

**Toni Babarović  
Iva Šverko<sup>1</sup>**

Institute of Social  
Sciences Ivo Pilar,  
Zagreb

## VOCATIONAL DEVELOPMENT IN ADOLESCENCE: CAREER CONSTRUCTION, CAREER DECISION-MAKING DIFFICULTIES AND CAREER ADAPTABILITY OF CROATIAN HIGH SCHOOL STUDENTS<sup>2</sup>

This study investigated the vocational development of Croatian high school students. High school students start planning their careers in early adolescence, and they have to make important career decisions at the end of the secondary school. Therefore, we compared the first and the fourth graders ( $n_{1st} = 309$ ,  $n_{4th} = 492$ ) in several aspects of their career development. Participants completed paper-and-pencil measures regarding the realization of career construction tasks (SCCI), career decision-making difficulties (CDDQ) and career adaptability (CAAS). Results showed appropriate reliability and structural validity of all instruments. The senior students had a somewhat higher level of career maturity measured by the Occupational Exploration, Career Decision-Making, and Skilling and Instrumentation subscales of SCCL. Small age differences were observed in career decision-making difficulties (Lack of Readiness, Lack of Information, and Inconsistent Information subscales), where the junior students expectedly expressed more difficulties. The only increase in career adaptability was found for the Concern subscale, showing that career adaptability did not change much during the early-to-middle adolescence shift. Additionally, we did not find a considerable moderating effect of gender on age difference in career maturity, indicating that the same problem equally affected boys and girls. The observed progress in vocational development during secondary school was generally small, both for boys and girls. Therefore, it is very important to foster vocational development of all students by implementing broad and comprehensive career education and guidance programs in regular secondary school curriculum.

<sup>1</sup> Author's address:  
iva.sverko@pilar.hr.

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The influence of new approaches on the field of career psychology has become obvious during the last decade. Traditional trait-and-factor theories (Dawis & Lofquist, 1984; Holland, 1959; Parsons, 1909) were integrated into the developmental perspective (Savickas, 2002; Super, 1953, 1957). Today a combination between differential and developmental approaches is favored, and career is seen as a sequence of different choices that are facilitated with personal lifelong vocational development. Due to the impact of the global economy on careers in the 21<sup>st</sup> century, individuals nowadays face strong demands to cope with lifelong job changes without losing their sense of self and social identity (Savickas, 2013). Career construction theory (Savickas, 2013) emphasizes the interpretative and interpersonal processes through which individuals impose meaning and direction on their vocational behavior. Career construction theory places the central focus on career adaptability, or the ability to deal with demanding vocational transitions and unpredictable adjustments prompted by changes in the world of work (Savickas, 1997, 2013).

In contemporary vocational psychology, a special attention is placed on vocational development and the facilitative force of career self-guidance competencies. Vocational development is a readiness to accomplish vocational development tasks typical for a particular stage in a life span, and is frequently seen as career choice certainty or career decision-making readiness. Career self-guidance competencies are personal strengths that facilitate making career decisions, as well as enhance career exploration and vocational identity conceptualization. They refer to various behaviors and skills that appear when people get engaged in active exploration of their future career, such as showing concern for the future, or actively preparing for it.

### **Vocational development and career self-guidance competencies**

Vocational development, or a sequence of life stages associated with particular career development tasks, is one of the crucial determinants of positive career transition outcomes. According to Super (1953, 1957), vocational development starts with the period of Growth (4–13 years) and finishes with the period of Disengagement (65 and older). However, although all stages of career development are important for one's career, probably the most turbulent is the Exploration stage (14–24 years), which is typical for adolescents and characterized by school-to-work transition (Blustein, Juntunen, & Worthington, 2000). During years of the exploration stage, adolescents explore their preferences and capabilities, and collect information about different occupations and educational programs. They conceptualize their vocational identity and make important career decisions that will allow them to actualize themselves in the world of work. Good accomplishment of developmental tasks leads adolescents to move from occupational daydreams to employment in a job (Savickas, 2002).

Indicators of vocational development can be represented as a number of completed vocational tasks that are relevant for a particular developmental stage (Savickas, 2002). The Student Career Construction Inventory (SCCI: Savickas & Porfeli, 2012c) was developed to measure the realization of five career developmental tasks:

self-concept crystallization, occupational exploration, career decision making, skilling and instrumentation, and transition from school to work. The accomplishment of these tasks reflects the overall degree of vocational development. People with a greater degree of vocational development have realized more career construction tasks and are more likely to achieve favorable career transition outcomes.

Further, people with a higher level of vocational development also face less career decision-making difficulties (Gati, 2013). Career decision-making difficulties can arise due to a lack of readiness to make career decisions, lack of information and lack of consistent information (Gati, Krausz, & Osipow, 1996). People who are facing greater difficulties are unmotivated to make career decisions and lack important information necessary to decide about their future options. They feel disadvantage in the career construction process, and therefore have more problems in career transition. Gati et al. (1996) developed the Career Decision-Making Difficulties Questionnaire (CDDQ) to grasp the hierarchical taxonomy of career decision-making difficulties.

Another important career self-guidance competence is career adaptability, or the individual's ability to cope with tasks, transitions, and traumas in one's career (Savickas, 1997). Career adaptability reflects resources and capacities that a person can rely on in the process of career construction (Savickas & Porfeli, 2012b). These resources are identified as concern with personal career, control over the preparation for a vocational future, curiosity for exploring possible career identities and career paths, and confidence in pursuing career development tasks (Savickas, 2013). The international research team has developed the Career Adapt-Abilities Scale (CAAS: Savickas & Porfeli, 2012a), which measures the following career adaptability resources: concern, control, curiosity, and confidence, which are further aggregated into the global dimension of career adaptability.

In the recently published Handbook of Vocational Psychology, the level of vocational development, career adaptability and career decision-making competencies are considered crucial for good career transition outcomes (Gati, 2013; Savickas, 2013), and therefore fostering the development of these characteristics is essential in adolescence.

### **Career construction in adolescence**

The tipping point of the exploration phase for Croatian adolescents is the age of 18 when they finish secondary school. At that age students have to decide upon suitable university study or adequate job to engage in, and their career decisions will strongly direct their future career paths.

Students in the first grade are at the beginning of their secondary education, and they have just accomplished a very important career construction task, as they have enrolled a secondary school. They are concerned with their current adaptation to the new school and new obligations, and not with their future career choices. In contrast, students in the final grade of secondary school are focused on the forthcoming career transition. In January they begin applying for under-

graduate programs of their choice, and in spring they take national exams if they are willing to study. Those who are planning to find a job have to start exploring employment opportunities very early in order to become recruited.

Therefore, students gradually become more focused on making career choices during their secondary education. They form their vocational identity and explore different career options. As they accomplish more career construction tasks, their degree of vocational development increases. It is widely known that career maturity increases with age, and particularly with transition from lower to higher grades (Babarović & Šverko, 2011; Hartung, Porfeli, & Vondracek, 2005; Neice & Bradley, 1979; Post-Kramer, 1987; Wallace-Broschious, Serafica, & Osipow, 1994). In fact, career context and related demands direct vocational development even more than maturation (Crites, 1978; Gotfredson, 1981; Guthrie & Herman, 1982; Hall, 1963).

However, it is likely that different trends are typical for career adaptability. Career adaptability is related to vocational development, but at the same time it is a more general trait. It refers to a broad range of behaviors, not just those in the area of career construction. Facets of adaptability, as measured by CAAS, are more stable and fundamental constructs, and therefore they are not so easily directed by career context.

Furthermore, the studies have shown that female students systematically express a higher level of career maturity and have more knowledge about the world of work than their male peers (Alvi & Khan, 1983; Babarović & Šverko, 2011; Creed & Patton, 2003; Herr & Enderlein, 1976; Lee, 2001; Luzzo, 1995; Omvig & Thomas, 1997; Rojewski, Wicklein, & Schell, 1995). It is also possible for gender to moderate changes in vocational development that occur in adolescence. It is possible that different vocational development trends may be observed for secondary school girls and boys.

This paper explores vocational development trends during secondary education. In samples of the first and the fourth grade secondary school students (15 and 18 year- olds), we have observed possible changes in the degree of vocational development, difficulties in career decision-making and career adaptability, taking into account eventual gender moderation effects.

## Method

### Participants and procedure

The participants of this study were students enrolled in the first grade and in the final grade of secondary school. After contacting school principals, testing was organized on the school level, and all students from the first and the final grade were invited to participate in the anonymous survey which was scheduled during their regular classes. Participation was voluntary and students were offered feedback on their characteristics as an incentive for their participation. All the students who were present in the classroom at the day of administration agreed to take part in the survey. In total, 309 first grade students (37.22% boys) and 492 fourth grade

students (36.99% boys) participated in the survey. In order to ensure anonymity of their participation, students who wanted to receive the feedback were instructed to write down a password on their questionnaire. They were afterwards instructed to contact us by an e-mail, referring to their password in order to access their results and feedback. Only a minority of students requested feedback (approximately 15% in both age groups). The first grade students were predominantly 15 years old, and the fourth grade students were predominantly 18 years old. High schools were chosen to represent various fields of work and levels of prestige.

## Instruments

**The Career Adapt-Abilities Scale (CAAS: Savickas & Porfeli, 2012b).** CAAS measures four career adaptability resources, and therefore consists of four scales, as follows: 1. concern with personal future and career (Concern, e.g. "Thinking about what my future will be like."), 2. feeling of personal control over one's vocational future (Control, e.g. "Making decisions by myself."), 3. curiosity about different future options and possible vocational identities (Curiosity, e.g. "Becoming curious about new opportunities."), and 4. confidence in pursuing one's aspirations (Confidence, e.g. "Performing tasks efficiently."). Four career adaptability facets are further combined into general career adaptability. The CAAS scale comprises of 24 items in total (six per each facet). Respondents have to rate how strongly they have developed each of the abilities by using the following 5-point response scale from 1 = *not strong* to 5 = *the strongest*. Previous studies have shown excellent validity and reliability estimates in different international samples (Savickas & Porfeli, 2012), as well as in one Croatian sample (Šverko & Babarović, 2016). In this study, the reliability of the CAAS total score was excellent in both samples, while the reliability of CAAS facets was good (Table 3).

**The Career Decision-making Difficulties Questionnaire - Revised (CDDQ-R: Gati, Krausz, & Osipow, 1996).** CDDQ-R reflects theoretical taxonomy of career decision-making difficulties. The taxonomy includes three major categories of difficulties, which converge to form general career decision-making difficulties, and which are also further divided into 10 specific categories. The major categories are: 1. Lack of Readiness (includes lack of motivation to engage in career decision-making process, general indecisiveness concerning all types of career decision making, and dysfunctional myths about career decision making; e.g. "It is usually difficult for me to make decisions."), 2. Lack of Information (includes lack of knowledge about the steps in career decision-making, lack of information about the self, lack of information about the occupations, and lack of information about the ways of obtaining information; e.g. "I find it difficult to make a career decision because I do not have enough information about my abilities, for example: numerical ability, verbal skills.") and 3. Inconsistent Information (includes unreliable information, internal conflicts within the individual, and external conflicts with other people's opinions; e.g. "I find it difficult to make a career decision because people who are important to me [such as parents or friends] do not agree with the career options I am consider-

ing.”). The CDDQ comprises 32 items that reflect career decision-making difficulties, and two validity items that are not used in scoring. The participants have to rate on a 9-point scale the degree to which each difficulty describes them (from 1 = *does not describe me* to 9 = *describes me well*). Scores are calculated as mean scores of responses, and higher scores indicate greater career decision-making difficulties. Previous studies have shown good validity and reliability of CDDQ (e.g. Albion & Fogarty, 2002; Gati et al., 1996; Gati & Saka, 2001; Mau, 2004; Tien, 2005), also in Croatian samples (Babarović & Šverko, 2016). In this study, the reliability of the CDDQ total score was excellent in both samples, while the reliability of CDDQ subscales ranged from acceptable to good (Table 3). The lowest reliability was found for the CDDQ Lack of Readiness subscale in both samples, indicating lower internal consistency of the scale. However, the reliability of CDDQ scales was in accordance with reliability estimates obtained on the original CDDQ-R, where median scale reliability was .72, and reliability of the total CDDQ score was .90 (Amir & Gati, 2006). It is important to note that the reliability of scales in this study was calculated on a smaller number of items, since the Dysfunctional Myths subscale was excluded due to the results of CFA, which were presented later. For the number of included items please refer to the Results section and Table 3.

**The Student Career Construction Inventory (SCCI: Savickas & Porfeli, 2012c).** SCCI is a measure of degree of vocational development. It measures the realization of five career development tasks that adolescents have to accomplish, and therefore consists of five subscales: 1. Self-Concept Crystallization (e.g. “Recognizing my talents and abilities.”), 2. Occupational Exploration (e.g. “Learning about different types of jobs.”), 3. Career Decision Making (e.g. “Planning how to get into the occupation I choose.”), 4. Skilling and Instrumentation (e.g. “Beginning the training I need for my preferred job.”), and 5. Transition from School to Work (e.g. “Making plans for my job search.”). It is a Likert-type instrument consisting of 25 items reflecting various career construction activities. Participants have to indicate how much thinking or planning they have done about each activity using a 5-point response scale (from 1 = *I have not yet thought much about it* to 5 = *I have already done this*). Along with scores that reflect the accomplishment of five career construction tasks, it also yields a total score which represents the overall degree of vocational development. Previous studies have suggested adequate psychometric properties of SCCI (Rocha & Guimarães, 2012; Savickas & Porfeli, 2012c), which has been also confirmed in Croatia (Černja, Šverko, & Babarović, in press). In this study, the reliability of the SCCI total score was excellent in both samples, while the reliability of SCCI subscales ranged from acceptable to good (Table 3).

## Results

Confirmatory factor analysis (CFA) was used to examine whether the original structure of the assessed constructs can be applied to the samples of the first grade and the fourth grade Croatian students. The Career Adapt-Ability Scale was assumed to have a four-factor structure with interrelated latent variables. The model fit indi-

cators for CAAS showed acceptable fit in both samples, especially if we looked at the absolute fit indices as a Root mean square error of approximation (RMSEA), or as a Chi-square and degrees of freedom ratio (Table 1). RMSEA lower than .07 (Steiger, 2007) and  $\chi^2/df$  ratio lower than 3:1 (Kline, 2005) represented a good fit. However the relative fit indices (CFI and NFI) for the CAAS model were little bit below the cut-off point for the acceptable model fit of .90 (Hu & Bentler, 1999).

For the Career Decision-making Difficulties Questionnaire model, data fit was tested on the original interrelated three-factor structure. Examining the factor loadings of each item on its main factor, it was indicated that the Dysfunctional Myths subscale had a low and non-salient loading on the conjectured factor. This finding was already observed in other Croatian samples (Babarović & Šverko, 2016), as well as for the original scale (Gati et al., 1996). Therefore, the Dysfunctional Myths scale was excluded from the CDDQ model. The modified structural model of CDDQ showed good model fit in the fourth grade by all parameters, and acceptable fit in first grade by relative fit indices.

The data obtained for the Students Career Construction Inventory were tested against the expected five-factor model with interrelated factors. The absolute fit indices indicated adequate model fit in the both samples, while the incremental fit indices were a little below the cut-off criteria, and therefore suggested mediocre fit.

It should also be noted that we consulted the modification indices to improve the model-data fit of CDDQ and SCCI. We proposed the existence of a correlation between one pair of within-factor error terms in CDDQ, and between eight pairs of within-factor error terms in SCCI. The interrelations of error terms in SCCI were especially pronounced within the Occupational Exploration scale. Four correlations between error terms were proposed for the first five items of the subscale. Evidently, those items shared a substantial amount of common variance which was unexplained by the conjectured factor. These items had common content and wording, which was the likely cause of exogenous common variability.

Table 1  
*Model fit indices for the single group models*

	$\chi^2$	<i>df</i>	$\chi^2/df$	NFI	CFI	RMSEA
The first grade						
CAAS	561.13	248	2.26	.800	.876	.065
CDDQ	85.78	23	3.73	.914	.935	.094
SCCI	572.32	257	2.23	.857	.915	.063
The fourth grade						
CAAS	787.37	248	3.17	.854	.895	.067
CDDQ	48.65	23	2.12	.973	.985	.048
SCCI	823.50	257	3.20	.823	.870	.067

*Note.* CAAS = Career Adapt-Abilities Scale; CDDQ = Career Decision-making Difficulties Questionnaire; SCCI = Student Career Construction Inventory.

In order to access measurement invariance between two age samples, a multi-group confirmatory factor analysis (MGCFAs) was performed (Table 2). There was tested the typical sequence of models, nested and organized in a hierarchical ordering, by adding the parameter restrain one at a time (Cheung & Rensvold, 2002; Vandenberg & Lance 2000). Firstly the configural invariance was tested, followed by metric, and scalar invariance. If two nested models showed a decrease in the value of CFI or NFI greater than or equal to .01, or an increase of RMSEA greater than or equal to .01, the more restrictive model should be rejected (Chen, 2007; Cheung & Rensvold, 2002).

According to our MGCFAs results (Table 2), full measurement invariance was confirmed for CAAS and SCCI, allowing the latent means comparison across groups. For the CDDQ the configural and metric invariance were achieved, but the drop of CFI and NFI, and growth of RMSEA for the scalar invariance test pointed to possible problems in group comparison of latent means. In this paper we did not strive to establish the partial measurement invariance of the CDDQ, so we proceeded to group comparison, interpreting the age group differences in CDDQ scales with caution.

Table 2

*Model fit indices for the multi-group models (the first grade and the fourth grade groups)*

	Invariance level	$\chi^2$	<i>df</i>	$\chi^2/df$	$\Delta\chi^2$	$\Delta df$	NFI	CFI	$\Delta CFI$	RMSEA	$\Delta RMSEA$
CAAS	configural	1348.55	496	2.72			.836	.889		.047	
	metric	1375.41	516	2.67	26.86	20	.832	.888	.001	.046	-.001
	scalar	1378.88	520	2.65	3.47	4	.832	.888	.000	.046	.000
CDDQ	configural	143.48	46	2.92			.952	.968		.049	
	metric	150.95	52	2.90	16.47*	6	.946	.964	.004	.049	.000
	scalar	258.69	61	4.24	107.94*	9	.908	.928	.036	.064	.015
SCCI	configural	1395.86	514	2.72			.839	.890		.046	
	measurement	1417.95	534	2.66	22.08	20	.836	.890	.000	.046	.000
	scalar	1481.88	549	2.70	63.93*	15	.826	.884	.006	.046	.000

*Note.* CAAS = Career Adapt-Abilities Scale; CDDQ = Career Decision-making Difficulties Questionnaire; SCCI = Student Career Construction Inventory.

\* $p < .01$ .



Table 3  
*Inter-correlations and reliability of CAAS, CDDQ, and SCCI scales in the first grade and the fourth grade samples*

	Concern	Control	Curiosity	Confidence	CAAS total	Lack of Readiness	Lack of Information	Inconsistent Information	CDDQ total	Self-Concept Crystallization	Occupational Exploration	Career Decision Making	Skilling and Instrumentation	Transition from School to Work	SCCI total	Reliability (Alpha)
Concern (6)		.35	.51	.43	.77	-.22	-.19	-.07	-.20	.48	.40	.40	.37	.26	.49	.83
Control (6)	.49		.33	.49	.70	-.33	-.37	-.33	-.42	.39	.17	.26	.21	.14	.30	.77
Curiosity (6)	.58	.46		.48	.78	-.07	-.05	.07	-.04	.40	.45	.24	.24	.21	.41	.79
Confidence (6)	.52	.60	.55		.78	-.22	-.20	-.14	-.22	.49	.40	.29	.30	.20	.44	.81
CAAS total (24)	.81	.79	.81	.82		-.27	-.26	-.15	-.28	.58	.47	.39	.37	.27	.54	.89
Lack of Readiness (6)	-.30	-.39	-.17	-.38	-.38		.58	.45	.75	-.25	-.20	-.38	-.20	-.21	-.31	.60
Lack of Information (10)	-.23	-.33	-.13	-.31	-.31	.56		.53	.92	-.33	-.16	-.43	-.28	-.25	-.36	.90
Inconsistent Information (12)	-.25	-.39	-.12	-.30	-.33	.53	.67		.77	-.19	-.02	-.19	-.14	-.11	-.16	.79
CDDQ total (28)	-.28	-.41	-.14	-.37	-.37	.73	.92	.86		-.35	-.16	-.43	-.28	-.24	-.36	.91
Self-Concept Crystallization (7)	.53	.46	.45	.42	.58	-.23	-.27	-.26	-.29		.54	.59	.54	.39	.79	.81
Occupational Exploration (7)	.40	.21	.48	.31	.44	-.13	-.14	-.07	-.12	.43		.56	.61	.53	.84	.73
Career Decision Making (5)	.53	.42	.40	.36	.53	-.28	-.36	-.30	-.37	.57	.44		.67	.58	.84	.83
Skilling and Instrumentation (4)	.48	.42	.39	.42	.53	-.27	-.33	-.27	-.33	.49	.44	.67		.67	.83	.75
Transition from School to Work (2)	.17	.20	.20	.18	.23	-.08	-.10	-.02	-.08	.27	.30	.32	.42		.71	.72
SCCI total (25)	.59	.46	.54	.46	.64	-.26	-.32	-.25	-.32	.78	.77	.81	.77	.53		.93
Reliability (Alpha)	.85	.81	.83	.85	.92	.63	.90	.84	.92	.75	.73	.83	.75	.72	.89	

Note. The first grade above diagonal; the fourth grade below diagonal; correlations above .11 or .10 are significant in the first grade and the fourth grade respectively ( $p < .05$ ); a number of items per scale is in parenthesis. CAAS = Career Adapt-Abilities Scale; CDDQ = Career Decision-making Difficulties Questionnaire; SCCI = Student Career Construction Inventory.

Correlations between explored career-related constructs are presented in Table 3. The students' level of career construction correlated highly with career adaptability, both in the senior and the junior sample. Observed results indicated that career adaptability and career construction shared a substantial amount of common variance, as students with a higher level of career adaptability realized a greater number of career construction tasks, therefore expressing somewhat higher level of career maturity. On the other hand, career adaptability and career construction were less related to career decision-making difficulties. Correlations between career decision-making difficulties and other scales were lower and expectedly negative. The negative correlations between CDDQ and CAAS were weak in the junior sample, and moderate in the senior sample, while negative correlations between CDDQ and SCCI were moderate. Low to moderate negative correlations between these constructs indicated that students with higher career adaptability and higher accomplishment of career construction tasks faced a bit less career decision-making difficulties. Therefore, the results of the correlational analysis showed that career adaptability and career construction were firmly interwoven constructs which were close in the nomological net, while career decision-making difficulties were not so intimately related to them. A similar pattern of correlations was also found between the subscales of the particular instruments.

In order to grasp age differences in career adaptability, career decision-making difficulties, and career construction, we have conducted three separate ANOVAs on the total scores of CAAS, CDDQ and SCCI, and three MANOVAs on groups of subscales belonging to each of the three instruments. Multivariate tests for four career adaptability subscales (Wilks'  $\lambda = .956$ ,  $F(4, 780) = 8.91$ ,  $p < .001$ ,  $\eta^2 = .044$ ), three career decision-making subscales (Wilks'  $\lambda = .938$ ,  $F(3, 720) = 15.90$ ,  $p < .001$ ,  $\eta^2 = .062$ ), and five career construction subscales (Wilks'  $\lambda = .914$ ,  $F(5, 742) = 14.04$ ,  $p < .001$ ,  $\eta^2 = .086$ ) revealed the existence of age differences in each of the three groups of variables, and suggested the need for further group comparisons at the univariate level. The univariate group comparisons are presented in Table 4. For career adaptability, senior students expressed higher level of Concern, while no age differences were observed in other subscales and the total CAAS score. For career decision making difficulties, it was observed that senior students had lower results both on all three CDDQ subscales and on the total score. According to effect sizes, the age differences were greater for Lack of Readiness and Lack of Information than for Inconsistent Information. In career construction, senior students achieved higher results on Occupational Exploration, Career Decision Making, and Skilling and Instrumentation subscales, and on the total SCCI score. The observed effect sizes indicated that somewhat greater differences were found in career construction and career decision making difficulties than in career adaptability (Table 4).

Table 4  
*Age differences in career adaptability, career decision making difficulties and career construction*

	The first grade		The fourth grade		<i>F</i>	<i>df<sub>1</sub></i>	<i>df<sub>2</sub></i>	<i>p</i>	$\eta^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
Concern	3.84	0.67	4.06	0.69	19.86	1, 783	.00	.025	
Control	4.01	0.61	4.05	0.65	0.70	1, 783	.40	.001	
Curiosity	3.85	0.64	3.92	0.68	1.68	1, 783	.20	.002	
Confidence	3.94	0.57	3.88	0.64	1.94	1, 783	.16	.002	
CAAS total	3.91	0.47	3.98	0.53	3.06	1, 783	.08	.004	
Lack of Readiness	4.72	1.33	4.21	1.27	26.08	1, 722	.00	.035	
Lack of Information	4.78	1.71	3.99	1.60	39.28	1, 722	.00	.052	
Inconsistent Information	3.68	1.24	3.42	1.45	5.83	1, 722	.02	.008	
CDDQ total	4.49	1.26	3.93	1.29	33.49	1, 722	.00	.044	
Self-Concept Crystallization	3.87	0.62	3.95	0.61	3.02	1, 746	.08	.004	
Occupational Exploration	3.04	0.76	3.35	0.73	32.30	1, 746	.00	.042	
Career Decision Making	3.52	0.86	3.89	0.72	41.64	1, 746	.00	.053	
Skilling and Instrumentation	3.45	0.80	3.69	0.68	2.20	1, 746	.00	.026	
Transition from School to Work	3.08	1.00	3.12	1.04	0.29	1, 746	.59	.000	
SCCI total	3.44	0.62	3.66	0.53	28.73	1, 746	.00	.037	

*Note.* CAAS = Career Adapt-Abilities Scale; CDDQ = Career Decision-making Difficulties Questionnaire; SCCI = Student Career Construction Inventory.

Finally, we examined possible moderating effects of the student's gender on age differences in the total scores on CAAS, CDDQ and SCCI. As shown in Table 5, the interaction effect was significant only for the total SCCI score. According to the subgroup means (Table 5), it could be concluded that career construction during secondary-school was more rapid for girls than for boys. Girls in the first grade had an almost equal level of career construction as boys, but the level of career construction became significantly higher for females at the fourth grade. However, it should be noted that the effect size of gender moderating effect on age difference in SCCI scores was very low.

Table 5  
*Moderating effects of gender on age difference in CAAS, CDDQ and SCCI total scores*

		The first grade		The fourth grade		<i>F</i> (age × gender)	<i>df</i> <sub>1</sub> <i>df</i> <sub>2</sub>	<i>p</i>	$\eta^2$
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
CAAS	Male	3.86	0.50	3.91	0.55	0.17	1	.68	.000
	Female	3.94	0.45	4.02	0.51		769		
CDDQ	Male	4.40	1.24	3.86	1.32	0.20	1	.66	.000
	Female	4.56	1.28	3.94	1.27		708		
SCCI	Male	3.48	0.60	3.58	0.56	5.56	1	.02	.008
	Female	3.41	0.64	3.72	0.51		735		

*Note.* CAAS = Career Adapt-Abilities Scale; CDDQ = Career Decision-making Difficulties Questionnaire; SCCI = Student Career Construction Inventory.

## Discussion

In the first grade and the fourth grade secondary school samples, Career Adapt-Abilities Scale, Career Decision-Making Difficulties-Revised and Student Career Construction Inventory all showed good structural validity and adequate reliability. Relations between constructs were also sound and logical. A high positive correlation between career adaptability and career construction was observed in both samples, which is not surprising as these constructs come from common theoretical point of view and cover broad concept of career maturity (Larson, Bonitz, & Pesch, 2013; Savickas, 1997; Savickas & Porfeli, 2011). Further, these constructs were negatively moderately related to career decision-making difficulties. This was also expected, since problems in career decision-making are an indication of lower career maturity (Betz & Luzzo, 1996; Gati, 2013; Osipow & Fitzgerald, 1996).

### Age differences in vocational development

When considering age differences in vocational development in two adolescent samples, we found that students in the final grade of secondary school expressed greater accomplishment of different vocational development tasks, a lower number of difficulties in career decision-making process, and an equal level of career adaptability when compared to students in the first grade.

The fourth grade students showed somewhat greater results in SCCI than the first grade students. At the subscale level, there was no improvement observed in Self-Concept Crystallization and Transition from School to Work, while some improvements were found in Skilling and Instrumentation, Occupational Explora-

tion and Career Decision Making. Similar findings were observed for career decision-making difficulties. Students reported a decrease in Lack of Information and Lack of Readiness to make career decision, and a small change was also observed in the problem of Inconsistent Information. On the other hand, career adaptability did not change with age, except for the Concern subscale, which showed some increase during secondary education. The effect of age on other aspects of career adaptability was negligible, indicating that the first graders and the fourth graders felt equal control over their vocational future, were equally curious about different future options and possible vocational identities, and equally confident in pursuing their aspirations.

Differences in SCCI and CDDQ indicated the expected course of vocational development in adolescence and were in line with previous findings. Cross-sectional studies typically reported that senior students scored higher on career maturity measures than junior ones. This has been found in Israel (Fouad, 1988), Australia (Patton & Creed, 2001), Canada (Alvi & Khan, 1983), South Africa (Watson & Van Aarde, 1986) and Nigeria (Achebe, 1982). However, changes observed in our samples were small, suggesting that Croatian students did not develop their career-related competencies very much during secondary education.

The fact that career adaptability has been the least sensitive to the effect of age is not surprising, as career adaptability is not exclusively nested in the career context. The Career Adapt-Abilities Scale also includes items that cover general adaptability, like "Preparing for the future" (Concern), "Making decisions by myself" (Control), "Exploring my surroundings" (Curiosity), and "Solving problems" (Confidence). Such general feelings about oneself are more stable than narrower career-related variables. It is known that career adaptability at the same time shares common variability with career maturity and with more stable traits. For example, studies have revealed that career adaptability is moderately related to personality traits, Extraversion and Conscientiousness in particular (Rossier, Zecca, Stauer, Maggiori, & Dauwalder, 2012; Šverko & Babarović, 2016; Van Vianen, Klehe, Koen, & Dries, 2012), as well as the need for achievement, locus of control, future time perspective, and general motivation, while being negatively related to general anxiety (Pouyaud, Vignoli, Dosnon, & Lallemand, 2012).

## **The role of gender**

Although explored in a number of studies, the role of gender in vocational development is not so straightforward. Studies report equivocal results on the effect of gender on career development. The majority of studies have found that females express higher career maturity than males (Fouad, 1988; Luzzo, 1995; Rojewski, Wicklein, & Schell, 1995), even on samples of Croatian pupils aged 10 to 14 years old (Babarović & Šverko, 2011). However, some studies have failed to find any gender differences in career maturity (Kelly & Colangelo, 1990; Watson, Stead, & De Jager, 1995), or even reported higher career maturity for males (Achebe, 1982).

In the present study, we wished to explore the process of vocational development during secondary education in general, and we were not interested in gender differences in career maturity. However, since a majority of international studies and the previous study in Croatian context (Babarović & Šverko, 2011) emphasized the presence of gender differences in career maturity, it was necessary to explore whether the course of vocational development was affected by gender. We wished to check whether the vocational development trend was equal for girls and for boys. Therefore, we explored the possible moderating effect of gender on age differences in career construction, career decision-making difficulties and career adaptability. Our results showed that a weak moderation effect of gender was present only for the SCCI scale, suggesting a somewhat faster increase in career construction during secondary education for girls. However, the observed interaction effect in SCCI was weak, and no interaction effect was observed in CAAS and CDDQ. Therefore our data in general suggested that the course of vocational development during secondary education seemed very similar for girls and for boys. This was in line with results of Babarović & Šverko (2011) who reported the absence of age and gender interaction effect, as girls consistently showed greater career maturity than boys during primary education.

### **Career maturity of Croatian adolescents**

Students who have a higher level of career maturity have greater success in school (Babarović & Šverko, 2011; Luzzo, 1995; Tan, 1989), higher educational aspirations, and plan higher educational attainment (Babarović & Šverko, 2011; Westbrook, Elrod, & Wynne, 1996). However, it is questionable whether secondary school students in Croatia develop a sufficient level of vocational maturity to make adequate career decisions, and construct their careers.

Due to the response scale descriptors in the Croatian version of SCCI, it is obvious that, at the moment of testing, the average first graders and the fourth graders were, still crystallizing their self-concept, that they were in the process of acquiring proper skills, and that they were now making their career decisions. The average first graders and the fourth graders were both planning to start occupational exploration and transition from work to school. Although it could be a proper level of vocational development for the first graders, at the end of the secondary school the fourth graders should have a more stable picture of themselves and their career plans, particularly having in mind that their responses were collected in spring, just few months prior to their crucial career decisions.

When considering the results on CDDQ, it was obvious that both the first graders and the fourth graders still faced a number of career decision-making difficulties. This was manifested particularly in the lack of readiness to make career decisions and the lack of information about the world of work and the self. However, the average level of expressed difficulties was quite similar to comparable age groups of adolescents in other countries. By comparing our results with results of Australian adolescents at the age of 16 (Albion & Fogarthy, 2002), it was observed

that on average, Croatian adolescents reported a similar level of career decision making difficulties as their Australian colleagues. Further, the comparison with the fourth-grade secondary school students from Slovenia (Pečjak & Zagoričnik, 2007) revealed that their average total score on CDDQ, as well as scores on all three CDDQ subscales, were very similar to those of Croatian adolescents.

On the other hand, Croatian secondary school students showed somewhat higher results on CAAS when compared to the results observed in other countries. For example, on a French sample of 17 years old students, Pouyau, Vignoli, Dosnon, and Lallemand (2012) have observed lower adaptability in all CAAS subscales than in our sample. Similarly, on a US sample of students of the same age, Porfeli and Savickas (2012) have also evidenced lower career adaptability values. However, the higher career adaptability results observed in our samples do not necessarily mean that Croatian adolescents have a higher career maturity in comparison to their foreign colleagues. Since career adaptability is saturated with both core personality traits and career maturity, it is possible that the somewhat higher results on the CAAS scale stem from cultural differences in core personality traits, and not from career maturity.

As Croatian students expressed only a small rise in the realization of career construction tasks, and just a small decline in career decision-making during secondary education, we are somewhat concerned about the pace of their vocational development. By the end of secondary education students should be able to transit to the world of work or tertiary education. Thus, it is necessary for them to acquire the adequate level of career maturity during adolescence. Therefore it is very important to ensure proper career education and guidance during adolescence. From our point of view, vocational development should be fostered through various inter-curricular educational programs. By integrating career development into the curriculum, all students would have the needed support in their vocational development and career construction.

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## Toni Babarović Iva Šverko

Institut društvenih  
znanosti Ivo Pilar,  
Zagreb

# PROFESIONALNI RAZVOJ U ADOLESCENCIJI: KONSTRUKCIJA KARIJERE, POTEŠKOĆE U DONOŠENJU PROFESIONALNIH ODLUKA I PROFESIONALNA ADAPTABILNOST UČENIKA SREDNJIH ŠKOLA U HRVATSKOJ

U ovoj studiji ispitivali smo profesionalni razvoj učenika srednjih škola u Hrvatskoj. Razvoj karijere počinje već u ranoj adolescenciji, a tijekom srednje škole učenici moraju donijeti važne profesionalne odluke. Zato smo usporedili učenike prvih i četvrtih razreda srednjih škola ( $n_{1.\text{raz}} = 309$ ,  $n_{4.\text{raz}} = 492$ ) u nekoliko aspekata njihove profesionalne zrelosti. Sudionici su ispunili papir-olovka mjere koje se odnose na ostvarenje zadataka konstrukcije karijere (SCCI), poteškoće u donošenju profesionalnih odluka (CDDQ) te profesionalnu adaptabilnost (CAAS). Rezultati su ukazali na adekvatnu pouzdanost i strukturalnu valjanost svih mjera. Stariji studenti iskazali su nešto veći stupanj profesionalne zrelosti mjeren subskalama Istraživanje zanimanja, Donošenje profesionalnih odluka te Stjecanje potrebnog obrazovanja upitnika SCCI. Male dobne razlike primijećene su i u subskalama Nedostatak spremnosti, Nedostatak informacija i Nekonzistentne informacije upitnika CDDQ, gdje su mlađi učenici očekivano iskazali više poteškoća u donošenju profesionalnih odluka. Porast profesionalne adaptabilnosti primijećen je samo za skalu Briga za budućnost upitnika CAAS, ukazujući kako se profesionalna adaptabilnost ne mijenja bitno tijekom srednje škole. Također, moderacijski efekt spola na dobne razlike u profesionalnoj zrelosti vrlo je mali, te ukazuje da se profesionalni razvoj u srednjoškolskoj dobi odvija jednako za djevojke i mladiće. Porast profesionalne zrelosti tijekom srednje škole je mali i ukazuje kako učenici četvrtih razreda ne realiziraju sve predviđene zadatke u konstrukciji karijere te se i dalje suočavaju s poteškoćama u donošenju profesionalnih odluka. Stoga je vrlo važno implementirati programe poticanja profesionalne zrelosti u hrvatske srednje škole, kako bi se svim učenicima omogućio bolji profesionalni razvoj i osnažilo ih se za donošenje važnih profesionalnih odluka.

**Ključne riječi:** konstrukcija karijere, profesionalna adaptabilnost, profesionalna zrelost, poteškoće u donošenju profesionalnih odluka, adolescenti