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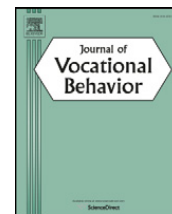
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Career-choice readiness in adolescence: Developmental trajectories and individual differences

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ABSTRACT

Developing career-choice readiness is an important task in adolescence, but current theory and research has provided a rather static view of the phenomenon. The present study investigated the development of career-choice readiness among a group of 325 Swiss students assessed four times every 5 months from seventh through eighth grade. A variable-centered approach applying latent curve modeling showed not only a linear increase of readiness over time but also significant inter-individual differences in the level and development of readiness. Higher levels were predicted by more self-esteem and generalized self-efficacy and fewer perceived barriers while increase in readiness was predicted by increase in occupational information. A person-centered approach applying latent class-growth analysis identified four distinct developmental trajectories: high-increasing (42%), high-decreasing (5%), moderate-increasing (42%), and constantly low (11%). Students with different trajectories showed significant differences in core self-evaluations, occupational knowledge, and barriers. The results suggest that environmental demands promote a developmental trend in readiness development that overrules individual differences for the majority of students. Individual differences affect the level of readiness to a greater extent than the process of its development. Career information seems pivotal for readiness increase.

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Adolescence is a pivotal time for vocational preparation for future career development with important implications for well-being and adjustment (Skorikov, 2007) and career development and achievement throughout the life course (e.g., Wiesner, Vondracek, Capaldi, & Porfeli, 2003). One core component of adolescent career preparation is the achievement of a well-developed career-choice readiness, which can be defined as the readiness and ability of a person to reach a well-founded career decision (Phillips & Blustein, 1994). Several studies in the U.S. and in other countries have indicated that having a high career-choice readiness and choice clarity is related to various components of adolescent well-being and adaptation (e.g., Creed, Prideaux, & Patton, 2005; Skorikov & Vondracek, 2007). However, career theory and empirical research says surprisingly little about how career-choice readiness develops, what different developmental patterns could be identified, and what distinguishes students with different development paths of career-choice readiness. The present study makes a theoretical and empirical contribution by (a) investigating the developmental process of reaching career-choice readiness among Swiss adolescents and (b) showing how this process is related to important individual differences in terms of core self-evaluations, reported occupational knowledge, and perceived career barriers.

1. Development and correlates of career-choice readiness

Despite the importance of career choice in vocational psychology, prominent existing theories (Gottfredson, 2002; Holland, 1997; Super, 1990) do not clearly specify the processes how career-choice readiness develops during adolescence. In fact, adolescent career development might be a much more dynamic and contextualized process than proposed by these theories. To

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account for this reality, the present study is based on a developmental–contextual view of human and career development (Lerner, 2006; Vondracek, Lerner, & Schulenberg, 1986). This approach, which is based on a developmental systems perspective (Ford & Lerner, 1992), states that career development is the result of a dynamic interaction of person and context. Due to its contextual nature, career development is strongly affected by the historical, cultural, economic, and social context. Hence, there are no universal stages in vocational development. As a result career development shows large interindividual differences in intraindividual change and there is considerable plasticity and variability in developmental patterns. This is particularly important during the adolescent years, where developmental change increasingly follows less of a normative, stage-like manner. Consequentially, the present study uses a longitudinal research design which is sensitive to change and that allows investigating trajectories of change at multiple levels of analysis. Moreover, we consider variables from both the individual person and the environmental context. Finally, we take individual differences into account which affect the dynamic nature of developmental change (Vondracek et al., 1986).

We suspected that significant inter-individual differences in level of career-choice readiness would exist among students and that those differences would be relatively persistent over time. We further assumed that the environmental demands in the Swiss context (briefly described below) promote the general development of career-choice readiness over time throughout adolescence so that, on average, there would be a developmental trend towards increased career-choice readiness. However, a developmental–contextual perspective and existing research also implies that there are significant inter-individual differences in developmental patterns. Therefore we expected that not all students would show the same degree of readiness development and that different students would show different developmental trajectories. Because we used an empirically derived rather than a theoretically imposed classification of developmental trajectories, we expected that at least four theoretically meaningful developmental trajectories would emerge: (a) students who increase in their readiness over time; (b) students who decrease in their readiness over time; (c) students who continuously show high readiness, and (d) students who consistently show low readiness.

Existing cross sectional (e.g., Akos, Konold, & Niles, 2004; Lounsbury, Hutchens, & Loveland, 2005; Nota, Ferrari, Solberg, & Soresi, 2007) and few available longitudinal studies (Creed, Patton, & Prideaux, 2006; Germeijs, Verschueren, & Soenens, 2006; Saka & Gati, 2007; Vondracek, Hostetler, Schulenberg, & Shimizu, 1990) showed significant inter-individual differences in the development and degree of career decidedness and choice readiness which were related to a diverse range of predictors (e.g., dysfunctional beliefs, trait anxiety, basic personality traits, career decision-making self-efficacy, external barriers). In a meta-analysis, Brown and Rector (2008) identified over 50 specific variables that have been included in research on correlates of career indecision. Their results showed that aside from a lack of readiness for a career choice, three additional factors emerged that are related to difficulties in career choice: (1) *indecisiveness/trait negative effect*, which includes aspects such as a dependent decision-making style, low levels of self-esteem, high neuroticism, anxiety, and an external locus of control beliefs; (2) *lack of information*, which includes a lack of self, occupational, or process information; and (3) *interpersonal conflicts and barriers*, including situational constraints, interpersonal conflict, and external barriers. To account for individual differences that might affect developmental change in career-choice readiness, the present study considered all of those three components.

1.1. Core self-evaluations

Representing the indecisiveness/trait negative affect component of career-choice difficulties as identified by Brown and Rector (2008), the study applied the construct of core self-evaluations (CSE) introduced by Judge, Locke, and Durham (1997). According to Judge and colleagues, core self-evaluations represent the fundamental assessments that people make about their worthiness, competence, and capabilities as represented by neuroticism, self-esteem, generalized self-efficacy, and locus of control. In a series of studies, Judge and colleagues showed that the construct is significantly related to job performance, job satisfaction, and goal attainment as well as a variety of measures of well-being (e.g., Judge & Bono, 2001). Research in vocational psychology has also found significant relations of the four core self-evaluations components to career decidedness and choice readiness (e.g., Lounsbury et al., 2005; Saka & Gati, 2007). According to a developmental–contextual view, self-perceptions affect the interaction with the environment and affect the adjustment to environmental demands (Lerner, 2006; Vondracek et al., 1986). Therefore, we expected positive CSE to be positively related to the level and increase of career-choice readiness and to more positive developmental patterns. In order to investigate possible differences in the effects of the four CSE components on career-choice readiness, and contrary to the measurement-approach proposed by Judge et al. (1997), the present study examined each component separately and not as a common latent factor (Johnson, Rosen, & Levy, 2008).

1.2. Occupational information

Second, representing the component of the lack of information, the study investigated the degree of self-reported occupational knowledge, that is, the self-perceived knowledge about possible career paths in general as well as specific job characteristics of preferred career options in particular. Career decision-making theories strongly emphasize the importance of career information for reaching a sound career choice (Peterson, Sampson, & Reardon, 1991). The empirical research reviewed by Brown and Rector (2008) also suggests that more occupational knowledge would be positively related to level and increase in career-choice readiness over time because occupational knowledge increases the clarity and predictability of choices. Based on those findings, we suspected that students with different levels and developmental trajectories of career choice readiness would also significantly differ in the degree to which they acquire more information and better knowledge of the world-of-work.

1.3. Career barriers

Third, interpersonal conflicts and barriers were represented by perceived barriers to one's career development. Students who believe that they face many external barriers, conflicts, or handicaps in their personal career development can be expected to possess less career self-efficacy and be more conflicted in their choices when trying to find a personally suitable but also feasible and socially acceptable career (e.g., Gushue, Clarke, Pantzer, & Scanlan, 2006). Including barriers to career development in our model also takes into account the environmental components affecting career choices, as stressed by developmental–contextual approach. From this perspective, people are affected not only by the objective reality but also by the subjectively perceived characteristics of the environment. In fact, several researchers have argued that it is the *interpretation* of the environment that has a strong effect on agency in career development (Lent, Brown, & Hackett, 2000; Vondracek et al., 1986). We thus assumed that more perceived barriers would be related to a lower level of career-choice readiness and less favorable developmental trajectories.

2. Present study context and analytical approach

The study was conducted in Switzerland, where a strong emphasis is placed on vocational education and training (VET), which about two thirds of all students pursue after finishing compulsory school at the end of ninth grade. The other students continue on to general educative high schools or specialized high schools with the primary purpose of preparing students for future college education (Federal Office for Professional Education & Technology, 2008). This system implies that students have to become engaged in career planning and decision making during the last years of compulsory school in order to successfully navigate this transition. It was thus expected that for the present study participants, developing a high career-choice readiness was of great importance despite their comparatively young age.

The present study applied both a variable- and person-centered approach to data analysis in order to fully capture on the developmental nature of the data. Specifically, the present study applies Latent Growth Modeling (LGM) to investigate developmental patterns which describe general developmental trends and captures information about inter-individual differences in intra-individual change over time. In addition, we also used a person-centered approach that takes into account that study participants can differ significantly in their development over time and that subgroups should be identified and examined separately to gain a more accurate picture of development and relations of variables as they apply to individual people (Molenaar, 2004; Vondracek & Porfeli, 2002). Specifically, we applied Latent Class Growth Analysis (LCGA) (Nagin, 2005), a group-based semi-parametric approach based on finite mixture modeling.

3. Method

3.1. Participants and procedure

Swiss students from a German-speaking part of the country attending seventh grade in different school district in the same larger region participated in the study ($N = 364$). At the first time of measurement, the majority (60%) were 14 years old, ranging from 12 to 16 years ($M = 14.09$, $SD = 0.7$). Approximately half were girls (49.7%), 81% had a Swiss nationality, the others had nationalities from other countries, mostly from southeastern Europe. The majority (60.4%) attended classes with advanced scholastic requirements; the others are classes with basic requirements. The distribution of gender, nationality, and the type of school attended was representative for Swiss students at that grade level. Race is not commonly assessed in Switzerland as a meaningful demographic variable, but almost all of the students in the study region were white.

Participants were recruited by contacting randomly selected schools and teachers in the study region to ask for their cooperation in conducting the research project. All of the contacted schools agreed to participate. Students and their parents were then informed about the general nature of the study some weeks prior to the first collection of data. First, four waves of data collection (T1 to T4) took place starting in the middle of seventh grade with follow-up measures every 5 months until the end of eighth grade, spanning a total of 20 months. All of the questionnaires were completed in school classes under the supervision of the teachers. Participation was voluntary and with active consent, and all students present at the time of data collection completed the questionnaires. Choice readiness was assessed at all four points, knowledge was assessed at T1 and T4, barriers at T1, and the four measures for core self-evaluations at T4.

Of all students, 288 (79.1%) participated in all 4 waves of data collection. A total of 11% missed one wave, 1.9% missed two waves, and 8% missed three waves. Students with more than one missing wave of data were excluded from the study, leaving 89% of the original sample with a sample size of 325 (49.7% girls, 82.6% Swiss nationals) for the subsequent analyses. Chi square tests showed no difference in gender, $\chi^2(1, N = 364) = .001$, $p = .972$, $\phi = .002$, but relatively more students with immigration background were missing compared to Swiss nationals, $\chi^2(1, N = 364) = 5.4$, $p = .020$, $\phi = .122$.

3.2. Measures

3.2.1. Career-choice readiness

The German-language adaptation of the Career Maturity Inventory (Crites, 1973; Seifert & Stangl, 1986) Career Decidedness/Commitment Scale was applied. The measure consists of 12 items (e.g. "I don't know exactly what to do in order to choose the right occupation"), which tap the self-clarity and readiness of a students to reach a career decision. Answers are provided on a 4-point

Likert response scale ranging from 1 (*not true*) to 4 (*true*). Different studies applying the original English version and the German adaptation provide support for the scale's construct validity with adolescents, for example, significant relationship to positive career attitudes, less perceived stress in career preparation, or more active application for an apprenticeship after school (e.g., Bergmann, 1993; Seifert, 1993). Cronbach's alphas within the present sample were .85, .87, .85, and .87 at the four measurement points, respectively.

3.2.2. Core self-evaluations

In accordance with the model proposed by Judge and colleagues (e.g., Judge et al., 2003) four measures were applied: (a) *neuroticism* was assessed with the respective scales from the official German language adaptation of the NEO-FFI (Borkenau & Ostendorf, 1993; Costa & McCrae, 1992). Based on scale evaluation studies with adolescents an 11 item version (e.g., "I seldom feel lonely or sad") with a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*) was applied (Roth, 2002). The authors of the scale provide broad support for the scale's construct validity in terms of correlations to other established personality inventories. Cronbach's alpha was .76 in the present sample; (b) *self-esteem* was assessed with a revised version of the Rosenberg Self-Esteem Scale (Rosenberg, 1965; von Collani & Herzberg, 2003). The Rosenberg scale is the most widely used scale of self-esteem and consists of 10 items (e.g., "On the whole, I am satisfied with myself"), and students answer on a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Numerous studies provide support for the construct validity of this scale with adolescents (e.g., Patton, Bartrum, & Creed, 2004). Cronbach's alpha was .85 in the present sample; (c) *generalized self-efficacy* and (d) *locus of control* beliefs were both assessed with the Inventory for the Measurement of Self-Efficacy and Externality [FKK] (Krampen, 1991). It includes 16 items for each construct with a 6-point Likert scale response format ranging from 1 (*very wrong*) to 6 (*very true*) (e.g., "I can determine very much of what happens in my life"). Different studies provide support for the construct validity of the scale with adolescents, such as showing significant relationships with personality traits, psychological disorders, or well-being (Anderson, Hattie, & Hamilton, 2005; Krampen, 1991). Alpha was .71 for self-efficacy and .84 for externality of control.

3.2.3. Occupational information

Perceived knowledge about careers and occupations was assessed with the knowledge scale of the German language adaptation of the Career Development Inventory Planning Scale (Seifert & Eder, 1985; Super, Thompson, Lindeman, Jordaan, & Myers, 1981). The subscale consists of 8 items asking students to indicate how well they know aspects such as the required abilities, education, work content, or expected pay of their aspired career with answers provided on a 5-point Likert scale ranging from 1 (*poorly*) to 5 (*very well*). Alpha was .87 at T1 and .88 at T2.

3.2.4. Barriers

Perceived barriers to career choice and development were assessed with the barriers subscale of the German-language adaptation of the My Vocational Situation Scale (Holland, Daiger, & Power, 1980; Jörin, Stoll, Bergmann, & Eder, 2004). The barriers measure consists of six items stating different barriers in career development and choice (e.g., conflict with significant others about personal career plans, required time and cost of aspired education or profession). Answers are provided on a 5-point Likert scale assessing the degree to which those barriers apply to the students, ranging from 1 (*not at all*) to 5 (*completely*). Support for the construct validity comes from research showing significant relationships to the need for counseling or reported problems with career decision-making (Jörin Fux, 2006). Alpha was .70.

4. Results

4.1. Rank-order stabilities and relations among the measures

Table 1 shows the bivariate correlation among the assessed variables. The 5-month rank-order stability of career-choice readiness (all $p < .001$) ranged between .48 and .62, and the 20-month stability was .33 ($p < .001$), indicating a significant inter-individual stability of the construct over time. Self-esteem and generalized self-efficacy beliefs related positively to choice readiness over all four measurement points. Neuroticism related negatively at T1, T2, and T4. The externality of control beliefs was consistently unrelated to choice readiness. More career knowledge at T1 related positively to readiness at T1, T2, and T3, more knowledge at T4 related positively to readiness at all four measurement points. Barriers related negatively to readiness at T1, T2, and T3. Confirming the assumption of the core self-evaluations construct, self-esteem, neuroticism, generalized self-efficacy, and locus of control beliefs were all significantly ($p \leq .002$) related.

4.2. Change in choice readiness—Variable centered approach

To investigate the average pattern of change of career-choice readiness over time, first, Latent Growth Curve Modeling was applied. Next, the relationship to the other three components of career choice in terms of core self-evaluations, occupational knowledge, and perceived barriers were investigated with the latent variable Structural Equation Modeling.

First, the intercept and slope of career-choice readiness development was estimated with latent growth-curve modeling. The mean and variance of the intercept and the slope were all significant at $p < .01$, indicating an on-average significant increase in choice readiness over time, as well as significant inter-individual differences in level and slope of increase, thus confirming the assumptions of significant individual differences in level and degree of development of career choice readiness as well as a general

Table 1
Correlations, means, and standard deviations among the assessed variables ($N = 325$).

	CCR T1	CCR T2	CCR T3	CCR T4	N	Self-esteem
CCR T1	–	.484***	.446***	.331***	–.180*	.151*
CCR T2		–	.594***	.478***	–.196***	.283***
CCR T3			–	.619***	–.112	.302***
CCR T4				–	–.150*	.322***
Neuroticism					–	–.480***
Self-esteem						–
Self-efficacy						
Control						
Information T1						
Information T1 Barriers						
<i>M</i>	32.05	35.65	36.87	38.40	25.88	30.68
<i>SD</i>	6.54	6.36	5.81	6.01	4.73	4.37

	GSE	Control	Info T1	Info T4	Barriers
CCR T1	.248***	–.106	.586***	.278***	–.346**
CCR T2	.233***	–.101	.261***	.422***	–.144*
CCR T3	.209***	–.021	.247***	.499***	–.156*
CCR T4	.317***	–.119	.122	.552***	–.066
Neuroticism	–.379***	.500***	–.023	–.096	.294***
Self-esteem	.294***	–.217***	.070	.256***	–.121
Self-efficacy	–	–.186**	.214**	.272***	–.127
Control		–	.081	.020	.228**
Information T1			–	.297***	–.165**
Information T4				–	.060
Barriers					–
<i>M</i>	62.68	52.48	22.51	29.28	12.13
<i>SD</i>	7.89	10.59	6.45	5.68	3.08

Note. CCR: Career choice readiness, N: Neuroticism; GSE: Generalized self-efficacy; Info: Occupational information.
* $p < .05$. ** $p < .01$. *** $p < .001$.

developmental trend towards more readiness over time. Slope and intercept showed a significant negative relationship ($r = -.293$, $p < .05$), indicating that students with a higher initial level of choice readiness showed less of an increase compared to students with lower initial levels. We also compared different models of career choice readiness development over time and found that a linear increase most parsimoniously represented the developmental trend.

Next, a model estimating the predictive utility of the assessed four constructs of core self-evaluations, perceived barriers, and increase in occupational knowledge on choice readiness slope and intercept was assessed. Each predictor variable was represented by its respective scale score. An increase in occupational information over time was represented by the difference score of information assessed at T4 and at T1. The assessed predictor variables were allowed to freely correlate in order to control for shared variance and assess their unique effect on career choice readiness. The results show that perceived barriers ($\beta = -.66$, $p < .001$), self-esteem ($\beta = .26$, $p < .05$), and self-efficacy ($\beta = .51$, $p < .001$) but not neuroticism ($\beta = -.01$, $n.s.$) and externality of control ($\beta = .08$, $n.s.$) were significant predictors of a higher level of career choice readiness. However, neither core self-

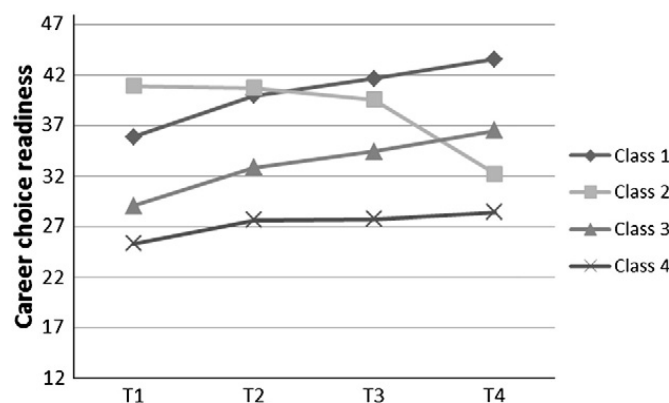


Fig. 1. Class means of career choice readiness time 1 to time 4.

evaluations nor barriers had a significant effect on the development (slope) of readiness. Conversely, the development ($\beta = .90$, $p < .001$), but not level ($\beta = -.27$, *n.s.*), of readiness was significantly predicted by the increase of career information over time.

The results provide only partial support for the hypothesis. As expected, more positive self-evaluations and fewer perceived barriers related positively to more readiness. However, their expected relation to increase in readiness was not confirmed. Conversely, increase of career information had the expected effect on readiness development but not on readiness level, as assumed.

4.3. Developmental patterns of readiness—Person centered approach

The investigation of different subgroups of career-choice readiness development across the four measurement points proceeded in three phases. First, LCGA was applied to determine (Phase 1) and describe (Phase 2) the adequate number of latent classes regarding the four career choice readiness measurement points. Next, Multiple Analysis of Variance (MANOVA) was applied to investigate differences of the derived classes regarding core self-evaluations, occupational information, and barriers (Phase 3).

4.3.1. Phase 1: Determining the latent trajectory classes

LCGA was conducted with the Mplus 6 program, applying the full-information maximum-likelihood algorithm. As recommended in the literature (Nylund, Asparouhov, & Muthén, 2007) several criteria were applied to determine the most appropriate number of latent classes: Bayesian Information Criterion (BIC), entropy (E), Lo, Mendell, and Rubin (2001) likelihood ratio test (LMR-LRT) statistic, and the bootstrap likelihood ratio test (BLRT). We also evaluated whether adding an additional class would increase the substantive usefulness of the latent classes. Several models with two to six classes were estimated. The four-class solution, which was selected, showed the lowest BIC and the highest entropy values of all solutions and both LMR-LRT and BLRT and showed a significant improvement over a three-class solution. Moreover, the four-class solution added a class of students who decreased in their readiness over time, which was not represented in the three-class solution, thus adding substantial meaningfulness. The LMR-LRT and BLRT for the five-class solution indicated a better fit than the four-class solution. However, this solution also had higher BIC and lower entropy values than the chosen four-class model. Most importantly, adding a fifth class did not provide substantial meaningfulness because it added a new group that showed very high initial levels of readiness and subsequent increase over time, thus merely being a variation of an already existing group showing high initial levels and subsequent increase. In the interest of parsimony, the four-class model thus seemed most appropriate. The results confirm the assumption that students show different developmental trajectories of career choice readiness.

4.3.2. Phase 2: Describing the trajectory classes

Fig. 1 shows the mean readiness scores across the four measurement times for each of the four classes. Class 1, “high increasing” (42% of all participants), showed a high initial readiness and a linear increase of readiness over time. Class 2, “high decreasing” (5%), showed a very high initial level of choice readiness but then a decline in their readiness over time. Class 3, “moderate increasing” (42%), showed a moderate initial level and a linear subsequent increase in readiness. Finally, Class 4, “low stable” (11%), showed a low initial level and almost no increase in readiness over time. These results confirm the existence of the theoretically meaningful trajectories of increasing, decreasing, and constantly low readiness over time. Not confirmed was a group of students with consistently high readiness because the data indicated a fourth group of modest increase at an already high level instead of stability at a high level over time.

4.3.3. Phase 3: Differences of the derived classes regarding core self-evaluations, occupational information, and barriers

In order to compare the four developmental classes according to their values on the other assessed variables, MANOVA with the four classes as fixed, between-subjects factors and the four measures of core self-evaluation, increase in career information, and perceived barriers as dependent variables was conducted. Prior to data analysis, missing values were replaced with the expectation maximization method. The results show that all four groups showed an increase in occupational information across time. Fig. 2 shows the standardized values of the six measures separated by class groups. As can be seen, Class 1, “high-increasing”, showed positive CSE in terms of below-average neuroticism, above-average self-esteem and self-efficacy, and below-average externality of control beliefs. They also showed an above-average increase in occupational information, and below-average perceived barriers. Class 2, “high-decreasing”, also showed below-average neuroticism, above-average self-esteem, and below-average externality but below-average self-efficacy. They also reported below-average increase in occupational information and below-average barriers. Class 3, “moderate-increasing”, showed a negative CSE pattern with above-average neuroticism and externality but below-average self-esteem and self-efficacy. Moreover, this group also reported below average increase in occupational information and above-average perception of barriers. Finally, Class 4, “constantly low”, showed the same negative pattern as Class 3 but was more negatively pronounced on all indicators except perceived barriers.

The results of the MANOVA confirmed that the four groups differ significantly in the four CSEs, change in information, and barriers, Wilks' lambda $F(18, 894.27) = 5.04$, $p < .001$, $\eta^2 = .087$. The between-subjects tests showed significant differences on all measures (all $p < .003$) except externality of control. Post-hoc Scheffé tests showed that the high increasing group (Group 1) differed significantly from the moderate increasing (Group 3) and constantly low (Group 4) groups in terms of neuroticism, self-esteem, and self-efficacy. The high increasing group also showed significantly more increase in occupational knowledge compared to the high decreasing group (Group 2). The moderate increasing group reported significantly more barriers than the high

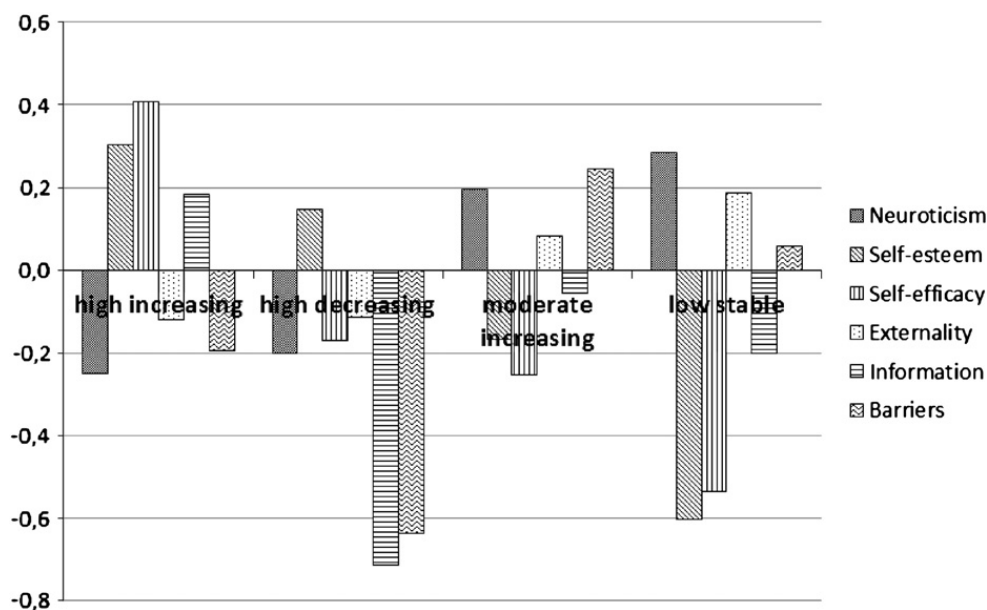


Fig. 2. Standardized cluster means of core self-evaluations, occupational knowledge increase, and barriers.

increasing and high decreasing groups. These results confirm the assumptions that students with high levels of readiness show more favorable characteristics in terms of CSE, increase in information, and perceived barriers compared to students with low readiness. Moreover, the difference between students with high readiness levels who increase their readiness and those who decrease in readiness over time seems to be in lower self-efficacy and less increase in occupational knowledge of the latter group.

5. Discussion

Based on a developmental-contextual approach to career development, the present study investigated trajectories and individual differences in the development of career-choice readiness among a group of Swiss adolescents from seventh through eighth grade. Overall, the results strongly support a developmental-contextual view of human and career development (Lerner, 2006; Vondracek et al., 1986) by showing (a) the importance of the cultural context on the general developmental trend of career-choice readiness, (b) the existence of significant interindividual differences in intraindividual change patterns, and (c) the effects of individual differences on developmental change.

The results of the variable-centered latent growth curve modeling support the presence of a strong general developmental trend of a linear increase in career-choice readiness over time among the investigated group. This can be explained by the environmental pressures and support present for Swiss adolescents during the investigated school years of becoming engaged in career preparation and career decision-making prior to the important transition from compulsory school to vocational education and training or college preparation high school. This developmental trend towards an increase in career choice readiness over time even overruled individual differences of core self-evaluations and perceived barriers. While self-evaluations and perceived barriers had effects on the level of readiness, the development of readiness over time depended strongly on the increase of reported occupational information. This suggests that providing adequate information about the world of work is a major component to increase readiness over time, an observation which supports many theoretical career decision-making models (Peterson et al., 1991). At the same time, the results confirm the importance of considering both personal and environmental variables as predictors of level of career choice readiness as well as previous studies showing strong relations between personality traits, barriers, and career decidedness (e.g., Germeijs et al., 2006; Lounsbury et al., 2005; Nota et al., 2007).

Apart from the variable-centered approach the study also applied a person-centered analytical approach to fully capitalize on the developmental nature of the data. As expected, important distinctions between different students were observed, which confirms a developmental-contextual view of careers (Lerner, 2006; Vondracek et al., 1986), proposing significant variability in change trajectories. However, even among the different trajectory groups, the strength of the developmental trend towards more career-choice readiness was observed. Among the four identified groups with distinct trajectories of career-choice readiness, only one group, representing merely 5% of the sample, did not show an increase in readiness over time. Conversely, the two dominant groups of students, representing 84% of the sample, showed a rather strong linear increase in readiness over time. This was true even for a group with unfavorable level of self-evaluations, information, and barriers. Only for a minority (representing 11% of the sample) with very severe negative self-evaluations, lack of information, and perceived barriers was no meaningful increase in readiness over time observed. This result implies that within the present context, unless adolescents show highly above-average negative choice difficulties, an increase in readiness over time can be expected.

Only a very small minority of 5% showed an actual decrease of readiness. This developmental pattern could be attributed to their below-average self-efficacy and almost no increase in occupational knowledge over time. They also reported very few

perceived barriers, which might have led to their early high career choice readiness. However, their negative self-view and lack of career information might have caused them to start questioning their initial career plans and get into a state of doubt by the end of eighth grade, where an actual choice was expected.

6. Limitations, conclusions, and practice implications

One limitation of the study is that only choice readiness was assessed at each measurement point. Therefore, the development of the other individual difference variables could not be observed. Future longitudinal research could simultaneously assess all four aspects affecting choice in order to provide a more comprehensive picture of their development and interaction over time. Moreover, core-self-evaluations were assessed at T4 which opens up the possibility that they were not predictors but actually outcomes of career choice readiness development. For example, it might be possible that low self-efficacy might be the result of the perceived failure to reach a career decision. Finally, the study used a convenience sample, and future studies should provide additional information regarding the generalizability of the study results to other cultural contexts and groups. This is even more important, given the suggested strong environmental impact on the development of readiness in this sample.

In sum, the study strongly supports that static or stage-oriented theoretical approaches, which still dominate the career field, have limited applicability in describing developmental patterns as they occur in adolescent career preparation. The results suggest that applying a developmental-contextual view that takes dynamic processes, contextualized development, and individual differences into account more adequately represents the observed reality. The study showed not only that different developmental patterns exist but also that the environmental context promotes a general developmental trend of increasing career-choice readiness, which overrules individual differences for the majority of students. Self-evaluations, occupational knowledge, and perceived barriers play an important role in readiness development but more so in relation to the level of achieved readiness than regarding the developmental pattern. Future empirical work and theory development should more fully incorporate this perspective.

For practice, interventions could apply a developmental-contextual approach which aims at preventing developmental problems and enhancing positive career development. First, it is important to consider both personal and environmental variables in interventions and simultaneously address self-evaluations and perceptions of the environment. Also, providing adequate occupational information and support learning about careers would be important. Finally, the study implies that it would be useful to focus resources on identifying and systematically assisting the 10% of adolescents with very unfavorable views about themselves, their environmental support, and available occupational information, because they are in real need of assistance in developing choice readiness.

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