

This is an unedited manuscript published in the Journal of Vocational Behavior.

Please note that the published version underwent minor additional editing in style and content.

Complete reference:

Hirschi, A., & Abessolo, M., & Froidevaux, A. (2015). Hope as a resource for career exploration: examining incremental and cross-lagged effects. *Journal of Vocational Behavior, 86*, 38-47. doi:10.1016/j.jvb.2014.10.006

Hope as a resource for career exploration: Examining incremental and cross-lagged effects

Andreas Hirschi^a

University of Bern, Switzerland

Marc Abessolo^b and Ariane Froidevaux^c

University of Lausanne, Switzerland

^a Correspondence concerning this article should be addressed to Andreas Hirschi, Institute of Psychology, University of Bern, Fabrikstrasse 8, CH – 3012 Bern, Switzerland. Email: andreas.hirschi@psy.unibe.ch

^b Marc Abessolo, Institute of Psychology, University of Lausanne, Quartier UNIL-Mouline, Bâtiment Géopolis, CH-1015 Lausanne. Email: Marc.Abessolo@unil.ch

^c Ariane Froidevaux, Institute of Psychology, University of Lausanne, Quartier UNIL-Mouline, Bâtiment Géopolis, CH-1015 Lausanne. Email: Ariane.Froidevaux@unil.ch

Acknowledgement. Part of this research was supported by an individual research grant awarded to Andreas Hirschi by the Deutsche Forschungsgemeinschaft (DFG), GZ: HI 1530/2-1. The funding source had no involvement in study design, in the collection, analysis and interpretation of data, in the writing of the report, or in the decision to submit the article for publication.

We would like to thank Valérie Guex for collecting the data of Study 1 as part of her Master thesis: Guex, V. (2014). *Jeunesse en transition et sentiment d'espoir*, Saarbrücken : Éditions universitaires européennes.

Abstract

Hope is believed to be beneficial for vocational pursuits, but the question of how and why hope is related to pivotal career development variables remains largely unaddressed. In a series of three studies, we investigated the relationship between hope and career exploration. Study 1 examined at-risk adolescents ($N = 228$) in Switzerland and showed that hope explains variance in career exploration beyond the significant effects of generalized self-efficacy beliefs and perceived social support. Study 2 found the same result among a group ($N = 223$) of first-year students at a Swiss university with a measure of state hope. Study 3 applied a one-year cross-lagged design with a diverse group of students ($N = 266$) at a German university to investigate the mutual effects of dispositional hope and career exploration over time. Although both variables were found to be related within and over time, we could not confirm lagged effects in either direction. The results suggest that hope is significantly correlated with career exploration because both are related to personality and social-contextual variables.

Keywords: hope; career exploration; self-efficacy beliefs; social support

Hope as a Resource for Career Exploration: Examining Incremental and Cross-Lagged Effects

Hope as a primal virtue has a long history in western philosophical and religious thought and has been introduced in the psychology literature in the 1950s as an important factor for human adaptation and mental health (Magaletta & Oliver, 1999). The empirical exploration of hope, defined herein as the perceived ability to derive pathways to desired goals and motivate oneself via agency thinking to use those pathways (Snyder, 2002), is more recent. Research has established that hope helps individuals cope with various life demands and is positively related to academic achievement and persistence, psychological well-being, and physical health (Snyder, 2002). Over the last few years, scholars in the fields of management (Luthans & Jensen, 2002) and vocational psychology (Brown, Lamp, Telander, & Hacker, 2013; Diemer & Blustein, 2007; Juntunen & Wettersten, 2006; Niles, 2011) have emphasized that hope may also be critical for all vocational pursuits, especially in the current career environment that is frequently characterized as dynamic and uncertain, with a high demand for adaptability, resilience, and self-directedness (Sullivan, 1999).

However, the empirical literature that links hope with career development remains sparse. One area in which hope may be especially important is in relation to career exploration, which is a pivotal construct in vocational psychology because of its importance for career decision-making and self-directed career management across the life span (Zikic & Hall, 2009). Because hope entails the envisioning of pathways to desired goals and a sense of agency to undertake and succeed in taking those pathways to one's goals, a close connection to career exploration might be assumed. However, the current state of empirical research leaves several

important questions unaddressed. First, to the best of our knowledge, no study has investigated the empirical relationship between hope and career exploration. Such research is important to increase our knowledge of the functions of hope in career development. Second, existing research in the career domain has not sufficiently addressed the question regarding the incremental utility of hope, an important issue when introducing new constructs (e.g., hope) to the literature to avoid dispersion in the literature or creating unnecessary redundancies among constructs. Third, another critical issue is the question of temporal precedence linking hope to career development. It is reasonable to assume that hope predicts enhanced career development, such as greater career exploration. However, it is also possible that career exploration can foster a sense of hope because it allows people to see new pathways and build confidence to achieve career goals. Existing research, however, has not examined issues of temporal precedence linking hope with career development variables.

In the present paper, we report the findings of three distinct studies among at-risk adolescents and university students that (a) investigated whether hope is related to increased career exploration across different samples and measures of hope; (b) examined the incremental predictive utility of hope regarding career exploration beyond personality (i.e., generalized self-efficacy) and social (i.e., perceived social support) variables; and (c) explored the potential causal links between hope and career exploration by addressing the question of their temporal precedence.

Hope and Career Exploration

The career literature has proposed different conceptualizations and measures of vocational hope, or work hope, referring to hope specific for the career or work context (Brown et al., 2013;

Diemer & Blustein, 2007; Juntunen & Wettersten, 2006). However, the applied definitions and measures vary. For example, Diemer and Blustein (2007) conceptualized it as career commitment while Juntunen and Wettersten (2006) built upon Snyder's (2002) hope theory and measured hope as three components (goals, pathways, and agency) pertaining to work and work-related issues. Unfortunately, this divergence in hope constructs makes it difficult to directly compare respective findings. Conversely, in our studies, we adopted the definition and measures based on Snyder's hope theory, arguably the most well-researched and established notion of hope in the scientific literature. In contrast to vocational or work hope, this notion of hope is not restricted to a particular life domain. Our studies thus make a contribution to our understanding of how more context-general traits and states are related to career outcomes. As such, our studies also allow to explore whether the established positive effects of context-general hope for outcomes in the educational, health, and psychological well-being domains (Snyder, 2002) generalize to positive outcomes in the career domain.

According to hope theory (Snyder, 2002), hope consists of pathways thinking in which multiple plausible routes to achieve personally valued goals are envisioned. Individuals with high levels of hope should also possess stronger agency thinking and feel more confident in achieving their goals and successfully undertaking the envisioned pathways that lead them there (Snyder, 2002). Similarly, career exploration entails reflection on personally valued goals and the collection of information about career goals and ways to attain them (Super, 1990). Hence, hope and career exploration are conceptually closely related and it is reasonable to assume a positive relationship between the two. Theoretically, because of their more readily available pathways and agency thinking, individuals with

high levels of hope should find it easier to envision and explore multiple career options and pathways (environment exploration) and to reflect on personal preferences and strengths that facilitate achieving and envisioning career goals (self-exploration). Existing empirical research has not directly investigated this assumption but has shown that different measures of hope (including context-general, vocational, and work hope) are positively related to various vocational constructs, such as vocational identity (Diemer & Blustein, 2007; Jackson & Neville, 1998; Juntunen & Wettersten, 2006), career decidedness (Hirschi, 2014), career planning (Hirschi, 2014; Kenny, Walsh-Blair, Blustein, Bempechat, & Seltzer, 2010), career self-efficacy beliefs (Hirschi, 2014; Juntunen & Wettersten, 2006), and proactive career behaviors (Hirschi, 2014) among adolescents, college students, and working adults. We build on those findings and propose the following hypothesis:

Hypothesis 1: There is a positive correlation between hope and career exploration.

Incremental Utility of Hope

Although it is important to establish whether hope is related to career exploration, it is also critical to examine whether hope can explain variance in career exploration beyond theoretically related constructs with established predictive utility. We evaluated whether hope explains variance in career exploration beyond the two constructs of (a) generalized self-efficacy beliefs and (b) perceived social support. We chose these two variables because they represent social-cognitive variables that tap into both the personality and social domain. Moreover, both variables have established predictive utility with respect to career exploration. Research has repeatedly found that career self-efficacy beliefs are positively related to career exploration (e.g., Rogers & Creed, 2011; Rogers,

Creed, & Ian Glendon, 2008) because having a sense of competence in the mastery of challenging tasks is useful in exploring career options. Likewise, social support has been shown to facilitate career exploration (Hirschi, Niles, & Akos, 2011; Kracke, 2002) because it provides a resource for obtaining career information and provides encouragement and security when engaging in the task of exploration.

Hope is also positively related to self-efficacy beliefs and social support. Both hope and self-efficacy refer to expectancy beliefs related to goals in the future. However, hope is distinct from self-efficacy because it combines both self-efficacy expectancies and outcomes expectancies. In contrast to self-efficacy, hope also encompasses the intention to act and the envisioning of pathways that lead to desired goals (Snyder, 2002). Empirical research has confirmed that self-efficacy and hope are positively related but distinct factors (Magaletta & Oliver, 1999). In the present paper, we specifically applied a measure of generalized self-efficacy. In contrast to Bandura's (1977) notion of (task- and situation-specific) self-efficacy, generalized self-efficacy represents a dispositional, context-independent tendency to believe that one is capable to perform behaviors that lead to desired outcomes (Sherer et al., 1982). Generalized self-efficacy is often used in research relating to hope because both constructs represent more context-independent personality characteristics (Alarcon, Bowling, & Khazon, 2013). For our study aim, that is to establish the incremental validity of hope beyond self-efficacy beliefs, investigating generalized self-efficacy, which is situated at the same level of analysis as hope, thus represents a more stringent test than would applying a context-specific measure of self-efficacy. Social support is also expected to be positively related to hope because the latter is affected by the social context and

the resulting specific learning history of a person (Snyder, 2002). Empirical studies have repeatedly confirmed a positive relationship in which both social support and hope act as resources in coping with challenging life situations and illness (e.g., Hagen, Myers, & Mackintosh, 2005; Kemer & Atik, 2012).

Because of the expected shared variance in hope and generalized self-efficacy and hope and social support, respectively, establishing the incremental utility of hope beyond each of these two variables in relation to career exploration becomes important. We thus propose the following hypothesis:

Hypothesis 2: Hope explains variance in career exploration beyond (a) generalized self-efficacy beliefs and (b) perceived social support.

Exploring the Temporal Precedence of Hope and Career Exploration

The other issue that we want to address in the present paper is the question of temporal precedence linking hope to career exploration. As stated above in Hypothesis (H) 1, we assume a positive relationship between the two constructs. This assumption leads to the subsequent question as to why this relationship might occur. One possibility is that both constructs are affected by the same set of personal and/or social variables. To investigate this possibility, we will examine the effects of generalized self-efficacy beliefs and perceived social support as stated in H2. A second possibility to explain the relationship between these constructs is that they affect one another over time. As we have explained above, there is reason to assume that individuals with high levels of hope may find it easier to engage in career exploration because the propensity to envision pathways combined with agency thinking facilitates the undertaking of active ca-

reer exploration activities. Hence, hope could act as a precursor to career exploration.

Hypothesis 3: Hope predicts an increase in career exploration over time.

It is also possible that engaging in career exploration activities can foster a sense of hope. Career exploration can lead to the discovery of new pathways to achieve career goals and can strengthen the confidence that one is able to reach those goals because the pathways for attaining such goals become clearer and because internal and external resources for goal attainment have been identified during the exploration process. This reasoning is consistent with hope theory, which proposes a positive feedback loop in which goal attainment and positive emotions resulting from hope can in turn foster increased hope (Snyder, 2002).

Hypothesis 4: Career exploration predicts increases in hope over time.

Building upon H3 and H4, we can assume that the reason for the positive relationship between hope and career exploration can be attributed to mutual effects over time.

Hypothesis 5: There is a mutual effect between hope and career exploration over time.

Overview of Studies

We conducted three independent studies to investigate our hypotheses among adolescents and emerging adults. Hope and career exploration may be especially important for these two groups, who are at the beginning of their careers. Although career exploration is currently viewed as a life-long process, it was traditionally emphasized as pivotal in the early phases of one's career, which lay the foundations for one's future vocational path(s) (Super, 1990). The same may apply to hope. Although it is relevant across life and career stages, it

appears to be especially important for adolescents and emerging adults at the outset of their careers. Studies 1 and 2 will examine the relationship between hope and career exploration among (1) at-risk adolescents in the transition from school to vocational training in Switzerland and (2) first-year university students at a Swiss university. The studies will also investigate the question of the incremental utility of hope regarding career exploration beyond the effects of generalized self-efficacy beliefs and perceived social support. In Study 3, which involves sampling university students in Germany with a one-year cross-lagged design, we then address the question of temporal precedence linking hope and career exploration. Because this is the first attempt to our knowledge to link hope with career exploration, we were also interested to explore to what extent different existing measures that assess hope in accordance with Snyder's (2002) hope theory would relate to career exploration. Consequently, Study 1 applies the children's hope scale (Snyder et al., 1997), Study 2 a state hope measure (Snyder et al., 1996), and Study 3 a dispositional hope measure (Snyder et al., 1991).

Study 1: Hope, Social Support, Generalized Self-Efficacy, and Career Exploration among At-Risk Adolescents

Study 1 investigates H1 and H2 among a sample of at-risk adolescents in Switzerland who are in the transition from mandatory school to vocational training. Vocational training is a fundamental part of the Swiss educational system, and approximately two-thirds of all adolescents pursue this option after completing school. In contrast, only a minority of students continue to general high school, preparing for later university studies (State Secretary for Education Research and Innovation, 2013). The students in the investigated group had already finished their mandatory schooling at the end of 9th

grade but had failed to obtain a subsequent apprenticeship, often because of insufficient scholastic achievement or behavioral problems. At the time that our study was conducted, these students were at the beginning of a voluntary transitory year that includes schooling as well as support for finding an apprenticeship. This group thus represents a relatively underprivileged group of individuals who have encountered their first setback in the transition from school to work and for whom hope and career exploration appear to be especially pivotal because of the increased challenges that they face in their vocational development.

Method

Participants. The sample consisted of 228 adolescents aged 15 to 18 years ($M = 16.10$, $SD = 0.82$), including 147 (64%) girls, enrolled in a vocational/educational transition program in a French-speaking region of Switzerland. All participants had finished mandatory school and were enrolled in the transition program on a voluntary basis. Half of the respondents (50%) were Swiss; the remaining respondents had a foreign nationality, a percentage that is considerably higher than the average number of foreign students in secondary school in this region (30% in 2012, Swiss Federal Statistical Office, www.bfs.admin.ch). This composition reflects the underprivileged nature of our sample because non-Swiss students are generally underrepresented in school types with higher scholastic levels (Swiss Federal Statistical Office, www.bfs.admin.ch). As usual in Switzerland, race was not assessed. Reflecting the generally low scholastic achievement level of students in the program, most participants (66%) had completed secondary school with basic requirements, 30% with intermediate requirements, and 9% with extended

requirements. The remaining 3% came from special educational requirements. Finally, 57% of the respondents indicated that they had repeated one year in compulsory school because of scholarly difficulties. In addition to completing the measurement scales described below, the adolescents were asked to indicate the occupation and education of their parents. A socio-economic index (IPSE) was calculated based on the latter information using the formula of Genoud (2011), which is calculated based on the education level and occupation of both parents. Reflecting the generally underprivileged socio-economic background of the study participants, the vast majority of the respondents (83%) were from a low socio-economic background, 39% from middle class (44%), and only 6.2% were from higher socio-economic background.

Procedure. Data were collected on site in the school. Students in all classes in the program were asked to complete the questionnaire during regular school hours under the agreement and supervision of their classroom teacher. Participation was voluntary, and no incentives were offered. The program enrolled 350 students, of which 66% participated in our study.

Measures. Table 1 shows Cronbach's alpha estimates, means, standard deviations, and bivariate correlations of the applied measurement scales. All measures were independently translated from their original version into French by two native French-speaking psychology master students familiar with the constructs. Together with the first author of this study, a final version was conceived by resolving any discrepancies between the two translations and by deciding on a final version that best reflected the original meaning of the items.

Table 1

Summary of Bivariate Correlations, Means, Standard Deviations, and Cronbach's Alphas among the Assessed Constructs in Study 1 and Study 2

Measure	1	2	3	4	<i>M</i>	<i>SD</i>
1. Hope	(.71/.79)	.52***	.19**	.23**	34.40	6.82
2. Self-efficacy	.50***	(.82/.85)	.04	.21**	49.52	7.88
3. Social support	.34***	.26***	(.73/.81)	.30***	13.03	3.92
4. Career exploration	.39***	.32***	.32***	(.82/.86)	31.43	7.51
<i>M</i>	26.26	50.40	15.61	35.35		
<i>SD</i>	4.12	7.58	3.29	6.67		

Note. Below diagonal: adolescent sample, $N = 228$; above diagonal: university students sample, $N = 223$; entries in parentheses in diagonal are Cronbach's alpha coefficients (left: adolescent sample/right: university students sample).

** $p < .01$; *** $p < .001$

Hope. We used Snyder et al.'s (1997) children's hope scale consisting of six substantive items (e.g., "I can think of many ways to get the things in life that are most important to me"), with a six-point Likert response format ranging from 1 (*none of the time*) to 6 (*all the time*). The scale was developed to assess dispositional hope among children aged 7 to 16. However, the scale can also be used for our slightly older sample, according to the study of Valle (2004), who reported acceptable internal levels of consistency for groups of students aged 15 to 19 years among a sample of 460 students. Support for the reliability, validity, and factor structure of the scale has been established in several studies with different populations (e.g., Lopez, Snyder, & Pedrotti, 2003; Snyder et al., 1997; Valle, 2004) with positive relations to measures of children's global life satisfaction, extraversion, and perceived social support and negative relations to measures of internalizing and externalizing behavior problems and neuroticism (Valle, 2004).

Career exploration. Career exploration was assessed by the 10-item career exploration scale (e.g., "I've thought about what could interest me professionally") assessing both self- and environmental exploration. The scale was developed and validated

by Hirschi (2009) and applies a five-point Likert scale from 1 (*seldom/few*) to 5 (*very much/a lot*). Various studies (Hirschi, 2010; Hirschi et al., 2011) have reported a Cronbach's alpha of approximately .90 and supported the construct validity of the scale among groups of Swiss adolescents. For instance, Hirschi (2010) found positive relations between the scale and career decidedness and choice congruence among Swiss adolescents.

Generalized self-efficacy beliefs. We used Sherer et al.'s (1982) 14-item general self-efficacy scale (e.g., "When I make plans, I am certain I can make them work") with a five-point Likert response scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The scale has been widely used in clinical, educational, and organizational setting and studies have supported the reliability and validity of the original scale across diverse samples (e.g., Chen, Gully, & Eden, 2001; Sherer et al., 1982) with positive relations to self-esteem, locus of control, and educational and vocational success (Sherer et al., 1982).

Social support. We applied a modified version of the UCLA social support inventory (UCLA – SSI, Schwarzer, Dunkel-Schetter, & Kemeny, 1994). From the original 16-item scale, we applied 4 items

assessing perceived tangible, emotional, and informational support from family and relatives during the last 3 months (e.g., "My relatives (family, friends, etc.) gave me advice or information concerning my future professional development"). Responses were given on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). The reliability and validity of the original scale have been supported by the results of different studies (Simoni, Martone, & Kerwin, 2002; Wrosch & Heckhausen, 1999) with significant effects on positive coping in various life domains such as psychological and physical health or partnership loss.

Results and Discussion

The bivariate correlations reported in Table 1 show that dispositional hope is positively correlated with career exploration, confirming H1. To test H2 regarding the incremental validity of hope, we calculated hierarchical regression analyses. The results showed that, controlling for participants age, gender, and nationality, hope explained significant variance in career exploration beyond generalized self-efficacy beliefs, $\beta = .41$, $\Delta R^2 = .17$, $\Delta F(1,222) = 45.51$, $p < .001$, and social support, $\beta = .34$, $\Delta R^2 = .10$, $\Delta F(1,222) = 27.62$, $p < .001$. All variables combined explained 23% variance in career exploration, $F(6,221) = 11.00$, $p < .001$. This confirmed that hope is significantly related to career exploration among at-risk adolescents, beyond its shared variance with generalized self-efficacy beliefs (confirming H2a) and perceived social support (confirming H2b).

Study 2: Hope, Social Support, Generalized Self-Efficacy, and Career Exploration among University Students

Study 2 addressed the same research questions as in Study 1 using a distinctly different sample. In this study, we assessed first-year university stu-

dents. In comparison to the sample from Study 1, this group comprises rather privileged individuals who tend to have high scholastic achievement and a variety of possible career prospects at their disposal. However, hope and career exploration also appear to be critical for university students to prepare for their future work and to confront challenges in their future career development.

Method

Participants. The sample consisted of 223 undergraduate students aged 18 to 26 years ($M = 20.10$, $SD = 2.53$) enrolled in the first year of a psychology major at a university in a French-speaking region of Switzerland. The majority were female ($n = 179$, 79%); 85% were Swiss, and the remaining participants had a foreign nationality.

Procedure. Data were collected through an online survey. General instructions on completing the survey were given to the participants during a compulsory introductory psychology course. After class, students were sent an email invitation containing a personal link to the online survey. Two reminders were sent, each one week apart. No incentives were offered, and participation was voluntary; the final response rate was 84%.

Measures. Table 1 shows the Cronbach's alpha estimates, means, standard deviations, and bivariate correlations for the applied measures. The same scales for *career exploration*, *generalized self-efficacy*, and *social support* were used as described in Study 1.

Hope. We used the state hope scale by Snyder et al. (1996) consisting of six items (e.g., "At the present time, I am energetically pursuing my goals"), with an eight-point Likert scale response format ranging from 1 (*definitely false*) to 8 (*definitely true*). The reliability (ranging from .79 to .95) and construct validity of the scale were validated among university student samples by Snyder et al.

(1996) and in subsequent studies (e.g., Feldman & Snyder, 2005), showing, among others, significant correlations with self-esteem and state positive and negative affect.

Results and Discussion

The bivariate correlations reported in Table 1 show that state hope was positively correlated with career exploration, thus confirming H1 among the university student sample. We conducted the same hierarchical regression analyses as described in Study 1 to test H2 in the university sample. The results confirmed that, controlling for gender, age, and nationality, hope explained significant incremental variance in career exploration beyond generalized self-efficacy beliefs, $\beta = .17$, $\Delta R^2 = .02$, $\Delta F(1,217) = 5.65$, $p = .02$, and social support, $\beta = .15$, $\Delta R^2 = .02$, $\Delta F(1,217) = 5.74$, $p = .02$. All variables combined explained 24% variance in career exploration, $F(6,216) = 11.3$, $p < .001$. The findings are in line with the results obtained in Study 1 and again suggested a positive relationship between hope and career exploration as well as an incremental relationship between hope and career exploration beyond the effects of generalized self-efficacy beliefs and perceived social support.

Study 3: Investigating the Mutual Effects of Hope and Career Exploration

Study 3 was designed to address H3 to H5, assuming mutual effects between hope and career exploration over time, by applying a longitudinal one-year cross-lagged design, which is particularly well suited to investigating questions of temporal precedence in psychological field studies (Martens & Haase, 2006). For this purpose, we sampled a diverse group of university students. The university years are characterized by ongoing processes of personality and identity development as well as career preparation (Arnett, 2000; Kroger, 2007).

Hence, we expected that the period of university studies would be ideal for investigating changes in career exploration and hope over the course of one year and for discovering potential mutual effects. For this study, we applied a measure of dispositional hope. Based on hope theory (Snyder, 2002), we expected that the learning experiences resulting from active career exploration would affect a sense of hope. This assumption holds also for dispositional hope which represents a middle-level personality disposition (McAdams & Pals, 2006) that is shaped by more basic and immutable traits as well as specific environmental influences. To measure effects of career exploration on hope over time, applying a dispositional measure of hope thus seems more meaningful than applying a state hope measure, which by definition is expected to change more frequently due to various situation-specific effects. Moreover, this allowed us to replicate the positive relation between state hope and career exploration observed in Study 2 with a different measure of hope pertaining to Snyder's hope theory.

Method

Sample and procedure. We sent an email invitation and two reminder emails (each one week apart) to all students during their last two years of study at a medium-sized German university ($N =$ approximately 3,600), with a response rate of approximately 37% and $N = 1,326$. We chose to sample students in the last two years because career exploration is likely to gain particular importance towards the end of studies. Among the respondents, 914 (69%) provided contact information and consent to be contacted again. These students were invited to participate in a follow-up survey one year later by email and two reminder emails (each one week apart), resulting in a response rate of 29% and $N = 266$. A lottery drawing with several

prizes with a total value of EUR 700 (USD 960) was offered during each assessment wave. The final sample was 70% female and had a mean age of 23 years ($SD = 3.0$) and a mean study semester of 4 ($SD = 2.0$) during the first wave of data collection. These participants were enrolled in a variety of majors, especially economics (25%), social and political sciences (18%), teacher education (14%), psychology (17%), and environmental sciences (14%).

To evaluate the nature of attrition in our sample, we created a dummy variable for missingness at T2 and investigated its relationship with a series of other variables. Attrition was significantly related to older age and more semesters of study at the

first time of assessment but not to career exploration or hope assessed at T1. This finding implies that attrition may largely be explained by older students with more study semesters leaving the university and no longer being available for our study. Consequently, because missingness was not related to our key variables of interest, the potential bias in our results in the subsequent analyses should be minimal.

Measures. Table 2 provides an overview of the correlations, means, standard deviations, and Cronbach's alphas for hope and career exploration at T1 and T2.

Table 2

Summary of Bivariate Correlations, Means, Standard Deviations, and Cronbach's Alpha of Hope and Career Exploration at Time 1 (T1) and Time 2 (T2) in Study 3

Variable	1	2	3	4
1. Hope (T1)	(.77)			
2. Hope (T2)	.58**	(.78)		
3. Career exploration (T1)	.27**	.23**	(.88)	
4. Career exploration (T2)	.21**	.30**	.52**	(.88)
<i>M</i>	24.95	25.41	29.72	32.75
<i>SD</i>	3.09	2.97	8.09	7.71

Note. $N = 266$. Time-lag between T1 and T2 is one year.

** $p < .01$.

Hope. We assessed hope with the adult dispositional hope scale (Snyder et al., 1991) based on an existing German translation (Krause, 2002). The scale has eight substantive items (e.g., "I energetically pursue my goals") with an eight-point Likert response format ranging from 1 (*definitely false*) to 8 (*definitely true*). This scale is widely used in empirical studies, with strong support for its reliability and construct validity among diverse samples, for example, in relation to anxiety, depression, positive affect, and coping (Snyder, 2002).

Career exploration. We used the same scale as in Studies 1 and 2 in its original German version.

Results and Discussion

Analysis of measurement invariance. Before testing the proposed cross-lagged model, we performed a longitudinal measurement invariance analysis of hope and career exploration by sequentially testing a series of six progressively restrictive models assessing configural invariance (i.e. equal factor structure), metric invariance (i.e., equal factor loadings), scalar invariance (i.e., equal inter-

cepts), residual item invariances, factor invariance, and latent means invariance, respectively (see Vandenberg & Lance, 2000) using the MLR estimator in Mplus and the Satorra-Bentler scaling corrected chi-square test (Byrne, Shavelson, & Muthén, 1989). Longitudinal measurement invariance for both hope and career exploration was confirmed for all but the most restricted model assuming equal latent means. This finding indicates that the mean levels of hope and career exploration increased significantly over time. However, the establishment of measurement invariance shows that the same substantive constructs were measured over time and thus permits subsequent analyses of cross-lagged effects.

Test of cross-lagged effects. We used Mplus 7 with a robust maximum likelihood estimator to test and compare a series of nested cross-lagged models to assess the association between hope and career exploration over time. The first model (i.e., the autoregressive model) assessed the stability of the constructs over time (see Byrne et al., 1989). The results indicated moderate to high levels of stability for each construct (hope $\beta = .71, p < .001$; exploration $\beta = .55, p < .001$). Furthermore, we found a significant positive correlation between hope and career exploration at T1 ($r = .27, p < .001$) and T2 ($r = .20, p < .001$), thus confirming the results obtained in Studies 1 and 2 with a new sample and with a different hope measure. The second model added a cross-lagged pathway from hope at Time 1 to career exploration at Time 2 to test whether hope is positively related to changes in career exploration over time. The third model tested the reverse relationship—that career exploration at T1 predicts change in hope over time. The fourth model tested a reciprocal effect that allowed for the assessment of both cross-lagged effects simultaneously. We used chi-squared difference

tests for model comparisons based on the Satorra-Bentler scaling correction.

To test H3 to H5, we compared the model fit of Models 2 to 4 with that of Model 1 (i.e., the autoregressive model). The path from hope at T1 to career exploration at T2 as specified in Model 2 was not significant ($\beta = .07$) and did not improve the model fit compared with Model 1 (SB-corrected $\Delta\chi^2(1) = 1.022, p > .05$), thus refuting H3 and indicating that hope did not predict changes in career exploration over the course of one year. Similarly, H4 and H5 were refuted because the path from career exploration at T1 to hope at T2 was not significant ($\beta = .08$) and did not increase the model fit compared with the autoregressive model: Model 3 SB-corrected $\Delta\chi^2(1) = .618, p > .05$; Model 4, SB-corrected $\Delta\chi^2(2) = 1.545, p > .05$. Taken together, these results suggest that hope and career exploration are significantly correlated within and across time, but we cannot support the assumed mutual effects of the two constructs over time.

General Discussion

The purpose of this paper was to explore the relationship between hope and career exploration, including addressing the issue of incremental validity beyond personality and social variables and mutual effects over time. We found that hope is significantly positively correlated with career exploration using three distinct samples and different measures of hope pertaining to Snyder's (2002) hope theory. This finding supports the theoretical notion that adolescents and emerging adults with higher levels of hope find it easier to engage in exploring career options and reflecting on suitable career goals compared to lower hope individuals because hope entails the envisioning of multiple pathways to important goals and the confidence to be able to achieve those goals.

We found that among at-risk adolescents and university students, generalized self-efficacy and social support were significantly correlated with career exploration, confirming their importance for positive career development as observed in other studies (e.g., Hirschi et al., 2011; Kracke, 2002; Rogers & Creed, 2011; Rogers et al., 2008). Notably, our results showed that hope explains incremental variance in career exploration beyond generalized self-efficacy and social support. This result emphasizes the added value of considering hope for positive career development, beyond other constructs established in the literature. Specifically, the incremental effect in the underprivileged adolescent sample is consistent with the assumption that hope may be especially important for populations with increased career challenges (Juntunen & Wettersten, 2006). The incremental utility of hope beyond generalized self-efficacy and social support suggests that facets of hope unrelated to these two constructs are positively related with career exploration. Because the agency component of hope is very similar to self-efficacy – both pertaining to expectancies about self-efficacy, the pathways component of hope might be the residual factor in this regard. This aspect of hope is closely related to optimism – another construct of recent interest in the career literature (Rottinghaus, Day, & Borgen, 2005). However, the two are not the same: Meta-analytic findings (Alarcon et al., 2013) showed an average weighted correlation coefficient of .69 between hope and optimism. In contrast to optimism where expectancies about outcomes include outcomes obtained through others or forces outside the self, the pathways component of hope pertains exclusively to outcomes obtained by the self (Magaletta & Oliver, 1999). Hence our results suggest that engagement in career exploration specifically depends on seeing connections between own efforts and the attainment of valued career goals.

Studies 1 and 2 were cross-sectional by nature and provided insights into how hope, generalized self-efficacy, perceived social support, and career exploration are related across different samples, age groups, and career stages. Study 3 advanced those results by investigating the relationship between hope and career exploration over time. We confirmed that hope and career exploration are positively related not only within but also across a one-year time span. Contrary to our assumption, however, we could not support the existence of cross-lagged effects in either direction. This result suggests that although hope and career exploration are significantly related within and over time, they do not appear to affect one another. This finding points to the plausible explanation that both are affected by other variables. Our results suggest that generalized self-efficacy and perceived social support are variables that are situated both within each person and within the environment: Because self-efficacy beliefs and social support are beneficial for both hope and career exploration, they can partially explain the positive relationship between the latter two constructs. However, as indicated by the incremental validity of hope in relation to career exploration, our results suggest that other variables may also play a role in explaining why hope and career exploration are positively related. We assume that other personality traits, such as negative/positive affectivity or conscientiousness, may also be important. Likewise, perceived environmental barriers such as discrimination or an unfavorable job market might be critical. Therefore, our studies provide an important foundation for future research to more closely investigate how and why hope and career exploration are related and how this relationship evolves over time.

Limitations and Future Research

A particular strength of this paper is that we applied multiple samples among different career stages and ages to test our assumptions and included a longitudinal study to provide insight into the causal mechanisms underlying the correlations found in the first two studies. However, there are several limitations to consider. First, our adolescent sample stemmed from a specific context that might not be easy to generalize to other educational systems in which vocational training is less important for adolescents. Likewise, our two samples of emerging adulthood represented relatively privileged groups, and it would thus be interesting to investigate samples from the same age group but from less favorable conditions, such as samples of individuals who have completed less education or who are unemployed. Moreover, samples of individuals in middle and late adulthood would complement the investigations presented herein with relatively young samples. Second, our results suggest that additional variables beyond those investigated here could play a role in better understanding why and how hope is related to positive career development more generally and to career exploration more specifically. For example, in cross-sectional research, Wilkins et al. (2014) showed that career adaptability (specifically confidence) mediated effects of dispositional hope on quality of life among Italian high school students. Hirschi (2014) reported that career planning and career decidedness mediated effects of dispositional hope on career engagement and job satisfaction, respectively, among German employees. Future research could also investigate to what extent work-specific hope and career self-efficacy beliefs are related to career outcomes, and possibly mediate the effects of more context-general hope. Research in this regard, particularly with longitudinal study designs, could provide insights into the underlying process-

es linking hope with career outcome variables. Finally, although we did not find cross-lagged effects between hope and career exploration in our sample, more research, which includes other samples and different time lags, is necessary to confirm the herein derived conclusion regarding the lack of mutual effects.

Implications for Practice and Conclusions

In terms of practical implications, we suggest that career counselors pay attention to hope as an important individual difference variable. Because hope is significantly related to important career development constructs, such as career exploration, promoting hope in counseling may be important. This objective could be achieved by clarifying goals and subgoals with clients, identifying obstacles and alternate routes to one's desired goals, developing strategies of how goals can be attained in the context of obstacles, reflecting on resources, and planning the next steps. Such counseling techniques seem to be highly promising for augmenting agency and pathway thinking and giving clients hope for their professional future (Feldman & Dreher, 2012). Moreover, because hope is related to self-efficacy beliefs and perceived social support, helping clients to obtain mastery experiences in career tasks (e.g., attaining personally desired career goals) and providing role models to foster a sense of efficacy and support might increase hope. Finally, because hope is related to career exploration beyond self-efficacy and social support, focusing on its specific component of pathways thinking by helping clients to make connections between their own actions and the attainment of valued career goals would be important to promote career exploration.

To conclude this paper, this work represents the first attempt to our knowledge to more closely investigate how and why hope is related to career

exploration. Cumulatively, our studies suggest that hope can be considered an important career resource that promotes engagement in active career management and merits further empirical investigation and consideration in counseling practice.

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