35	0.30	17.791	−4.29	2.31	3.920	−1.96	0.34
Contact police													3.419	1.86	0.38	0.315	0.56	0.35
Community sentence													11.372	3.38	1.15	0.562	0.76	0.00
Detention													11.886	3.44	1.92	0.056	0.24	0.00
Judicial measure													4.549	−2.13	0.38	0.931	−0.97	0.00
No sanction/measure													2.377	−1.53	0.00	0.09	0.30	0.00

Table 6 (continued)

	Vocational self-image						Vocational future image						Vocational self-efficacy					
	Valuing school outcome			Sense of belonging			Valuing school outcome			Sense of belonging			Valuing school out-come			Sense of belonging		
Extrinsic motivation							0.194	0.44	0.00	0.068	0.26	0.00						
Intrinsic motivation	16.317	−4.03	1.86	1.960	−1.37	0.00	4.812	−2.20	0.47	4.677	−2.18	0.61	16.257	−4.11	1.85	0.307	−1.96	0.00
Personal resilience	2.552	−1.61	0.00	0.681	0.81	0.40	3.797	−1.98	0.47	6.670	−2.61	0.91	27.555	−5.40	4.21	20.972	−4.67	2.64
Social resilience	1.780	−1.37	0.35	0.004	0.07	0.00	1.571	−1.24	0.16	5.725	−2.39	0.77	15.400	−3.96	2.37	7.680	−2.77	0.73
Sense of belonging[a]	0.217	0.45	0.31				3.626	−1.89	0.47				7.377	2.74	1.15			
Valuing				0.217	0.45	0.31				3.626	−1.89	0.47				6.872	2.61	0.75

Note. Dev., deviance score; *Z*, Wald-Z scores; *Size*, effect size in percentage of explained total variance.

[a]Due to ML-structure differences, effect sizes of resp. valuing x sense of belonging (2 levels) and sense of belonging x valuing (1 level) for vocational self-efficacy diverge.

References

Archambault, I., Janosz, M., Fallu, J.-S., & Pagani, L. S. (2009). Student engagement and its relationship with early high school dropout. *Journal of Adolescence, 32*(3), 651–670. https://doi.org/10.1016/j.adolescence.2008.06.007

Baay, P. E., van Aken, M. A. G., van der Lippe, T., & de Ridder, D. T. (2014). Personality moderates the links of social identity with work motivation and job searching. *Frontiers in Psychology, 5*, 1–8. https://doi.org/10.3389/fpsyg.2014.01044

Bäckman, O., & Nilsson, A. (2016). Long-term consequences of being not in employment, education or training as a young adult. Stability and change in three Swedish birth cohorts. *European Societies, 18*(2), 136–157. https://doi.org/10.1080/14616696.2016.1153699

Bakadorova, O., Lazarides, R., & Raufelder, D. (2020). Effects of social and individual school self-concepts on school engagement during adolescence. *European Journal of Psychology of Education, 35*(1), 73–91. https://doi.org/10.1007/s10212-019-00423-x

Bentler, P. M. (1992). On the fit of models to covariances and methodology to the bulletin. *Psychological Bulletin, 112*, 400–404. https://doi.org/10.1037/0033-2909.112.3.400

Blustein, D. L. (2013). The psychology of working: A new perspective for a new era. In D. L. Blustein (Ed.), *The Oxford handbook of the psychology of working* (pp. 3–18). Oxford University Press.

Brahm, T., Euler, D., & Steingruber, D. (2014). Transition from school to VET in German-speaking Switzerland. *Journal of Vocational Education & Training, 66*(1), 89–104. https://doi.org/10.1080/13636820.2013.877066

Bryman, A. (2012). *Social research methods* (4th ed.). Oxford, UK: Oxford University Press.

Carcillo, S., Fernández, R., Königs, S., & Minea, A. (2015). *NEET Youth in the aftermath of the crisis. Challenges and policies*. Retrieved from Paris: https://www.oecd-ilibrary.org/content/paper/5js6363503f6-en

Chaves, A. P., Diemer, M. A., Blustein, D. L., Gallagher, L. A., DeVoy, J. E., Casares, M. T., & Perry, J. C. (2004). Conceptions of work: The view from urban youth. *Journal of Counseling Psychology, 51*(3), 275–286. https://doi.org/10.1037/0022-0167.51.3.275

Coutinho, M. T., & Blustein, D. L. (2014). Cape Verdean immigrants' career development and school engagement: Perceived discrimination as a moderator. *Journal of Career Development, 41*(4), 341–358. https://doi.org/10.1177/0894845313495589

Danielsen, L. M., Lorem, A. E., & Kroger, J. (2000). The impact of social context on the identity-formation process of Norwegian late adolescents. *Youth & Society, 31*(3), 332–362. https://doi.org/10.1177/0044118x00031003004

de Vos, E., & de Jong, T. (2011). *Routekaart naar werk voor jongeren met ernstige gedragsmoeilijkheden [Route card to work for youth with severe behavioral problems]* (031.20899). Retrieved from Hoofddorp, the Netherlands: https://www.uwv.nl/overuwv/Images/Routekaart_naar_werk_vierde_meting.pdf

Denissen, J. J., Geenen, R., van Aken, M. A., Gosling, S. D., & Potter, J. (2008). Development and validation of a Dutch translation of the Big Five Inventory (BFI). *Journal of Personality Assessment, 90*(2), 152–157. https://doi.org/10.1080/00223890701845229

Diemer, M. A., & Blustein, D. L. (2006). Critical consciousness and career development among urban youth. *Journal of Vocational Behavior, 68*(2), 220–232. https://doi.org/10.1016/j.jvb.2005.07.001

Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The mini-IPIP scales: Tiny-yet-effective measures of the Big Five factors of personality. *Psychological Assessment, 18*(2), 192–203. https://doi.org/10.1037/1040-3590.18.2.192

Elffers, L. (2012). One foot out the school door? Interpreting the risk for dropout upon the transition to post-secondary vocational education. *British Journal of Sociology of Education, 33*(1), 41–61. https://doi.org/10.1080/01425692.2012.632866

Elffers, L., Oort, F. J., & Karsten, S. (2012). Making the connection: The role of social and academic school experiences in students' emotional engagement with school in post-secondary vocational education. *Learning and Individual Differences, 22*(2), 242–250. https://doi.org/10.1016/j.lindif.2011.08.005

Fassaert, T., Lauriks, S., van de Weerd, S., Theunissen, J., Kikkert, M., Dekker, J., . . . De Wit, M. (2014). Psychometric properties of the Dutch version of the self-sufficiency matrix (SSM-D). *Community Mental Health Journal, 50*(5), 583-590. https://doi.org/10.1007/s10597-013-9683-6

Finn, J. D. (1989). Withdrawing from school. *Review of Educational Research, 59*(2), 117–142. https://doi.org/10.3102/00346543059002117

Flouri, E., & Buchanan, A. (2002). The role of work-related skills and career role models in adolescent career maturity. *The Career Development Quarterly, 51*(1), 36–43. https://doi.org/10.1002/j.2161-0045.2002.tb00590.x

Fouad, N. A. (2007). Work and vocational psychology: Theory, research, and applications. *Annual Review of Psychology, 58*, 543–564. https://doi.org/10.1146/annurev.psych.58.110405.085713

Fredricks, J. A. (2011). Engagement in school and out-of-school contexts: A multidimensional view of engagement. *Theory into Practice, 50*(4), 327–335. https://doi.org/10.1080/00405841.2011.607401

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research, 74*(1), 59–109. https://doi.org/10.3102/00346543074001059

Fugate, M., Kinicki, A. J., & Ashforth, B. E. (2004). Employability: A psycho-social construct, its dimensions, and applications. *Journal of Vocational Behavior, 65*(1), 14–38. https://doi.org/10.1016/j.jvb.2003.10.005

Furr, R. M., & Bacharach, V. R. (2014). *Psychometrics : An introduction* (2nd ed.). Thousand Oaks, CA: Sage.

Gee, J. (2000). Identity as an analytic lens for research in education. *Review of Research in Education, 25*, 99–125. https://doi.org/10.2307/1167322

Green, J., Liem, G. A. D., Martin, A. J., Colmar, S., Marsh, H. W., & McInerney, D. (2012). Academic motivation, self-concept, engagement, and performance in high school: Key processes from a longitudinal perspective. *Journal of Adolescence, 35*(5), 1111–1122. https://doi.org/10.1016/j.adolescence.2012.02.016

Gushue, G. V., & Whitson, M. L. (2006). The relationship of ethnic identity and gender role attitudes to the development of career choice goals among black and Latina girls. *Journal of Counseling Psychology, 53*(3), 379–385. https://doi.org/10.1037/0022-0167.53.3.379

Hirschi, A. (2012). Vocational identity trajectories: Differences in personality and development of well-being. *European Journal of Personality, 26*(1), 2–12. https://doi.org/10.1002/per.812

Hox, J. J. (2010). *Multilevel analysis: Techniques and applications* (2nd ed.). New York, NY: Routledge.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Jackson, M. A., Perolini, C. M., Fietzer, A. W., Altschuler, E., Woerner, S., & Hashimoto, N. (2011). Career-related success-learning experiences of academically underachieving urban middle school students. *The Counseling Psychologist, 39*(7), 1024–1060. https://doi.org/10.1177/0011000010397555

Janosz, M., Archambault, I., Morizot, J., & Pagani, L. S. (2008). School engagement trajectories and their differential predictive relations to dropout. *Journal of Social Issues, 64*(1), 21–40. https://doi.org/10.1111/j.1540-4560.2008.00546.x

Keijzer, R., Admiraal, W. F., van der Rijst, R., & van Schooten, E. (2020). Vocational identity of at-risk emerging adults and its relationship with individual characteristics. *International Journal for Educational and Vocational Guidance, 20*(2), 375–410. https://doi.org/10.1007/s10775-019-09409-z.

Kroger, J. (2007). *Identity development: Adolescence through adulthood* (2nd ed.). Thousand Oaks, CA: Sage.

Kuijpers, M., & Meijers, F. (2008). *Loopbaanleren en -begeleiden in het hbo [Career learning and guidance in higher education]*. The Hague, the Netherlands: Platform Bèta Techniek [Platform STEM].

Kuijpers, M., Meijers, F., & Gundy, C. (2011). The relationship between learning environment and career competencies of students in vocational education. *Journal of Vocational Behavior, 78*(1), 21–30. https://doi.org/10.1016/j.jvb.2010.05.005

Lent, R. W. (2013). Social cognitive career theory. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling. Putting theory and research to work* (2nd ed., pp. 115–146). Hoboken, NJ: Wiley & Sons.

Li, Y. B., & Lerner, R. M. (2011). Trajectories of school engagement during adolescence: Implications for grades, depression, delinquency, and substance use. *Developmental Psychology, 47*(1), 233–247. https://doi.org/10.1037/a0021307

Lindstrom, L., Doren, B., Metheny, J., Johnson, P., & Zane, C. (2007). Transition to employment: Role of the family in career development. *Exceptional Children, 73*(3), 348–366. https://doi.org/10.1177/001440290707300305

Luyckx, K., Soenens, B., & Goossens, L. (2006). The personality-identity interplay in emerging adult women: Convergent findings from complementary analyses. *European Journal of Personality, 20*(3), 195–215. https://doi.org/10.1002/per.579

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods, 1*(2), 130–149. https://doi.org/10.1037/1082-989X.1.2.130

McArdle, S., Waters, L., Briscoe, J. P., & Hall, D. T. (2007). Employability during unemployment: Adaptability, career identity and human and social capital. *Journal of Vocational Behavior, 71*(2), 247–264. https://doi.org/10.1016/j.jvb.2007.06.003

McGrath, K. F., & Van Bergen, P. (2015). Who, when, why and to what end? Students at risk of negative student–teacher relationships and their outcomes. *Educational Research Review, 14*, 1–17. https://doi.org/10.1016/j.edurev.2014.12.001

Ministerie van Onderwijs Cultuur en Wetenschap [Ministry of Education Culture and Science]. (2020, October 1). VSV in de gemeenten [Early school-leavind in municipalities]. Retrieved from https://www.onderwijsincijfers.nl/kengetallen/onderwijs-algemeen/leerlingen-en-studenten/prestaties-voortijdig-schoolverlaten/vsv-in-de-gemeenten. Accessed 1 Oct 2020.

Ministerie van Onderwijs Cultuur en Wetenschap [Ministry of Education Culture and Science]. (2021). VSV informatie op landelijk niveau [Early school leaving at national level]. Retrieved from https://cijfers.duo.nl/ibi_apps/bip/portal/vsv_portal. Accessed 29 May 2021.

Motti-Stefanidi, F., & Masten, A. S. (2013). School success and school engagement of immigrant children and adolescents: A risk and resilience developmental perspective. *European Psychologist, 18*(2), 126–135. https://doi.org/10.1027/1016-9040/a000139

Muthén, L. K., & Muthén, B. O. (1998–2015). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Nauta, M. M. (2010). The development, evolution, and status of Holland's theory of vocational personalities: Reflections and future directions for counseling psychology. *Journal of Counseling Psychology, 57*(1), 11–22. https://doi.org/10.1037/a0018213

Nauta, M. M., Kahn, J. H., Angell, J. W., & Cantarelli, E. A. (2002). Identifying the antecedent in the relation between career interests and self-efficacy: Is it one, the other, or both? *Journal of Counseling Psychology, 49*(3), 290–301. https://doi.org/10.1037/0022-0167.49.3.290

Noack, P., Kracke, B., Gniewosz, B., & Dietrich, J. (2010). Parental and school effects on students' occupational exploration: A longitudinal and multilevel analysis. *Journal of Vocational Behavior, 77*(1), 50–57. https://doi.org/10.1016/j.jvb.2010.02.006

Onderwijs in cijfers [Education in numbers]. (2021). Aantal studenten in het mbo [Number of students in MBO]. Retrieved from https://www.onderwijsincijfers.nl/kengetallen/mbo/studenten-mbo/aantallen-studenten-mbo. Accessed 6 May 2021.

Pouyaud, J., Vignoli, E., Dosnon, O., & Lallemand, N. (2012). Career adapt-abilities scale-France form: Psychometric properties and relationships to anxiety and motivation. *Journal of Vocational Behavior, 80*(3), 692–697. https://doi.org/10.1016/j.jvb.2012.01.021

Restubog, S. L. D., Florentino, A. R., & Garcia, P. R. J. M. (2010). The mediating roles of career self-efficacy and career decidedness in the relationship between contextual support and persistence. *Journal of Vocational Behavior, 77*(2), 186–195. https://doi.org/10.1016/j.jvb.2010.06.005

Ryan, R. M., & Connell, J. P. (1989). Perceived locus of causality and internalization: Examining reasons for acting in two domains. *Journal of Personality and Social Psychology, 57*(5), 749–761. https://doi.org/10.1037/0022-3514.57.5.749

Skorikov, V. B., & Vondracek, F. W. (1998). Vocational identity development: Its relationship to other identity domains and to overall identity development. *Journal of Career Assessment, 6*(1), 13–35. https://doi.org/10.1177/106907279800600102

Skorikov, V. B., & Vondracek, F. W. (2012). Occupational identity. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of identity theory and research* (Vol. 2, pp. 693-714). New York, NY: Springer.

Sulimani-Aidan, Y. (2017). Barriers and resources in transition to adulthood among at-risk young adults. *Children and Youth Services Review, 77*, 147–152. https://doi.org/10.1016/j.childyouth.2017.04.015

Tian, Y., & Fan, X. Z. (2014). Adversity quotients, environmental variables and career adaptability in student nurses. *Journal of Vocational Behavior, 85*(3), 251–257. https://doi.org/10.1016/j.jvb.2014.07.006

Turner, S. L., & Lapan, R. T. (2013). Promotion of career awareness, development, and school success in children and adolescents. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling. Putting theory and research to work* (pp. 539-564). Hoboken, NJ: John Wiley.

Ungar, M., Liebenberg, L., Boothroyd, R., Kwong, W. M., Lee, T. Y., Leblanc, J., . . . Makhnach, A. (2008). The study of youth resilience across cultures: Lessons from a pilot study of measurement development. *Research in Human Development, 5*(3), 166-180. https://doi.org/10.1080/15427600802274019

Vignoles, V. L., Schwartz, S. J., & Luyckx, K. (2012). Introduction: Toward an integrative view of identity. In S. J. Schwartz, K. Luyckx, & V. L. Vignoles (Eds.), *Handbook of indentity theory and research* (Vol. 1, pp. 1-27). New York, NY: Springer.

von Soest, T., Mossige, S., Stefansen, K., & Hjemdal, O. (2009). A validation study of the resilience scale for adolescents (READ). *Journal of Psychopathology and Behavioral Assessment, 32*(2), 215–225. https://doi.org/10.1007/s10862-009-9149-x

Wallace-Broscious, A., Serafica, F. C., & Osipow, S. H. (1994). Adolescent career development: Relationships to self-concept and identity status. *Journal of Research on Adolescence, 4*(1), 127–149. https://doi.org/10.1207/s15327795jra0401_7

Wang, M.-T., & Eccles, J. S. (2012). Social support matters: Longitudinal effects of social support on three dimensions of school engagement from middle to high school. *Child Development, 83*(3), 877–895. https://doi.org/10.1111/j.1467-8624.2012.01745.x

Wang, M.-T., Willett, J. B., & Eccles, J. S. (2011). The assessment of school engagement: Examining dimensionality and measurement invariance by gender and race/ethnicity. *Journal of School Psychology, 49*(4), 465–480. https://doi.org/10.1016/j.jsp.2011.04.001

Windle, G., Bennett, K. M., & Noyes, J. (2011). A methodological review of resilience measurement scales. *Health and Quality of Life Outcomes, 9*(1), 1–18. https://doi.org/10.1186/1477-7525-9-8

Wong, Z. Y., & Kaur, D. (2018). The role of vocational identity development and motivational beliefs in undergraduates' student engagement. *Counselling Psychology Quarterly, 31*(3), 294–316. https://doi.org/10.1080/09515070.2017.1314249

Yuen, M., Gysbers, N. C., Chan, R. M. C., Lau, P. S. Y., & Shea, P. M. K. (2010). Talent development, work habits, and career exploration of Chinese middle-school adolescents: Development of the career and talent development self-efficacy scale. *High Ability Studies, 21*(1), 47–62. https://doi.org/10.1080/13598139.2010.488089

Rineke Keijzer. Leiden University, Leiden, The Netherlands. Rotterdam University of Applied Sciences, P.O. Box 25,035, 3001 HA, Rotterdam, The Netherlands. E-mail: r.keijzer@hr.nl.

Current themes of research:

Vocational identity. At-risk young adults. Educational psychology.

Most relevant publications in the field of Psychology of Education:

Keijzer, R., Admiraal, W. F., van der Rijst, R., & van Schooten, E. (2020). Vocational identity of at-risk emerging adults and its relationship with individual characteristics. *International Journal for Educational and Vocational Guidance*, *20*(2):375-410. https://doi.org/10.1007/s10775-019-09409-z.

Keijzer, R., van der Rijst, R., van Schooten, E., & Admiraal, W. (2021). Individual differences among at-risk students changing the relationship between resilience and vocational identity. *International Journal of Educational Research*, *110*. https://doi.org/10.1016/j.ijer.2021.101893.

Erik van Schooten. Rotterdam University of Applied Sciences, P.O. Box 25,035, 3001 HA, Rotterdam, The Netherlands.

Current themes of research:

Education. Social research methods. Educational assessment.

Most relevant publications in the field of Psychology of Education:

Denman, J., van Schooten, E., & de Graaff, R. (2018). Attitudinal factors and the intention to learn English in pre-vocational secondary bilingual and mainstream education. *Dutch Journal of Applied Linguistics* 7(2):203-226. https://doi.org/10.1075/dujal.18005.den.

Roeland van der Rijst. Leiden University, Leiden, The Netherlands.

Current themes of research:

Educational development. Teaching approaches. Further and higher education.

Most relevant publications in the field of Psychology of Education:

Vulperhorst, J., van der Rijst, R., & Akkerman, S.F. (2020). Dynamics in higher education choice: weighing one's multiple interests in light of available programmes. *Higher Education* 79(1): 1-21. https://doi.org/10.1007/s10734-019-00452-x.

Vereijken, M., van der Rijst, R., van Driel, J.H. & Dekker, F.W. (2019). Authentic research practices throughout the curriculum in undergraduate medical education: Student beliefs and perceptions. *Innovations in Education and Teaching International*. https://doi.org/10.1080/14703297.2019.1674680.

Wilfried Admiraal. Leiden University, Leiden, The Netherlands.

Current themes of research:

Teaching methods. Teacher education. Higher education.

Most relevant publications in the field of Psychology of Education:

Van Kampen, E., Meirink, J., Admiraal, W. & Berry, A. (2020). Do we all share the same goals for content and language integrated learning (CLIL)? Specialist and practitioner perceptions of 'ideal' CLIL pedagogies in the Netherlands. *International Journal of Bilingual Education and Bilingualism 23(8)*:855-871. https://doi.org/10.1080/13670050.2017.1411332.