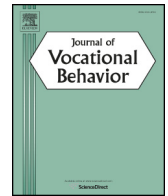




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Perceived career barriers and vocational outcomes among university undergraduates: Exploring mediation and moderation effects

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ABSTRACT

This study explores the role of perceived internal and external career barriers on undergraduates' vocational outcomes, such as academic major satisfaction and vocational identity commitment. Moreover, it tests career adaptability as a moderator in the barriers-vocational outcomes link. The study was carried out in three public universities in Lithuania. In total, 288 first and second year undergraduate students took part in it. Results demonstrated internal but not external barriers to be negatively associated with undergraduates' vocational outcomes. Furthermore, academic major satisfaction was found to be a partial mediator in the perceived career barriers-vocational identity commitment link. Finally, introducing career adaptability as a moderator revealed significant moderated mediation effects. In this case, both internal and external career barriers were found to negatively relate to vocational identity commitment through academic major satisfaction, the effect being particularly salient at the low values of career adaptability.

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1. Introduction

Perceived career barriers are generally defined as perceived difficulties in achieving career goals. Specifically, these can be "events or conditions, within the person or in his or her environment, that make career progress difficult" (Swanson & Woitke, 1997, p. 434). In the context of this study, perceived barriers refer to perceived difficulties in attaining the chosen academic major.

As research shows, there may be quite many barriers that people encounter in their careers (Swanson & Tokar, 1991). Although there is no one agreed upon classification, previous studies provide enough empirical basis for distinguishing between the internal and external barriers (see Creed, Patton, & Bartrum, 2004; Lent, Brown, & Hackett, 2000; McWhirter, Torres, Salgado, & Valdez, 2007). Internal barriers are person-focused and refer to such factors as perceived lack of ability, motivation or interest in pursuing career goals. External barriers are environment-focused and refer to various contextual factors, such as financial problems, family demands, employment restrictions, and the like.

Although some findings on perceived career barriers reveal their unexpectedly positive effects (e.g. Hirschi, Lee, Porfeli, & Vondracek, 2013; Lindley, 2005) implying that barriers can possibly serve not only as hindrance, but also as challenge factors in career development (Hirschi et al., 2013), they are usually explored as a negative precondition impeding career development. In line with this, they have been linked to career indecision (Albert & Luzzo, 1999; Constantine, Wallace, & Kindaichi, 2005; Creed et al., 2004), less career planning (Cardoso & Moreira, 2009) and readiness (Hirschi, 2011), lower or less adequate aspirations

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(Creed, Wong, & Hood, 2009; Jackson, Kacanski, Rust, & Beck, 2006; Kenny, Blustein, Chaves, Grossman, & Gallagher, 2003), and have been reported to have an effect upon post-secondary career plans (McWhirter et al., 2007) and career expectations in children (Creed, Conlon, & Zimmer-Gembeck, 2007).

However, despite an increased interest in this topic, the findings fail to provide a comprehensive picture of the role that perceived barriers play in career choice. On one hand, this is because perceptions of barriers are often analyzed in specific contexts (i.e. in female samples or minority populations). On the other hand, the effect of perceived career barriers is largely bound to respondents' career stage and can hardly be generalized across all age groups. For instance, the outcomes of high school students' perceived future-related barriers do not necessarily compare to those experienced by their older counterparts.

This study focuses specifically on first and second year university undergraduates' perceptions of career barriers. At the beginning of university studies this issue is of high importance, for it is the time when students have just undergone the transition from school to higher education and are likely to do a "reality check" about their chosen academic major or vocational choice in general. The topic is also relevant in the context of the current situation in the labor market. Similarly to the rest of the European Union, an increase in youth unemployment has been observed in Lithuania, reaching approximately 19% in the recent years (Statistics Lithuania, 2015). While for the large part this is an economic issue, it also raises a psychological question: How do career choice and vocational track look like in the minds of the future labor market entrants? Given the uncertainty of occupational future, exploration of undergraduates' perceived career barriers and their psychological outcomes is a matter of particular interest.

Based on previous studies, perceptions of barriers may negatively affect career attitudes and behaviors (Albert & Luzzo, 1999; Leal-Muniz & Constantine, 2005), and thus imply a potential threat to successful career development at this career stage. Nevertheless, it is argued that the effect of actual or perceived difficulties could be mitigated by certain adaptive behaviors (Konstam, Celen-Demirtas, Tomek, & Sweeney, 2015) or efficacy beliefs (Albert & Luzzo, 1999; Betz, 2001). These implications suggest the following research prospects that will be further addressed in this study: a) linking perceived career barriers to specific vocational outcomes that indicate undergraduates' (un)successful career choice; b) testing their negative effects upon these outcomes; c) exploring potential moderators that mitigate the negative perceived barriers effect.

1.1. Career barriers and vocational outcomes

To address the first question of interest, research literature suggests a number of variables that reflect a successful career choice. In this study, academic major satisfaction and vocational identity commitment are defined as positive vocational outcomes of the transition from school to higher education and explored in relation to perceived career barriers.

The satisfaction measure was included in this study, because job or career satisfaction is often considered as the most salient psychological indicator of career success (Heslin, 2005; Zacher, 2014). Given the sample of the study (i.e. undergraduate level students), academic major satisfaction was taken into account, as this type of satisfaction is the most relevant during the undergraduate studies. Based on classical conceptualizations (i.e. job satisfaction; see Locke, 1969), academic major satisfaction may be defined as an evaluative response to academic choice, which manifests in a pleasurable emotional state. According to Locke (1969), satisfaction is a function of the perceived relationship between what one wants from one's job and what one perceives it as entailing. In a similar vein, academic major satisfaction is understood here as the pleasurable emotional state resulting from the congruence between what one wants and what one actually receives from his or her academic major.

The second positive vocational outcome is vocational identity commitment. Its inclusion in this study is based on a number of findings, which equally emphasize the sense of commitment as a positive aspect of career development (Diemer & Blustein, 2007; Koslowsky, 1987; Porfeli, Lee, Vondracek, & Weigold, 2011; Weiss, 1999). Vocational identity commitment reflects consigning oneself to particular choices (Crogetti, Rubini, & Meeus, 2008; Porfeli et al., 2011). It is thus an important component in undergraduates' career development. When analyzed in the context of perceived barriers, it might provide an additional insight on what factors determine committing oneself to certain careers.

1.2. Theoretical background for linking barriers to vocational outcomes

Despite its relevance in career choice, the topic of barriers has often been a secondary issue in most of the theoretical models and has been argued to lack a comprehensive theoretical framework (Swanson, Daniels, & Tokar, 1996). However, as barriers constitute part of vocational environments, the person-environment (P-E) fit approach (e.g. Dawis & Lofquist, 1984) may offer an interesting analytic perspective for linking perceptions of barriers to their outcomes. Within this study, perceived career barriers are argued to reflect a certain vocational misfit, which further leads to the hypothesis about its negative effect upon academic major satisfaction and commitment.

Based on the P-E fit approach, the fit is defined as the congruence or correspondence between the person and the environment (Edwards & Shipp, 2007). Numerous studies have shown its positive outcomes, such as satisfaction, identification, and commitment, whereas a lack of fit has well documented negative effects (Cable & DeRue, 2002; Greguras & Diefendorff, 2009; Edwards & Shipp, 2007; Kristof-Brown, Zimmerman, & Johnson, 2005). Notably, P-E fit is conceptualized as a multidimensional construct encompassing various types of fit (Jansen & Kristof-Brown, 2006; Kristof-Brown et al., 2005). Vocational fit is considered to be the broadest type of P-E congruence (Kristof, 1996). Building on previous works (e.g. Feij, van der Velde, Taris, & Taris, 1999; Schmitt, Oswald, Friede, Imus, & Merritt, 2008), it results from the assessment of what one possesses (in terms of skills) or desires (in terms of needs, interests, or values) and what one receives from his or her vocation (in terms of requirements and benefits). Although perceptions of career barriers do not directly indicate a vocational misfit, they imply a

certain person–vocation incongruence. Specifically, internal (e.g. perceived lack of abilities) or external (e.g. perceived lack of employment opportunities) career barriers reflect a restriction in seeing oneself in the chosen vocation. Thus, high levels of perceived barriers could be regarded as a proxy of vocational misfit.

To further elaborate on this, the theory of work adjustment (TWA; Dawis & Lofquist, 1984) provides theoretical framework for linking perceptions of career barriers to academic major satisfaction and vocational identity commitment. Based on TWA, work environments require from a person certain qualities or skills, whereas a person expects his/her work environments to have certain reinforcers. Thus, correspondence is high when a person meets the demands posed by a work environment, or a work environment meets the needs of a person (Su, Murdock, & Rounds, 2015). The predictive model posited in this theory considers satisfaction as the most proximal outcome of P–E correspondence which, in turn, predicts tenure (Dawis, 2005). Referring to this, satisfaction can be seen not only as the outcome, but also as a mediator in the relationship between P–E fit and tenure-related outcomes.

The outcomes of person–environment congruence have been widely tested in work settings. Meta-analytic studies have demonstrated the relationship between various types of P–E fit and satisfaction to be one of the strongest (Kristof-Brown et al., 2005). Moreover, there is some evidence on the indirect link between the person–environment fit and tenure intentions (Dahling & Librizzi, 2015; Liu, Liu, & Hu, 2010; Wheeler, Coleman Gallagher, Brouer, & Sablynski, 2007) or actual turnover (Arthur, Bell, Villado, & Doverspike, 2006) as mediated by satisfaction. Based on a similar rationale, this study implies that perceived career barriers, as a proxy for vocational misfit, have a corresponding effect upon vocational outcomes. First, perceived career barriers are hypothesized to relate negatively to academic major satisfaction. Second, this study aims to explore a possible indirect relationship, where academic major satisfaction is hypothesized to act as a mediator in the link between barriers and vocational identity commitment (which indicates tentative vocational tenure, i.e. consigning oneself to the chosen vocational track). This extends previous research on the detrimental career barriers' effect upon vocational outcomes by focusing on the aspect of their relationship that has not been extensively addressed.

Hypothesis 1. Perceived career barriers relate to vocational identity commitment through academic major satisfaction:

Hypothesis 1a. Perceived barriers relate negatively to academic major satisfaction.

Hypothesis 1b. Academic major satisfaction mediates the link between perceived barriers and vocational identity commitment.

1.3. Moderator variables in the perceived barriers–outcomes link

The subsequent analysis of potential moderators in the barriers–outcomes relationship follows from the theoretical assumptions suggesting that certain personal characteristics could ease the adjustment to vocational environments (Dawis & Lofquist, 1984). Generally speaking, the look at moderator variables is important for they might explain how to help advance student career development when encountered with unfavorable conditions. Following this line of inquiry, various personal agency variables have been in focus over the years in vocational research. In broad terms, agency refers to self-reflective and self-regulative mechanisms that enable an individual to act in a more efficient or flexible way in a given situation (Bandura, 1989). A rather novel perspective on the topic is offered by the constructivist approach (Savickas, 2005; Savickas et al., 2009), which introduces career adaptability as the focal construct that may serve as an explanation for individual differences in vocational outcomes.

Career adaptability denotes individuals' resources to cope with various challenges including developmental tasks, vocational traumas or occupational transitions (Savickas, 1997; Savickas et al., 2009). It consists of concern, control, curiosity, and confidence, which manifest as competencies leading to adaptive outcomes. Most importantly, career adaptability is argued to be a major

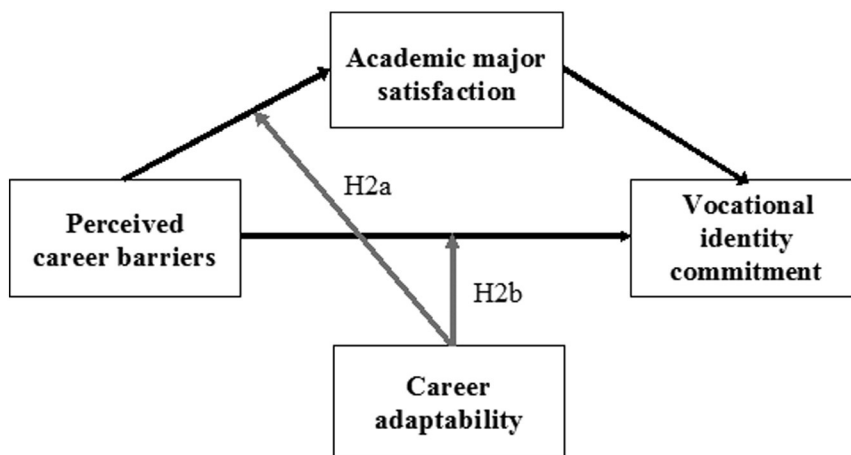


Fig. 1. Career adaptability as a moderator in the perceived career barriers–vocational outcomes link.

resource for adaptation, which relates to success, satisfaction, or individual well-being (Savickas, 2013). This suggests analyzing it as a tool for career construction and a potential moderating variable, which could help to deal with difficulties that occur.

The construct of career adaptability has received a lot of attention over the recent years linking it to a number of positive outcomes. For instance, it has been explored as a facilitator of school-to-work transition (Koen, Klehe, & Van Vianen, 2012), and has been found to relate to goal orientation and career optimism (Tolentino et al., 2014), work engagement (Rossier, Zecca, Stauffer, Maggiori, & Dauwalder, 2012), and general and professional well-being (Maggiori, Johnston, Krings, Massoudi, & Rossier, 2013). Notably, analytic approaches to exploring the role of adaptability vary across studies. For example, examining the link between antecedent characteristics and student satisfaction some researchers have looked at career adaptability as a mediator (e.g. McIlveen, Beccaria, & Burton, 2013; Wilkins et al., 2014), whereas others have analyzed adaptability as a moderator in predicting college outcomes (e.g. Wessel, Ryan, & Oswald, 2008). Such studies add to the explanation of the mechanism of how various forms of adaptability relate to adaptive vocational outcomes. However, additional empirical evidence is still necessary, particularly addressing career-related barriers in various vocational contexts. Thus, looking at the moderator effects could possibly add new insights on the topic.

This study implies that career adaptability buffers the negative response to perceived career barriers (see Fig. 1). Specifically, individuals who have well-developed career adapt-abilities should be more likely to demonstrate adaptive outcomes compared to those who have them less-developed: students with high scores in career adaptability are expected to retain higher satisfaction with their academic major and stay more committed to their vocational choice in an encounter to career barriers.

Hypothesis 2. Career adaptability is a moderator in the perceived barriers–academic major satisfaction–vocational identity commitment relationship:

Hypothesis 2a. Career adaptability moderates the link between perceived career barriers and academic major satisfaction, so that respondents who demonstrate high career adaptability will report higher satisfaction and, in turn, higher vocational identity commitment compared to respondents who demonstrate low career adaptability (moderated mediation effect).

Hypothesis 2b. Career adaptability moderates the link between perceived career barriers and vocational identity commitment, so that respondents who demonstrate high career adaptability will report higher levels of vocational identity commitment compared to respondents who demonstrate low career adaptability (moderated direct effect).

2. Method

2.1. Sample and procedure

The sample was drawn using the convenience sampling method with the following additional criteria: the respondents had to be full-time junior students and the sample had to be heterogeneous in terms of academic fields. In total, 288 undergraduate students took part in the study (25% male, mean age 19.67 years; $SD = .98$), representing over 20 academic disciplines, such as tourism, information technology, physics, social sciences, or language studies. The sample consisted of first and second year undergraduates from three state universities in Lithuania. Data collection lasted for two consecutive semesters from Spring 2014 to Fall 2014 (specifically, from February to May and from October to mid-December). The respondents filled-out a paper and pencil questionnaire during the class.

2.2. Measures

Perceived career barriers were measured with a 9-item scale ($\alpha = .81$), which consisted of two subscales measuring student perceptions of internal (four items; $\alpha = .75$) and external (five items; $\alpha = .71$) barriers. Internal barriers referred to, for instance, a lack of ability or interest to pursue the chosen vocational track, whereas external barriers referred to family, financial, labor market or similar restrictions. Respondents were asked to rate how likely they were to encounter each of the barriers on a five-point scale (1 – *almost unlikely*, 5 – *very much likely*). We opted to develop our own scale to better reflect the socio-cultural context in which the study was carried out. In the first step of scale construction, a preliminary set of items was developed, which included 36 items. In the second step, three professional psychologists selected the items for further analysis. The selection was based on the following criteria: the item had to reflect a specific career barrier applicable to students; it had to be clearly formulated, be relevant to the Lithuanian context, and not overlap with the remaining items. In total, 15 items were retained after this step. In the third step, the final structure of the scale was determined by conducting exploratory factor analysis in the pool of pre-selected items. Consequently, nine items were left in the scale, which is comprised of two subscales measuring internal and external barriers. Based on the results, the two-factor solution accounted for 53% of variance, the KMO measure of sampling adequacy was .83, and Bartlett's test of sphericity was significant ($\chi^2(36) = 668.70, p < .05$).

Career adaptability was measured using the CAAS International Form (Savickas & Porfeli, 2012), which has been recently validated in Lithuania confirming its original five-factor structure (Urbanaviciute, Kairys, Pociute, & Liniauskaitė, 2014). This measure consists of 24 items measuring career adapt-abilities in terms of concern, control, curiosity, and confidence (six items each). Respondents were asked to indicate how strongly they had developed the abilities described in the scale. The items were rated on a five-point Likert scale (1 – *not strong*, 5 – *strongest*). The total career adaptability score was used in the analysis. The overall scale

had good internal consistency with $\alpha = .92$ (for the subscales, internal consistency coefficients were as follows: concern $\alpha = .81$, control $\alpha = .76$, curiosity $\alpha = .79$, confidence $\alpha = .86$).

Academic major satisfaction was measured by a single item asking respondents to indicate their overall satisfaction with the chosen academic major on a 10-point scale (1 – not at all satisfied, 10 – absolutely satisfied). Single-item satisfaction measures have often been used in psychological research to measure global satisfaction, such as satisfaction with one’s job (Steijn, 2004) or life (Suh, Diener, Oishi, & Triandis, 1998). As this study did not aim to analyze specific dimensions of satisfaction, a one-item measure was considered appropriate for the purposes of this study.

To measure vocational identity commitment, the commitment subscale was taken from the Utrecht Management of Identity Commitments Scale (U-MICS, Crocetti et al., 2008). In this measure, commitment refers to “enacting enduring choices with regard to various developmental domains and to the self-confidence individuals derive from these choices” (Crocetti, Schwartz, Fermani, & Meeus, 2010, p. 172). The U-MICS is designed to measure exploration and identity commitments in a variety of life domains. In this study, the items were formulated to measure the vocational domain specifically. The commitment subscale contains five items ($\alpha = .85$), the respondents had to indicate their agreement with them on a five-point scale (1 – absolutely disagree, 5 – absolutely agree).

3. Results

SPSS and PROCESS statistical tool developed by Hayes (2013) were used to analyze the data. To test the hypotheses, mediation, moderation, and moderated mediation analyses were performed. Before conducting the analyses, descriptive statistics and inter-correlations between the study variables were calculated. They are provided in Table 1.

At the first step of testing the mediation and moderated mediation hypotheses, multiple regression analyses were performed (see Table 2). In model 1, the direct paths from independent variables to the mediator were estimated. The mediator (i.e. academic major satisfaction) was set as the outcome, perceived barriers were set as predictors, and background characteristics (i.e. age and gender) and career adaptability were set as statistical controls. In model 2, hierarchical regression analysis was run. The direct paths from independent variables to the outcome variable, controlling for the mediator, were estimated. The mediator (academic major satisfaction) was added to the above-mentioned predictor variable list and vocational identity commitment was set as the outcome. Table 2 provides the standardized (Beta) estimates for each regression model.

Results demonstrated internal but not external barriers to be negatively associated with academic major satisfaction, thus providing partial support for Hypothesis 1a. Furthermore, to test for the mediation effects stated in Hypothesis 1b, indirect effects of perceived career barriers to vocational identity commitment through academic major satisfaction were estimated using PROCESS. In order to do this, mediation analysis were performed, where vocational identity commitment was set as the outcome and internal and external barriers were in turn set as focal predictors. The remaining variables (i.e. perceived barriers that were not set as the focal predictor, respondent background characteristics, and career adaptability) were added to the covariates list.

The indirect effects and 95% bias-corrected confidence intervals were estimated using 5000 bootstrap samples, as recommended by Hayes (2009). A significant indirect effect was indicated by the confidence interval not including the zero value. According to the results, academic major satisfaction mediated the relationship between internal career barriers and vocational identity commitment (unstandardized indirect effect $-.093$, 95% CI = $[-.149; -.047]$). The direct path between internal barriers and vocational identity commitment remained significant after including the mediator (see Model 2 in Table 2) indicating partial mediation. In the case of external barriers, the mediation effect was not found (unstandardized indirect effect $-.012$, 95% CI = $[-.080; .023]$). Thus, Hypothesis 1 was only partially supported.

Furthermore, to examine for career adaptability as a moderator of the relation between perceived career barriers and academic major satisfaction (see Fig. 1, path H2a), moderated mediation analyses were performed, testing for moderated indirect effects. To

Table 1
Descriptive statistics and correlations among study variables.

Variables	M	SD	1	2	3	4	5	6	7	8	9	10
1	19.67	.98										
2	–	–	–.04									
3	2.36	.85	.03	.09								
4	2.51	.78	.04	–.10	.53***							
5	7.58	1.63	–.07	–.07	–.35***	–.20***						
6	3.39	.78	.01	–.01	–.31***	–.17**	.48***					
7	3.46	.60	.06	–.06	–.24***	–.07	.29***	.34***				
8	3.26	.79	.11	–.03	–.23***	–.11	.23***	.33***	.77***			
9	3.70	.71	–.02	–.10	–.27***	–.09	.33***	.28***	.78***	.42***		
10	3.33	.73	.03	.01	–.11	.02	.16**	.22***	.79***	.47***	.48***	
11	3.54	.75	.05	–.07	–.18**	–.04	.22***	.26***	.87***	.56***	.63***	.61***

Note. 1 – age, 2 – gender (0 = female, 1 = male), 3 – internal barriers, 4 – external barriers, 5 – academic major satisfaction, 6 – vocational identity commitment, 7 – CAAS total, 8 – CAAS concern, 9 – CAAS control, 10 – CAAS curiosity, and 11 – CAAS confidence.

** p < .01.
*** p < .001.

Table 2

Standardized regression coefficients predicting undergraduates' vocational outcomes.

	Model 1: Academic major satisfaction	Model 2: Vocational identity commitment
Age	-.07	(.00) .03
Gender ^a	-.04	(.02) .04
Internal barriers	-.27***	(-.23**) -.13*
External barriers	-.05	(-.02) -.01
Career adaptability	.22***	(.28***) .20***
Academic major satisfaction		.38***
R ²	.17	.29
ΔR ²		.12***
F (5;282)	11.91***	11.54***
F (6;281)		18.74***

Note. The coefficients in parentheses in Model 2 show the hierarchical regression results before introducing the mediator.

^a gender was coded as follows: 0 = female, 1 = male.

* p < .05

** p < .01

*** p < .001.

test for career adaptability as a moderator of the relation between perceived barriers and vocational commitment (see Fig. 1, path H2b), moderation analyses were performed testing for moderated direct effects. All interaction effects were estimated using PROCESS. Interactions between perceived career barriers and career adaptability in predicting academic major satisfaction and vocational identity commitment were estimated one at a time. In all cases, respondent background characteristics and variables that were not set as the focal predictor were included as covariates.

According to the results (see Table 3), career adaptability moderated the link between both internal and external perceived career barriers and academic major satisfaction, thus confirming Hypothesis 2a. Significant interactions in predicting academic major satisfaction are graphically shown in Fig. 2 and Fig. 3. Notably, because of the significant interaction between external barriers and career adaptability, the (moderated) indirect effect of external barriers upon vocational identity commitment was found to be significant, whereas in the simple mediation model it was not.

The results presented in Table 3 show that both internal and external perceived barriers had significant negative indirect effects upon vocational identity commitment through academic major satisfaction. Regarding the internal career barriers, the moderated indirect effects were more salient at the low values of adaptability; moreover, in the case of external career barriers, they were significant only when the values of career adaptability were low.

No significant interaction effects were found between any of the barriers and career adaptability in directly predicting vocational identity commitment. Therefore, Hypothesis 2b was not supported.

4. Discussion

This study aimed to demonstrate how undergraduates' perceptions of career barriers relate to other career variables that are pertinent upon entering higher education, such as academic major satisfaction and vocational identity commitment. The results yielded several insights. First, similarly to previous findings obtained in different populations (e.g. Creed et al., 2004; Kenny et al., 2003; Leal-Muniz & Constantine, 2005), the study showed perceived career barriers to be detrimental to undergraduates' vocational outcomes. However, this was true in the case of internal barriers only: they were found to relate to both outcomes measured in this study (i.e. internal barriers related negatively to academic major satisfaction and vocational identity commitment), whereas external barriers did not predict any of the above-mentioned outcomes.

Moreover, in line with Hypothesis 1, the link between perceived internal career barriers and vocational identity commitment was partially mediated by academic major satisfaction. This is noteworthy result, as it provides a potential explanation for the way perceptions of barriers affect career choice: our findings suggest that perceived career barriers result in an affective response first, further leading to commitment-related cognitions and/or behavioral intentions.

Table 3

Moderated indirect effects of perceived career barriers to vocational identity commitment.

	Value of the moderator (career adaptability)	Estimate	95% CI
Internal barriers → AM satisfaction → VID commitment	High	-.061	[-.124; -.002]
	Low	-.160	[-.256; -.085]
External barriers → AM satisfaction → VID commitment	High	.039	[-.016; .102]
	Low	-.107	[-.206; -.027]

Note. Based on unstandardized estimates.

AM – academic major; VID – vocational identity.

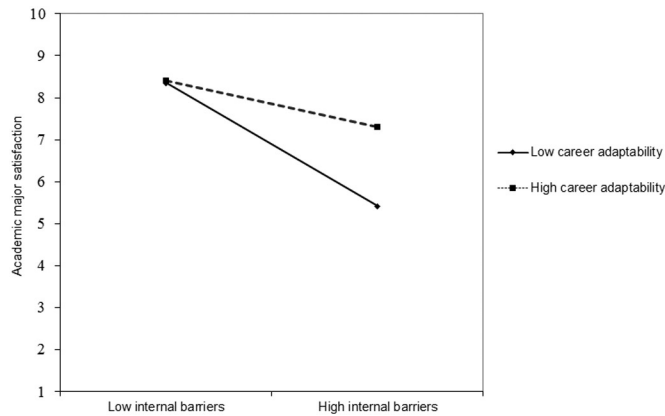


Fig. 2. Interaction between internal barriers and career adaptability in predicting academic major satisfaction.

However, the mediation hypothesis was only partially supported, because the above-mentioned results did not apply to external career barriers. A potential explanation for this lies in the distinction between different types of barriers. Based on previous conceptualizations of internal and external barriers (Albert & Luzzo, 1999; Creed et al., 2004), perceptions of career-related difficulties stem from different sources. Internal barriers refer to certain restrictions imposed by oneself (i.e. lack of abilities, interest, etc.), whereas external barriers result from perceived restrictions in the environment. It is therefore possible that personal sources of vocational misfit were regarded by the respondents as more permanent than the contextual ones. The unfavorable external conditions (i.e. external career barriers) mostly apply to the limited period of time spent acquiring the chosen academic major, thus presumably they were seen as less threatening and did not have such an impeding effect upon academic major satisfaction and vocational identity commitment.

In addition to this, it is also important to take background characteristics into account, particularly when interpreting the results on external career barriers. Not only perceptions of barriers, but also academic major satisfaction and commitment may be contingent upon the situation in the labor market. For example, employability chances may vary depending on gender, age, occupational field, or other contextual factors (Merkys & Brazienė, 2013; Morrison, 2014; Tomlinson, 2012). Our study has certain limitations regarding this. The sample was not equally distributed in terms of gender, which may somewhat bias the findings. We have addressed this issue by including gender as a control variable in all regression models. Whereas it did not predict the vocational outcomes analyzed in this study, gender differences still remain an important issue to address in future research.

Occupational field is another factor that might be relevant in interpreting the findings. Different occupational fields yield different opportunities in the labor market (e.g. Okay-Somerville & Scholarios, 2013; Tomlinson, 2012). This may, in turn, affect either perceptions of barriers or academic major satisfaction and commitment. Unfortunately, it is rather difficult to control for this variable in statistical analyses because of the numerous criteria that determine the rank of each profession in the labor market in the given period of time. The sample of our study represented a number of disciplines, all of which were classified as either “in demand” or “in high demand” according to the Employment Opportunities Barometer by the Lithuanian Labor Exchange (2015). In this way, the sample did not include any extremes in terms of future occupational opportunities. However, we do acknowledge that there may be considerable variations even within the same occupational field, which fell behind the scope of our analysis.

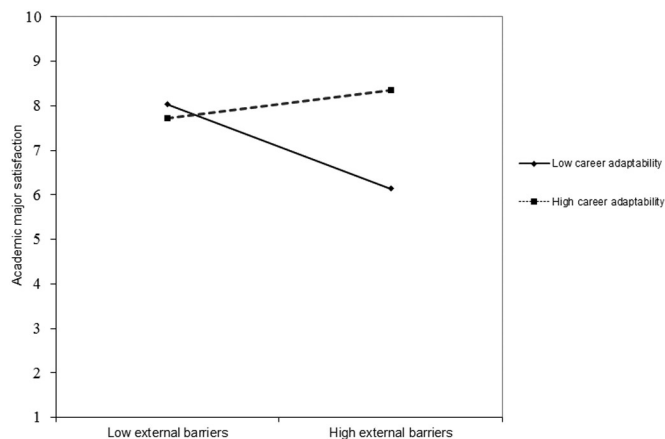


Fig. 3. Interaction between external barriers and career adaptability in predicting academic major satisfaction.

The subsequent question of the study concerned the moderating role of career adaptability. The results partially supported our hypothesis showing that the outcomes of perceived career barriers were different at different levels of career adaptability. However, interestingly, career adaptability did not moderate the direct link between perceived career barriers and vocational identity commitment (see *Hypothesis 2b* and path H2b in Fig. 1). Thus, again, testing the second hypothesis supported our initial proposition based on theory of work adjustment (Dawis & Lofquist, 1984) that the intention to stay in the chosen vocation may be primarily explained by the reduced academic major satisfaction.

Notably, the moderated mediation effects were shown to be stronger when the values of career adaptability were set to low. Stated differently, in an encounter to career barriers, specifically lack of adaptability seems to account for lower academic major satisfaction and vocational identity commitment. These findings can be interpreted using the constructivist approach, which emphasizes career adaptability as a resource and a tool for meeting vocational challenges (Savickas, 2005, 2013). Entering higher education is one of the most important post-secondary transitions which may be regarded as a transition to adulthood encompassing both opportunities and challenges (Meeus, 1993; Test et al., 2009). Career adaptability is expected to have a supportive function at this career stage. In line with this, previous empirical studies have advocated higher levels of career adaptability to relate to a number of adaptive career outcomes in terms of school-to-work transition (Koen et al., 2012) or employment status (Guan et al., 2014). Our current results generally complement these findings. However, at the same time, they focus on the other side of the coin demonstrating the detrimental effect of the lack of adaptability resources.

Additionally, the moderator analysis revealed yet another aspect of the relationship between perceived barriers and academic major satisfaction and/or commitment. Whereas previously (see results referring to *Hypothesis 1*) only internal barriers significantly related to undergraduates' vocational outcomes, after introducing career adaptability as a moderator, both internal and external barriers proved to significantly predict the outcomes. Specifically, when the respondents were lacking career adaptability, they were more likely to demonstrate less academic major satisfaction in relation to both internal and external barriers. Bearing on the definition of career adaptability as a psychosocial coping resource (Savickas, 1997; Savickas et al., 2009), this is a rather convincing result. It implies that when psychological resources for career development are not sufficient, individuals tend to regard both types of barriers as detrimental, presumably inflating the perceived vocational misfit (whereas in the condition of high adaptability this is not the case).

This leads to several research and practical implications. First, our findings draw attention to career adaptability as a potential buffer in the relation between undergraduates' perceived career barriers and their outcomes. Second, specifically the lack of career adaptability was demonstrated to be relevant for explaining the barriers–outcomes link, which suggests further testing for different career outcomes with regard to high/low levels of adaptability. Although many studies consider it to be beneficial for career development, career adaptability is still quite rarely explored as a moderator. Finally, looking from the practical perspective and in line with some previous suggestions (e.g. Koen et al., 2012; Taber & Blankemeyer, 2015), our results emphasize the importance of developing and maintaining career development competencies. Again, as low levels of career adaptability were found to account for the negative internal and external barrier effects, interventions aimed at increasing career adaptability during the transition from school to higher education might be particularly beneficial in preventing various unfavorable outcomes.

4.1. Limitations and future directions

This study is subject to several limitations that have to be taken into account before drawing conclusions. First, we aimed to examine the outcomes of perceived career barriers, which may imply a temporal sequence of the variables under examination. However, as the study was not carried out on a longitudinal basis, interpretation of the findings should be done with caution. Further investigations would benefit from the examination of longitudinal effects, as it is reasonable to imply that both satisfaction and commitment may evolve in time. Second, the sampling strategy does not allow for making conclusions about the effects of perceived barriers across different social and demographic indicators. Finally, all variables were measured using self-report scales, which may produce somewhat biased results. While it is not always possible to obtain objective indicators (e.g. in the case of satisfaction), future studies may consider including an objective measure of career-related barriers, which would give a different analytic possibility to explore the barriers–outcomes link.

5. Conclusion

This study adds a potential explanation for the way perceived difficulties affect undergraduates' career choice and development. Our findings demonstrated the link between perceived career barriers and vocational identity commitment to be partially mediated by academic major satisfaction. In the context of this study, satisfaction may thus be regarded as a proximal correlate of perceived career barriers. In addition, particularly internal barriers proved to be detrimental for both academic major satisfaction and vocational identity commitment. These results suggest that following the transition from school to higher education, undergraduates' internal restrictions are more salient than the external ones in judging about their vocational (mis)fit. Finally, career adaptability proved to be a moderator in the perceived career barriers–outcomes link. This draws attention to the importance of developing career competencies, as insufficient career adaptability resources seem to be detrimental in an encounter to internal and/or external barriers.

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