Extracurricular Activities and Career Indecision: A Look at the Mediating Effect of Vocational Exploration

Anne-Sophie Denaulta, Université Laval

Catherine F. Ratellea, Université Laval

Stéphane Duchesnea, Université Laval

Frédéric Guaya, Université Laval

aDépartement des fondements et pratiques en éducation, Université Laval, 2320, rue des Bibliothèques, Québec, QC, Canada, G1V 0A6. E-mails: [anne-sophie.denault@fse.ulaval.ca](mailto:anne-sophie.denault@fse.ulaval.ca), [catherine.ratelle@fse.ulaval.ca](mailto:catherine.ratelle@fse.ulaval.ca), [stephane.duchesne@fse.ulaval.ca](mailto:stephane.duchesne@fse.ulaval.ca), [frederic.guay@fse.ulaval.ca](mailto:frederic.guay@fse.ulaval.ca)

Corresponding Author: Anne-Sophie Denault, PhD, Département des fondements et pratiques en éducation, Université Laval, 2320, rue des Bibliothèques, Québec, QC, Canada, G1V 0A6. Phone: 1-418-656-2131 # 6930. Fax: 1-418-656-2885. E-mail: anne-sophie.denault@fse.ulaval.ca

Funding: This work was supported by the Social Sciences and Humanities Research Council of Canada (grant number 410-2005-0436 and 410-2011-0706) and the Fonds de Recherche du Québec sur la Société et la Culture (grant number 03509-FS081703).

Acknowledgements: The authors wish to thank Bei Feng for her help and support in the statistical analyses.

Extracurricular Activities and Career Indecision: A Look at the Mediating Role of Vocational Exploration

Submitted October 31 2018

Abstract

This study examined whether vocational exploration mediated the association between participation in extracurricular activities and career indecision among high school students. A total of 312 students were surveyed over three waves of data collection (Secondary 3 to Secondary 5). Participation in extracurricular activities (number and types), vocational exploration (self and environment), and career indecision (undecidedness, self-unclarity, and career choice unimportance) were self-reported. Results revealed that participation in a higher number of extracurricular activities predicted an increase in vocational exploration the following year. Moreover, vocational exploration predicted a decrease in career indecision the year after that. However, the predictive association between participation in extracurricular activities and career indecision was not mediated by vocational exploration. Examination of the types of activities (sports; arts and sociocultural activities; academic-related committees, volunteering, and civic activities) also showed that participation in arts and sociocultural activities predicted an increase in vocational exploration, whereas participation in academic-related committees, volunteering, and civic activities predicted a decrease in career indecision by the end of the high school years. These results suggest that extracurricular activities could be promoted by career counselors as an additional strategy for supporting students in their exploration of the world of work.

*Keywords*: Extracurricular Activities, Career Development, Career Exploration.

Extracurricular Activities and Career Indecision: A Look at the Mediating Role of Vocational Exploration

Choosing a career is among the most complex and significant decisions to be made in one’s lifetime (Gati, 2013). The career students choose has the potential to meet their needs, values, and interests, and thus influence their quality of life (Guay, Ratelle, Senécal, Larose, & Deschênes, 2006). As underlined by Gati (2013), career development is a continuous process that involves seeking, obtaining, and processing information about oneself and one’s environment. While supported during the high school years by most educational systems around the world, this process can be difficult for some students, and result in career indecision. Career indecision is the primary reason for not pursuing postsecondary education (Malatest et al., 2008) and can lead to delays in youths’ entry into the labor market (Quebec Ministry of Education, 2007). Encouraging youths to explore and formulate a concrete career plan is thus important, especially in the context of the knowledge economy and its growing need for a highly skilled workforce (Powell & Snellman, 2004).

Adolescence is a time of exploration, when identity development and planning for the future emerge as important developmental tasks (Beal & Crockett, 2010; Erikson, 1968; Porfeli, Lee, & Vondracek, 2013). Although most adolescents are not significantly engaged in career decision-making during the high school years, many have already embarked upon a process of vocational exploration (Vondracek, 1993). Focusing on the high school years therefore appears appropriate when examining the processes associated with vocational development. Multiple actors in the school system, such as teachers and career counselors, can promote high school students’ vocational development. In this study, we focused on another salient, yet understudied school experience: participation in extracurricular activities (ECAs).

ECAs are formal activities characterized by the presence of an adult leader and a peer group, and an emphasis on skill building (Larson, 2000; Mahoney & Stattin, 2000). They take place at school outside of regular school hours, are rule-guided, and follow regular participation schedules. These activities are not intended for vocational development per se*.* When it comes to the use of participation in ECAs as a study variable, there are important measurement issues regarding its operationalization (Busseri & Rose-Krasnor, 2010; Rose-Kranor, 2009). Both psychological components (e.g., degree of engagement in the activity) and behavioral components (e.g., number, intensity, types) can be considered when measuring students’ involvement in ECAs. In this study, we decided to focus on two behavioral components, namely the number and types of activities, as we believe these two dimensions may more accurately reflect the level of students’ curiosity and their interests than the intensity of their participation.

To our knowledge, few studies have examined the contribution of ECAs to adolescents’ vocational development, although these activities have been found to contribute to identity development during adolescence (Mahoney, Vandell, Simpkins, & Zarrett, 2009). Hence, ECAs may play a role in students’ vocational development, initially through vocational exploration – the process of gathering information about the professional world while considering personal interests (Stumpf & Colarelli, 1983) – which is important when it comes to decreasing career indecision (Porfeli & Skorikov, 2010). In this study, we examined direct and indirect associations between participation in ECAs, vocational exploration, and career indecision during the high school years. We also examined the differential contributions of various activity types to these associations. Identifying the benefits of ECAs in terms of vocational decision-making could yield innovative intervention strategies to help support students during this important phase leading up to their work lives.

**Participation in ECAs, Identity Development, and Exploration During Adolescence**

Career exploration can be intentional, such as when students reflect on various possible careers, or unintentional, such as when it emerges through experiences gained in leisure activities, including ECAs (Staff, Messersmith, & Schulenberg, 2009; Vondracek & Skorikov, 1997). One observation that emerges from the literature on ECAs is that these activities constitute unique contexts in students’ lives wherein they can personally choose to be involved in activities that meet their own interests (Blomfield & Barber, 2011). These activities also give them more freedom to explore and express identity options than may be available to them under more rigid structures such as in academic settings (Blomfield & Barber, 2011; Eccles, Barber, Stone, & Hunt, 2003; Eccles & Barber, 1999). For example, adolescents might describe themselves as being “sporty” “artistic,” or “brainy” depending on whether they participate in sports, theater, or the chess club (Blomfield & Barber, 2012). Thus, participation in ECAs can be seen as a manifestation of adolescents’ identity or personality. Through their participation in ECAs, students also discover their talents, values, abilities, and limits through the successes and failures they experience (Dworkin, Hansen, & Larson, 2003; Mahoney et al., 2009). ECAs are thus likely to facilitate the process of identity development, as suggested by prior studies (e.g., thinking about one’s identity, gaining self-knowledge, and developing a stronger sense of self; Eccles et al., 2003; Hansen, Larson, & Dworkin, 2003; Larson, Hansen, & Moneta, 2006; Youniss, McLellan, Su, & Yates, 1999).

Linking this field of research to developmental theories of career development, it can first be related to Holland’s RIASEC theory on personality types (Holland, 1997). For instance, *artistic* types have artistic interests and could participate in artistic activities during the high school years (e.g., the school band); *investigative* types have scientific interests and could participate in scientific activities at their school (e.g., the science club); *social* types show a natural tendency to help others and could get involved in volunteering during the high school years. Although not all ECAs necessarily tap into these personality types and while the theory is much more complex than is shown by these examples, students might get involved in activities that reflect their interests and some of these interests could relate to an eventual career choice. Another relevant theoretical framework is Experiential Learning Theory (ELT; Kolb, 1984, 2014). This model emphasizes the central role that experience plays in the learning process and proposes a holistic process of learning that helps explain how experience is transformed into learning and reliable knowledge. Since learning is a central task of career exploration, ECAs could play a role in career exploration by leading to a better understanding of the self and the world of work (Atkinson & Murrel, 1988). For example, ECAs could be important among high school students with regard to the “concrete experience” adaptive mode of learning by providing them with opportunities to identify values, interests, personal strengths and weaknesses, as well as in vivo experiences for exploratory purposes. In the school system in which this study was conducted, by the end of Secondary 3, students already have to make choices concerning specific courses they will enroll in the following year. These choices (e.g., whether to take advanced math and science courses) have long-lasting consequences on their future school path. Participating in a science club, for example, might help students make this important choice by realizing they have interests and skills in this area.

Through all these experiences, it is likely that students will start to reflect on the kind of job that would suit them, project themselves into various worker roles (Porfeli et al., 2013), and begin to explore these avenues. Given that career exploration is embedded within a more general process of identity exploration during adolescence (Vondracek & Skorikov, 1997), and that gaining knowledge about one’s interests, values, goals, and skills is central to vocational identity development (Porfeli et al., 2013), participation in ECAs could well contribute to vocational exploration during the high school years. Overall, various theoretical perspectives suggest that ECAs could contribute to students’ vocational exploration during the high school years. Participation in ECAs is thus seen both as a “manifestation” of an interest (e.g., in art, sports, politics, etc.), which could be vocational (e.g., linked to RIASEC types) and as a meaningful learning experience. Accordingly, participating in these kinds of activities might lead adolescents to explore further as a result of their learning experiences. Based on prior research and theory, the following hypothesis is proposed.

H1: Participation in ECAs will predict an increase in vocational exploration.

**Vocational Exploration and Career Indecision in Adolescence**

Adolescents’ reflections on their future selves and worker roles are important because they can influence their decisions regarding the careers they wish to pursue (Beal & Crockett, 2010). To make these decisions, students first have to collect information about themselves and the world of work (Guay et al., 2006). Multiple theories on vocational development view adolescence as a salient period for exploring and refining career choices (Staff et al., 2009) and include vocational exploration as an essential preliminary step in career decision-making and choices (e.g., Blustein, 1992; Erikson, 1959; Gottfredson, 1981; Holland, 1985; Jordaan, 1963; Super, 1990; Vondracek, 1993). Vocational exploration can be viewed as a set of behaviors and cognitive processes aimed at increasing one’s knowledge about oneself and one’s environment (Jordaan, 1963). More specifically, exploration of the self refers to learning more about one’s personality, including one’s values, interests and abilities, whereas exploration of the environment refers to collecting information about the opportunities and constraints one faces, gathered in various contexts such as school, work, and social networks (Blustein & Flum, 1999; Duchesne, Mercier, & Ratelle, 2012; Porfeli, Hartung, & Vondracek, 2008). By improving their understanding of themselves and the world of work, students become better able to identify the career opportunities that fit their core features (Porfeli et al., 2013). This should, in turn, decrease their level of career indecision by the end of high school. Career indecision occurs when one is unable to make an appropriate decision regarding an academic or professional activity (Osipow, 1987). This can be a normative experience during the early stages of the career decision-making process (Guay et al., 2006). In this study, we opted for a multidimensional conceptualization of career indecision (Holland & Holland, 1977), as assessed by the Career Decision Profile (Jones and Lohman, 1989). Based on prior theory and research, the following hypothesis is proposed.

H2: Vocational exploration will predict a decrease in career indecision.

**The Relationships Between ECAs, Vocational Exploration, and Career Indecision**

Based on the notion that participation in ECAs may serve as an important source of experiential learning that enables students to explore their own personal characteristics and future career possibilities, thereby reducing their career indecision, a central aim of this study was to explore whether vocational exploration mediates the relationship between participation in ECAs and career indecision. To our knowledge, no study to date has examined the role of vocational exploration in the relationship between participation in ECAs and career indecision among high school students. This is important since extracurricular activities are resources that are already available in schools, accessible to all students, and part of normative experiences during the high school years. If participating in these activities can increase students’ vocational exploration, and ultimately decrease their career indecision, these results could add new insights to current career theories. Since no clear empirical evidence has demonstrated that ECAs directly predict career indecision, the following hypotheses is proposed.

H3: Vocational exploration will mediate the relationship between participation in ECAs and career indecision.

**The Differential Contribution of ECA Types**

Prior research suggests that the extent to which students report identity experiences in ECAs depends on the types of activities they engage in. For instance, students who are involved in certain types of activities may be more likely to engage in tasks or endeavors that stand out from the rest of their experience, and begin to think more about who they are or about their future as a result of the activity. Indeed, prior research suggests that students who are involved in performance and fine arts report higher levels of identity-related exploration experiences than students who are involved in sports (Hansen et al., 2003), while students who are involved in faith-based activities report higher rates of identity experiences compared to all other types of activities (e.g., sports, performance and fine arts, academic clubs and service activities; Larson et al., 2006). Thus, the associations between participation in ECAs and vocational exploration may differ for different types of extracurricular activities. Based on these considerations and given the state of research, the following hypothesis is proposed with respect to sports, while no other hypothesis was formulated with respect to the other types of activities.

H4: Participation in sports will not predict an increase in vocational exploration during the high school years.

**Study Objectives**

The first objective of this study was to test a mediation model in which higher participation in ECAs among students in Secondary 3 was expected to predict greater vocational exploration of “who they are” and their environment in Secondary 4, which, in turn, was expected to predict a lower level of career indecision (i.e., undecidedness, self-unclarity, and career choice unimportance) in Secondary 5. The second objective was to test the differential contribution of specific activity types (sports; arts and sociocultural activities; and academic-related committees, volunteering, and civic activities). Important covariates associated with both vocational exploration and career indecision were also taken into account (i.e., family income and structure, parental education and occupation, grades, academic specialization, and part-time employment; e.g., Creed, Patton, & Prideaux, 2007; Lent et al., 2002; Staff et al., 2009; Zimmer-Gembeck & Mortimer, 2006). Vocational exploration and career indecision in Secondary 3 (T1) were also used as control variables in the analyses to isolate stability effects when examining the predictive associations.

**Method**

**Participants and Procedure**

The data came from a longitudinal two-cohort study on school adjustment and persistence spanning from the end of elementary to the end of high school. It took place in the province of Quebec, Canada, from the 2005-2006 academic year, when students were in their last year of elementary school (Grade 6) to 2010-2011, when they were in their last year of high school (Secondary 5). The total sample included 762 students (45% boys, 55% girls) with an average age of 11.80 years (SD = .44) at the start of the study. The majority of students were born in the province of Quebec (93%), spoke French at home (97%), and grew up in intact families (71%). The children came from middle-class families, as indicated by their average family income ($50,000 to $59,000 CAN, as reported by mothers), which corresponded to the average household income in the province of Quebec at the time of the first data wave ($59,734 CAN; Statistics Canada, 2009).

Participants were randomly selected by the Quebec Ministry of Education among students enrolled in Grade 6 during the 2005-2006 academic year and attending a French-speaking public school (N = 2500). The sample was stratified on the basis of gender, geographic representation (rural or urban), and socioeconomic status. Students were recruited by phone after a letter was sent to their homes. Once parental consent had been obtained, students were given a consent form and questionnaire in either paper or electronic format. Participants were surveyed in the spring of each year, over six consecutive years. In the present study, only students in Cohort 2 (*n* = 561) were selected since they were the only ones to have completed all the measures related to our variables of interest. We used three waves of data collection: Secondary 3 (ages 14-15; Time 1; T1; *n* = 320), Secondary 4 (ages 15-16; Time 2; T2; *n* = 242), and Secondary 5 (ages 16-17; Time 3; T3; *n* = 293), the last wave corresponding to the last year of high school in the Quebec education system.

In total, 312 students provided data on ECA participation at T1 (56% of the original Cohort 2; 55% girls, mean age at T1 = 14.80, *SD* = 0.51). Differences between the retained (*n* = 312) and non-retained samples (*n* = 249), with regard to the sociodemographic information assessed at the start of the study (Grade 6; ages 11-12), revealed that students in the retained sample had better grades (French: *t*[390] = -2.41, *p* = .016; Mathematics: *t*[393] = -2.96, *p* = .003) and were more likely to come from an intact family (χ2[N = 338] = 7.39, *p* = .007) with a higher family income (*t*[380] = -2.85, *p* = .005) than students in the non-retained sample. There were no statistically significant differences with regard to sex, age, or parental education or occupational status. Among the retained sample (*n* = 312), 240 students completed the questionnaire at T2 and 293 students completed the questionnaire at T3 (on average, 17.0% of the data were missing across the three waves of data collection and the 59 items used in this study). As for our variables, participation in ECAs was measured in Secondary 3 (T1; independent variable), vocational exploration was measured in Secondary 3 (T1, control variable) and Secondary 4 (T2, mediating variable) and career indecision was measured in Secondary 3 (T1, control variable) and Secondary 5 (T3, dependent variable).

**Measures**

**Participation in ECAs (T1)**. In Secondary 3, students were asked the following question: “At your high school, do you participate in extracurricular activities (e.g., sports, theater, dance, student newspaper, computer club, etc.)?” If they answered yes (*n* = 130), they were asked to write down the names of their activities. Students named up to four activities (range = 0-4; no activity: *n* = 182, one activity: *n* = 92; two activities: *n* = 27; three activities, *n* = 7, and four activities: *n* = 4). Activities were then grouped by our research team into three different activity types: (a) sports (e.g., football, basketball, ice hockey, volleyball, cross-country, badminton, etc.; 54% of students participated in at least one sport); (b) arts and sociocultural activities (e.g., music, dance, student newspaper, student radio, theater, student variety show, etc.; 42% of students participated in at least one activity of this type); and (c) academic-related committees, volunteering, and civic activities (e.g., science club, environmental club, student council, volunteering, Amnesty International, etc.; 19% of students participated in at least one activity of this type). Academic-related committees, volunteering, and civic activities had to be merged into one category given their small frequencies. Consequently, the sum of the percentages did not equal 100%, given that students could participate in more than one such activity. To take this into account, participation in the other two types of activities were added as controls in the models.

**Vocational exploration (T1 and T2)**. Vocational exploration was self-reported by the adolescents using the Career Exploration Survey (Stumph, Colarelli, & Hartman, 1983). Two subscales were used: (a) self-exploration (career exploration involving self-assessment and retrospection; five items; e.g., “Reflected on how my past integrates with my future career”) and (b) environment exploration (career exploration regarding occupations, jobs, and organizations; six items; e.g., “Sought information on specific areas of career interest”). Participants were asked to indicate the extent to which each item in these subscales reflected their behavior in the previous three months, using a 5-point scale (1 = very little or not at all; 5 = a lot). In the original validation study (Stumph et al., 1983), the internal consistency coefficients for each subscale were .83 and .88, respectively. In our study, these coefficients were .90 and .87 at T1 (control variables), respectively, and .88 and .86 at T2, respectively.

**Career indecision status (T1 and T3)**. To assess career indecision, the Career Decision Profile was used (Jones & Lohmann, 1998). This measure includes three dimensions (i.e., decidedness, comfort, and reasons) assessed through six scales. For the purpose of this study, we selected three scales closely related to career indecision, namely *decidedness* (two items; e.g., “I have an occupational field in mind that I want to work in [for example, medicine, agriculture, management, or the performing arts]”; reverse coded; *r* = .78 at T1 [control variable] and *r* = .79 at T3), *self-clarity* (three items: e.g., “I wish I knew which occupations best fit my personality”; α = .83 at T1 [control variable] and α = .83 at T3) and *career choice importance* (e.g., “My future work or career is not that important to me right now”; α = .80 at T1 [control variable] and α = .80 at T3). The other three scales were not considered, for various reasons: (a) *comfort*, because according to the items, individuals have already made career decisions, which is likely not the case among a sample of high school students, (b) *knowledge about occupations and training*, because the items overlap with environment exploration, and (c) *decisiveness*, because the items tap decision making styles. As mentioned by the authors, the six scales can be used independently in research, as the psychometric properties have been examined separately for each scale. Items were rated on an 8-point Likert scale (1 = strongly disagree; 8 = strongly agree) and some items were reversed such that higher scores on the three scales indicated higher career indecision.

**Control variables (T1)**. Adolescents’ mothers and fathers completed a sociodemographic questionnaire. *Gross family income* was reported by both mothers and fathers (1 = less than $10,000 CAD to 8 = $70,000 CAD or more) and a mean of these scores was used in the analyses (*M* = $50,000 to $59,999 CAN; *SD* = 2.04). *Family structure* was reported by mothers (0 = non-intact [45%], 1 = intact; valid *n* = 248). Both mothers and fathers reported on their *education level* (0 = high school diploma or less [28% and 30% of mothers and fathers, respectively], 1 = more than a high school diploma) and *occupational status* (0 = not full time [29% and 12% of mothers and fathers, respectively], 1 = full time). For *school grades*, we used self-reported academic achievement in Math and French, scored on a 1-100 scale. Previous studies have reported high correlations between self-reported and objective measures of achievement (up to .80; e.g., Kuncel, Credé, & Thomas, 2005). Adolescents also reported on their academic *specialization* (0 = no specialization [51%], 1 = specialization [e.g., sports, performing arts, sciences]; valid *n* = 310), as well as on their *part-time employment* during the school year (0 = no [56%] and 1 = yes; valid *n* = 201). This last control variable was assessed at the end of T2 instead of T1, since it was not available at T1.

**Analytical Strategies**

All models were estimated using Mplus (Muthén & Muthén, 2012) and were tested with standardized coefficients obtained using the maximum likelihood robust (MLR) method of estimation. This software also uses full information maximum likelihood (FIML) estimation to deal with missing data. Models that fit the data well usually have a non-statistically significant chi-square value, a comparative fit index (CFI) greater than .90, and a root mean square error of approximation (RMSEA) of less than .08 (Browne & Cudeck, 1993; Hu and Bentler, 1999; Schumacker & Lomax, 1996).

**Testing the measurement portion of the model**. Before testing the mediation model, confirmatory factor analyses (CFAs) were performed to verify that the latent constructs were correctly measured in the sample under investigation (“measurement portion” of the model with no predictive associations between the latent constructs). Because vocational exploration and career indecision status were assessed at two time points, correlated uniquenesses between the same indicators assessed at both time points were taken into account (i.e., the indicators’ residual variances were correlated over time; Marsh & Hau, 1996).

**Testing mediation effects.** The total effect of T1 participation in ECAs on T3 career indecision – through the latent dimensions of undecidedness, self-unclarity, and career choice unimportance – was separated into direct and indirect components via the T2 latent constructs of self-exploration and environment exploration (Hayes, 2013). Confidence intervals for the indirect effects were obtained using bootstrapping (*n* = 1000). An indirect effect is considered statistically significant when the confidence intervals do not include zero. This method does not impose the assumption of normality of the sampling distribution, which is unlikely to be met with relatively small samples (Preacher & Hayes, 2008).

**Testing activity types.** To bring out the contribution of specific activity types, three additional mediation models were tested, one with participation in sports (yes = 1, no = 0), one with participation in arts and sociocultural activities (yes = 1, no = 0), and one with participation in academic-related committees, volunteering, and civic activities (yes = 1, no = 0) as the independent variable. The other two types of activities were added as controls in these models to determine the unique contribution of each type of activity.

**Results**

**Descriptive Statistics**

Descriptive statistics for all items used in this study are presented in Table 1. The data were screened to ensure that they met basic statistical postulates (e.g., distribution). They were also screened to test for potential multivariate outliers on the various items, but no outlier was found.

**Measurement Portion of the Model**

Confirmatory factor analyses revealed that the measurement portion of the model was supported: χ2(601) = 1053.76, *p* = .000, CFI/TLI = .91/.90, RMSEA = .05 (90% CI = .04, .05). In this model, no predictive associations between the latent constructs were specified. For all latent factors, indicators loaded strongly on their respective factors (λs ≥ .54). Correlations between the latent factors are presented in Table 2. Given the strong correlations between the latent factors, we decided to specify higher-order factors for vocational exploration and career indecision status. When comparing the two models, the chi-square test did not reveal a statistically significant difference, ∆χ2(24) = 32.37, *p* = .118. Factor loadings on the second-order factor for T2 vocational exploration were .87 and .71 for self-exploration and environment exploration, respectively, whereas factor loadings for career indecision status at T3 were .85, .60, and .66 for undecidedness, self-unclarity, and career choice unimportance, respectively. Given its parsimony and superior model fit indices, we decided to opt for the second-order factor model.

**Mediation Analyses**

With respect to the control variables, preliminary analyses of correlations revealed that only specialization, part-time employment, and grades in French were related to our variables of interest, in addition to the second-order factor of vocational exploration at T1 and the second-order factor of career indecision status at T1. Therefore, only these variables were included in the mediation analyses. However, specialization and grades in French were no longer statistically significant when entered simultaneously with part-time employment. Consequently, for the sake of parsimony, they were removed from the model. The tested model appears in Figure 1. The final Mplus syntax with bootstrapping is available in a supplementary file.

Results are presented in Table 3 and Figure 1. The model fit the data well, as revealed by its fit indices: χ2(699) = 1174.89, *p* = .000, CFI/TLI = .91/.90, RMSEA = .05 (90% CI = .04, .05). As expected (H1), participation in a higher number of ECAs at T1 predicted an increase in the students’ scores for vocational exploration at T2, after controlling for vocational exploration at T1. Furthermore, vocational exploration at T2 predicted a decrease in career indecision status at T3 (H2), after controlling for career indecision status at T1. Participation in ECAs at T1 did not predict a decrease in career indecision status at T3, after controlling for career indecision status at T1. Contrary to our hypothesis (H3), there was also no indirect association between participation in ECAs at T1 and career indecision status at T3 through T2 vocational exploration. Overall, the model accounted for 12% of the variance in T2 vocational exploration and 32% of the variance in T3 career indecision status, and these associations held after accounting for the control variables (part-time employment was moderately linked to career indecision status at T3, β = .23, *p* = .002; T1 exploration was moderately associated with vocational exploration at T2, β = .30, *p* = .006; as were T1 and T3 career indecision status, β = .40, *p* = .000).

**Activity types**. Three models were tested separately for participation in sports versus no participation in ECAs; in arts and sociocultural activities versus no participation in ECAs; and in academic-related committees, volunteering, and civic activities versus no participation in ECAs. The control variables (T1 vocational exploration, T1 career indecision status, and part-time employment) were also included in these models, as was participation in the other two types of activities. Model fits for the models including sports; arts and sociocultural activities; and academic-related committees, volunteering, and civic activities were: χ2(775) = 1277.23, *p* = .000, CFI/TLI = .90/.89, RMSEA = .05 (90% CI = .04, .05); χ2(778) = 1277.38, *p* = .000, CFI/TLI = .91/.90, RMSEA = .04 (90% CI = .04, .05); and χ2(737) = 1236.80, *p* = .000, CFI/TLI = .90/.89, RMSEA = .05 (90% CI = .04, .05), respectively.

The results suggest that participation in arts and sociocultural activities versus no participation in ECAs at T1 predicted an increase in vocational exploration at T2 (link a; β = .22, SE = .08, z = 2.60, *p* = .009, 95% CI = .05, .38), but no decrease in career indecision status at T3 (link c’; β = -.11, SE = .07, z = -1.51, *p* = .131; 95% CI = -.25, .03). The indirect effect was not statistically significant (link ab; β = -.05, SE = .03, z = -1.56, *p* = .119; 95% CI = -.11, .01). The results also suggest that participation in academic-related committees, volunteering, and civic activities versus no participation in ECAs predicted a decrease in career indecision status at T3 (link c’; β = -.19, SE = .05, z = -3.86, *p* = .000; 95% CI = -.28, -.09). As expected (H4), participation in sports versus no participation in ECAs was unrelated to both vocational exploration and career indecision status.

**Discussion**

The goal of this study was to examine the contribution of participation in ECAs to adolescents’ vocational development during the high school years. This voluntary context, which provides students with opportunities to explore their identity, interests and talents, has been understudied with respect to its potential to contribute to students’ vocational exploration and career indecision status. The hypothesis was that the association between participation in ECAs during the mid-high school years (T1) and career indecision status at the end of high school (T3) would be mediated by self-exploration and environment exploration (T2). After controlling for baseline levels of vocational exploration and career indecision status, the results revealed that participation in ECAs predicted increases in vocational exploration (H1), and that vocational exploration predicted decreases in career indecision status (H2). No predictive association was found between participation in ECAs and career indecision status. However, our findings did not support the mediating role of vocational exploration, that is, ECA participation did not have an indirect effect on career indecision status through vocational exploration (H3). As expected, the results also revealed that participation in sports was not related to vocational exploration during the high school years (H4). Participation in arts and sociocultural activities predicted an increase in vocational exploration, while participation in academic-related committees, volunteering, and civic activities predicted a decrease in career indecision status over time.

**Associations Between ECAs, Vocational Exploration, and Career Indecision Status**

Early to mid-adolescence is a time of active identity development (Staff et al. 2009). Participation in ECAs is among the multiple contexts contributing to this development (Blomfield & Barber, 2011, 2012; Eccles et al., 2003; Eccles & Barber, 1999). Indeed, cultivating specific interests can be viewed as a reflection of the way individuals think about themselves (Hogan & Blake, 1999; Su, Round, & Amstrong, 2009). One contribution of this study is its demonstration that ECAs also promote vocational exploration (H1; Mahoney et al., 2009), likely by helping adolescents gain insights into and start thinking about their future. Indeed, researchers have underlined the importance of informal vocational exploration, which contributes to the occupational roles adolescents will eventually take up, and the importance that leisure activities play in this informal exploration (Super, 1990; Vondracek & Skorikov, 1997). For example, a student might choose to get involved in theater at school based on her personal interests. By writing a play and acting in it, she might come to realize that she enjoys expressing her ideas and working with others on a collective project. In turn, this may awaken her curiosity regarding the kinds of real-life jobs that would foster these skills. One’s interests can be reflected in one’s vocational identity, or work-role-based preferences and competency beliefs (Porfeli et al., 2013). According to Holland (1985), one’s choice of leisure activities, such as ECAs, is also coherent with the personality factors and interests that guide one’s selection of occupations.

In our study, participation in ECAs was only associated with vocational exploration and not with students’ career indecision status at the end of the high school years. Moreover, vocational exploration did not mediate the predictive association between participation in ECAs and career indecision status, as we had hypothesized (H3). It is possible that the predictive power of ECA participation was not strong enough over the three years of the study. On the other hand, it is also possible that this context does not provide sufficient relevant experiences and feedback to help students decrease their level of indecision regarding their future career (Vondracek & Skorikov, 1997). A moderation effect of persistence in ECA participation could also be in operation here. That is, the contribution of ECAs to career indecision status may only be observed when students remain invested in an activity over several years. Whatever the case, this study suggests that participation in ECAs does not directly contribute to lowering students’ career indecision. However, the results do suggest that participation in ECAs prompts vocational exploration and that vocational exploration predicts higher decidedness, self-clarity, and career choice importance among students at the end of high school.

The predictive association between vocational exploration and career indecision status was, however, convergent with our expectations, theories and prior research (H2; e.g., Blustein, 1992; Erikson, 1959; Gottfredson, 1981; Holland, 1985; Jordaan, 1963; Super, 1990; Vondracek, 1993). The more students explore their selves and their environment with respect to the world of work, the more capable they will feel to make career decisions, the better able they will be to identify the kind of work that fits their personality and interests, and the greater value they will assign to making career choices. Given the importance of vocational exploration and career decidedness during the adolescent years (Gati, 2013), any context that plays a role in this development merits further attention from researchers and stakeholders.

With regard to activity types, our only expectation was that sports would not be related to vocational exploration during the high school years, which was supported by our results (H4). The present results also revealed that participation in arts and sociocultural activities, in particular, contributed to vocational exploration during the mid-adolescence years, which is partly in line with previous research (e.g., Hansen et al., 2003). Participation in academic-related committees, volunteering, and civic activities also predicted lower career indecision status at the end of the high school years. The type of activities that students select is thus important to consider when examining the role of ECAs in the vocational development of high school students. Compared to sports, which showed no association with our variables of interest, these activities might be more likely to promote identity exploration and development given the diversity of experiences they provide to students. For instance, in any sport, students have to concentrate on a set of objectives, follow the coach’s program, develop specific athletic skills, play the game, and cope with wins and losses. In contrast, in arts and sociocultural activities, or in academic-related committees, volunteering, and civic activities, students are more often expected to make decisions or plans or create projects based on their own interests, partner with the activity leader, and reflect on their actions, which may be more likely to impact vocational development.

**Strengths, Limitations, and Future Research**

Overall, despite the lack of support for the hypothesized mediating role of vocational exploration, it is important to highlight the strengths of this study. First, the model controlled for the contribution of prior vocational exploration and career indecision status, as well as gender and part-time employment. Second, the prospective design spanned three academic years, allowing for a more optimal estimation of predictive associations over time than would a cross-sectional design, thereby increasing our confidence in the results obtained. Third, the sample came from a representative sample provided by the Ministry of Education, which supports the external validity of the study’s inferences. Lastly, while the effect sizes of the associations found were rather small, overall, the variables included in the model explained a non-negligible amount of variance with respect to our two concepts of interest (i.e., vocational exploration and career indecision status).

While this study has important strengths, it also has limitations that should be considered when interpreting the findings. First, the study used only self-reported measures, which are subject to issues of shared method variance as well as potential bias in the reporting of scores. To overcome this limitation, future studies could use school-reported information on participation in ECAs, as well as parent-reported or teacher-reported information on the vocational variables (e.g., environment exploration, career choice importance). Second, the characteristics of the activity contexts (e.g., the content or quality of offerings; Mahoney et al., 2009) were not assessed. Yet, it is possible that some activities are more career-oriented than others, such as involvement in the student newspaper, theater, young entrepreneurs, a student political party or the student council, or computer and science activities. Activities were grouped into rather general categories, with no information regarding the specific skills that could generalize to the world of work (e.g., leadership, teamwork, planning, giving and receiving feedback). A qualitative study asking students to describe how their participation in ECAs helped them explore the world of work and contribute to their career decision processes would overcome this limitation. Third, we examined general constructs of vocational exploration and career indecision. Yet, there are different types of vocational exploration (in-breadth versus in-depth; e.g., Porfeli et al., 2013) and career indecision (developmental versus chronic; e.g., Gati, 2013) that have received empirical support in recent years. These constructs are also likely to fluctuate during the adolescent years (Creed, Prideaux, & Patton, 2005), which was not taken into account in this study. Future studies should thus pay more attention to the distinctive features of these concepts and their developmental course over time. Finally, we did not examine the students’ characteristics as potential moderators. Yet, some theories, such as the Social Cognitive Career Theory (Lent, Brown, & Hackett, 1994, 2002), propose that personal factors, such as gender, are likely to influence career-related choices and behaviors. For instance, given the gender-role socialization process, boys and girls are likely to be treated differently and develop gender-typed interests (Hartung, Porfeli, & Vondracek, 2005). Thus, there might be different “paths” in the career development of boys and girls (Patton, Bartrum, & Creed, 2004). For instance, parents might be more inclined to encourage their daughter to take a dance class and their son to be part of a football team. Although this may appear trivial, it could contribute to the development of interests, talents, and skills that predict vocational exploration and career decision processes in the long run. This should thus be further examined in future studies.

**Conclusions and Implications for Practice**

The school-to-work transition is a critical step in the life course (Schoon & Silbereisen, 2009; Vuolo, Mortimer, & Staff, 2014). In recent years, however, an increasing number of students appear to be having difficulty navigating this transition successfully, and find themselves floundering for quite some time (Vuolo et al., 2014). In order to facilitate the school-to-work transition, developing a vocational identity is key. Accordingly, career interventions should focus on the development of this identity during the adolescent years (Porfeli et al., 2013). Providing students with the widest possible range of activities to openly explore their vocational identity is central to this process (Vondracek & Skorikov, 1997). By showing the importance of ECAs in this process, this study takes the literature on vocational development during the high school years in a new direction. Beyond the formal context of school and part-time employment, school counselors could encourage students to participate in ECAs as an additional strategy through which to explore their interests, talents, and skills, and ultimately themselves and their environment with respect to the world of work. This may subsequently contribute to their educational and career paths in a way that fits their personal characteristics. Effectively engaging in the career development process during the adolescent years is associated with many positive outcomes, such as job satisfaction and employment (Staff et al., 2009), and should therefore be promoted among high school students.

**References**

Atkinson, G. & Murrel, P. H. (1988). Kolb’s Experiential Learning Theory: A meta-model for career exploration. *Journal of Counseling and Development, 66*, 374-377.

Beal, S. J., & Crockett, L. J. (2010). Adolescents’ occupational and educational aspirations and expectations: Links to high school activities and adult educational attainment. *Developmental Psychology, 46*(1), 258-265. <http://dx.doi.org/10.1037/a0017416>

Blomfield, C. J., & Barber, B. L. (2011). Developmental experiences during extracurricular activities and Australian adolescents’ self-concept: Particularly important for youth from disadvantaged schools. *Journal of Youth and Adolescence, 40*(5), 582-594. [http://dx.doi.org/ 10.1007/s10964-010-9563-0](http://dx.doi.org/%2010.1007/s10964-010-9563-0)

Blomfield, C. J., & Barber, B. L. (2012). Exploring the positive peer and identity experiences occurring in Australian adolescents’ leisure activities. *The Australian Educational and Developmental Psychologist, 29*(1), 44-51. <http://dx.doi.org/10.1017/edp.2012.8>

Blustein, D. L. (1992). Applying current theory and research in career exploration to practice. *The Career Development Quarterly, 41*(2), 174-184. <http://dx.doi.org/10.1002/j.2161-0045.1992.tb00368.x>

Blustein, D. L., & Flum, H. (1999). A self-determination perspective of interests and exploration in career development. In M. L. Savickas & A. R. Spokane (Eds.), *Vocational interests: Meaning, measurement, and counseling use* (pp. 345-368). Palo Alto, CA: Davies-Black Publishing.

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Thousand Oaks, CA: Sage Publications.

Creed, P. A., Patton, W., & Prideaux, L.-A. (2007). Predicting change over time in career planning and career exploration for high school students. *Journal of Adolescence, 30*(3), 377-392. <http://dx.doi.org/10.1016/j.adolescence.2006.04.003>

Creed, P., Prideaux, L.-A., & Patton, W. (2005). Antecedents and consequences of career decisional states in adolescence. *Journal of Vocational Behavior, 67*(3), 397-412. <http://dx.doi.org/10.1016/j.jvb.2004.08.008>

Duchesne, S., Mercier, A., & Ratelle, C. F. (2012). Vocational exploration in middle school: Motivational characteristics of students and perceptions of the learning climate. *Canadian Journal of Counselling and Psychotherapy, 46*(4), 367-386.

Dworkin, J. B., Larson, R., & Hansen, D. (2003). Adolescents' accounts of growth experiences in youth activities. *Journal of Youth and Adolescence, 32*(1), 17-26. [http://dx.doi.org/10.1023/ A:1021076222321](http://dx.doi.org/10.1023/%20A:1021076222321)

Eccles, J. S., & Barber, B. L. (1999). Student council, volunteering, basketball, or marching band: What kind of extracurricular involvement matters? *Journal of Adolescent Research, 14*(1), 10-43. <http://dx.doi.org/10.1177/0743558499141003>

Eccles, J. S., Barber, B. L., Stone, M., & Hunt, J. (2003). Extracurricular Activities and Adolescent Development. *Journal of Social Issues, 59*(4), 865-889. [http://dx.doi.org/10.1046/ j.0022-4537.2003.00095.x](http://dx.doi.org/10.1046/%20j.0022-4537.2003.00095.x)

Erikson, E. H. (1959). Identity and the life cycle: Selected papers. *Psychological Issues, 1*, 1-171.

Erikson, E. H. (1968). *Identity: youth and crisis*. Oxford, England: Norton & Co.

Gati, I. (2013). Advances in career decision making. In W. B. Walsh, M. L. Savickas, & P. J. Hartung (Eds.), *Handbook of vocational psychology: Theory, research, and practice* (pp. 183-215). New York: Routledge/Taylor & Francis Group.

Gottfredson, L. S. (1981). Circumscription and compromise: A developmental theory of occupational aspirations. *Journal of Counseling Psychology, 28*(6), 545-579. [http://dx.doi.org/ 10.1037/0022-0167.28.6.545](http://dx.doi.org/%2010.1037/0022-0167.28.6.545)

Guay, F., Ratelle, C. F., Senécal, C., Larose, S., & Deschênes, A. (2006). Distinguishing developmental from chronic career indecision: Self-efficacy, autonomy, and social support. *Journal of Career Assessment, 14*(2), 235-251. <http://dx.doi.org/10.1177/1069072705283975>

Guay, F., Sénécal, C., Gauthier, L., & Fernet, C. (2003). Predicting career indecision: A Self-Determination Theory perspective. *Journal of Consulting Psychology, 50*(2), 165-177. http://dx.doi.org/10.1037/0022-0167.50.2.165

Hansen, D. M., Larson, R. W., & Dworkin, J. B. (2003). What Adolescents Learn in Organized Youth Activities: A Survey of Self-Reported Developmental Experiences. *Journal of Research on Adolescence, 13*(1), 25-55. <http://dx.doi.org/10.1111/1532-7795.1301006>

Hartung, P. J., Porfeli, E. J., & Vondracek, F. W. (2005). Child vocational development: A review and reconsideration. *Journal of Vocational Behavior, 66*(3), 385-419. [http://dx.doi.org/ 10.1016/j.jvb.2004.05.006](http://dx.doi.org/%2010.1016/j.jvb.2004.05.006)

Hayes, A. F. (2013). *Methodology in the social sciences. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York: Guilford Press.

Hogan, R., & Blake, R. (1999). John Holland's vocational typology and personality theory. *Journal of Vocational Behavior, 55*(1), 41-56. <http://dx.doi.org/10.1006/jvbe.1999.1696>

Holland, J. L. (1985). *Making vocational choices: A theory of vocational personalities and work environments.* Englewood Cliffs, NJ: Prentice-Hall.

Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments, 3rd ed*. Odessa, FL: Psychological Assessment Resources.

Holland, J. L., & Holland, J. E. (1977). Vocational indecision: More evidence and speculation. *Journal of Counseling Psychology, 27*, 469-477. http://dx.doi.org/10.1037/0022-0167.24.5.404

Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55. <http://dx.doi.org/10.1080/10705519909540118>

Jones, L. K., & Lohmann, R. C. (1998). The Career Decision Profile: Using a measure of career decision status in counseling. *Journal of Career Assessment, 6*(2), 209-230.

Jordaan, J. P. (1963). Exploratory behavior: The formation of self and occupational concepts. *Career development: Self-concept theory*, 42-78.

Kolb, D. A. (1984). *Experiental learning*. Englewood Cliffs, NJ: Prentice-Hall.

Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development* (2nd edition). Upper Saddle River, NJ: Pearson Education.

Kuncel, N. R., Credé, M., & Thomas, L. L. (2005). The Validity of Self-Reported Grade Point Averages, Class Ranks, and Test Scores: A Meta-Analysis and Review of the Literature. *Review of Educational Research, 75*(1), 63-82. <http://dx.doi.org/10.3102/00346543075001063>

Larson, R. W., Hansen, D. M., & Moneta, G. (2006). Differing profiles of developmental experiences across types of organized youth activities. *Developmental Psychology, 42*(5), 849-863. <http://dx.doi.org/10.1037/0012-1649.42.5.849>

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior, 45*(1), 79-122. <http://dx.doi.org/10.1006/jvbe.1994.1027>

Lent, R. W., Brown, S. D., & Hackett, G. (2002). Social Cognitive Career Theory. In Duane Brown and Associates (Ed.), *Career choice and development, 4th ed* (p. 255-311). San Francisco, CA, USA: Jossey-Bass/John Wiley & Sons, Inc. San Francisco.

Mahoney, J. L., Vandell, D. L., Simpkins, S., & Zarrett, N. (2009). Adolescent out-of-school activities. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology: Contextual influences on adolescent development* (pp. 228-269). Hoboken, NJ: John Wiley.

Malatest, R. A., & Associates Ltd. (2008). *Survey of Canadian Career College Students. Phase II: In-School Student Survey* (Report no POR-350-05).

Marsh, H. W., & Hau, K. T. (1996). Assessing goodness of fit: Is parsimony always desirable? *The Journal of Experimental Education, 64*(4), 364-390. [http://dx.doi.org/10.1080/ 00220973.1996.10806604](http://dx.doi.org/10.1080/%2000220973.1996.10806604)

Muthén, L. K., & Muthén, B. O. (2012). *Mplus users' guide*. Los Angeles, CA: Muthén & Muthén.

Osipow, S. H. (1987). *Career decision scale*. Odessa, FL: Psychological Assessment Resources.

Patton, W., Bartrum, D. A., & Creed, P. A. (2004). Gender differences for optimism, self-esteem, expectations and goals in predicting career planning and exploration in adolescents. *International Journal for Educational and Vocational Guidance, 4*(2-3), 193-209. [http://dx.doi.org/10.1007/ s10775-005-1745-z](http://dx.doi.org/10.1007/%20s10775-005-1745-z)

Porfeli, E. J., Hartung, P. J., & Vondracek, F. W. (2008). Children's vocational development: A research rationale. *The Career Development Quarterly, 57*(1), 25-37. [http://dx.doi.org/ 10.1002/j.2161-0045.2008.tb00163.x](http://dx.doi.org/%2010.1002/j.2161-0045.2008.tb00163.x)

Porfeli, E. J., Lee, B., & Vondracek, F. W. (2013). Identity development and careers in adolescents and emerging adults: Content, process, and structure. In W. B. Walsh, M. L. Savickas, & P. J. Hartung (Eds.), *Handbook of vocational psychology: Theory, research, and practice* (pp. 133-153). New York: Routledge/Taylor & Francis Group.

Porfeli, E. J., & Skorikov, V. B. (2010). Specific and diversive career exploration during late adolescence. *Journal of Career Assessment, 18*(1),46-58. http://dx.doi.org/10.1177/1069072709340528

Powell, W. W., & Snellman, K. (2004). The knowledge economy. *Annual Review of Sociology, 30*, 199-220. http://dx.doi.org/10.1146annurev.soc.29.010202.100037

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*(3), 879-891. <http://dx.doi.org/10.3758/BRM.40.3.879>

Quebec Ministry of Education (2007). *Programme de formation de l’école québécoise. Enseignement secondaire, deuxième cycle*. Québec : Gouvernement du Québec.

Schumacker, R. E., & Lomax, R. G. (1996). *A beginner's guide to structural equation modeling*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Schoon, I., & Silbereisen, R. K. (Eds.). (2009). *The Jacobs foundation series on adolescence. Transitions from school to work: Globalization, individualization, and patterns of diversity.* New York, NY, US: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511605369>

Su, R., Rounds, J., & Armstrong, P. I. (2009). Men and things, women and people: A meta-analysis of sex differences in interests. *Psychological Bulletin, 135*(6), 859-884. [http://dx.doi.org/10.1037/ a0017364](http://dx.doi.org/10.1037/%20a0017364)

Super, D. E. (1990). A life-span, life-space approach to career development. In D. Brown & L. Brooks (Eds.), *Career choice and development: Applying contemporary theories to practice* (2nd ed., pp. 197-262). San Francisco, CA: Jossey-Brass.

Staff, J., Messersmith, E. E., & Schulenberg, J. E. (2009). Adolescents and the world of work. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of adolescent psychology: Contextual influences on adolescent development* (pp. 270-313). Hoboken, NJ: John Wiley.

Statistics Canada (2009). *Median total income, by family type, by province and territory*. Retrieved at www.statcan.gc.ca/l01/cst01/famil108a-eng.htm

Stumpf, S. A., & Colarelli, S. M. (1980). Career exploration: Development of dimensions and some preliminary findings. *Psychological Reports, 47*(3), 979-988.

Stumpf, S. A., Colarelli, S. M., & Hartman, K. (1983). Development of the career exploration survey (CES). *Journal of Vocational Behavior, 22*(2), 191-226.

Super, D. E. (1990). A life-span, life-space approach to career development. In D. Brown & L. Brooks (Eds.), *The Jossey-Bass management series and The Jossey-Bass social and behavioral science series. Career choice and development: Applying contemporary theories to practice* (pp. 197-261). San Francisco: Jossey-Bass.

Vondracek, F. W. (1993). Promoting vocational development in early adolescence. In R. M. Lerner (Ed.), *The Penn State series on child & adolescent development. Early adolescence: Perspectives on research, policy, and intervention* (pp. 277-292). Hillsdale, NJ: Lawrence Erlbaum Associates.

Vondracek, F. W., & Skorikov, V. B. (1997). Leisure, school, and work activity preferences and their role in vocational identity development. *The Career Development Quarterly, 45*(4), 322-340. <http://dx.doi.org/10.1002/j.2161-0045.1997.tb00537.x>

Vuolo, M., Mortimer, J. T., & Staff, J. (2014). Adolescent precursors of pathways from school to work. *Journal of Research on Adolescence, 24*(1), 145-162. <http://dx.doi.org/10.1111/jora.12038>

Youniss, J., McLellan, J. A., Su, Y., & Yates, M. (1999). The role of community service and identity development: Normative, unconventional, and deviant orientations. *Journal of Adolescent Research, 14*(2), 248-261. <http://dx.doi.org/10.1177/0743558499142006>

Zimmer-Gembeck, M. J., & Mortimer, J. T. (2006). Adolescent Work, Vocational Development, and Education. *Review of Educational Research, 76*(4), 537-566. [http://dx.doi.org/10.3102/ 00346543076004537](http://dx.doi.org/10.3102/%2000346543076004537)

Table 1

*Descriptive Statistics for the Items*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Latent factors and indicators | Sample size | M | SD | S/K | Min/Max | Factor loadings | Uniquenesses |
| **Self-exploration (T1)** |  |  |  |  |  |  |  |
| E4exv7 | 310 | 2.95 | 1.30 | -0.03/-1.11 | 1-5 | .76 | .43 |
| E4exv8 | 302 | 3.02 | 1.35 | -0.09/-1.14 | 1-5 | .80 | .36 |
| E4exv9 | 307 | 2.93 | 1.33 | -0.02/-1.15 | 1-5 | .83 | .32 |
| E4exv10 | 307 | 3.29 | 1.23 | -0.34/-0.88 | 1-5 | .82 | .32 |
| E4exv11 | 308 | 3.28 | 1.30 | -0.34/-0.94 | 1-5 | .74 | .45 |
| **Environment exploration (T1)** |  |  |  |  |  |  |  |
| E4exv1 | 309 | 3.66 | 1.17 | -0.60/-0.55 | 1-5 | .66 | .57 |
| E4exv2 | 310 | 2.58 | 1.33 | 0.28/-1.15 | 1-5 | .64 | .60 |
| E4exv3 | 309 | 3.19 | 1.36 | -0.21/-1.19 | 1-5 | .80 | .35 |
| E4exv4 | 310 | 2.27 | 1.36 | 0.72/-0.76 | 1-5 | .68 | .54 |
| E4exv5 | 310 | 2.94 | 1.42 | -0.00/-1.34 | 1-5 | .79 | .37 |
| E4exv6 | 310 | 3.08 | 1.42 | -0.12/-1.28 | 1-5 | .82 | .33 |
| **Undecidedness (T1)** |  |  |  |  |  |  |  |
| E4ind1 | 309 | 3.06 | 2.06 | 0.69/-0.67 | 1-8 | .89 | .21 |
| E4ind2 | 310 | 3.98 | 2.37 | 0.26/-1.22 | 1-8 | .88 | .23 |
| **Self-unclarity (T1)** |  |  |  |  |  |  |  |
| E4ind5 | 309 | 5.45 | 2.12 | -0.56/-0.61 | 1-8 | .66 | .56 |
| E4ind6 | 308 | 4.09 | 2.26 | 0.19/-1.16 | 1-8 | .90 | .20 |
| E4ind7 | 309 | 4.19 | 2.09 | 0.13/-1.04 | 1-8 | .79 | .38 |
| **Career choice unimportance (T1)** |  |  |  |  |  |  |  |
| E4ind14 | 309 | 3.41 | 2.17 | 0.69/-0.51 | 1-8 | .83 | .31 |
| E4ind15 | 311 | 2.70 | 2.00 | 1.13/0.36 | 1-8 | .90 | .19 |
| E4ind16 | 310 | 2.27 | 1.78 | 1.54/1.70 | 1-8 | .54 | .71 |
| **Self-exploration (T2)** |  |  |  |  |  |  |  |
| E5exv7 | 198 | 3.19 | 1.27 | -0.25/-0.96 | 1-5 | .73 | .47 |
| E5exv8 | 197 | 3.37 | 1.23 | -0.26/-0.99 | 1-5 | .80 | .36 |
| E5exv9 | 198 | 3.25 | 1.25 | -0.29/-1.04 | 1-5 | .84 | .29 |
| E5exv10 | 196 | 3.41 | 1.14 | -0.42/-0.51 | 1-5 | .78 | .40 |
| E5exv11 | 197 | 3.44 | 1.20 | -0.54/-0.51 | 1-5 | .57 | .68 |
| **Environment exploration (T2)** |  |  |  |  |  |  |  |
| E5exv1 | 197 | 3.80 | 1.08 | -0.61/-0.50 | 1-5 | .65 | .58 |
| E5exv2 | 198 | 2.72 | 1.29 | 0.15/-1.02 | 1-5 | .69 | .52 |
| E5exv3 | 198 | 3.44 | 1.21 | -0.53/-0.55 | 1-5 | .84 | .30 |
| E5exv4 | 198 | 2.81 | 1.37 | 0.13/-1.22 | 1-5 | .64 | .59 |
| E5exv5 | 198 | 3.17 | 1.31 | -0.31/-1.00 | 1-5 | .84 | .30 |
| E5exv6 | 198 | 3.35 | 1.24 | -0.43/-0.70 | 1-5 | .77 | .41 |
| **Undecidedness (T3)** |  |  |  |  |  |  |  |
| E6ind1 | 232 | 2.56 | 1.93 | 1.22/0.54 | 1-8 | .95 | .09 |
| E6ind2 | 232 | 3.18 | 2.29 | 0.80/-0.64 | 1-8 | .83 | .31 |
| **Self-unclarity (T3)** |  |  |  |  |  |  |  |
| E6ind5 | 231 | 4.52 | 2.28 | -0.00/-1.14 | 1-8 | .62 | .62 |
| E6ind6 | 231 | 3.32 | 2.13 | 0.67/-0.63 | 1-8 | .94 | .12 |
| E6ind7 | 232 | 3.22 | 2.01 | 0.65/-0.68 | 1-8 | .82 | .33 |
| **Career choice unimportance (T3)** |  |  |  |  |  |  |  |
| E6ind14 | 232 | 2.46 | 1.89 | 1.22/0.50 | 1-8 | .72 | .49 |
| E6ind15 | 231 | 1.91 | 1.49 | 1.71/1.98 | 1-7 | .88 | .23 |
| E6ind16 | 232 | 1.86 | 1.45 | 1.75/2.29 | 1-7 | .72 | .48 |

*Note*. S = Skewness, K = Kurtosis.

Table 2

*Correlations Between Latent Factors in the CFAs*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1. Environment Exploration at T2 | - |  |  |  |  |  |  |  |  |  |
| 2. Self-Exploration at T2 | .61 | - |  |  |  |  |  |  |  |  |
| 3. Undecidedness at T3 | -.23 | -.22 | - |  |  |  |  |  |  |  |
| 4. Self-Unclarity at T3 | -.10 | -.24 | .51 | - |  |  |  |  |  |  |
| 5. Career Choice Unimportance at T3 | -.22 | -.29 | .57 | .38 | - |  |  |  |  |  |
| Control variables |  |  |  |  |  |  |  |  |  |  |
| 6. Environment Exploration at T1 | .28 | .18 | -.21 | -.17 | -.20 | - |  |  |  |  |
| 7. Self-Exploration at T1 | .16 | .34 | -.25 | -.16 | -.17 | .64 | - |  |  |  |
| 8. Undecidedness at T1 | -.15 | -.20 | .46 | .28 | .15 | -.43 | -.42 | - |  |  |
| 9. Self-Unclarity at T1 | -.10 | -.16 | .22 | .42 | .11 | -.14 | -.08 | .45 | - |  |
| 10. Career Choice Unimportance at T1 | -.13 | -.15 | .28 | .11 | .41 | -.30 | -.25 | .42 | .34 | - |

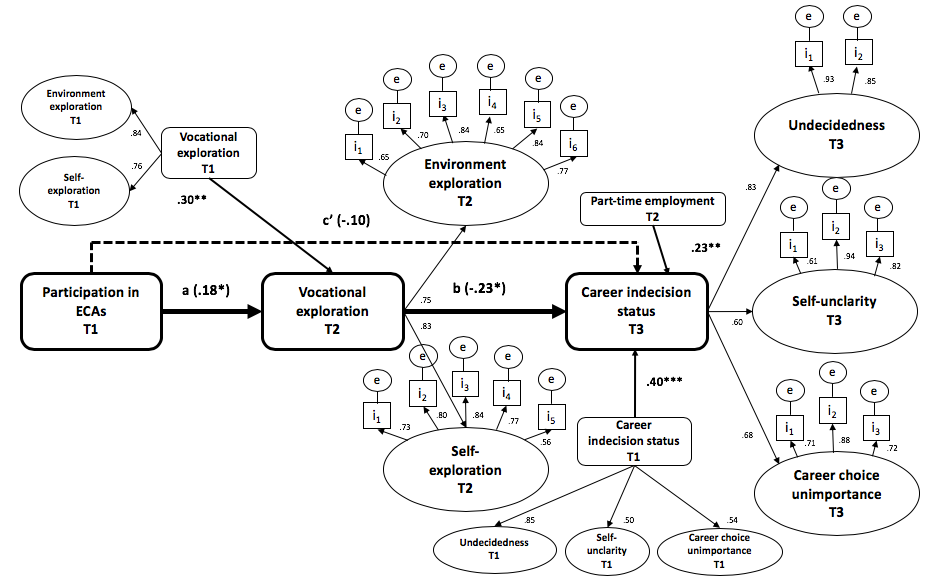
*Note*. T1 = Time 1 (Secondary 3). T2 = Time 2 (Secondary 4), T3 = Time 3 (Secondary 5).

Table 3

*Results of the Mediation Analyses (N = 312)*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Paths** | **β** | **SE** | | **Z** | ***p*** | **95% CI** |
| From ECAs at T1 to Vocational Exploration at T2 (a) | .18 | | .08 | 2.13 | .03 | .01, .34 | |
| From Vocational Exploration at T2 to Career Indecision at T3 (b) | -.23 | | .10 | -2.33 | .02 | -.42, -.04 | |
| From ECAs at T1 to Career Indecision at T3 (c’) | -.10 | | .09 | -1.13 | .26 | -.26, .06 | |
| Total effect | -.14 | | .08 | -1.64 | .10 | -.27, .07 | |
| Indirect effect (ab) | -.04 | | .03 | -1.49 | .14 | -.13, -.00 | |

*Note*. Confidence intervals for the indirect effect were obtained using bootstrapping (*n* = 1000).



*Figure 1.* Tested model. For the sake of clarity, the indicators for environment exploration (*n* = 6) and self-exploration (*n* = 5) at T1 are not represented in the Figure. The same is true for undecidedness (*n*  = 2), self-unclarity (*n* = 3) and career choice unimportance (*n* = 3) at T1.