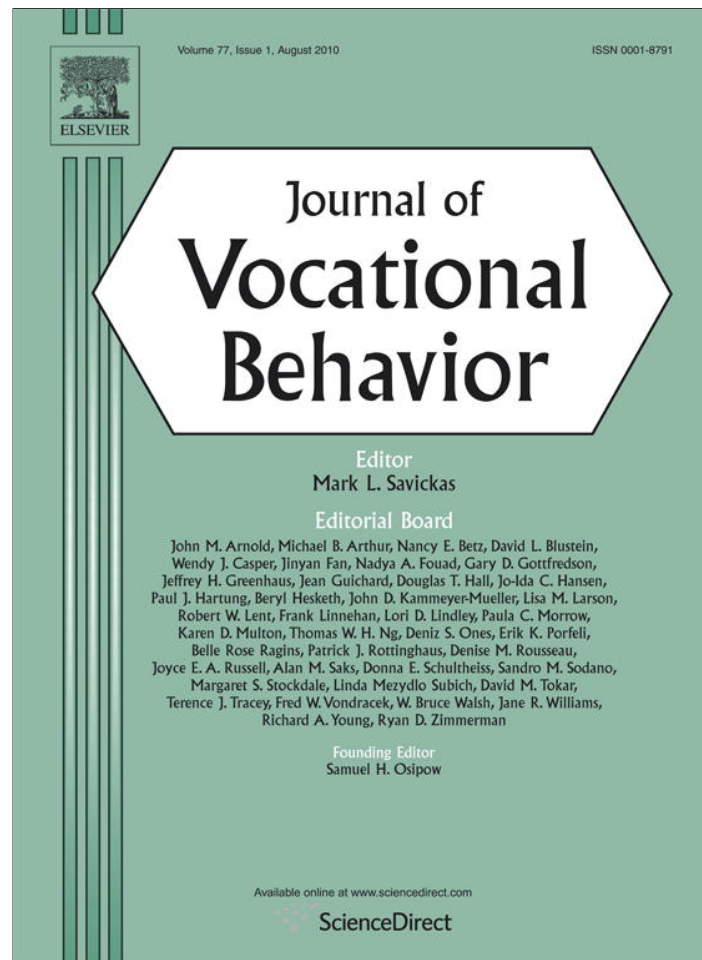


Provided for non-commercial research and education use.  
Not for reproduction, distribution or commercial use.



This article appeared in a journal published by Elsevier. The attached copy is furnished to the author for internal non-commercial research and education use, including for instruction at the authors institution and sharing with colleagues.

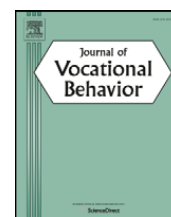
Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>

Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

## Journal of Vocational Behavior

journal homepage: [www.elsevier.com/locate/jvb](http://www.elsevier.com/locate/jvb)

## The role of chance events in the school-to-work transition: The influence of demographic, personality and career development variables

Andreas Hirschi\*

Leuphana Universität Lüneburg, Institute for Strategic HR Management Research and Development (SMARD), Wilschenbrucher Weg 84, D-21335 Lüneburg, Germany

## ARTICLE INFO

*Article history:*

Received 5 November 2009

Available online 13 April 2010

*Keywords:*

Career development

School-to-work transition

Chance events

Personality

Career preparation

Career success

## ABSTRACT

Chance events are considered important in career development, yet little empirical research is available on their predictors and consequences. The present study investigated socio-demographic (gender, nationality, school-type), personality (openness, locus of control) and career development variables (career decidedness, career planning) in relation to perceived chance events with a retrospective ( $N=229$ , eleventh grade), and 1-year longitudinal prospective study ( $N=245$ , eighth/ninth grade) among Swiss adolescents. The results showed that the majority of both groups reported a significant influence of chance events on their transition from compulsory school to vocational education or high school. Importance of chance events related to socio-demographics and personality but not career preparation. Career preparation and chance events predicted subjective career success in terms of wish correspondence and overall satisfaction with transition outcome among the younger cohort. Implications include the necessity to integrate both thorough career preparation and chance events in theory and counseling practice.

© 2010 Elsevier Inc. All rights reserved.

### Introduction

In recent years, there has been increased theorizing about the effects of unplanned events in career decision making and career development. The Chaos Theory of Careers (Pryor & Bright, 2003) and Krumboltz' (2009) Happenstance Learning Theory proposed that career decisions and career development are strongly affected by unplanned events. Empirical research confirms that many people report that chance events affected their career decision making (e.g., Betsworth & Hansen, 1996; Bright, Pryor, & Harpham, 2005; Williams et al., 1998). However, research is mostly restricted to investigate whether people perceive chance events affecting their career decision making. Almost no quantitative empirical studies are available about how individual differences such as personality or career development variables affect the perception of chance events and, subsequently, how chance events affect career transitions and success. Another limitation of the current literature is that most studies were conducted with adults or college students and less is known about how adolescents perceive chance events in their career development.

The present paper investigates for the first time (a) the perceived influence of chance events on important career transitions in adolescence in a previously uninvestigated cultural context, (b) how the report of experienced chance events is affected by personality and career development variables with a retrospective and prospective research design, and (c) how chance events affect success in an important adolescent career transition above and beyond personality and career development variables.

\* Fax: +49 4131 6 777 935.

E-mail address: [andreas.hirschi@leuphana.de](mailto:andreas.hirschi@leuphana.de).

*Chance events in career decision making and development*

Many of the major classic career theories such as by Krumboltz (1979), Super et al. (1957), or Crites (1969) noted that chance events can significantly affect career decisions and development. Recently, the emergence of Bright and Pryor's Chaos Theory of Careers (Bright & Pryor, 2005; Pryor & Bright, 2007) and Krumboltz' Happenstance Learning Theory (2009) also led to an increased appreciation of unplanned events in career development research and practice (e.g., Chien, Fischer, & Biller, 2006; McKay, Bright, & Pryor, 2005). Some researchers referred to such events as serendipity (Betsworth & Hansen, 1996), happenstance (Miller, 1983), or synchronicity (Guindon & Hanna, 2002). A number of descriptive empirical studies confirmed that diverse groups of people such as adults (Betsworth & Hansen, 1996; Bright, Pryor, Wilkenfeld, & Earl, 2005), college students (Bright, Pryor, & Harpham, 2005; Bright, Pryor, Wilkenfeld, et al., 2005), high school students (Bright, Pryor, & Harpham, 2005), academic women in counseling (Williams, et al., 1998), female college graduates (Scott & Hatalla, 1990), or nonprofessional workers (Salomone & Slaney, 1981) all reported that chance events had affected their career choices and career development process. Moreover, Bright, Pryor, Chan, and Rijanto (2009) reported that many of their investigated Australian college students and working adults reported experiencing multiple chance events in their careers and that most unplanned events were more likely to be connected than independent.

Going beyond simply stating that chance affects career development, Salomone and Slaney (1981) as well as Cabral and Salomone (1990) suggested that personal factors such as locus of control beliefs or clarity of self-concept affect the likelihood of experiencing and being able to capitalize on chance events. However, very limited empirical knowledge exists of how personal characteristics affect the experience of chance events and how chance events affect vocational transitions. Bright, Pryor, and Harpham (2005) confirmed that university students and adults with more external locus of control beliefs reported more chance events affecting their career choices. However, this personality disposition accounted for only about 9% of the total variance in reporting of chance events. Conversely, Bright et al. (2009) reported mixed results with Australian university students and working adults with no significant relationship observed between locus of control and the reported influence of single and multiple chance events. Only a moderate negative relation emerged with more externally oriented individuals more likely to report experiencing a series of negative, independent chance events.

A theoretically important personality characteristic which has not yet been empirically investigated in relation to chance events is openness. Krumboltz (2009) stressed the merits of openness as an alternative to decidedness and referred to its importance for experiencing and capitalizing on happenstance. According to this reasoning, being open should allow people to more readily perceive a favorable opportunity if it emerges and change one's course of action and initial plans to capitalize on this happenstance compared to people who are rigidly committed to a certain course of action or career goal. In personality theory and research (Costa & McCrae, 1997) openness to experience is one of the big five human traits which describes the propensity to be curious, open to new intellectual stimuli and ideas, trying out new activities and experiences, and to critically re-examine old assumptions and beliefs. As such, people high in this trait can be expected to be more likely to get exposed to, realize, and capitalize on chance events compared to people who lack this predisposition.

Another common theme in the literature on chance events is that the theories and models stressing effects of chance events offer a complementary perspective to traditional career decision making and career development theories stressing planfulness and decidedness (Betsworth & Hansen, 1996; Rojewski, 1999). A number of empirical studies supported the merits of decidedness and planfulness for mastering career transitions (e.g., Patton, Creed, & Muller, 2002; Seifert, 1993; Skorikov, 2007). However, no study to date investigated how the perception of chance events also depends on the degree of decidedness and planfulness of a person. Theoretically, it could be that chance plays a larger role for people who are less decided and planful about their careers. Chance may also separately affect transitions in addition to its effects on planning and decidedness. However, previous research was mainly concerned with whether chance events affect career decisions or one's career development in general. Specifically, it would be interesting to investigate to what extent chance events affect an important career transition above and beyond the more established effects of decidedness and planfulness.

*Present study*

The present study investigated perceived chance events in the school-to-work transition of Swiss adolescents going from compulsory school to either vocational education and training (VET) or general high school, preparing for later college education. In contrast to more open systems such as in the U.S. and other countries, the educational systems in Switzerland, Germany, and Austria are more stratified and early vocational choices are closely connected to education and future careers (Heinz, 2002; Hirschi, 2010). Specifically, in Switzerland two thirds of all students attend VET after compulsory school and receive practical training and theoretical education in one of over 200 apprenticeships for a period of three to four years. The remaining minority continues to general high school which specifically prepares for future college education. The transition to VET functions much like an ordinary job market where students have to apply for apprenticeships on a competitive basis or alternatively, pass scholastically-demanding entry exams to high schools (Federal Office for Professional Education and Technology, 2008). This context provides an opportunity to investigate the perception of chance events in an important adolescent career transition within a different cultural and educational context than investigated in previous studies. The first goal of the present study was to investigate to what degree students perceive chance events affecting their transition from school-to-work in this context.

The second goal was to examine which socio-demographic, personality, and career development variables would predict the amount of reported chance events. Empirical research conducted in Switzerland showed that gender, school-type attended, and

nationality significantly affect school-to-work transition success. The reasons for these findings are seen in an unequal distribution of opportunities regarding vocational fields and their scholastic requirements as well as discrimination practices in the selection of apprentices by small- and medium-sized firms (Haeblerlin, Imdorf, & Kronig, 2005; Hirschi, 2010). Generally, girls, students with a more basic scholastic background, and students with other than Swiss nationalities face more challenges in mastering this transition successfully (Haeblerlin et al.). Rojewski (1999) proposed that chance events might play a more important role for individuals with learning disabilities due to their generally increased challenges in career development. The same reasoning could be applied for girls, basic scholastic track students, and foreign students in Switzerland. Those groups of students face more structural limitations and discrimination which might result in experiencing less control over one's career development process and more effect of uncontrollable and random events. It was therefore hypothesized that these groups of students perceive a stronger influence of chance in their career transitions compared to the more privileged group of boys, advanced scholastic track students, and students with Swiss nationality.

Accounting for possible effects of personality on perception of chance events, this study investigated locus of control and openness to experience as two theoretically important variables possibly related to the perception and utilization of chance in career development. In addition, the degree of career decidedness and planfulness was assessed to account for two of the most salient factors describing successful career preparation and adaptability (Savickas, 2005; Super, 1990). It was hypothesized that more external locus of control, more openness, but less decidedness and planfulness would relate to a stronger perceived effect of chance events.

The third goal of this study was to investigate how perceived chance events would relate to the subjective success (cf. Heslin, 2005) in career transitions, assessed in terms of perceived correspondence to one's original wish and the subjective satisfaction with one's vocation/education. Based on previous research (Haeblerlin et al. 2005, Patton et al. 2002), it was expected that the socio-demographic variables of gender, school-type, and nationality, as well as the career development variables of decidedness and planfulness, would significantly relate to a successful transition. In an explanatory fashion it was investigated whether perceived chance events would explain variance in success above and beyond those variables.

Two studies were conducted to investigate the research questions. Study one applied a retrospective design with students in eleventh grade rating the effects of chance events for when they underwent the transition from school-to-work at the end of ninth grade. Study two applied a longitudinal prospective design where personality and career development variables were assessed before the transition at the end of eighth grade (T1). The same group of students then rated the effect of chance events immediately after completing the transition approximately one year later at the end of ninth grade (T2).

## Method

### Participants

The cohort in eleventh grade consisted of 229 students (70% female, age 16–20 years,  $M = 17.5$ ,  $SD = .9$ ) with 66% attending VET in the professions of office clerk (54%), retail sales (34%), and assistant nurse (12%). The others attended general high school. The majority had a Swiss nationality (82%); the other nationalities mainly consisting of other European countries.

The cohort in eighth grade encompassed 245 students (50% female, age 13–17 years,  $M = 15.1$ ,  $SD = .7$ ) with 57% attending a school track with advanced requirements and the others a track with basic requirements. The majority were Swiss (81%); the others had nationalities mainly from other European countries.

### Measures

#### Chance event survey

In accordance with Bright, Pryor, and Harpham (2005), chance events were assessed with two questions. The first question (Q1) asked participants to rate the overall influence of chance events on their career transition from compulsory school to VET or high school. Answers were provided on a 3-point Likert-type scale, with the response categories "great," "some," and "no" influence. The second question (Q2) asked participants to rate the influence of eight categories of chance events on their career transition using the same rating scale as in question one. The events were retrieved from the chance events survey by Bright et al. and adjusted for the present study context. For example, influence of family and marriage or military experiences were excluded from the survey because they did not generally apply for this age group. The eight events included: (i) professional or personal connections, e.g., leading to information about jobs, informal recommendations, job offers, etc.; (ii) right place/right time; (iii) encouragement from others, e.g., encouragement to acquire education and experience, set higher goals, or pursue a new field; (iv) influence of previous work/volunteer experiences; (v) obstacles in original career path; (vi) unintended exposure to a type of work or activity that you *did* find interesting; (vii) unintended exposure to a type of work or activity that you *did not* find interesting; and (viii) unexpected personal event, e.g., injury or health problem.

Following the procedure by Bright et al. for scoring the chance event survey, a separate score was calculated for both question one and two. Zero points were awarded for no influence, two points for some influence, and four points for great influence. For question two, a total score was computed by adding the individual item scores (Q2-total). In addition, the number of chance events categories that participants selected as having either great or some influence was also calculated, providing another way to examine the extent of influence of chance events (Q2-breadth).

Personality characteristics

*Openness to experience* was assessed with the respective scale of the German language adaptation of NEO-FFI (Borkenau & Ostendorf, 1993; Costa & McCrae, 1992). The scale consists of 12 statements (e.g., “I often try new and exotic foods”) and answers were provided on a 4-point Likert scale ranging from *strongly disagree* to *strongly agree* (Lüdtke, Trautwein, Nagy, & Köller, 2004). Support for the validity and applicability of the scale with adolescents is provided by Lüdtke et al. (2004) who report significant relations school achievement, or by Bergmann and Eder (2005) in relation to vocational interests. Cronbach's Alpha for the present sample was .72. *Externality of control beliefs* was assessed with the Inventory for the Measurement of Self-Efficacy and Externality (FKK; Krampen, 1991). The scale consists of 16 items assessing social externality and fatalistic externality (e.g., “I can determine very much of what happens in my life” [reverse coded]). Answers are provided on a 6-point Likert scale, ranging from *very untrue* to *very true*. Support for the applicability and validity among adolescents is provided by Krampen (1991) and others (Anderson, Hattie, & Hamilton, 2005) in relation to school motivation, personality, and well-being. Alpha within the present sample was .86.

Career development

*Career decidedness* was assessed with the German language adaptation of the Career Maturity Inventory (Crites, 1973; Seifert & Stangl, 1986) Career Decidedness/Commitment scale. The scale consists of 12 items (e.g. “I don't know exactly what to do in order to choose the right occupation”) and answers are indicated on a 4-point scale. For the purpose of analysis, scores were inversed and higher scores indicate more career decidedness. In support of the construct validity of the scale, previous studies have shown a significant relationship with vocational identity (Hirschi & Läge, 2007), positive career attitudes, more active application for an apprenticeship after school, and more success in actually finding an apprenticeship (e.g., Bergmann, 1993; Seifert, 1993). Alpha within the present sample was .87. *Career planning* was assessed with the German language adaptation of the Career Development Inventory (Seifert & Eder, 1985; Super, Thompson, Lindeman, Jordaan, & Myers, 1981). The scale consists of 22 items which tap into the amount of time and thought invested in career planning compared to classmates, the degree of conducted vocational/educational planning, and the degree of knowledge about one's preferred career options. Answers were indicated on a 5-point Likert scale with higher scores indicating more career planning. Studies supporting the construct validity of the scale showed, for example, a positive relation to career knowledge and decidedness, likelihood of obtaining an apprenticeship after school, and realizing one's aspired major in university (e.g., Seifert, 1993; Seifert & Eder, 1985). Alpha was .90.

Transition success

Two measures for subjective career transition success were applied. A first measure of perceived success of the career transition asked students to indicate on a 5-point Likert scale how well their currently found vocation/education corresponds to their original wish, ranging from *not at all* to *completely*. A second measure assessed overall satisfaction with their currently found vocation/education on a 7-point Likert scale ranging from *extremely dissatisfied* to *extremely satisfied*. Using single-item measures as indicators of success has several obvious psychometric shortcomings, for example, because no estimates of reliability can be provided. However, other research suggests that single-item measures possess sufficient validity when cognitive readily-available constructs are measured (Nagy, 2002; Robins, 2001). The meta-analysis by Wanous, Reichers, and Hudy (1997) showed that single-item job satisfaction measures provide satisfactory validity and estimated reliability when compared to multi-item job satisfaction facets measures. Table 1 provides support for the convergent validity of the measures within this sample.

**Table 1**  
Correlations among the assessed constructs for the two study groups.

	1	2	3	4	5	6	7	8	9	10	11	12
1 Q1	–	.491***	.446***	–.021	.042	–.287***	–.172**	.217***	–	–	–.315***	–.038
2 Q2-total	.371***	–	.941***	–.009	.236***	–.200**	–.110	.231***	–	–	–.229***	.025
3 Q2-breadth	.346***	.914***	–	.015	.215***	–.182**	–.084	.249***	–	–	–.217***	–.004
4 Gender	–.142	–.017	–.006	–	.039	.128	.026	.037	–	–	.026	–.128
5 Nationality	–.038	.060	.057	–.071	–	–.249***	–.039	–.075	–	–	–.086	–.051
6 School	–.154*	–.332***	–.287***	–.045	–.186**	–	.150*	–.075	–	–	.185**	.003
7 Openness	.202**	.093	.042	–.129*	.075	–.037	–	.000	–	–	.151*	.037
8 Externality	–.008	.177*	.113	.061	.136*	–.048	.053	–	–	–	–.171**	.067
9 Decidedness	–.048	–.092**	–.147**	.122	–.214***	–.034	–.046	–.138*	–	–	–	–
10 Planning	.098	–.003	–.039	.082	–.154*	–.030	.080	–.185**	.572***	–	–	–
11 Wish	–.062	–.117	–.132	.103	–.239***	.100	–.003	–.054	.242***	.156*	–	.220***
12 Satisfaction	–.006	–.116	–.138	–.083	.008	.131	.055	.054	.152*	.157*	.376***	–

Note. *above diagonal*: Group 1 (eleventh grade, n = 229), *below diagonal*: Group 2 (eighth/ninth grade, n = 245).  
Coding: gender 0 = female, 1 = male; nationality 0 = Swiss, 1 = other; school (Group 1) 0 = vocational education and training, 1 = general high school; (Group 2) 0 = basic requirements, 1 = advanced requirements.  
\* p < .05.  
\*\* p < .01.  
\*\*\* p < .001.

## Procedure

All students completed the measures in their classes under the supervision of their teachers. Participation was voluntary and with informed consent. All students present at the time of data collection completed the measures. Cohort 1 participated at the end of eleventh grade, completing the chance events survey, the personality scales, and the items for wish correspondence and satisfaction. Students in Cohort 2 completed the personality and career development scales at the end of eighth grade (T1). Approximately one year later the same group then completed the chance events survey and rated the subjective success of the career transition (T2). By that time they had completed the application process for VET or high school and were aware of the outcomes of those efforts. At the second measurement point 50 students (20.4%) were not available for data collection due to two entire classes no longer being available for assessment and some individual attrition. Students missing at T2 showed no difference in gender, school-type, or nationality distribution or scores in openness and decidedness at T1. However, they scored higher in externality ( $d = .34$ ) and lower in planfulness ( $d = .42$ ) compared to students attending both measurement points.

## Results

### Perception of chance events

Within the whole group of participants ( $n = 423$ ), 64.7% stated that chance events had some or a great influence on their career transition, with 15.9% perceiving a great influence. The two cohorts did not differ in their overall assessment of chance events (Q1). However, their rating of the single events differed significantly,  $F(8, 408) = 195.45$ ,  $p < .001$ ,  $\eta^2 = .793$ . Students in the younger cohort reported a stronger effect of total events (Q2-total,  $d = .33$ ) and more breadth of events (Q2-breadth,  $d = .40$ ) compared to the group in eleventh grade.

Among students in eleventh grade, 61.6% of all students indicated that chance events had some or a great influence on their career transition with 16.6% ascribing a great influence. The rated influence of the eight events varied significantly between the events,  $F(8, 221) = 108$ ,  $p < .001$ ,  $\eta^2 = .796$ . Encouragement of others (77.3% of all participants rated some or great influence,  $M = 2.13$ ,  $SD = 1.44$ ) and professional or personal connections (63.3%,  $M = 1.76$ ,  $SD = 1.56$ ) were the most frequently, unexpected personal event (10%,  $M = .24$ ,  $SD = .077$ ) and unintended exposure to a type of work or activity that you *did not* find interesting (25.8%,  $M = .62$ ,  $SD = 1.13$ ) were the least frequently reported chance events.

Among students in eighth/ninth grade, 68.4% stated that chance events had some or a great effect on their career transition with 15% reporting a great effect. The importance of chance events showed significant differences between events  $F(8, 191) = 90.6$ ,  $p < .001$ ,  $\eta^2 = .791$ . Encouragement of others (82.5%,  $M = 2.30$ ,  $SD = 1.40$ ) and right place/right time (63.9%,  $M = 1.62$ ,  $SD = 1.44$ ) were the most frequent, unexpected personal event (13%,  $M = .32$ ,  $SD = .89$ ) and unintended exposure to a type of work or activity that you *did not* find interesting (40.9%,  $M = .95$ ,  $SD = 1.22$ ) were the least frequently reported chance events.

### Predictors of chance events

The next set of analyses were conducted to assess how the socio-demographic variables of gender, nationality, and school-type, the personality characteristics of openness and locus of control, and the career development variables of decidedness and planfulness would affect the perception of chance events.

First, bivariate correlations were calculated. Table 1 shows that within both cohorts the overall perception of chance events (Q1) related significantly to the total score (Q2-total) and breadth of chance events (Q2-breadth). Total score of chance events and breadth of chance events correlated with such a magnitude that the two measures can be regarded as interchangeable. Among students in eleventh grade, gender was unrelated to chance events but students with Swiss nationality and students in general high school reported fewer chance events on all three measures compared to students with other nationalities and those in VET. Perception of chance events (Q1 and Q2) related positively to externality of control beliefs. Q1 but not Q2 related negatively to openness. Among students in eighth/ninth grade, boys reported fewer chance events on Q1 but not Q2. Nationality was unrelated to both chance questions. Students in basic requirements school tracks reported more chance events on all three measures compared to those in advanced tracks. Externality related positively to Q2-total and openness to Q1 but not Q2. Decidedness related negatively to Q2-breadth but planfulness was unrelated to reported chance events.

Next, multiple hierarchical regression analyses were conducted to account for the effect of all variables on chance events while taking their shared variance into account. In the first step, the socio-demographic variables were included in the model. The next step included the personality variables and the last step (for Cohort 2 only) incorporated the two career development variables. Only the results for Q1 and Q2-total are reported due to space limitations.

The results in Table 2 show that for Cohort 1 (eleventh grade) regressing on Q1 the socio-demographic variables explained a significant 8% variance,  $F(3, 225) = 6.55$ ,  $p < .001$ . Personality explained an additional 7%,  $\Delta F(2, 223) = 9.09$ ,  $p < .001$ . Attending VET, more externality but less openness were significant predictors of more overall reported influence of chance events. Regressing on Q2-total, socio-demographics explained 7.2% variance,  $F(3, 225) = 5.78$ ,  $p < .001$ . Personality explained an additional 6.8%,  $\Delta F(2, 223) = 8.82$ ,  $p < .001$ . Foreign nationality, attending VET, and more externality predicted more total perception of chance events.

For Cohort 2 (eighth/ninth grade) regressing on Q1, socio-demographics explained 5.6% variance,  $F(3, 189) = 3.73$ ,  $p = .012$ , personality an additional 3.2%,  $\Delta F(2, 187) = 3.32$ ,  $p = .038$ , and the career development measures a nonsignificant 1.7%,  $\Delta F(2,$

**Table 2**  
Hierarchical regression analysis for perceived chance events.

	Q1							
	Cohort 1 (n = 229)				Cohort 2 (n = 193)			
	B	SD(B)	Beta	R <sup>2</sup>	B	SD(B)	Beta	R <sup>2</sup>
<i>Step 1</i>								
Gender	.066	.201	.021		-.422	.188	-.159 *	
Nationality	-.083	.243	-.023		-.489	.197	-.181 *	
School	-.865	.199	-.290 ***	.080 ***	-.317	.248	-.093	.056 *
<i>Step 2</i>								
Externality	.329	.088	.232 ***		-.042	.094	-.031	
Openness	-.179	.089	-.126 *	.150 ***	.257	.100	.184 *	.088 **
<i>Step 3</i>								
Decidedness	-	-	-		-.161	.117	-.118	
Planning	-	-	-		.208	.116	.153	.105 **
Q2-total								
	Cohort 1 (n = 229)				Cohort 2 (n = 194)			
	B	SD(B)	Beta	R <sup>2</sup>	B	SD(B)	Beta	R <sup>2</sup>
	<i>Step 1</i>							
Gender	-.112	.746	-.010		-.520	.828	-.043 *	
Nationality	2.576	.899	.191 **		-4.189	.866	-.338 ***	
School	-1.597	.737	-.145 *	.072 ***	.233	1.103	.015	.118 ***
<i>Step 2</i>								
Externality	1.315	.326	.251 ***		.998	.422	.160 *	
Openness	-.379	.331	-.072	.140 ***	.466	.439	.073	.151 ***
<i>Step 3</i>								
Decidedness	-	-	-		-.636	.527	-.102	
Planning	-	-	-		.366	.516	.060	.158 ***

Note. Coding: gender 0 = female, 1 = male; nationality 0 = Swiss, 1 = other nationalities; school (Cohort 1) 0 = vocational education and training, 1 = general high school, (Cohort 2) 0 = basic requirements, 1 = advanced requirements. All values are for when variables were first entered into the regression.

- \*  $p < .05$ .
- \*\*  $p < .01$ .
- \*\*\*  $p < .001$ .

185) = 1.71,  $p = .183$ . Female gender, attending basic track school, and more openness predicted more overall chance events. Regressing on Q2-total, the socio-demographic variables explained 11.8% variance,  $F(3, 190) = 8.49$ ,  $p < .001$ , personality an additional 3.3%,  $\Delta F(2, 188) = 3.68$ ,  $p = .027$ , and the career development measures a nonsignificant .7%,  $\Delta F(2, 186) = .73$ ,  $p = .483$ . Attending basic track school and more externality predicted more total chance events.

*Effects of chance events on career transition success*

The last set of analyses investigated how perceived chance events would relate to subjective success with the career transition. The bivariate correlations in Table 1 show that among Cohort 1 all three aggregate chance measures related negatively to reported correspondence of vocation/education to original wish. No relation to satisfaction was observed. Among Cohort 2, no correlation between the chance measures and wish correspondence or satisfaction was observed.

Next, multiple hierarchical regression analyses were conducted with models estimating the effects of (1) the socio-demographic variables, (2) personality dispositions, (3) the two career development variables (for Cohort 2 only), (4) the overall perception of chance events (Q1), and (5) all eight chance events. This procedure allows investigating to what extent the eight single chance events had an effect above and beyond the general reported effect of chance (Q1) and assesses the unique effect of each of the eight events on the outcomes. The results in Table 3 show that for Cohort 1, correspondence to wish was significantly predicted by the socio-demographic variables,  $R^2 = .039$ ,  $F(3, 225) = 3.00$ ,  $p = .031$ , personality explained an additional 4.7% variance,  $\Delta F(2, 223) = 5.79$ ,  $p = .004$ , and overall chance events (Q1) an additional 4.9% variance,  $\Delta F(1, 222) = 12.60$ ,  $p < .001$ . The eight single chance events did not predict significant additional variance,  $\Delta R = .046$ ,  $\Delta F(1, 214) = 1.50$ ,  $p = .158$ . Attending general high school, less externality, more openness, and fewer generally perceived chance events positively predicted correspondence to wish. For satisfaction, none of the included blocks of variables could explain significant variance, and totally only accounted for a nonsignificant 8.6% of explained variance in satisfaction. However, female gender and unintended exposure to a type of work or activity that was found interesting related positively to satisfaction.

**Table 3**  
Hierarchical regression analysis for successful transition.

	Wish correspondence							
	Cohort 1 (n = 229)				Cohort 2 (n = 181)			
	B	SD(B)	Beta	R <sup>2</sup>	B	SD(B)	Beta	R <sup>2</sup>
<i>Step 1</i>								
Gender	.066	.139	.003		.146	.131	.081	
Nationality	-.078	.167	-.031		-.399	.180	-.167**	
School	.373	.137	.186**	.039*	.262	.140	.141	.067**
<i>Step 2</i>								
Externality	-.175	.061	-.183**		-.008	.069	-.009	
Openness	.114	.062	.119	.086***	.022	.017	.023	.068*
<i>Step 3</i>								
Decidedness	-	-	-		.142	.083	.155	
Planning	-	-	-		.037	.082	.040	.099**
<i>Step 4</i>								
Q1	.230	.65	-.240***	.135***	.021	.063	-.026	.100*
<i>Step 5</i>								
Connections	.098	.129	.050		-.078	.141	-.043	
Place/time	-.027	.140	-.014		.454	.141	.242**	
Encouragement	-.204	.148	-.090		.337	.181	.137	
Work experiences	.083	.132	.041		.210	.141	.115	
Obstacles	-.335	.138	-.170*		-.521	.142	-.289***	
Pos. exposure	.229	.133	.118		.016	.145	.009	
Neg. exposure	-.088	.157	-.040		-.270	.139	-.147	
Pers. event	-.038	.218	-.012	.181***	-.144	.208	-.053	.253***
Satisfaction								
	Cohort 1 (n = 229)				Cohort 2 (n = 179)			
	B	SD(B)	Beta	R <sup>2</sup>	B	SD(B)	Beta	R <sup>2</sup>
<i>Step 1</i>								
Gender	-.420	.190	-.148*		-.437	.279	-.117	
Nationality	-.055	.228	-.016		.488	.380	.099	
School	.104	.187	.038	.023	.473	.296	.123	.034
<i>Step 2</i>								
Externality	.082	.086	.063		.130	.146	.068	
Openness	.047	.087	.036	.028	.052	.149	.027	.040
<i>Step 3</i>								
Decidedness	-	-	-		.226	.175	.119	
Planning	-	-	-		.181	.175	.095	.075
<i>Step 4</i>								
Chance Q1	-.060	.093	-.046	.030	-.027	.134	-.016	.075
<i>Step 5</i>								
Connections	.325	.184	.122		-.276	.312	-.073	
Place/time	-.274	.200	-.106		.626	.313	.160*	
Encouragement	-.230	.212	-.074		.805	.407	.156*	
Work experiences	.106	.189	.039		-.167	.312	.044	
Obstacles	-.195	.197	-.073		-.702	.315	-.187*	
Pos. exposure	.438	.190	.166*		.294	.323	-.078	
Neg. exposure	-.042	.224	-.014		.222	.308	-.018	
Pers. event	-.335	.312	-.076	.086	.102	.458	-.018	.164*

Note. Coding: gender 0 = female, 1 = male; nationality 0 = Swiss, 1 = other nationalities; school (Cohort 1) 0 = vocational education and training, 1 = general high school, (Cohort 2) 0 = basic requirements, 1 = advanced requirements.

All values are for when variables were first entered into the regression.

- \*  $p < .05$ .
- \*\*  $p < .01$ .
- \*\*\*  $p < .001$ .

For Cohort 2, the socio-demographic variables explained 6.7% in correspondence to wish,  $F(3, 177) = 4.24, p = .006$ . Personality could not explain significant additional variance,  $\Delta R^2 = .001, \Delta F(2, 175) = .05, p = .950$ , but the career variables did,  $\Delta R^2 = .032, \Delta F(2, 173) = 3.06, p = .050$ . General perceived chance events (Q1) did not explain additional variance,  $\Delta R^2 = .001, \Delta F(1, 172) = .11,$



$p = .737$ . Finally, the eight chance events explained an additional 18% variance in the outcome above and beyond the already included measures,  $\Delta F(8, 164) = 4.21, p < .001$ . Swiss nationality and the chance events of obstacles (negative) and right place/right time were single significant predictors of more wish correspondence. For satisfaction, the socio-demographics,  $R^2 = .034, F(3, 175) = 2.07, p = .106$ , and personality variables,  $\Delta R^2 = .006, \Delta F(2, 173) = .50, p = .609$ , could not explain significant variance. However, the career variables explained a significant 3.7% variance above and beyond the already included measures,  $\Delta F(2, 171) = 3.26, p = .041$ . General perceived chance events (Q1) did not account for any additional variance,  $\Delta F(1, 170) = .04, p = .842$ . However, the eight single chance events predicted 8.2% additional variance in satisfaction,  $\Delta F(8, 162) = 2.16, p = .034$ . Obstacles (negative), encouragement, and right place/right time were single significant predictors of more satisfaction. A series of post-hoc tests investigated whether the effects of either the personality, career development, or the chance measures on wish correspondence and satisfaction were moderated by gender, school-type, or nationality in the two cohorts. The regression analysis showed no significant interaction between these variables, which indicates no moderation effects of the socio-demographic variables.

## Discussion

The study shows that the majority of the study participants report that chance events had an effect on their school-to-work transition. The number of participants (almost two thirds) perceiving effects of chance is comparable to those reported in other studies with adults, college students, or high school students (Betsworth & Hansen, 1996; Bright, Pryor, & Harpham, 2005; Scott & Hatalla, 1990). Unexpected encouragement and effects from professional or personal connections seemed to be especially important for both investigated cohorts while unexpected personal events and negative work experiences were less important. These results are very similar to those reported by Bright, Pryor, and Harpham (2005) with Australian high school and college students. Overall, the results imply that chance events play an important role in the Swiss transition from compulsory school to VET or high school. Because the present study context was very different from that of previous studies this new result speaks to the intercultural importance in considering the role of chance events in career decision making and development.

Another major finding of the study was that socio-demographic variables, which are closely bound to the existing environmental opportunity structure, significantly affect the perception of chance events. The results confirmed that structurally handicapped students with an immigration background and those from school tracks with only basic scholastic requirements perceive chance to have a stronger effect on their career transition compared to more privileged students with Swiss nationalities and those from advance requirement tracks. Those results are in line with Rojewski's (1999) reasoning that chance events might play a special role for individuals with more challenging personal or social circumstances. They confirm the assumption that those students perceive less control over their career development due to environmental, social, and structural restrictions and discrimination, which in turn increases the perceived effects of unplanned and uncontrollable events. In other words, it implies that chance events are perceived as more influential by people who experience less agentic possibilities to affect their own careers.

Contrary to the hypothesis but aligning with other studies (Betsworth & Hansen, 1996; Bright, Pryor, Wilkenfeld, et al., 2005), no consistent significant gender differences occurred in perceived chance events. However, the educational track of a student in terms of pursuing VET or general high school had a significant effect. As could be expected, the transition from school to VET, which functions more like an ordinary job market, is related to more perceived chance events than the more formal transition from compulsory school to general high school, which depends on an entry examination. This implies that the degree to which chance events affect career decisions and development depends on the specific kinds of transitions people undergo.

Confirming the hypothesis, personality characteristics in terms of openness and locus of control significantly affected the perception of chance events. Specifically, students with more external control beliefs reported more chance events in both cohorts compared to those with more internal beliefs. This finding confirms Bright, Pryor, and Harpham's (2005) results and implies that the attribution style of an individual accounts for a certain variance to which chance events are perceived as influential in one's career choices and development. The relation to openness was more complex. Among the older cohort, who rated the effects of chance events in retrospect for the transition they underwent two years ago, openness related negatively to importance of chance events. For the younger cohort, using a prospective research design and rating chance events immediately after their career transition, it related positively. The latter finding is in line with theoretical reasoning that openness would help to perceive and capitalize on unplanned events (Krumboltz, 2009). The negative relation among the older group could be explained in the way that for less open students chance events are more salient in retrospect since this group generally prefers predictability and control. The study by Bright et al. (2009) showed that there are biases in recalling chance events, depending on the nature of the event in terms of perceived influence of the event and personal level of control. This would imply that more open individuals are indeed more likely to experience unplanned events in the future but would at the same time attribute less influence to chance events as having affected their past career transitions. This preliminary explanation should be investigated by future studies. Finally, contrary to the expectation, the degree of career decidedness and planning did not affect the subsequent experience of chance events. This implies that chance events occur regardless of the individual's degree of previous career preparation.

The final research question addressed the possible effects of unplanned events on subjective success in the investigated career transition. For the older cohort, the results show that there is generally no strong relation of reported chance events to perceived success in the transition in terms of the reported overall satisfaction with one's vocational education. However, the general perception of chance events related negatively to the reported correspondence of one's current vocational education to one's original wish, indicating a perceived negative effect of chance events preventing them from pursuing their original vocational/educational wish. In the younger cohort chance events showed a stronger effect on perceived transition success. As a group, the assessed eight different events significantly predicted wish correspondence and satisfaction above and beyond the general perception of chance occurrence.

Experiencing unexpected obstacles and being at the right place at the right time emerged as the most important negative and positive chance events, respectively, for both outcome measures. This finding confirms Bright et al.'s (2009) findings that different chance events might have a differential impact upon career transitions. The difference between the findings of the younger and older cohort could be explained with the point of assessment, where the older cohort reported the perceived chance events for the transition they underwent two years ago. This might have caused recollection biases, because not all chance events are remembered with the same accuracy (Bright et al. 2009) and might thus weaken the perceived effects of chance on transition success. Moreover, post-hoc tests showed that the younger cohort reported significantly higher correspondence to wish ( $d = .67$ ) and satisfaction ( $d = .38$ ) compared to the older cohort. Based on actual work experiences, it is possible that the older cohort discovered that they did not like their vocation/education as much as originally expected and their current job satisfaction is related to a number of factors such as current supervisor, co-workers, or task assignments which were not anticipated immediately after the transition, hence, significantly weakening the effects of past chance events on current satisfaction.

Personality, specifically openness or control beliefs, did not predict success in the prospective design with Cohort 2. However, better career preparation in terms of decidedness and planfulness before engaging in the transition predicted a moderate but statistically significant amount of variance in subsequent wish correspondence and satisfaction. The finding supports other empirical research (Mortimer, Zimmer-Gembeck, Holmes, & Shanahan, 2002; Patton, et al., 2002) and classic theories of career decision making and development which stress a thorough career preparation as a core developmental task in adolescence affecting subsequent career success (Savickas, 1999; Super, 1990). It implies that although chance events do affect career transitions for most students, intentional career preparation is still an important developmental task for adolescents affecting their success in the school-to-work transition.

### Limitations

One limitation is the use of all self-report questionnaires which prevents distinguishing between perceived and actual occurring chance events. The longitudinal prospective design with Cohort 2 helps to reduce shared method bias and strengthens the argument that personality variables do indeed affect the perception of chance events beyond shared method bias. However, the study cannot determine to what degree personality actually affects the occurrence and utilization of chance events as speculated by several theoretical contributions in the literature. Moreover, shared method variance might affect the report of perceived success and chance events and bias their observed relation. In future research, utilization of objective measures of career success and/or measures from other sources would be important. Also, it could be argued that some chance events (e.g., encouragement from others, influence of previous work/volunteer experiences) actually refer more to existing social support or human capital than chance occurrences. This might have blurred the distinction between chance occurrences and existing resources outside or inside the individual affecting the career transition. Success in career transition was assessed by only two indicators with single-item measures. Future studies could apply other indicators and multidimensional measures to increase our understanding of how chance events affect career success. Another limitation is the attrition within Cohort 2 at the second measurement point which might be systematically related to career preparation, personality, and possibly chance events. This could result in a distortion of the results and limit their generalizability. Finally, future international research is required to provide support for the generalizability of the presented results beyond the present convenience sample and specific national context.

### Implications for theory and practice

The importance of chance and happenstance in career development has been introduced as a complementary perspective to the traditional models stressing rational decision making and planful control over one's career (e.g., Pryor & Bright 2003). The present study expands this emerging area of research and implies that a simultaneous acknowledgment of both chance events and careful career preparation is a cornerstone to understand career development. On the one hand, it supports the increasing body of research that chance events are perceived to play a major part in career development (e.g., Bright, Pryor, & Harpham, 2005). On the other hand, it confirms theoretical and empirical notions of traditional career development theory (e.g., Creed, Prideaux, & Patton, 2005; Savickas, 1999), as well as general findings on human agency and motivation (Locke & Latham, 2002; Wiese, Freund, & Baltes, 2000), that goals, planning, and self-clarity are core components for successfully mastering life transitions. Hence, an integrative perspective on career development which acknowledges both realities seems warranted. In fact, as outlined by Bandura (2006) in his notion of human agency, actively managing one's life is important not despite but *because* the inevitable occurrence of unpredictable events. According to this reasoning, people with the necessary psychological, human, and social resources are much more likely to "create" unplanned situations, realize their potential for personal development, and utilize their occurrence for positive personal gain.

For career counseling this implies that clients should be made aware of unplanned events and assisted in developing favorable attitudes towards their occurrence (Chen, 2005; Pryor & Bright, 2006; Pryor, Amundson, & Bright, 2008). At the same time, approaches from traditional career counseling can be applied to increase career adaptability in terms of self-awareness, goal clarity, confidence, and planfulness, as well as active career engagement in terms of environmental exploration and networking (e.g., Savickas, 1999). The latter can also be seen as important preconditions to generate the necessary motivation, resilience, and actions to be able to capitalize on the unexpected shifts and opportunities as they occur during one's career development process.

## References

- Anderson, A., Hattie, J., & Hamilton, R. J. (2005). Locus of control, self-efficacy, and motivation in different schools: Is moderation the key to success? *Educational Psychology, 25*, 517–535.
- Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science, 1*, 164–180.
- Bergmann, C. (1993). Differenziertheit der Interessen und berufliche Entwicklung [Differentiation of interests and vocational development]. *Zeitschrift für Differentielle und Diagnostische Psychologie, 14*, 265–279.
- Bergmann, C., & Eder, F. (2005). *Allgemeiner Interessen-Struktur-Test. Revidierte Fassung (AIST-R) [General-Interest-Structure-Test. Revised version]*. Weinheim: Verlag Beltz.
- Betsworth, D. G., & Hansen, J. -I. C. (1996). The categorization of serendipitous career development events. *Journal of Career Assessment, 4*, 91–98.
- Borkenau, P., & Ostendorf, F. (1993). *NEO-Fünf-Faktoren Inventar (NEO-FFI) nach Costa und McCrae [NEO Five-Factor Personality Inventory (NEO-FFI) according to Costa and McCrae]*. Göttingen: Hogrefe.
- Bright, J. E. H., & Pryor, R. G. L. (2005). The chaos theory of careers: A user's guide. *Career Development Quarterly, 53*, 291–305.
- Bright, J. E., Pryor, R. G., Chan, E. W. M., & Rijanto, J. (2009). Chance events in career development: Influence, control and multiplicity. *Journal of Vocational Behavior, 75*, 14–25.
- Bright, J. E. H., Pryor, R. G. L., & Harpham, L. (2005). The role of chance events in career decision making. *Journal of Vocational Behavior, 66*, 561–576.
- Bright, J. E. H., Pryor, R. G. L., Wilkenfeld, S., & Earl, J. (2005). The role of social context and serendipitous events in career decision making. *International Journal of Educational and Vocational Guidance, 5*, 19–36.
- Cabral, A. C., & Salomone, P. R. (1990). Chance and careers: Normative versus contextual development. *Career Development Quarterly, 39*, 5–17.
- Chen, C. P. (2005). Understanding career chance. *International Journal of Educational and Vocational Guidance, 5*, 251–270.
- Chien, J., Fischer, J. M., & Biller, E. (2006). Evaluating a metacognitive and planned happenstance career training course for Taiwanese college students. *Journal of Employment Counseling, 43*, 146–153.
- Costa, P. T., & McCrae, R. R. (1992). *Revised NEO Personality Inventory (NEO PI-R) and NEO Five Factor Inventory professional manual*. Odessa, FL: Psychological Assessment Resources.
- Costa, P. T., & McCrae, R. R. (1997). Personality trait structure as a human universal. *American Psychologist, 52*, 509–516.
- Creed, P. A., Prideaux, L., & Patton, W. (2005). Antecedents and consequences of career decisional states in adolescence. *Journal of Vocational Behavior, 67*, 397–412.
- Crites, J. O. (1969). *Vocational psychology: The study of vocational behavior and development*. New York: McGraw-Hill.
- Crites, J. O. (1973). *Theory and research handbook for the Career Maturity Inventory*. Monterey, CA: CTB/McGraw Hill.
- Federal Office for Professional Education and Technology (2008). *Vocational education in Switzerland 2007*. Bern: Author.
- Guindon, M. H., & Hanna, F. J. (2002). Coincidence, happenstance, serendipity, fate, or the hand of God: Case studies in synchronicity. *Career Development Quarterly, 50*, 195–209.
- Haerberlin, U., Imdorf, C., & Kronig, W. (2005). Verzerrte Chancen auf dem Lehrstellenmarkt [Distorted opportunities on the labor market for trainees]. *Zeitschrift für Pädagogik, 51*, 116–134.
- Heinz, W. R. (2002). Transition discontinuities and the biographical shaping of early work careers. *Journal of Vocational Behavior, 60*, 220–240.
- Heslin, P. A. (2005). Conceptualizing and evaluating career success. *Journal of Organizational Behavior, 26*, 113–136.
- Hirschi, A. (2010). Swiss adolescents' career aspirations: Influence of context, age, and career adaptability. *Journal of Career Development, 36*, 228–245.
- Hirschi, A., & Läge, D. (2007). Holland's secondary constructs of vocational interests and career choice readiness of secondary students. *Journal of Individual Differences, 28*, 205–218.
- Krampen, G. (1991). *Fragebogen zu Kompetenz- und Kontrollüberzeugungen (FKK) [Inventory for the Measurement of Self-Efficacy and Externality]*. Göttingen: Hogrefe.
- Krumboltz, J. D. (1979). A social learning theory of career decision making. In M. Mitchell, G. B. Jones, & J. D. Krumboltz (Eds.), *Social learning and career decision making* (pp. 19–49). Cranston, RI: Caroll.
- Krumboltz, J. D. (2009). The Happenstance Learning Theory. *Journal of Career Assessment, 17*, 135–154.
- Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist, 57*, 705–717.
- Lüdtke, O., Trautwein, U., Nagy, G., & Köller, O. (2004). Eine Validierungsstudie zum NEO-FFI in einer Stichprobe junger Erwachsener [A validation of the NEO-FFI in a sample of young adults]. *Diagnostica, 50*, 134–144.
- McKay, H., Bright, J. E. H., & Pryor, R. G. L. (2005). Finding order and direction from chaos: A comparison of chaos career counseling and trait matching counseling. *Journal of Employment Counseling, 42*, 98–112.
- Miller, M. J. (1983). The role of happenstance in career choice. *Vocational Guidance Quarterly, 32*, 16–20.
- Mortimer, J. T., Zimmer-Gembeck, M. J., Holmes, M., & Shanahan, M. J. (2002). The process of occupational decision making: Patterns during the transition to adulthood. *Journal of Vocational Behavior, 61*, 439–465.
- Nagy, M. S. (2002). Using a single-item approach to measure facet job satisfaction. *Journal of Occupational and Organizational Psychology, 75*, 77–86.
- Patton, W., Creed, P. A., & Muller, J. (2002). Career maturity and well-being as determinants of occupational status of recent school leavers: A brief report of an Australian study. *Journal of Adolescent Research, 17*, 425–435.
- Pryor, R. G. L., Amundson, N. E., & Bright, J. E. H. (2008). Probabilities and possibilities: The strategic counseling implications of the chaos theory of careers. *The Career Development Quarterly, 56*, 309–318.
- Pryor, R. G. L., & Bright, J. E. H. (2003). The chaos theory of careers. *Australian Journal of Career Development, 12*, 12–20.
- Pryor, R. G. L., & Bright, J. E. H. (2006). Counseling chaos: Techniques for practitioners. *Journal of Employment Counseling, 43*, 2–16.
- Pryor, R. G. L., & Bright, J. E. H. (2007). Applying chaos theory to careers: Attraction and attractors. *Journal of Vocational Behavior, 71*, 375–400.
- Robins, R. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin, 27*, 151–161.
- Rojewski, J. W. (1999). The role of chance in the career development of individuals with learning disabilities. *Learning Disability Quarterly, 22*, 267–278.
- Salomone, P. R., & Slaney, R. B. (1981). The influence of chance and contingency factors on the vocational choice process of nonprofessional workers. *Journal of Vocational Behavior, 19*, 25–35.
- Savickas, M. L. (1999). The transition from school to work: A developmental perspective. *Career Development Quarterly, 47*, 326–336.
- Savickas, M. L. (2005). The theory and practice of career construction. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling* (pp. 42–70). Hoboken, NJ: Wiley & Sons Inc.
- Scott, J., & Hatalla, J. (1990). The influence of chance and contingency factors on career patterns of college-educated women. *Career Development Quarterly, 39*, 18–30.
- Seifert, K. H. (1993). Zur prädikativen Validität von Berufswahlreifeinstrumenten [Predictive validity of measures of career maturity]. *Zeitschrift für Arbeits- und Organisationspsychologie, 4*, 172–182.
- Seifert, K. H., & Eder, F. (1985). Der Fragebogen zur Laufbahnenentwicklung [The Career Development Inventory: The German adaptation]. *Zeitschrift für Differentielle und Diagnostische Psychologie, 6*, 65–77.
- Seifert, K. H., & Stangl, W. (1986). Der Fragebogen Einstellung zur Berufswahl und beruflichen Arbeit [The questionnaire attitudes toward career choice and professional work]. *Diagnostica, 32*, 153–164.
- Skorikov, V. B. (2007). Continuity in adolescent career preparation and its effects on adjustment. *Journal of Vocational Behavior, 70*, 8–24.
- 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* (pp. 197–262)., 2nd ed. San Francisco, CA: Jossey-Bass.
- Super, D. E., Crites, J. O., Hummel, R. C., Moser, H. P., Overstreet, P. L., & Warnath, C. G. (1957). *Vocational development: A framework for research*. New York: Teachers College Press.

- Super, D. E., Thompson, A. S., Lindeman, R. H., Jordaan, J. -P., & Myers, R. A. (1981). *Career Development Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology*, 82, 247–252.
- Wiese, B. S., Freund, A. M., & Baltes, P. B. (2000). Selection, optimization, and compensation: An action-related approach to work and partnership. *Journal of Vocational Behavior*, 57, 273–300.
- Williams, E. N., Soeprapto, E., Like, K., Touradji, P., Hess, S., & Hill, C. E. (1998). Perceptions of serendipity: Career paths of prominent academic woman in counseling psychology. *Journal of Counseling Psychology*, 45, 379–389.