

Vocational Identity as a Mediator of the Relationship between Core Self-Evaluations and Life and Job Satisfaction

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This study investigated whether vocational identity achievement mediates the relation between basic personality dispositions (i.e. core self-evaluations) and career and well-being outcomes in terms of job and life satisfaction. Two studies with Swiss adolescents were conducted. Study 1 ($N = 310$) investigated students in eighth grade, prior to making the transition to vocational education and training (VET); it showed that vocational identity related positively to life satisfaction but that this relationship disappeared once core self-evaluations were controlled. Study 2 ($N = 150$) investigated students in their second year of VET; it showed that job satisfaction was unrelated to identity and self-evaluations. However, identity fully mediated the relation between self-evaluations and life satisfaction.

INTRODUCTION

Personality has long been an important research construct to understand a vast array of occupational and organisational behaviors. One personality construct that has gained increased attention in occupational and organisational research over the last few years is core self-evaluations (CSE), which include a person's fundamental assessments of their worthiness, competence, and capabilities (Judge, Locke, Durham, & Kluger, 1998). An increasing number of studies have shown that CSE relate to a range of important occupational and organisational outcomes, such as job satisfaction and career success, as well as life satisfaction and well-being (e.g. Judge & Bono, 2001). One emerging research interest is in how those relationships can be explained. Specifically, researchers are curious about how and why the more distal, general construct of CSE relates to those outcomes. The present study makes a theoretical and empirical contribution to this body of research by proposing and empirically investigating whether vocational identity achievement mediates the effects of CSE on career and life outcomes during adolescence.

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A number of studies have investigated possible mediators that may explain why CSE are related to career and work outcomes. Among these mediators are job stress (Brunborg, 2008), goal setting, goal attainment, motivation (e.g. Erez & Judge, 2001; Judge, Bono, Erez, & Locke, 2005), work–family conflict (Boyar & Mosley, 2007), job burnout (Best, Stapleton, & Downey, 2005), perceived job characteristics, and job complexity (e.g. Judge, Bono, & Locke, 2000). Adding to this literature, the present study investigated vocational identity, a person’s sense of clarity and stability for personal interests, values, and characteristics (Holland, 1997), as a possible mediator. As outcome variables, the study focused on life and job satisfaction.

Dependent Variables of Life Satisfaction and Job Satisfaction

Life Satisfaction. Life satisfaction is a core component of general well-being and refers to a judgmental process of the overall quality of a person’s life, according to his or her own unique set of criteria (Pavot & Diener, 1993). Lower levels of life satisfaction were found to be related to depression, loneliness, and a variety of psychological disorders. However, adolescents and youth with higher levels of life satisfaction are less involved in violent behavior problems and show more self-esteem, and intrinsic motivation. Higher levels of life satisfaction can also act as a buffer against psychological disorders and stressful life events (Park, 2004). As discussed above, the relation of core self-evaluations to life satisfaction is relatively well established (Judge & Bono, 2001) in that people who hold more positive views about themselves are generally also more satisfied with their lives.

Hypothesis 1: CSE are positively related to life satisfaction.

Job Satisfaction. The degree to which employees are satisfied with their job is important to organisations due to its relation to performance and turnover (van Dick, Christ, Stellmacher, Wagner, Ahlswede, Grubba, Hauptmeier, Höhfeld, Moltzen, & Tissington, 2004). Naturally, it is also essential to individuals, as it is an important component in the quality of life and general well-being (Rode, 2004), as well as an indicator of subjective career success (Judge, Cable, Boudreau, & Bretz, 1995). Job satisfaction has been frequently investigated in relation to personality traits and core self-evaluations (Judge & Bono, 2001; Judge, Heller, & Mount, 2002b). There is clear support for favorable personality traits providing a basis for the affective evaluations of one’s work.

Hypothesis 2: CSE are positively related to job satisfaction.

Vocational Identity as a Potential Mediator

Vocational identity is a core construct for career development and has long been a central focus of vocational psychology. The development and implementation of a clear sense of occupational or vocational identity is regarded as a core developmental task that emerges in adolescence and continues throughout adulthood (Super, 1990). This career development concept has also gained increased importance from an industrial-organisational perspective. Hall (2002) introduced a clear sense of identity as a metacompetence for self-directed, values-driven career development, as discussed with respect to protean career orientation. Fugate, Kinicki, and Ashforth (2004) named career identity as a core component of employability and of the ability to identify and realise career opportunities. A number of studies have shown that adolescents and adults with a clearer sense of vocational identity were more successful in career transitions and reported greater well-being, career self-efficacy beliefs, work engagement, or congruence and differentiation of vocational-interest (e.g. Diemer & Blustein, 2007; Gushue, Scanlan, Pantzer, & Clarke, 2006; Meeus, Deković, & Iedema, 1997).

In the present study, vocational identity was conceptualised in terms of identity achievement represented by the dimensions identity commitment and identity exploration. Based on Marcia's (1980) identity status model, identity achievement implies that a person has reached a clear sense of and commitment to a particular identity after actively exploring possible identities. Hence, this status is characterised by high levels of commitment and exploration. The importance of considering commitment and exploration lies in the necessity to distinguish identity achievement from the following statuses: foreclosure (that is, commitment without exploration), moratorium (i.e. exploration without commitment), and diffusion (that is, no commitment and no exploration). Various empirical studies have supported the applicability of Marcia's model to career development and vocational identity among adolescents and emerging adults (e.g. Vondracek, Schulenberg, Skorikoc, Gillespie, & Wahlheim, 1995).

Identity and CSE. A number of studies have shown that different favorable personality dispositions among adolescents and adults, such as emotional stability, extraversion, conscientiousness, locus of control beliefs, and positive affect (e.g. Lounsbury, Levy, Leong, & Gibson, 2007) are significantly related to vocational identity achievement. In relation to CSE, research has shown that self-esteem is positively related to clarity of self-concept generally (Campbell, 1990) and vocational identity specifically (Munson, 1992). Other studies have shown that an internal locus of control (Abraham, 1983; Ng & Feldman, 2009) and low neuroticism (Luyckx,

Soenens, & Goossens, 2006) relate positively to identity development. Finally, self-efficacy beliefs relate positively to vocational identity (e.g. Gushue et al., 2006; Nauta & Kahn, 2007).

In terms of Marcia's (1980) model of identity statuses, it seems that core self-evaluations affect both career exploration and career decidedness/commitment. Research has found that negative perceptions of one's self in terms of low self-efficacy beliefs, external control beliefs, low self-esteem, and high neuroticism impede the active exploration of career options (Creed, Patton, & Prideaux, 2007; Gushue et al., 2006; Nauta, 2007; Rogers, Creed, & Glendon, 2008). Likewise, negative self-evaluations hinder the development of choice clarity and decidedness regarding one's career (e.g. Argyropoulou, Sidiropoulou-Dimakakou, & Besevegis, 2007; Lounsbury, Hutchens, & Loveland, 2005). Luyckx et al. (2006) showed, in a study investigating identity development among adolescent female students, that neuroticism related positively to a state of ruminative identity exploration that lacks the capacity to reach identity clarity and commitment. It therefore appears that negative self-views lead people to question themselves and their vocational goals and choices, thereby encouraging ruminative exploration without comfortably settling on a clear sense of who one is and what one wants to become. Likewise, negative self-views might inhibit people from actively getting engaged in an identity exploration process in the first place which would be the foundation for eventual identity achievement. As such, positive CSE would promote the development of a clear sense of identity by facilitating identity commitment and focused exploration.

Hypothesis 3: CSE are positively related to vocational identity achievement.

Identity and Life Satisfaction. Due to the importance of career development and career preparation, the vocational domain provides a central component of identity development for most adolescents (Skorikov & Vondracek, 1998). Vocational identity can therefore act as a major source of meaning in life (Ibarra & Barbulescu, 2010; McLean & Pratt, 2006) and is closely related to self-esteem (Campbell, Trapnell, Heine, Katz, Lavalley, & Lehman, 1996; Luyckx, Schwartz, Goossens, Soenens, & Beyers, 2008). A sense of meaning, self-clarity, and self-esteem are in turn important precursors of life satisfaction and well-being (Baumeister & Vohs, 2002; Diener, Suh, Lucas, & Smith, 1999). A number of studies have directly supported the relationship between identity achievement and life satisfaction (Meeus, 1996; Skorikov & Vondracek, 2007).

Hypothesis 4: Vocational identity achievement is positively related to life satisfaction.

Building on Hypotheses 1, 3, and 4, we also expect:

Hypothesis 5: Vocational identity achievement partially mediates the effects of CSE on life satisfaction.

Identity and Job Satisfaction. Having a clear sense of one's own strengths and preferences facilitates the selection of self-congruent career goals (Hirschi, Niles, & Akos, 2011; Skorikov & Vondracek, 2007). Goal self-congruence in turn facilitates goal achievement and success, which then promote job satisfaction (Judge et al., 2005). Moreover, achieving self-congruent goals is more satisfying than achieving extrinsically motivated goals (Judge et al., 2005; Locke & Latham, 2002). A clear sense of identity also promotes the perception of meaningfulness and purpose in work (Ibarra & Barbulescu, 2010), which in turn are positively related to job satisfaction (Dik & Duffy, 2009; Humphrey, Nahrgang, & Morgeson, 2007). Finally, a clear sense of identity is related to work engagement (Luyckx, Duriez, Klimstra, & De Witte, 2010), which may also promote a sense of achievement in terms of career goals and career satisfaction. Hence, vocational identity as a career metacompetence can be expected to promote job satisfaction via several pathways.

Hypothesis 6: Vocational identity achievement is positively related to job satisfaction.

Building on Hypotheses 2, 3, and 6, we also expect:

Hypothesis 7: Vocational identity achievement partially mediates the effects of CSE on job satisfaction.

The Study Context

Two studies of Swiss adolescents were conducted to investigate the hypotheses proposed above. In Switzerland, a strong emphasis is placed on vocational education and training (VET) in adolescence as the primary route to train and educate the future workforce. About 70 per cent of all students continue on to vocational education and training after finishing compulsory school, where they are then trained in one of over 200 specific vocations. The remaining students continue to general high school or specialised middle-schools, where the primary focus is on preparing students for a college education (Federal Office for Professional Education & Technology, 2008). Students in the first study sample were at the end of eighth grade, which marks the end of an environmentally imposed phase of career preparation and career decision-making that takes place during seventh and eighth grades. These students were about to enter their last year of compulsory school, and they were generally expected to apply to specific vocational apprenticeships or, for the minority of them, general high school, by the

beginning of ninth grade. Students in the second study sample were at the end of their second year of a total of 3 years in VET. Thus, for this study sample, career preparation for participants was of the utmost importance and not something they would face later on, in emerging adulthood.

Investigating career development during adolescence is important because adolescence is a critical phase with respect to establishing early antecedents for successful lifelong career development (Super, 1990). For example, a number of prospective longitudinal studies have shown that levels of adolescent career preparation and identity achievement can be persistent over the years, with potentially negative outcomes for career success in young adulthood (e.g. Caspi, Wright, Moffitt, & Silva, 1998; Wiesner, Vondracek, Capaldi, & Porfeli, 2003). Other research has shown that early levels of negative or positive core self-evaluations were related to both the levels of and increases in later economic and career success (Judge & Hurst, 2007). Thus, investigating the effects of core self-evaluations and vocational identity on career variables during adolescence can provide important information to better understand individual differences in career development, with potentially important consequences for later stages of life.

Within both studies we investigated life satisfaction as an outcome variable. Study 2 also included the outcome variable of job satisfaction, as this sample was already working in a specific VET.

METHOD AND PROCEDURE

The teachers and directors of the schools selected for the research project were contacted and asked whether they would participate in the study with their classes. All contacts agreed to do so, and passive consent was obtained from the parents and/or guardians of students in Study 1, prior to data collection. All measures were completed while students were in school. The sample in Study 2 also attended their weekly day of theoretical schooling as part of their VET. Assessments took place in class, under the supervision of their teachers, during an ordinary school lesson. Participation was voluntary and was undertaken with active consent by the students. All students attending class on the day of data collection completed the questionnaires.

STUDY 1

Participants

Sample 1 consisted of 310 students who were assessed at the end of eighth grade. Half (50.6%) were girls; their ages ranged from 13 to 17 years ($M = 15.1$, $SD = 0.7$). Eighty-three per cent were Swiss nationals, whereas the rest of the students were of other nationalities, mostly from South-Eastern

Europe. Sixty-five per cent attended a school track with advanced requirements, whereas the others attended a school track with basic requirements. This separation is mainly based on scholastic achievement in primary school. Due to the higher scholastic requirements of certain professions, some VETs can only be pursued by students who have attended the advanced track. The distribution of gender, age, nationality, and school type was representative of students at this grade level in Switzerland (Swiss Federal Statistical Office, 2006). Race is generally not assessed in Switzerland as a demographic variable and was therefore not assessed in the study. However, almost all students in the region were white.

Measures

Core Self-Evaluations. In accordance with the model proposed by Judge, Erez, Bono, and Thoresen (2002a), four measures were applied: (a) *Neuroticism* was assessed with the respective scales from the official German-language adaptation of the NEO-FFI (Borkenau & Ostendorf, 1993; Costa & McCrae, 1992). Based on scale evaluation studies with adolescents, an 11-item version (e.g. "I seldom feel lonely or sad") with a 4-point Likert scale ranging from (1) *strongly disagree* to (4) *strongly agree* was applied (Roth, 2002). The authors of the scale (Borkenau & Ostendorf) provided broad support for the scale's construct validity in terms of correlations to other established personality inventories. Cronbach's alpha was .76 in the present sample. (b) *Self-esteem* was assessed with a revised version of the Rosenberg Self-Esteem Scale (Rosenberg, 1965; von Collani & Herzberg, 2003). The Rosenberg scale is the most widely used scale of self-esteem and consists of 10 items (e.g. "On the whole, I am satisfied with myself"). Students answered on a 4-point Likert scale ranging from (1) *strongly disagree* to (4) *strongly agree*. Numerous studies have provided support for the construct validity of this scale with adolescents (e.g. Patton, Bartrum, & Creed, 2004). Cronbach's alpha was .85. (c) *Generalised self-efficacy* and (d) the *locus of control* beliefs were both assessed with the Inventory for the Measurement of Self-Efficacy and Externality (FKK; Krampen, 1991). It included 16 items for each construct with a 6-point Likert scale response format, ranging from (1) *completely false* to (6) *completely true* (e.g. "I can determine very much of what happens in my life"). Different studies have provided support for the construct validity scale with adolescents, including, for example, significant relations to personality traits, psychological disorders, and well-being (Anderson, Hattie, & Hamilton, 2005; Krampen, 1991). Cronbach's alpha was .71 for self-efficacy and .84 for control. According to Judge et al.'s (2002a) model, a factor score was calculated with principal axis functioning to represent the latent construct of core self-evaluations, which confirmed the existence of one underlying factor ($R^2 = .47$).

Vocational Identity Achievement. In line with established procedures for identity research (Schwartz & Dunham, 2000), vocational identity achievement was measured by the degree of career identity commitment and the reported career identity exploration. *Commitment* was measured using the career decidedness and commitment scale from the German-language adaptation of the Career Maturity Inventory (Crites, 1973; Seifert & Stangl, 1986). The scale consists of 12 items (e.g. “I don’t know exactly what to do in order to choose the right occupation”), and answers are indicated on a 4-point scale ranging from (1) *do not agree* to (4) *completely agree*. The scale is well established in the international literature (Patton & Creed, 2001), and support for the validity of the German-language version has been provided in several studies that show the positive relations of the scale to career planning and active application to an after-school apprenticeship (Bergmann, 1993; Seifert, Bergmann, & Eder, 1987). The final scale score was reversed so that a higher score represents higher commitment. Reliability measured by Cronbach’s alpha was .85. *Career exploration* was assessed in accordance with the Career Exploration Scale from Stumpf, Colarelli, and Hartman (1983) and the use of other career exploration scales for adolescent career development research (Kracke, 2002), as the degree of career exploration conducted in terms of self- and environmental exploration. Four items addressed self-exploration (e.g. “thinking about personal strengths and skills”), and six items measured environmental exploration (e.g. “acquiring information about career fields of interest”). Answers were provided on a 5-point Likert scale that indicates the degree to which one has engaged in these behaviors during the last 3 months, with answers ranging from (1) *seldom/few* to (5) *very much/a lot*. Higher scores indicate more engagement in career exploration during the last 3 months. Support for the construct validity of the scale has been provided in other studies, including its significant correlations with other established measures of career exploration and career planning (Hirschi, 2010). Cronbach’s alpha was .90. Following the procedure recommended in the literature (Schwartz & Dunham, 2000), a score for vocational identity achievement was calculated by taking the linear combination of the standardised decidedness and exploration measures, with higher scores indicating more vocational identity achievement.

Life Satisfaction. The German-language adaptation of the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; Peterson, Ruch, Beermann, Park, & Seligman, 2007) was applied. This scale is one of the most frequently applied measures as an indicator of well-being and has been found to possess excellent reliability and validity, as well as applicability to research with adolescents (Lucas, Diener, & Suh, 1996; Neto & Barros, 2007). The German-language version showed properties similar to the

original version among a group of Swiss adults (Peterson et al., 2007). Cronbach's alpha was .82.

Results

Correlations among the Measures. The results in Table 1 show that core self-evaluations related positively to vocational identity achievement and significantly to its commitment dimension. Specifically, the dimensions of self-esteem and generalised self-efficacy beliefs related positively and neuroticism related negatively to vocational identity commitment. Moreover, externality, self-esteem, and self-efficacy related positively to career exploration. Core self-evaluations and its dimensions also related significantly to life satisfaction, just as vocational identity achievement and career commitment proved to be related.

Test of the Hypotheses. The four steps to assess mediation effects according to Baron and Kenny (1986) were applied with multiple hierarchical regression analysis to test the hypothesis that vocational identity achievement would partially mediate the relation of core self-evaluations and life satisfaction. In all models, the effects of gender, nationality, and schooltype were controlled.

First, we investigated whether core self-evaluations significantly predicted life satisfaction, and H1 was confirmed in the way that CSE predicted life satisfaction above and beyond the effects of the socio-demographic variables, $\beta = .491$, $p < .001$, $\Delta R^2 = .233$. Second, we established that core self-evaluations significantly predicted vocational identity achievement above and beyond the control variables, confirming H3, $\beta = .191$, $p = .012$, $\Delta R^2 = .035$. Third, we examined whether vocational identity achievement would predict life satisfaction above and beyond the socioeconomic control variables and could confirm H4, $\beta = .197$, $p = .002$, $\Delta R^2 = .037$. Fourth, we investigated whether vocational identity achievement would predict life satisfaction when core self-evaluations were included as a predictor of the outcome variable. The results showed that controlling for the socio-demographic measures and core self-evaluations, identity achievement no longer significantly predicted life satisfaction, $\beta = .102$, $p = .137$, $\Delta R^2 = .010$, thus not supporting H5 and a partial mediation model. Table 2 shows the results of the final regression model.

Brief Discussion of Study 1

The results confirmed the assumption that positive core self-evaluations would relate positively to vocational identity achievement, particularly to the commitment dimension. Also confirmed was the hypothesis that core

TABLE 1
Bivariate Correlations among the Measures of Study 1 (N = 310, below) and Study 2 (N = 150, above)

	CSE	N	SES	GSE	EOC	VID	Com	Expl	SWL	Job Sat	Gen	Char	M	SD
Core self-evaluations	—	-.80***	.59***	.60***	-.65***	.47***	.47***	.25***	.36***	.08	-.11	.07	—	—
Neuroticism	-.86***	—	-.35***	-.32***	-.36***	-.31***	-.34***	-.14	-.20*	-.01	.09	.01	25.85	5.67
Self-esteem	.64***	-.40***	—	.19*	-.24**	.33***	.19*	.32***	.10	.05	-.11	.02	28.11	2.67
Generalised self-efficacy	.57***	-.41***	.21**	—	-.27**	.35***	.34***	.19*	.40***	.09	-.08	-.08	61.03	8.23
Externality of control	-.64***	.51***	-.16*	-.20**	—	-.35***	-.44***	-.11	-.40***	-.06	.06	-.06	48.87	12.15
Identity achievement	.19*	-.04	.25***	.30***	.02	—	.76***	.77***	.44***	.05	.17*	.06	-0.18	1.51
Commitment	.25***	-.14*	.27***	.32***	-.11	.84***	—	.16	.51***	.19*	.22**	.20**	37.33	6.06
Exploration	.08	.07	.16*	.19**	.14*	.84***	.42***	—	.17*	-.11	.04	-.12	22.39	7.27
Life satisfaction	.49***	-.41***	.41***	.48***	-.31***	.19**	.23***	.09	—	.26***	.22**	.30**	23.35	4.85
Job satisfaction											.64***	.97***	—	—
General												.66***	4.80	1.37
Characteristics													30.22	7.55
M	—	25.94	30.95	62.66	52.23	-0.00	38.43	34.19	23.10	—	—	—	—	—
SD	—	4.69	4.84	7.94	10.38	1.69	6.02	7.51	5.59	—	—	—	—	—

Note: CSE: Core self-evaluations (principal axis factor score); N: Neuroticism; SES: Self-esteem; GSE: Generalised self-efficacy; EOC: Externality of Control; VID: Vocational identity achievement; Com: Commitment; Expl: Exploration; SWL: Satisfaction with life; Job Sat: Job Satisfaction; Gen: Job satisfaction general; Char: Job satisfaction characteristics.
* $p < .05$; ** $p < .01$; *** $p < .001$.

TABLE 2
 Hierarchical Regression Model for Core Self-Evaluations and Vocational Identity
 Achievement Predicting Life Satisfaction in Study 1, $N = 310$

	<i>B</i>	<i>SD(B)</i>	<i>Beta</i>	R^2
<i>Model 1</i>				
Gender	.699	.832	.064	
Nationality	.682	1.115	.048	
Schooltype	.663	.883	.059	.012
<i>Model 2</i>				
Gender	-.183	.740	-.017	
Nationality	.740	.978	.052	
Schooltype	.189	.777	.017	
CSE	2.676	.368	.491***	.244***
<i>Model 3</i>				
Gender	-.225	.738	-.020	
Nationality	.542	.983	.038	
Schooltype	.319	.779	.028	
CSE	2.570	.373	.471***	
VID	.350	.235	.102	.254***

Note: Coding: Gender: 0 = female, 1 = male; Nationality: 0 = Swiss, 1 = other, Schooltype: 0 = basic requirements, 1 = advanced requirements; CSE: Core self-evaluations; VID: Vocational identity achievement.
 * $p < .05$; ** $p < .01$; *** $p < .001$.

self-evaluations would relate significantly to life satisfaction. As expected, vocational identity achievement also related positively to life satisfaction. However, the results of the regression models further showed that vocational identity achievement did not mediate the effect of core self-evaluations on life satisfaction, as expected. Conversely, the positive relation of vocational identity achievement and life satisfaction disappeared once core self-evaluations were taken into account.

STUDY 2

Participants

Sample 2 consisted of 150 students assessed at the end of 11th grade in vocational education and training. The majority (75%) were girls. Their ages ranged from 16 to 20 years ($M = 17.4$, $SD = 1.0$). One hundred and twelve (74.7%) were Swiss nationals; the other students were of nationalities mostly from Western Europe and South-Eastern Europe. Of the foreign nationals, 35 per cent were born in Switzerland. Eighty students (53.3%) attended vocational education and training as office clerks, and 34 per cent attended as retail salespersons. Finally, 12 per cent attended as assistant nurses.

Measures

Core Self-Evaluations. Neuroticism (Cronbach's alpha = .87), self-esteem (Cronbach's alpha = .85), generalised self-efficacy (Cronbach's alpha = .68), and locus of control (Cronbach's alpha = .86) were assessed with the same scales as described in Study 1. A factor score was calculated with principal axis functioning to represent the latent construct of core self-evaluations, which confirmed the existence of one underlying factor ($R^2 = .49$).

Vocational Identity Achievement. Again, vocational identity achievement was measured by the degree of career identity commitment and the reported career identity exploration. (a) *Commitment* was assessed with the German-language adaptation of the Vocational Identity Scale (Holland, Daiger, & Power, 1980; Jörin, Stoll, Bergmann, & Eder, 2004). The scale consists of 10 items, with which students can indicate how much the statements (e.g. "I'm not sure yet which occupations I could perform successfully") resemble their personal situation ranking from (1) *not at all* to (5) *completely*. Answers were provided on a 5-point Likert scale; higher scores indicated greater vocational identity commitment. The measure is well established in the international literature (Holland, Johnston, & Asama, 1993), and studies with the German-language version have shown that the scale has positive correlations with career decidedness, career planning, and career exploration among adolescents (Hirschi & Läge, 2007). The final scale score was reversed so that higher scores represent greater commitment. Cronbach's alpha was .78. Because participants in this study were already working (recall that those in Study 1 were still in school), a different decidedness and commitment scale was selected in this study to increase content and face validity. However, Hirschi and Läge (2007) reported that the two applied scales showed a correlation of .83. Thus, both studies basically measure the same construct. (b) *Career exploration* was assessed with the same scale as in Study 1 (Cronbach's alpha = .88). As in Study 1, a score for vocational identity achievement was calculated by taking the linear combination of the standardised decidedness and exploration measures, with higher scores indicating more vocational identity achievement.

Job Satisfaction. Two basic approaches to measure job satisfaction can be identified in the literature and were applied in the present study. The first measure addressed general job satisfaction with a single-item measure, asking the participants to rate their thoughts on a 7-point Likert scale ranging from (1) *extremely dissatisfied* to (7) *extremely satisfied* for how satisfied they were in general with their current job. Although one-item measures have several psychometric shortcomings, assessing general job satisfaction this way is well established in the literature and, in fact, a meta-analysis attests to the

approach's satisfactory construct validity and reliability (Wanous, Reichers, & Hudy, 1997). The second approach applied in the study was to assess job satisfaction as the composite of satisfaction with several specific job characteristics (Neuberger & Allerbeck, 1978). Participants were asked to indicate their satisfaction with work conditions, possibilities for professional advancement, organisational leadership, work colleagues, content of work, and supervisors. Cronbach's alpha for the six-item scale was .84. A composite score for each student was calculated applying principal components analysis based on the six items, which indicated that one common factor explained 57.3 per cent of the variance in satisfaction among single-job aspects. To obtain a measure for overall job satisfaction, a factor score based on the two job satisfaction measures was calculated by applying principal axis functioning, which confirmed that one factor underlies job satisfaction ($R^2 = .83$).

Life Satisfaction. Satisfaction with life was assessed with the same scale as in Study 1 (Cronbach's alpha = .80).

Results

Correlations among the Measures. As reported in Table 1, the factor score for core self-evaluations related positively to vocational identity achievement and both its commitment and exploration dimensions. Self-esteem and generalised self-efficacy were positively related to career exploration, whereas all dimensions related significantly to commitment. Contrary to expectations, core self-evaluations and its single dimensions were not significantly related to the two measures of job satisfaction or their factor score. However, as expected, CSE and all of its dimensions except self-esteem related significantly to life satisfaction. Vocational identity achievement was positively related to the measure of general job satisfaction but not the overall job satisfaction factor score or the job characteristics satisfaction component score. However, the identity commitment dimension related positively to all three job satisfaction measures. Vocational identity achievement, specifically its commitment dimension, related positively to life satisfaction. Finally, life satisfaction related significantly and positively to all three measures of job satisfaction.

Evaluation of the Hypotheses. The four steps to assess mediation effects according to Baron and Kenny (1986) were applied to test the hypothesis that vocational identity achievement would partially mediate the relation of core self-evaluations to job satisfaction and life satisfaction. In all models, the effects of gender, nationality, and type of VET were controlled. In addition, the effects of job satisfaction on life satisfaction were controlled because job satisfaction can be a major source of life satisfaction (Judge et al., 2005).

First, we investigated whether core self-evaluations significantly predicted job satisfaction, but H2 was not confirmed, $\beta = .121$, $p = .160$, $\Delta R^2 = .013$. However, as expected, CSE predicted life satisfaction above and beyond the effects of the socio-demographic variables and job satisfaction, confirming H1, $\beta = .300$, $p < .001$, $\Delta R^2 = .082$. Second, we established that core self-evaluations significantly predicted vocational identity achievement, confirming H3, $\beta = .426$, $p < .001$, $\Delta R^2 = .167$. Third, we investigated whether vocational identity achievement would predict job satisfaction and life satisfaction while controlling for the socio-demographic variables and the effect of job satisfaction on life satisfaction. The results did not confirm H6 with identity not predicting job satisfaction, $\beta = .101$, $p = .272$, $\Delta R^2 = .008$, but confirmed H4 regarding life satisfaction, $\beta = .420$, $p < .001$, $\Delta R^2 = .142$. Because neither core self-evaluations nor identity predicted job satisfaction, the conditions for mediation were not met and H7 regarding the mediating effect of identity was consequently disconfirmed. Finally, we established that identity would predict life satisfaction when core self-evaluations were included as a predictor of the outcome variables, $\beta = .347$, $p < .001$, $\Delta R^2 = .078$. The results showed that the relation of CSE to life satisfaction was smaller ($\beta = .153$) and not significant ($p = .066$) when taking the effect of identity into account, thus not supporting H5 with respect to partial mediation. Instead, this indicated full mediation. In addition, we conducted a Sobel (1982) test to evaluate mediation. Confirming the previous results, the test indicated no significant mediation effect for job satisfaction ($z = 0.52$, $SD = 0.06$, $p = .604$), but it did indicate such an effect for life satisfaction ($z = 3.32$, $SD = 0.21$, $p < .001$). The results of the final models are shown in Table 3.

Brief Discussion of Study 2

The results supported that vocational identity achievement mediated the effects of CSE on life satisfaction. However, contrary to expectations, it was a full rather than partial mediation of the effects of CSE on the outcome measure. Also contrary to expectations, neither identity nor self-evaluations were significantly related to job satisfaction, and consequently, no mediation effect could be established.

GENERAL DISCUSSION

The present paper investigated a model which proposes that vocational identity achievement partially mediates the relationship between core self-evaluations and job and life satisfaction. Two studies among Swiss adolescents in eighth (Study 1) and eleventh (Study 2) grade were conducted. Participants in Study 1 faced the transition from school to vocational

TABLE 3
 Hierarchical Regression Model for Core Self-Evaluations and Vocational Identity
 Achievement Predicting Job and Life Satisfaction in Study 2, $N = 150$

	<i>Job satisfaction</i>				<i>Life satisfaction</i>				
	<i>B</i>	<i>SD(B)</i>	<i>Beta</i>	<i>R</i> ²	<i>B</i>	<i>SD(B)</i>	<i>Beta</i>	<i>R</i> ²	
<i>Model 1</i>					<i>Model 1</i>				
Gender	-.28	.19	-.12		Gender	1.95	.89	.18*	
Nationality	-.03	.19	-.01		Nationality	-.42	.90	-.04	
Office	.10	.18	.05		Office	-.24	.84	-.03	
Nurse	-.03	.28	-.01	.02	Nurse	2.08	1.30	.14	.05
<i>Model 2</i>					<i>Model 2</i>				
Gender	-.34	.20	-.15		Gender	2.34	.85	.22**	
Nationality	-.05	.19	-.02		Nationality	-.38	.86	-.04	
Office	.10	.18	.05		Office	-.38	.80	-.04	
Nurse	-.09	.28	-.03		Nurse	2.12	1.25	.15	
CSE	.12	.09	.12	.03	Job satisfaction	1.38	.37	.29***	.14***
<i>Model 3</i>					<i>Model 3</i>				
Gender	-.35	.20	-.15		Gender	1.52	.84	.14	
Nationality	-.05	.19	-.02		Nationality	-.63	.82	-.06	
Office	.11	.18	.06		Office	-.46	.77	-.05	
Nurse	-.13	.30	-.04		Nurse	1.41	1.20	.10	
CSE	.10	.10	.10		Job satisfaction	1.22	.36	.26***	
VID	.05	.10	.05	.03	CSE	1.42	.37	.30***	.19***
					<i>Model 4</i>				
					Gender	1.35	.80	.13	
					Nationality	-.69	.78	-.06	
					Office	.06	.74	.01	
					Nurse	-.02	1.20	.00	
					Job satisfaction	1.17	.34	.25***	
					CSE	.73	.39	.15	
					VID	1.12	.28	.35***	.26***

Note: Coding Gender: 0 = female, 1 = male; Nationality: 0 = Swiss, 1 = other; Office, Retail, Nurse: 0 = no, 1 = yes; CSE: Core self-evaluations; VID: Vocational identity achievement.

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

education and training (VET) or continued education. They stemmed from two school tracks, one with advanced and one with basic scholastic requirements. Study 2 participants were in VET, facing the transition from VET to work. They were engaged in three different VETs: namely, office work, retail sales, and nursing. The results of both studies confirmed the assumption that controlling for the socio-demographic variables of gender, nationality, and attended school track, positive core self-evaluations relate positively to vocational identity achievement, particularly to its commitment dimension. This finding is in line with previous studies that have shown a positive relationship

between different core self-evaluation traits and identity achievement (e.g. Crocetti, Rubini, Luyckx, & Meeus, 2008; Lounsbury et al., 2007) and provides further support for the notion that the ability to reach a clear sense of identity might itself be a personality characteristic (Meeus, Iedema, Helsen, & Vollebergh, 1999). The study also confirmed a number of other research studies mainly conducted with college students and adults (e.g. Judge et al., 1998) by finding significant relations between core self-evaluations and life satisfaction among the adolescent participants.

The major contribution of the study was that vocational identity achievement could be established as a mediating variable for life satisfaction, partially explaining the effects of CSE on well-being during adolescence. Vocational identity related positively to life satisfaction, which confirms other studies that have shown a positive relationship between identity achievement and well-being (Luyckx, Schwartz, Goossens, & Pollock, 2008). However, the relation with core self-evaluations was different for the two study samples. Among the younger sample in eighth grade in Study 1, the effects of vocational identity achievement were no longer significant after the direct effects of CSE on life satisfaction were taken into account. In contrast, among the sample in vocational education and training, identity achievement fully mediated the relation of core self-evaluations and life satisfaction. The results suggest that core self-evaluations have a greater effect on life satisfaction in early adolescence, while having reached an achieved sense of one's vocational identity becomes a more central component to well-being for adolescents actually working in a vocation. This suggests that different processes linking core self-evaluations, vocational identity, and well-being are at work depending on whether adolescents are actually working or are still in school.

However, the expected relationship among core self-evaluations, vocational identity achievement, and job satisfaction was not supported. This contradicts a number of previous studies that have shown significant relationships between personality characteristics and job satisfaction (Judge et al., 2002b). Possibly, job satisfaction for Swiss students in VET is more dependent on whether they are able to work in their aspired vocation. Normally, processes of attraction-selection-attrition (Schneider, 1995) restrict the variance of correspondence between aspired and actual occupation within a given group of workers. These processes are expected to lead to the outcome that most employees who are working in a given occupation in fact like doing so. However, research on the transition from mandatory school to vocational education and training in Switzerland has shown that many constraints, such as availability, scholastic requirements, gender, and nationality, affect which vocation a student eventually pursues (Haeberlin, Imdorf, & Kronig, 2005). This implies a restricted and circumscribed kind of career choice and vocational transition for many adolescents, which could mean that a number of

adolescents are employed in vocations that are not indicative of their real aspirations. The results suggest the necessity for future studies to provide more knowledge about the specific circumstances under which personality dispositions and vocational identity achievement affect job satisfaction evaluations.

Limitations and Conclusions

One limitation of this study is that only cross-sectional and self-reported measures were available. This prevents making causal inferences about the identified relationships. Future studies could apply longitudinal designs to investigate some of the processes which might be involved in producing relations among the assessed variables. The use of all self-report measures introduced a shared method bias, which can magnify the relation among the measures. It is possible to post-hoc control for shared method bias in structural equation modeling by introducing a latent method factor (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, this approach has the limitation that it might extract meaningful variance among measures that is not due to shared method bias. For the present study, this approach was not deemed feasible because such variance might indeed represent meaningful information such as a general positive personal disposition, which is related to core self-evaluations, vocational identity achievement, career self-efficacy, and life satisfaction. Future research could therefore try to apply other measures to reduce shared method bias, such as multi-method approaches. Another limitation is that the results are based on convenience samples, and participants in Study 2 were predominantly female, which might limit the generalisability of the study.

Despite these limitations, the present study suggests that career meta-competencies such as identity do mediate the effects of more basic personality variables on well-being outcomes (Hall, 2002). Specifically, the study suggests that core self-evaluations comprise an important construct to understand personality effects on career development and well-being during adolescence. It also implies that research investigating the relationship between core self-evaluation and vocational identity as a potential mediator of some of the previously reported effects of core self-evaluations on career variables seems to be a fruitful avenue for future research. For practice, the results imply that helping students achieve a sense of vocational identity in middle adolescence would be important in order to increase their well-being above and beyond the effects of relatively stable traits. This is especially important because core self-evaluations are conceived as a relatively stable construct (Judge et al., 2002a) and are thus not well suited for career interventions. However, vocational identity achievement can be systematically advanced through career counseling and career interventions (Meijers, 1998;

Raskin, 1989) which would provide a valuable way to not only promote career development but also increase well-being among adolescents.

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