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CAREER ADAPTABILITY OF VOCATIONAL EDUCATION AND TRAINING GRADUATES IN THE PERIOD OF PROSPECTIVE SCHOOL-TO-WORK TRANSITION

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Abstract

The completion of vocational education and training (VET) and the subsequent school-to-work transition are important steps on the career pathway. The school-to-work transition is a long-term process with unclear boundaries involving a number of potentially difficult aspects. Psychological resources for successful school-to-work transitions are reflected in the multidimensional psychosocial construct of career adaptability. The goal of the present study was to examine the role of selected demographic and school-related variables in predicting career adaptability and four components of career adaptability (concern, control, curiosity, and confidence) among VET graduates. Participants in this study were 3,028 Czech students approximately 1–2 months before graduation from vocational education and training, aged from 18 to 26 years (M = 18.97, SD = 1.09). The 24-item Career Adapt-Abilities Scale was used to measure career adaptability. Results from multiple linear regression analyses found that five out of ten predictor variables positively predicted the career adaptability or career adaptability components. These variables were the gained paid work experience in the field of study, one-off or multiple use of career guidance services, male gender, tertiary education of the father, and the field of study completed with a school-leaving examination. The variables that did not statistically predict career adaptability were family structure, maternal education, grades (GPA), repetition of a grade, and change of the field of study. Implications for career guidance are discussed.

Keywords

career adaptability, concern, control, curiosity, confidence, school-to-work transition, graduates, vocational education and training, VET

Introduction

Developing and planning tentative vocational goals and career choices can be regarded as one of the major developmental tasks in adolescence (Super, 1990) with important implications for psychological well-being, adjustment, and social integration (Skorikov, 2007) as well as for career development and achievement throughout the life course (Hirschi, 2011). The completion of vocational education and training (VET) and the subsequent transition to work are important steps on the career pathway. Graduates moving from VET directly into the work force struggle with perhaps the most challenging developmental tasks of their lifetimes, requiring important career-related decisions that can determine their future career success (Sos, 2018; Koen, Klehe, & van Vianen, 2012; Blustein et al., 2002).

The school-to-work transition is not a one-off event but a long-term process with unclear boundaries involving a number of potentially difficult aspects (Ling & O'Brien, 2012). Based on a literature review, Ling (2009) stated that such graduates tend to have difficulty finding employment, drift from one job to another, and end up in jobs lacking advancement opportunities. Furthermore, VET graduates entering the labor market tend to lack traditional support systems and services, and some researchers therefore refer to them as "disconnected."

Career development theorists have a long-standing interest in exploring the psychological resources that can help to deal with these difficulties and allow people to successfully manage their careers (Hirschi & Valero, 2015). Resources for successful school-to-work transition are reflected in the construct of career adaptability (Konstam, Celen-Demirtas, Tomek, & Sweeney, 2015). Since the publication of a reliable and valid scale for career adaptability measurement (Savickas & Porfeli, 2012), great attention has been dedicated to researching the career adaptability construct in an international context (cf. McKenna, Zacher, Ardabili, & Mohebbi, 2016). Nevertheless, only a few studies have examined in detail the career adaptability of VET graduates (Negru-Subtirica, Pop, & Crocetti, 2015; Hirschi, 2009). Research has focused mainly on general high school students, university students, and adults; these results are not relevant for VET graduates and their specific career decision-making circumstances.

Developmental construct of career adaptability

Savickas (2002), influenced by a contextualist world view, developed the career construction theory (CCT) based on a revision, reconstruction, and extension of Super's theory of career development. According to the CCT, individuals should pursue career tasks with *concern* about their future, a sense of personal

control over their own career, *curiosity* about possible career options and alternatives, and *confidence* in career future planning and its implementation (Savickas, 2005).

One central concept of the CTT is career adaptability, which Savickas (2005) defined as the "attitudes, competencies, and behaviors that individuals use in fitting themselves to work that suits them" (p. 45). The high-order developmental construct of career adaptability, based on the CCT proposed by Savickas (2013), is composed of four components—career concern, control, curiosity, and confidence—representing general adaptive resources and self-regulatory strategies that allow for reflection on an individuals' resources for managing career tasks and challenges, in order to effectively realize the professional self-conception of the individual. The measured sources of career adaptability are self-regulatory capacities that enable individuals to address unknown, complex, and unclear difficulties associated with career development tasks, career changes, and work traumas (cf. Porfeli & Savickas, 2012). Career adaptability can be seen as a meta-competence: the ability of an individual to identify the qualities necessary for their career future and make changes to achieve career goals.

Concern about the future represents the degree of awareness of one's career future and the preparation for future career tasks. It leads to an awareness of career development tasks, transition phases, and choices that an individual has to deal with or face in the near or further future. Concern in principle means focusing on the future, which is a necessary starting point for vocational training. *Control* over life reflects the individual's conviction of personal responsibility for career preparation and perceived personal control over career development. Career control means that an individual feels responsible for their career design, not relying on chance or being lucky but carrying out career development tasks in an organized, disciplined, deliberate, and goal-oriented manner. *Curiosity* reflects the individual disposition to learn, especially the ability to get to know the working environment, career opportunities, and possible future "Self" associated with the career. Career curiosity manifests itself in initiative in exploring the world of work. It includes, for example, openness to new experience, actively seeking information or assessing compliance with the requirements of the world of work. *Confidence* in constructing the future and dealing with barriers in a career means belief in one's own ability to solve complex problems, make decisions, overcome obstacles, and succeed in the professional area (Savickas, 2005; cf. Hirschi, Herrmann, & Keller, 2015).

If there is a need to deal with new career tasks or challenges, changing occupations, and work traumas, adaptive individuals become interested in their professional future, take control over the necessary preparation for their professional future, show interest in exploring their own opportunities

and possible scenarios, and strengthen the necessary confidence for projecting the professional future needed to fulfil their aspirations and plans (Savickas, 2013). Thus, career adaptability resides at the intersection between a person and their environment and reflects individuals' resources for managing career tasks and challenges (Zacher, 2014).

Empirical findings about career adaptability

Some research has been directly focused on identifying the relationship between career adaptability and selected demographic covariates (e.g., age, gender, and education), and also relationships between career adaptability and measures of adaptivity, adapting responses, and adaptation results. The empirical findings in this area are not uniform, however, and their comparison is further complicated by the fact that consistent tools, such as the widely used and internationally verified Career Adapt-Abilities Scale (Savickas & Porfeli, 2012), have not always been used to measure career adaptability.

The CTT proposed associations between career adaptability and age (Rudolph, Lavigne, & Zacher, 2017). A 2014 study determined that among Australian adults, age correlates positively with overall career adaptability, control, and confidence, and correlates negatively with concern (Zacher, 2014). In contrast, other research has not supported a correlation between career adaptability and age (e.g., Jiang, 2017; Guan, Capezio, Restubog, Read, Lajom, & Li, 2016; McKenna et al., 2016). Although a meta-analysis of more than 30 previously published studies (Rudolph et al., 2017) showed that age was positively related to career adaptability, the given association was weak. The level of career adaptability is not entirely dependent on the chronological age of an individual and is dependent on the effect of other variables.

Similarly disparate findings are related to the correlation between career adaptability and gender. Adults employed in the US government, for example, were found to have a significant correlation between gender and career adaptability, with women having a higher degree of career adaptability than men (O'Connell, McNeely, & Hall, 2008). This finding was later confirmed by Coetzee and Harry (2015) with employees in Africa. Their results showed that gender significantly predicted the career adaptability and that women had higher levels of overall career adaptability and concern, control, curiosity, and confidence components. Research conducted with Portuguese students attending the 9th to 12th grades revealed differences between males and females in only two components of career adaptability: females expressed more concern and confidence (Duarte et al., 2012). The same observation was made by Ginevra, Pallini, Vecchio, Nota, & Sotresi (2016) concerning Italian adolescents attending the 2nd to 5th grades of secondary school. Negru-Subtirica

and colleagues (2015) reported that with Romanian students from the 8th to 12th grades, the girls had significantly higher levels of career concern and curiosity. In Zacher's research (2014), women achieved a higher level of career adaptability only in the confidence component. Some research has reached the opposite conclusion. Research among students in Shanghai (Hou, Leung, Li, Li, & Xu, 2012) showed, for example, that male students had significantly higher scores in overall career adaptability and in the control, curiosity, and confidence components than female students. Other research has failed to prove a significant relationship between gender and career adaptability. This includes research related to Swiss 8th graders (Hirschi, 2009), undergraduate Chinese students (Guan et al., 2016), graduating seniors at a Midwestern university who were transitioning from school to work (Ghosh & Fouad, 2017), employed and unemployed Swiss adults (Maggiori, Johnston, Krings, Massoudi, & Rossier, 2013), and other studies (Jiang, 2017; McKenna et al., 2016), including a meta-analysis of the published studies (Rudolph et al., 2017).

Previous studies in various samples reported effects of individual difference predictors on career adaptability. However, each predictor contributes uniquely to the prediction of career adaptability components. Overall career adaptability is predicted by cognitive ability, the Big Five personality traits (Rudolph et al., 2017), future temporal focus (Zacher, 2014), a proactive personality (Guan et al., 2017; Jiang, 2017), positive emotional disposition (Hirschi, 2009), motivation (Pouyaud, Vignoli, Dosnon, & Lallemand, 2012), explicit and implicit self-esteem (Hui, Yuen, & Chen, 2018; Negru-Subtirica & Pop, 2016; Cai et al., 2015; Rusu, Măirean, Hojbotă, Gherasima, & Gavriloaiei, 2015), core self-evaluation (Guan et al., 2017; Neureiter & Traut-Mattausch, 2017; Zacher, 2014), career self-efficacy, personal goal orientation, and career future concern (Ebenehi, Rashid, & Bakar, 2016; Wang & Fu, 2015), and learning goal orientation (Guan et al., 2017; Yousefi, Abedi, Baghban, Eatemadi, & Abedi, 2011).

Other variables were also identified as significant predictors of overall career adaptability, for example, education (Zacher, 2014), training (Koen et al., 2012), academic achievement (Negru-Subtirica & Pop, 2016), work volition (Autin, Douglass, Duffy, England, & Allan, 2017), career calling (Douglas & Duffy, 2015; Praskova, Hood, & Creed, 2014), and thriving (Jiang, 2017). In the context of our study, findings connected with school-related variables are important. The career adaptability of students attending vocational schools and general schools may vary, for example, depending on whether the education system of the given country is more typically vocational education and training or general education (Negru-Subtirica et al., 2015; Hirschi, 2009). In accordance with these studies, it seems that a higher level of career adaptability is achieved by students attending a vocational school in cultures in which educational systems place a high emphasis on vocational education

and training (Hirschi, 2009); in cultures in which the education systems focus primarily on general education, a higher level of career adaptability is achieved by general high school students (Negru-Subtirica et al., 2015). Nevertheless, some studies have not demonstrated a connection between career adaptability and the type of upper-secondary school (Ginevra et al., 2016).

Researchers have found that career adaptability development is influenced not only by factors within the individual but is also positively associated with factors connected with social background. Specifically, career adaptability is positively associated with perceived social support, particularly with parental support, perceived teacher or school support, and peer support (Hui et al., 2018; Ghosh & Fouad, 2017; Ebenehi et al., 2016; Guan et al., 2015; Han & Rojewski, 2015; Wang & Fu, 2015; Tian & Fan, 2014).

Research focused on adaptation results is also important. The studies provide important evidence with respect to the effect of career adaptability or career adaptability components on vocational identity, identification with career commitments (Porfeli & Savickas, 2012), self-efficacy and career optimism (McLennan, McIlveen, & Perera, 2017), occupational self-efficacy (Hirschi, Herman, & Keller, 2015), sense of power (Hirschi, 2009), positive attitude towards the future, future orientation, and indirectly (through these two variables) career decidedness (Ginevra et al., 2016), and entrepreneurial intentions (McKenna et al., 2016).

Developed career adaptability and some of its components may increase academic achievement (Negru-Subtirica & Pop, 2016). Further, it increases the opportunity to obtain a suitable job as career adaptability is positively reflected in job search self-efficacy (Guan et al., 2013) and employability (Rudolph et al., 2017). Overall, individuals with higher career adaptability are more successful in vocational transitions (Creed, Fallon, & Hood, 2009) and show a higher satisfaction with the transition processes (Hirschi, 2010). Career adaptability can also be reflected in increased career success as it is positively associated with managing work changes (Neuenschwander & Garrett, 2008; Germeijs & Verschueren, 2007), job performance, work engagement (Rudolph et al., 2017), career engagement (Nilforooshan & Salimi, 2016), employment status (Guan et al., 2013), and employment quality (Koen et al., 2012). Research has shown that with increasing career adaptability, perceived internal barriers and external barriers decrease, while the perceived quality of life and extent of interests (Soresi, Nota, & Ferrari, 2012), career satisfaction (Rudolph et al., 2017), job satisfaction (McKenna et al., 2016; Han & Rojewski, 2015; Tolentino, Garcia, Restubog, Bordia, & Tang, 2013), as well as life meaning (Buyukgoze-Kavas, Duffy, & Douglass, 2015) and life satisfaction (Ginevra et al., 2018; Hirschi, 2009) increase. In this perspective, highly developed career adaptability can make the school-to-work transition, and dealing with accidental or planned career changes, easier.

Present study

The goal of the present study is to examine the role of selected demographic and school-related variables in predicting career adaptability and four components of career adaptability (concern, control, curiosity, and confidence) among VET graduates. To address this goal, a large and diverse group of Czech VET students before graduation were surveyed.

Methods

Participants and procedures

The present study is cross-sectional and survey-based and presents partial findings from the first wave of data collection within the framework of the longitudinal research project *Career adaptability of vocational upper-secondary school graduates during the school-to-work transition* (2018–2020). The data collection took place in March and April 2018 via web-based or paper-and-pencil self-reported questionnaire surveys of 44 vocational upper-secondary schools providing VET in two regions in the Czech Republic (the South-Moravian Region and the Moravian-Silesian Region). Each participant completed the questionnaire voluntarily during an ordinary school lesson in their classroom under the supervision of instructed teacher. The researchers provided students with an informed consent form regarding the aim of the study, confidentiality, and the right to withdraw from the study at any time. Of the 3,126 students who completed the survey, 98 observations were filtered from the data set (e.g., all responses were identical, repeated patterns of 123454321). As a result of these removals, our sample was reduced to 3,028 effective sample size.

Participants in this study were 3,028 full-time students 1–2 months before graduating from VET (hereinafter "VET graduates"): 1,394 women (46.5%) and 1,603 men (53.5%) aged from 18 to 26 years (M = 18.97, SD = 1.09); 63.2% of the participants completed their studies with a school-leaving examination and 36.8% completed with an apprenticeship certificate.[1]

[1] A range of possibilities and opportunities to give direction to their careers are open to graduates who complete an upper secondary education in the Czech Republic. Nevertheless, fields of studies in vocational upper-secondary education completed with an apprenticeship certificate (ISCED 353) or a schoolleaving examination (ISCED 354) are designed primarily to prepare graduates to directly enter the labor market.

The data were analyzed using independent-samples t-test and multiple linear regression (MLR) analysis with the aid of SPSS software version 23. Preliminary data analyses were carried out to make sure that assumptions of normality, multicollinearity, and homoscedasticity were not violated.

Measures

To measure career adaptability, we used the Career Adapt-Abilities Scale—Czech Form, which has been translated from the reliable and well-validated 24-item Career Adapt-Abilities Scale—International Form 2.0 (Savickas & Porfeli, 2012). Participants provided their rating on a 5-point Likert scale ranging from 1 (*not strong*) through to 5 (*strongest*), in response to the instruction "Please rate how strongly you have developed each of the following abilities." Career adaptability may be measured as a total score of the 24 items (overall career adaptability) and as four subscale scores: concern (e.g., "Thinking about what my future will be like."), control (e.g., "Keeping upbeat."), curiosity (e.g., "Looking for opportunities to grow as a person."), and confidence (e.g., "Performing tasks efficiently."). The model fitted to our data was similar to the model based on combined data from the CAAS International Form 2.0, $\chi^2(248) = 3584$, $p < .001$, CFI = .93, RMSEA = .069, SRMR = .045. Cronbach's alpha for the overall scale was .93, and .84 (concern), .80 (control), .82 (curiosity), and .88 (confidence) for the sub-scales. [Note from the authors: Assessment of the CAAS-Czech factor structure is the goal of another study.]

Demographic and school-related questionnaires were used to obtain the characteristics of the participants. The instruments were developed for the purposes of this research:

- *Gender* is a dichotomic variable, with answer options man = 1 and woman = 0.
- *The family structure* was investigated using the question: "Who are you currently living with? Choose only one option that describes your situation the best." Participants could choose from: a) with my father and mother, b) only with my father, c) only with my mother, d) with my father and his new partner, e) with my mother and her new partner, f) with my grandparents or other relatives, g) with substitute parents, h) I live in a children's home, i) other. For analysis purposes, item a) was encoded as 1 = complete family and other answers as 0 = other family structure.
- *Parents' education* was investigated separately in the case of mothers and fathers: "What is the highest education level achieved by your mother (or the person you consider a mother)?" and "What is the highest education level achieved by your father (or the person you consider a father)?" Recipients chose one of the following answers for both questions: a) lower-secondary, b) upper-secondary without a school leaving examination, c) upper-secondary with a school leaving examination, d) non-university

tertiary, e) tertiary, f) I do not know. Answers d) and e) were encoded as 1 = tertiary education and answers a) – c) as 0 = lower than tertiary.

- *The method of completing secondary school education* (hereinafter referred to as "certificate") was found using the question: "How will your VET studies be completed?" Recipients could choose from two options: a) a school leaving examination (code 1) and b) an apprenticeship certificate (code 0).
- *Satisfaction with the field choice* was found using the question: "To what extent are you satisfied with the choice of the field you study in secondary school?" Recipients chose from: a) very satisfied, b) rather satisfied, c) rather dissatisfied, d) very dissatisfied. For the purposes of analyses, the answers a) and b) were encoded as 1 = satisfaction with the studied field and answers c) and d) as 0 = dissatisfaction with the studied field.
- *Academic success rate* (hereinafter referred to as "grades") was determined by: "How would you describe your learning outcomes in this school year?" Recipients chose one of five options: a) excellent (code 1), b) very good (code 2), c) good (code 3), d) sufficient (code 4), e) insufficient (code 5).
- *Repetition of a year* was ascertained by the dichotomous item: "Have you *repeated a year* at this secondary school?" Possible answers were a) no (code 0) and b) yes (code 1).
- *Change in the field of study during secondary school* was found using the question: "Have you changed your school or field of study during secondary school studies?" Recipients chose one of the options: a) No, I have not, b) I have changed the school, but the field of study remained the same, c) I have changed the field of study, but the school remained the same, d) I have changed the school and field of study. Answers a) and b) were encoded 0 = no change in the field of study and answers c) and d) were encoded 1 = change in the field of study.
- *Paid work experience in the field of study* was found using the question: "Have you had a paid part-time job? Paid part-time job means work for which you have received a financial reward. A school internship is not a part-time job." Recipients could choose one of three answers: a) Yes, in the field I study in secondary school, b) Yes, outside the field I study in secondary school, c) No. Answer a) was encoded as 1 = gained experience and answers b) and c) were encoded as 0 = did not gain experience.
- *Use of career guidance services* was found using the question: "Have you consulted an expert on what you would like to do after graduating from secondary school? An expert means, for example, an educational advisor, a school psychologist, a labor office worker, or a worker in a recruitment agency, a university advisor, etc." Recipients had the following choices: a) Yes, repeatedly, b) Yes, once, c) No, but I am planning to do so, d) No, and I am not planning to do so. Answers a) and b) were encoded as 1 = one-off or multiple use and answers c) and d) were encoded as 0 = no use.

Results

The questionnaire investigated how the VET graduates assess various abilities that are important in the course of building an educational and career pathway. The item descriptive statistics appear in Table 1. The item means and standard deviations suggest that the typical response among VET graduates was in the range of *strong* to *very strong*. According to their own stated opinions, VET graduates have the strongest developed career adaptability in the component of control (M = 3.91, SD = .68). This is followed in descending order by confidence (M = 3.88, SD = .72), concern (M = 3.56, SD = .76), and curiosity (M = 3.53, SD =.74)

Table 1
Career Adapt-Abilities Scale—Czech Form: Item means and descriptive statistics

Component	#	Item (first-order indicators)	Mean	SD
Concern (Conc)	1	Thinking about what my future will be like	3.65	1.05
	2	Realizing that today's choices shape my future	3.72	1.04
	3	Preparing for the future	3.42	1.03
	4	Becoming aware of the educational and career choices that I must make	3.49	1.02
	5	Planning how to achieve my goals	3.58	1.08
	6	Concerned about my career	3.48	1.05
Control (Cont)	1	Keeping upbeat	3.49	1.21
	2	Making decisions by myself	3.84	.98
	3	Taking responsibility for my actions	4.14	.92
	4	Sticking up for my beliefs	4.06	.96
	5	Counting on myself	4.09	.95
	6	Doing what's right for me	3.86	1.01
Curiosity (Cur)	1	Exploring my surroundings	3.44	1.05
	2	Looking for opportunities to grow as a person	3.45	1.03
	3	Investigating options before making a choice	3.46	1.01
	4	Observing different ways of doing things	3.65	.96
	5	Probing deeply into questions I have	3.39	1.13
	6	Becoming curious about new opportunities	3.78	1.03
Confidence (Conf)	1	Performing tasks efficiently	3.63	1.00
	2	Taking care to do things well	3.99	.92
	3	Learning new skills	4.00	.91
	4	Working up to my ability	3.99	.90
	5	Overcoming obstacles	3.82	.98
	6	Solving problems	3.82	1.02

Construct		Construct (second-order indicators)	Mean	SD
Adaptability		Concern	3.56	.76
		Control	3.91	.68
		Curiosity	3.53	.74
		Confidence	3.88	.72
		Total score	3.72	.60

Note: For each of the 24 statements, the recipients chose on a 5-point scale reflecting whether they had a developed ability: 5 = *strongest*, 4 = *very strong*, 3 = *strong*, 2 = *somewhat strong*, 1 = *not strong.*

With respect to the inconsistency of previous research on the association between career adaptability and gender, we analyzed differences in career adaptability among men and women, at the level of individual items, components of career adaptability and overall career adaptability. Table 3 reports the averages, standard deviations, and statistical significance. Men are shown to have higher levels of career control, curiosity, and confidence, as well as overall career adaptability, than women. The only component in which there was no difference between men and women was concern.

VET students in the Czech Republic receive a vocational education and after graduation can apply for a qualified job. Students who have completed VET by passing a secondary school-leaving examination can also continue in higher education. Graduates in the fields of study completed with an apprenticeship certificate are limited in their career decision-making by the fact that they cannot continue their studies at a tertiary technical school or university. The tertiary level of education is only available for them after obtaining the required education completed with the state secondary school-leaving examination, which they may obtain by means of extension study.

With respect to these specifics, the differences in the career adaptability of the VET graduates were analyzed in detail according to the type of secondary school completed (certificate). Details are provided in Table 2. Graduates who completed their studies with a secondary school-leaving examination had more developed career confidence than the graduates of fields of study completed with an apprenticeship certificate. No differences were found in other components of career adaptability and overall career adaptability. A more detailed survey of the items suggests, however, that the subpopulation of graduates of apprenticeship fields of study and fields of study completed with a school-leaving examination differs at the level of specific abilities. The VET graduates of apprenticeship fields of study achieved higher average values in the following items: *preparing for the future* (Conc #3), *doing what's right for me* (Cont #6), *taking care to do things well* (Conf #2), *overcoming obstacles* (Conf #5), and *solving problems* (Conf #6). Conversely, the VET

graduates of fields of study completed with a school-leaving examination showed higher average values in the following items: *thinking about what my future will be like* (Conc #1), *realizing that today's choices shape my future* (Conc #2), *concerned about my career* (Conc #6), *investigating options before making a choice* (Cur #3), *probing deeply into questions I have* (Cur #5), and *becoming curious about new opportunities* (Cur #6).

Table 2
T-test for Gender and Certificate

	Gender			Certificate		
Item	Men *M*(*SD*)	Women *M*(*SD*)	Sig.	SLE *M*(*SD*)	AC *M*(*SD*)	Sig.
Conc 1	3.63 (1.07)	3.66 (1.03)		3.70 (1.02)	3.54 (1.09)	***
Conc 2	3.72 (1.02)	3.72 (1.03)		3.75 (1.00)	3.67 (1.09)	*
Conc 3	3.42 (1.03)	3.40 (1.00)		3.36 (.98)	3.49 (1.08)	**
Conc 4	3.47 (1.01)	3.50 (1.01)		3.51 (.98)	3.44 (1.05)	
Conc 5	3.65 (1.10)	3.50 (1.05)	***	3.55 (1.05)	3.62 (1.12)	
Conc 6	3.46 (1.07)	3.50 (1.00)		3.51 (.98)	3.42 (1.13)	*
Cont 1	3.62 (1.19)	3.32 (1.22)	***	3.47 (1.24)	3.51 (1.17)	
Cont 2	3.90 (.93)	3.78 (1.01)	***	3.83 (.95)	3.87 (1.00)	
Cont 3	4.16 (.92)	4.13 (.91)		4.14 (.89)	4.15 (.95)	
Cont 4	4.09 (.91)	4.03 (1.00)		4.05 (.93)	4.10 (.98)	
Cont 5	4.08 (.94)	4.12 (.94)		4.11 (.93)	4.08 (.96)	
Cont 6	3.88 (1.02)	3.85 (.97)		3.81 (.99)	3.95 (1.00)	***
Cur 1	3.54 (1.04)	3.31 (1.02)	***	3.41 (1.02)	3.48 (1.07)	
Cur 2	3.56 (1.03)	3.31 (1.01)	***	3.44 (1.01)	3.44 (1.07)	
Cur 3	3.55 (.99)	3.33 (.99)	***	3.49 (.99)	3.38 (1.02)	**
Cur 4	3.76 (.93)	3.51 (.95)	***	3.64 (.93)	3.66 (.99)	
Cur 5	3.40 (1.13)	3.35 (1.12)		3.43 (1.12)	3.29 (1.13)	**
Cur 6	3.80 (1.00)	3.76 (1.04)		3.82 (.98)	3.72 (1.08)	*
Conf 1	3.68 (1.00)	3.57 (.98)		3.61 (.97)	3.66 (1.04)	
Conf 2	4.00 (.91)	4.00 (.91)	**	3.97 (.90)	4.04 (.93)	*
Conf 3	4.05 (.89)	3.94 (.92)		4.00 (.87)	4.00 (.96)	
Conf 4	4.06 (.88)	3.93 (.91)	**	3.98 (.86)	4.02 (.95)	
Conf 5	3.85 (.97)	3.79 (.99)	***	3.77 (.96)	3.91 (1.00)	***
Conf 6	3.82 (1.01)	3.82 (1.01)		3.79 (.97)	3.88 (1.07)	**
Concern	3.56 (.75)	3.55 (.75)		3.57 (.71)	3.53 (.81)	
Control	3.96 (.65)	3.87 (.69)	**	3.90 (.65)	3.94 (.70)	
Curiosity	3.60 (.69)	3.43 (.74)	***	3.54 (.70)	3.49 (.76)	
Confidence	3.91 (.70)	3.84 (.71)	**	3.85 (.68)	3.92 (.76)	*
Total score	3.76 (.57)	3.67 (.58)	***	3.71 (.54)	3.72 (.64)	

Note. M – mean, SD – standard deviation, SLE – school leaving examination, AC – apprenticeship certificate. * $p < .05$, ** $p < .01$, *** $p < .001$

Our data show that future graduates of fields of study completed with an apprenticeship certificate are reconciled to the fact that the period of school-to-work transition or further education leading to the completion of a school leaving certificate may be difficult for them, but at the same time, it seems that they feel ready to face all sorts of obstacles. On the other hand, students who are to complete their studies with a school leaving examination associate their future with what they would like to do, and they apparently consider the transition an opportunity to direct their future in a better way.

A multiple linear regression (MLR) using the *stepwise* method was calculated to predict overall career adaptability (Model 1), as well as concern (Model 2), control (Model 3), curiosity (Model 4), and confidence (Model 5) resources of career adaptability among VET graduates based on a set of independent variables: gender, family structure, paternal education, maternal education, certificate, grades (GPA), repetition of a grade, change in the field of study, paid work experience in the field of study, and use of career guidance services.

In the first final model (Table 3), three predictors of overall career adaptability are included ($F(3, 3016) = 25.97$, $p < .001$) – paid work experience in the field of study, use of career guidance services, and gender. The three predictor variables explained 2.5% of the total variance in career adaptability ($R^2 = .025$, adjusted $R^2 = .024$). Based on the first model, it can be concluded that individuals who have gained paid work experience in the field of study, have made one-off or multiple use of career guidance services, and are male are likely to achieve a higher level of overall career adaptability.

Table 3
MLR analysis for predictors of career adaptability

Model 1: Dependent Variable – Career Adaptability	Unstandardized Coefficients		Standardized Coefficients	*t*	*Sig.*	95% CI for B	
	B	Std. Error	β			Lower	Upper
(Constant)	3.622	.016		219.632	.000	3.589	3.654
Paid work experience in the field of study	.162	.023	.127	6.971	.000	.116	.207
Use of career guidance services	.096	.030	.058	3.227	.001	.038	.154
Gender	.064	.021	.055	3.025	.003	.022	.105

Coding: Gender: male = 1, female = 0; paid work experience in the field of study: gained experience = 1, did not gain experience = 0; use of career guidance services: one-off or multiple use = 1, no use = 0.

The second final model (Table 4) includes four predictors of the career *concern* component ($F(4, 3007) = 20.813$, $p < .001$). These are paid work experience in the field of study, use of career guidance services, paternal education, and the certificate. The four predictors explained 2.6% of the total variance in concern ($R^2 = .026$, adjusted $R^2 = .025$). Based on this model, it is possible to assume that individuals who have gained paid work experience in their field of study, who have made one-off or multiple use of career guidance services, whose father has completed tertiary education, and who have graduated the field of study completed with a school-leaving examination will show a higher level of career concern.

Table 4
MLR analysis for predictors of career concern

Model 2: Dependent Variable – Concern	Unstandardized Coefficients		Standardized Coefficients	*t*	*Sig.*	95% CI for B	
	B	Std. Error	β			Lower	Upper
(Constant)	3.413	.026		131.982	.000	3.362	3.464
Paid work experience in the field of study	.197	.030	.120	6.549	.000	.138	.256
Use of career guidance services	.195	.038	.091	5.069	.000	.120	.270
Paternal education	.092	.039	.042	2.324	.020	.014	.169
Certificate	.065	.028	.042	2.287	.022	.009	.121

Coding: Paternal education: tertiary = 1, lower than tertiary = 0; certificate: school leaving examination = 1, apprenticeship certificate = 0; paid work experience in the field of study: gained experience = 1, did not gain experience = 0; use of career guidance services: one-off or multiple use = 1, no use = 0.

The third final model (Table 5)includes two predictors of the career *control* component ($F(2, 2998) = 14.76$, $p < .001$), specifically paid work experience in the field of study and gender. Predictors explained for only 1% of the total variance in control ($R^2 = .010$, adjusted $R^2 = .009$). Based on this model, it can be stated that individuals who have gained paid work experience in their field of study and who are male will also have a higher level of career control.

Table 5
MLR analysis for predictors of career control

Model 3: Dependent Variable – Control	Unstandardized Coefficients		Standardized Coefficients	*t*	*Sig.*	95% CI for B	
	B	Std. Error	β			Lower	Upper
(Constant)	3.845	.019		205.605	.000	3.808	3.881
Paid work experience in the field of study	.110	.027	.075	4.069	.000	.057	.163
Gender	.073	.025	.055	2.979	.003	.025	.122

Coding: Gender: male = 1, female = 0; paid work experience in the field of study: gained experience = 1, did not gain experience = 0.

The fourth final model (Table 6) includes five predictors of the career *curiosity* component ($F(5, 3005) = 22.23$, $p < .001$), which are paid work experience in the field of study, gender, certificate, use of career guidance services, and paternal education. The predictors explained 3.6% of the total variance in curiosity ($R^2 = .036$, adjusted $R^2 = .034$). Based on this model, it can be assumed that individuals who have gained paid work experience in their field of study, who have graduated from education completed with a secondary school-leaving examination, whose father has reached a tertiary level of education, who have made one-off or multiple use of career guidance services, and who are male will show a higher career curiosity.

Table 6
MLR analysis for predictors of career curiosity

Model 4: Dependent Variable – Curiosity	Unstandardized Coefficients		Standardized Coefficients	*t*	*Sig.*	95% CI for B	
	B	Std. Error	β			Lower	Upper
(Constant)	3.298	.029		114.130	.000	3.242	3.355
Paid work experience in the field of study	.181	.029	.114	6.211	.000	.124	.238
Gender	.155	.026	.107	5.856	.000	.103	.207
Certificate	.090	.028	.060	3.280	.001	.036	.144
Use of career guidance services	.118	.037	.057	3.188	.001	.045	.191
Paternal education	.108	.038	.051	2.825	.005	.033	.182

Coding: Gender: male = 1, female = 0; paternal education: tertiary = 1, lower than tertiary = 0; certificate: school leaving examination = 1, apprenticeship certificate = 0; paid work experience in the field of study: gained experience = 1, did not gain experience = 0; use of career guidance services: one-off or multiple use = 1, no use = 0.

The last fifth final model (Table 7) includes only one predictor of the *confidence* component ($F(1, 3010) = 46.74$, $p < .001$), which is paid work experience in the field of study. The results of the regression indicated that this predictor explained 1.5% of the variance ($R^2 = .015$, adjusted $R^2 = .015$). From the latest model it can be predicted that individuals who have gained paid work experience in the field of study will also have a higher level of career confidence.

Table 7
MLR analysis for predictors of career confidence

Model 5: Dependent Variable – Confidence	Unstandardized Coefficients		Standardized Coefficients	*t*	*Sig.*	95% CI for B	
	B	Std. Error	β			Lower	Upper
(Constant)	3.821	.015		250.879	.000	3.792	3.851
Paid work experience in the field of study	.193	.028	.124	6.836	.000	.138	.248

Coding: Paid work experience in the field of study: gained experience = 1, did not gain experience = 0.

Discussion and conclusion

With respect to the lack of knowledge about the career development of youth graduating from VET, the present study focused on examining career adaptability in this specific group. The main objective was to determine whether VET graduates differ in terms of career adaptability by gender and manner of completion of study (certificate) and furthermore, what demographics (gender, family structure, parental education) and school-related variables (certificate, grades, repetition of a grade, change in the field of study, paid work experience in the field of study, use of career guidance services) may predict the level of career adaptability.

The findings of this study indicated that five out of the ten predictor variables (specifically paid work experience in the field of study, use of career guidance services, gender, certificate, and paternal education) statistically predicted career adaptability among VET graduates. Although a significant regression equation was found, the effect size measured by R squared was small in all five models. The low proportion of the explained variability suggests that other, unconsidered factors influence career adaptability as well. Nevertheless, we consider our findings to be important as they indicate a relationship between significant predictors and career adaptability.

Our study found that the most important predictor of overall career adaptability, as well as the components of concern, control, curiosity, and confidence among the VET graduates, is the gained paid work experience in the field of study. This finding is partly in accordance with previous research related to university students who showed a higher level of career curiosity when they gained work experience (Monteiro & Almeida, 2015). Overall, paid work experience gained during VET is likely to actively orientate an individual towards the world of adults closely associated with work, leads to thinking about careers, and motivates planning a career future and exploring the world of work (Creed, Patton, & Prideaux, 2007; Creed & Patton, 2003; Phillips, Blustein, Jobin-Davis, & White, 2002). Furthermore, work experience may serve as a form of career exploration, in which individuals assume various working roles in different working environments, which helps them to decide what they would or would not want to do in their vocational careers (Stringer & Kerpelman, 2010). In addition to this, the work experience gained by an individual may lead to a belief in possible control over their career, thereby developing responsibility and awareness in career decision-making, or even higher career decisiveness (Earl & Bright, 2003). When performing genuine work tasks, an individual has to solve a number of problems and gain positive experience in actively overcoming obstacles and dealing with difficult work situations, which may result in higher career confidence.

Paid work experience obtained in the course of VET can be a prerequisite for graduates' successful school-to-work transition. Nevertheless, there is a need to take into account that the positive benefit from the acquired work experience depends on many other aspects, such as whether the work experience was acquired in the same field or profession for which the individual is trained, the number of jobs, the regularity and the length of the work experience, the ability of an individual to learn from this experience, reflect on it, etc. independently or with the help of teachers (Monteiro & Almeida, 2015; Billett & Ovens, 2007). Thus, in addition to systematic career education focused on developing career adaptability (Koen et al., 2012), inclusion of paid work experience as an integral part of VET should be considered when modifying the national or school curriculum. Students in the Czech Republic normally obtain vocational training in which they acquire the necessary vocational skills. Less often, however, they have the opportunity to be involved in situations that would simulate real job performance under natural conditions. From the point of view of looking for pathways to the possible development of career adaptability, a dual vocational and training system seems therefore to be a possible solution. The transition to dual learning would not only cover the required work experience, but also the diversity of work situations with the potential for work role experimentation (Stringer & Kerpelman, 2010).

The multiple linear regression revealed that one-off or multiple use of career guidance services is an important predictor among VET graduates, not only with respect to their overall career adaptability, but also in terms of career concern and curiosity. The use of career guidance services has a positive impact on the ability to look ahead and prepare for a vocational future and explore potential vocational opportunities. The positive impact of career guidance on developing career adaptability has been confirmed by other foreign studies (Johnston, 2016), even in short-term career guidance intervention (Stauffer, Maggiori, Froidevaux, & Rossier, 2014). On the other hand, some studies have not found a relationship between career guidance and the level of career adaptability (Beková, 2015). Thus, the present study provides further support for the importance of career guidance for the adolescent population and leads to possible recommendations for the practice of career guidance. Career advisors could engage in more decision-making intervention to increase career control by clarifying self-concept, decreasing anxiety, and empowering clients to deal with opposition from parents and significant others (Barnová, Tamášová, & Krásna, 2019), which could lead to increased career control and thereby reduce the problems of indecision, hesitation, and uncertainty about the future (Hartung, Porfeli, & Vondracek, 2008). Career advisors could further emphasize role play, social modelling, and cognitive-behavioral interventions to increase self-efficacy beliefs and foster self-esteem in their individual and group career guidance in order to develop career confidence among their clients (Hartung et al., 2008).

A number of studies have failed to demonstrate an influence of gender on career adaptability (Rudolph et al., 2017; Ghosh & Fouad, 2017; Guan et al., 2016; McKenna et al., 2016; Maggiori et al., 2013 and others). When a difference in career adaptability based on gender was proved, females possessed higher career adaptability than their male peers (e.g., Ginevra et al., 2016; Coetzee & Harry, 2015; Negru-Subtirica et al., 2015; Duarte et al., 2012; O'Connell et al., 2008). It is therefore somewhat surprising that male gender was a positive predictor of overall career adaptability and the dimensions of control and curiosity in our study.

Inconsistent findings are usually explained by the socio-cultural differences of the samples. Higher career adaptability of men is common in regions where parents and society have higher educational and career aspirations for men than for women and where men are generally expected to have a greater career orientation (Gati & Saka, 2001). We believe, however, that this situation is not entirely valid in the Czech environment. An explanation of why men display a higher level in the career control dimension is provided by gender theories. Due to the nature of gender socialization, men tend to have a deeper belief than women that they are the creators of their own lives (Small & McClean, 2002), which gives men the opportunity to plan their own future

and make decisions about it independently, without too much social pressure (Beal, 1994; Bem, 1993). In addition, Hlaďo and Ježek (2018) found that men in VET schools receive more instrumental assistance from their parents than women do (for example, in the form of motivation and encouragement to acquire information needed for career decision-making), which can lead to greater development of career curiosity. We believe that despite the inconsistency of the research findings, it should be taken into account that gender is a variable that can potentially influence the career development of adolescents when designing career education and career interventions (Rojewski, Wicklein, & Schell, 1995).

The influence of parents on the career development of adolescents is another area on which research attention has long been focused. Past research indicated that mothers are more engaged in the career decision-making process of adolescents than fathers (Paloş & Drobot, 2010) and mothers with higher education provide their children with higher psychosocial and instrumental support in career decision-making (Hlaďo & Ježek, 2018). In our research, it was somewhat surprising to find that the father's tertiary education is a predictor of career concern and control dimensions. Having a father with a higher education can therefore be an advantage in connection with the ability of individuals to plan their vocational future and manage their own preparation for its fulfilment.

The results of the independent-samples t-test suggest that, as compared to the graduates with a school leaving examination, graduates with an apprenticeship certificate show a higher degree of career confidence; statistical modelling (MLR) revealed that studies completed with the state secondary school-leaving examination were a significant predictor of the concern and curiosity dimensions. Although both groups of VET graduates go through the same curriculum of career education in the Czech Republic, the findings are likely to be affected by the specific type of VET completion and the opportunities that are subsequently open to the graduates. Students in the apprenticeship field of education are systematically prepared to perform in a particular profession; after completing VET, with some exceptions, they enter the labor market. In the course of their vocational training, they are likely to gain enough experience to make them more confident that they are able to make autonomous decisions, overcome obstacles, and solve partial and complex problems in work tasks. Although VET students of the field of study completed with the state secondary school-leaving examination are also prepared for direct entry into the labor market, most of them consider continuing in tertiary non-university or university education in fields of study related to the ones they have completed within the VET framework (Kuchař, Vojtěch, & Kleňha, 2014). These students are in a situation in which they realize that they will make further career decisions that they will have

to prepare for and address, which goes hand in hand with the need to obtain information about themselves as well as possible career paths and alternatives. This situation is mirrored in the statistical differences we found for specific abilities, such as thinking about the future, awareness of the importance of current decisions for the future, investigating options before making choices, etc.

It may be concluded that VET graduates achieve a level of career adaptability that should enable them to cope with the career challenges associated with the given transition period. In addition to this, significant predictors of career adaptability have been explored as variables that may be influenced in individuals and thus could increase their career adaptability.

Limitations

The results and conclusions of the present study need to be considered in light of the study's limitations. Specifically, the use of self-report measure and the cross-sectional design, which does not allow for assessing the development of career adaptability over time, establishing the influence of the variables on career adaptability at individual time points, or evaluating the causal relationship between the variables. The direction of the effect of the variables may be bidirectional or even in a reverse order. Although the models presented are statistically significant, another limit to be highlighted is the low level of variance of career adaptability explained by the independent variables included in the individual models. The present study used only a limited set of demographic and school-related variables, and the inclusion of other variables into the research could well have led to different results. A consideration of the limits may be further directed to the used tool. Although the Career Adapt-Abilities Scale is an internationally accepted and commonly used tool, it is a self-evaluating scale capturing subjective responses from recipients. The relevance of the answers therefore depends primarily on the extent to which the recipients are able to realistically assess their abilities. Future research should also examine whether the current research findings could be replicated in other cultural settings. Despite these limits, we assume that the results drawn from this study may provide a clearer picture about the role of demographic and school-related variables in the career adaptability of VET graduates and suggestions can be used by career advisors and career educators to develop more appropriate and effective career guidance and educational interventions.

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