

# What makes academic careers less insecure? The role of individual-level antecedents

Renate Ortlieb<sup>1</sup>  · Silvana Weiss<sup>1</sup>

Published online: 5 January 2018

© The Author(s) 2018. This article is an open access publication

**Abstract** The early stages of an academic career are fraught with insecurity. By focusing on the individual and his or her background, this article sets out to analyse and develop theories for this insecurity. We see academic career insecurity as a mix of how much someone wants to pursue a job in academia and what they feel is the probability of reaching their goal. The article draws on concepts of boundaryless careers and protean careers to theorise about the antecedents of insecurity. Empirical analysis is based on survey data from early-career researchers at a large Austrian university. The findings indicate that the most important individual factors that reduce academic career insecurity are the willingness to be geographically mobile, self-attribution of previous career success, a high proportion of working time devoted to research and networking, as well as being at an advanced career stage. The article demonstrates the potential and limits of the boundaryless and protean career concepts for studying academic careers. Practical measures are that universities should provide early-career researchers with temporal space for research and networking, facilitate stays at other universities, inform them about career success factors, and tailor faculty development programmes to the distinct stages of academic careers.

**Keywords** Academic careers · Early-career researchers · Career insecurity · Job insecurity · Boundaryless careers · Protean careers

## Introduction

Early-career researchers face a highly uncertain professional future. While academic career systems vary from country to country, they all share what Van Maanen (2015) called “the

---

✉ Renate Ortlieb  
renate.ortlieb@uni-graz.at

Silvana Weiss  
silvana.weiss@uni-graz.at

<sup>1</sup> School of Business, Economics and Social Sciences, Department of Human Resource Management, University of Graz, Elisabethstrasse 50, 8010 Graz, Austria

psychological atrocities of the tenure system” (p. 38). Until researchers receive tenure, their careers are characterised by fixed-termed employment contracts, high performance requirements, and high competition. And, as Caplow and McGee (1958) point out in their classic, *The Academic Marketplace*, promotion and job replacement often follow nontransparent procedures that apply ambiguous selection criteria (see also Musselin 2010; Pratt 2015; van den Brink and Benschop 2012). As a consequence of the high insecurity attached to early stages of academic careers, a considerable number of talented junior scholars feel discouraged from choosing or continuing academic careers (e.g. Dorenkamp and Weiß 2017; Langenberg 2001; Petersen et al. 2012).

Existing literature acknowledges the problems of insecurity in academic careers and the structural constraints within the academic career system that lead to perceived insecurity, but scientific knowledge concerning the antecedents or background of academic career insecurity in an individual is scanty. However, such knowledge is crucial to understand academic careers and to design faculty development programmes, because even if structural aspects in higher education cause career insecurity, individuals vary in their resources and strategies to cope with it.

This study addresses this research gap by considering the following question: which individual-level antecedents shape the perceived academic career insecurity of early career-researchers at the predoc or postdoc stage?

The theoretical reasoning of this article builds on the influential portrayal of career insecurity by Colakoglu (2011). Further, it draws on the concept of boundaryless careers with job paths across several organisations (Arthur 1994; Arthur and Rousseau 1996) and the protean career concept which includes the value-driven and self-directed nature of career choices (Hall 1996, 2004). While careers generally became increasingly trans-organisational, self-initiated, and shaped by individuals rather than by organisations and their human resource management in other sectors, so too academic careers are prototypical of boundaryless and protean careers. Accordingly, these two frameworks are well suited to theorise on the antecedents of academic career insecurity.

The empirical analysis focuses on Austria as an example of the German-speaking countries. These countries provide an interesting research context since traditionally, tenured positions are very rare, and a large proportion of researchers work on the basis of fixed-term employment contracts (Höge et al. 2012; Kreckel and Zimmermann 2014). For instance, in 2015, 64% of Austrian universities’ faculty members held fixed-term employment contracts (Federal Ministry of Science, Research and Economy 2016, personal communication). However, the findings are relevant for other countries too since academic career systems worldwide are part of a highly competitive job market environment, and tenure depends on meeting high performance standards (Gappa et al. 2007). In addition, as part of the global trend in academic governance toward the “entrepreneurial university” (Shattock 2014; Ylijoki 2013), fixed-term employment also gained significance in other countries (Musselin 2010; Teichler and Höhle 2013; Waaijer et al. 2017).

Overall, this article is an attempt to address the theoretical and empirical limitations of research on careers in higher education by proposing a new conceptualisation of academic career insecurity that incorporates a discussion of its antecedents at the individual level. The contribution of this article is twofold. *First*, by specifying the notion of academic career insecurity and examining its antecedents, this article contributes to literature on career insecurity in higher education, which is an under-researched but significant topic. *Second*, by linking previous findings on working conditions in academia with the theoretical concepts of

boundaryless careers and protean careers, it contributes to the constantly growing body of literature on academic careers. Thereby, this article demonstrates the potential of the boundaryless and protean career concepts for studying academic careers and also points out the limits of these concepts.

## Conceptualising career insecurity

Existing conceptualisations of career insecurity build on the much-researched notion of wider job insecurity. The most influential work on career insecurity, Colakoglu (2011), analyses career insecurity in the context of boundaryless careers. Drawing on the foundational job insecurity article by Greenhalgh and Rosenblatt (1984), Colakoglu (2011) defines career insecurity “as the sense of powerlessness to maintain desired employability in one’s career. ... [It] is experienced when there is a perceived threat both to the continuity of one’s employability and to the quality of subsequent employment” (p. 48). With special consideration of the academic context, Höge et al. (2012) define career insecurity as “insecurity in the achievement of self-defined career aims or the predictability of the vocational future” (p. 163).

As outlined in the introduction of this article, sources of career insecurity typical of the academic context include difficulty to achieve tenure, unclear promotion/selection criteria, and high performance requirements. The latter sources may be relevant in other sectors, too, as they relate to common structural aspects. Hence, we maintain that ways of thinking about career insecurity that were developed for other sectors can also be applied to academic careers (also see Baruch 2013).

Our conceptualisation of academic career insecurity widely follows Colakoglu (2011) and Höge et al. (2012). In line with these authors, our concern is an individual’s long-term professional situation. However, unlike these authors, who consider career prospects or employability in general, we concentrate on academic careers. That is, we only consider career prospects attached to future positions at universities or equivalent research institutions.

Again following Colakoglu (2011) and Höge et al. (2012), we focus on individuals’ subjective perceptions of their career prospects, because even researchers working in identical “academic eco-systems” (Baruch 2013) evaluate their personal situations differently (De Witte and Näswall 2003; Spurk et al. 2016). Existing research typically concentrates on the effects of objectively insecure working conditions, such as temporary employment. However, research indicates, compared to objective factors, subjective evaluations more strongly affect individual career decisions (Huang et al. 2010) and job outcomes (De Witte and Näswall 2003). Also in the context of higher education, academics differ in their subjective assessments of objective insecurity and in their behavioural responses (Dany et al., 2011; Dowd and Kaplan 2005). A theoretical rationale for the high significance of subjective evaluations is provided by the theory of reasoned action by Fishbein and Ajzen (1975). According to this theory, behavioural intentions rest on attitudes and subjective norms. Hence, emphasising the subjective assessments of individuals seems to be crucial for a conceptualisation of career insecurity as we do in this study.

Most importantly, our conceptualisation takes account of an individual’s potential indecision concerning an academic career. Whereas Colakoglu (2011) and Höge et al. (2012) implicitly assume that at a given point in time, individuals know their career goals, we follow Greenhalgh and Rosenblatt (2010), who stress the essential problem of being indifferent regarding career goals. Previous research reveals that graduates and early-career researchers

frequently do not know whether they wish to pursue academic careers or not (Mueller et al. 2015; Reybold and Alamia 2008; Roach and Sauermann 2010). While this indecision partly originates from the scarceness of academic positions, this feeling also exists independent of the availability of jobs (Hakala 2009; Ylijoki 2010). Thus, we maintain that academic career insecurity is related to two distinct individual assessments. We define academic career insecurity as a subjective perception emerging from the interrelation of the strength of an individual's desire to pursue an academic career and her/his subjective assessment of the probability of achieving this goal.

This conceptualisation forms the basis for the hypotheses to be developed in the next section.

## Theoretical framework and hypotheses

To theorise on individual antecedents of academic career insecurity, we draw upon the concepts of boundaryless careers (Arthur 1994; Arthur and Rousseau 1996) and protean careers (Hall 1996, 2004). Career scholars proposed the notion of boundaryless careers as a response to an observed decline of traditional career structures within organisations. Different from traditional career models, people pursuing boundaryless careers frequently move across organisations, and they receive validation of output from a professional community outside the present employer (Arthur 1994; Arthur and Rousseau 1996). Complementing the boundaryless career concept, under the notion of protean careers, people take on responsibility for their career management, resulting in value-driven and self-directed career choices (Hall 1996, 2004).

While Arthur and colleagues mentioned academic careers as archetypal examples of boundaryless careers (Arthur 1994; Arthur and Rousseau 1996), both concepts have proved to be fruitful frameworks for studying academia (Baruch 2013; Baruch and Hall 2004; de Janasz and Sullivan 2004; Dowd and Kaplan 2005). Furthermore, both career concepts are apt for studying career insecurity, since flexible autonomy and insecurity are two sides of the same coin (Hall, 1996). Thus, we prefer these concepts to alternative career concepts.

It is important to note that concepts of boundaryless and protean careers do not in themselves explain career insecurity. However, they offer a well-established analytical framework that helps identify factors at an individual level that potentially affect academic career insecurity. In the next paragraphs, we formulate testable hypotheses related to key features of boundaryless and protean careers, which are as follows: (1) frequent moves across organisations, (2) validation of output from a community outside the present employer, (3) driven by values, and (4) self-direction. In line with previous literature (e.g. Baruch 2013; McAlpine and Emmioglou 2015), by the term “early-career researchers,” we refer to individuals who are studying for or have recently received doctorates in any academic field and who are employed by a university.

### Frequent moves across organisations

Mobility is one of the constitutive elements of the boundaryless career concept (e.g. Arthur and Rousseau 1996; Briscoe et al. 2006). In academia, moving across universities is increasingly considered a prerequisite for obtaining a professorship (Baruch and Hall 2004; Herschberg et al. 2015; Jepsen et al. 2014). Moves can be more or less voluntary. Whereas voluntary

moves reflect individual aims, such as broadening personal horizons or academic development (Kim 2017), reasons for involuntary moves include legislation, fixed-term employment contracts, and scarcity of jobs (Kreckel and Zimmermann 2014; Morano-Foadi 2005; Waaijer et al. 2017; van der Weijden et al. 2016).

Given the importance of geographic mobility, those individuals who are bound to their current places of residence (e.g. due to family responsibilities) may perceive tensions between desires for academic careers and anticipated difficulties in getting adequate positions after their current work contracts terminate. In contrast, we expect that those individuals who are able and willing to move to other locations will experience less academic career insecurity.

**Hypothesis 1** The greater the willingness of an early-career researcher to be geographically mobile, the less her/his academic career insecurity will be.

### **Validation of output from a community outside the present employer**

According to the boundaryless career concept, the validation of output from the scientific community outside the currently employing university is more important to individuals than validation from within the present employer (Arthur and Rousseau 1996). Because research is recognised by the scientific community and crucial for academic careers (Drennan et al. 2013; Sutherland 2017), we expect that dedicating high amounts of energy and time to research lessens academic insecurity.

**Hypothesis 2** The greater the share of total working hours an early-career researcher devotes to research, the less her/his academic career insecurity will be.

Further, to present their research, receive feedback, and eventually obtain validation, early-career researchers may seek to create and nurture ties with the scientific community. In addition, linked with the feature of frequent moves across universities, boundaryless careers are facilitated by social networks outside of a current employer (Arthur 1994; Eby et al. 2003), and academic networks often provide information on job vacancies and mentoring opportunities (Baruch and Hall 2004; de Janasz and Sullivan 2004). Thus, networking activities will reduce academic career insecurity.

**Hypothesis 3** The greater the share of total working hours an early-career researcher devotes to networking, the less her/his academic career insecurity will be.

### **Driven by values**

According to the protean career model, individual career choices are value driven (Briscoe et al. 2006; Hall 2004), with personal freedom and growth as core values (Baruch 2013; Hall 2004). These values not only relate to career decisions but also to work tasks themselves. According to this model, individuals preferably choose jobs characterised by high autonomy, understood as individual freedom to decide what tasks to do, and how and when to do them (Hall 2004). Workplace autonomy is an essential characteristic of the academic profession (Baruch and Hall 2004; Gappa et al. 2007; Roach and Sauermann 2010; Sutherland 2017).

Previous research shows that individuals' participation in workplace-related decisions as well as perceived control over their job situations reduces job insecurity (Gallie et al. 2017) and its negative effects (Greenhalgh and Rosenblatt 2010; Vander Elst et al. 2014). Accordingly, we theorise that a work environment allowing individuals to act autonomously provides more opportunities to use coping strategies suited for reducing career insecurity.

**Hypothesis 4** The greater the degree of workplace autonomy experienced by an early-career researcher is, the less her/his academic career insecurity will be.

### **Self-direction**

Protean careers build on self-guided job changes (Briscoe et al. 2006; Hall 2004). Thus, what individuals think concerning previous career success appears to be crucial for their subjective career prospects, too. Previous research indicates that a protean career orientation is positively related to proactive disposition and career behaviour (Herrmann et al. 2015). Studies have also shown this relation in academia, where the extent to which an individual attributes her/his present career path to personal effort and extraordinary performance—rather than to chance or strong support from others—affects future career progress (Höge et al. 2012; Valentine et al. 2004). Hence, we expect that an early-career researcher who attributes previous career success to her/his own personal effort will be confident of future career success.

**Hypothesis 5** The more strongly an early-career researcher attributes personal effort having achieved them their current job, the lower her/his academic career insecurity will be.

Relatedly, as work experience and opportunity for learning about personal strengths depend on time spent in a certain career track, we expect that the career stage of an early-career researcher will affect her/his academic career insecurity. While scholars generally view protean careers as a series of learning cycles (Hall 2004; Hall and Mirvis 1995), academic careers are characterised by both universal “rules of the game” applying to all career stages as well as by specific learning opportunities attached to different career stages (Baldwin and Blackburn 1981; de Janasz and Sullivan 2004). Among early-career researchers, we expect differences between researchers at the predoc stage and those at the postdoc stage, because the accomplishment of a PhD is the first milestone on the academic career path (Baruch 2013; McAlpine and Emmioglu 2015). Previous research indicates that though researchers at the predoc stage (both, those employed by universities and those fully concentrating on their PhD studies) may think that they are full of potential and hope irrespective of contextual restraints (Mueller et al. 2015; Roach and Sauermaun 2010), they also experience considerable fear of failure (Jöstl et al. 2012). In contrast, while postdoc researchers also express insecurity (Puljak and Sharif 2009; Reybold and Alamia 2008; van der Weijden et al. 2016), they may be more confident of their future career success in academia than predoc researchers, because they have already proved their talent and outperformed rivals. In addition, postdoc researchers may feel safer, because they are more familiar with the requirements of academic careers (McAlpine and Emmioglu 2015).

**Hypothesis 6** Researchers who are at the postdoc stage will perceive lower academic career insecurity than researchers at the predoc stage.

These six hypotheses will be tested in the next sections, starting with a description of the research context.

## Methods

### Research context: the Austrian academic career model

As in most academic career systems worldwide, in Austria, the highest faculty rank is full professor. However, while the dominant US model has three career stages—tenure-track assistant, tenure-track associate, and tenured full professor—the Germanic model does not encompass such tenure-track positions leading up to full professor. Instead, scholars usually serve in a series of temporary positions, often at different universities. In addition, decisive selection processes happen at a late stage: whereas entering the academic career path in Austria is easier than in other European or Anglo-Saxon systems, the hardest job competition is attached to full professorships, since their number is small (Kreckel and Zimmermann 2014). According to official statistics, in 2015, there were approximately 18,500 predoc and postdoc positions at Austrian universities, compared with 2500 full professorships (Federal Ministry of Science, Research and Economy 2016, personal communication).

While the Austrian academic career system allows several alternative routes to a full professorship or another kind of tenured senior faculty position, the following path, which is defined by a collective agreement covering all Austrian public universities, is typical (Kreckel and Zimmermann 2014). On this path, researchers start their academic careers immediately after graduation as predocs with university employment as an assistant to a full professor. Like in higher-ranking academic positions, job duties comprise research—including the doctoral thesis—teaching, and administration. Employment contracts for these assistant positions typically last 3 to 5 years. After having obtained their PhDs, researchers usually work for 3 to 6 years as postdocs or assistant professors. Some of them are on tenure tracks and later will become associate professors if they meet the requirements, whereas others have to apply for full professorships having only held assistant positions.

### Sample

The data analysed in this article originate from a larger project on the career prospects and work-life balance in academia. We collected data via an online survey of researchers at a large Austrian university. The university's rectorate together with the research team invited all faculty members to participate in the survey. The university's works council (the employees' representative body) supported the survey by a separate mailing. Respondents were assured full anonymity. The response rate was 28%. Nonresponse analyses drawing on data from the university's administration revealed a slight overrepresentation of women and an underrepresentation of men and persons under 26 years old. While this kind of self-selection may reflect a lack of interest in the overall topic of the survey and the very high number of survey invitations that young researchers in particular receive, we found no statistical indication of harmful nonresponse bias.

The subsequent analysis uses data on early-career researchers, defined as employees at the predoc or postdoc stage, who hold fixed-term employment contracts with the university. From the subsample of 185 early-career researchers, we excluded 33 individuals who stated that they

did not wish to pursue academic careers. Of the 152 respondents remaining in the sample, 88 were women (57.9%) and 64 were men (42.1%). Ninety-one respondents held predoc positions (59.9%), and 61 held postdoc positions (40.1%). Seventy-one respondents (46.7%) were younger than 30 years, 35 respondents (23.0%) belonged to the age category 31–35 years, and 46 respondents (30.3%) were older than 35 years.

## Measures

We deployed both well-established and self-developed measures. The latter were a necessity due to our new conceptualisation of academic career insecurity. We discussed all measures within an interdisciplinary research team of ten colleagues and conducted a pretest using responses by 25 early-career researchers from several universities other than the one we studied.

**Academic career insecurity** Building on the job insecurity measures proposed by Greenhalgh and Rosenblatt (1984, 2010), we developed a measure of career insecurity with two components: (1) the strength of an individual's desire for an academic career and (2) the subjective probability of an academic career. High values of academic career insecurity indicate that an individual is indecisive as to an academic career and that her/his subjectively assessed probability of working in academia in the future is low. In contrast, low values indicate that an individual is highly interested in an academic career and at the same time she/he is confident of continuing an academic career. The study participants were asked: "If you look 10 years into the future, what are your wishes for your work or life situation?", followed by a question about their assessment of the probability of these wishes. We used a Likert-type scale comprising four items: "standing on a higher step of the academic career ladder," "doing research," "working in an area outside research" (reverse coded), and "being a professor" (1 = "strongly desired" to 5 = "not at all desired"). Cronbach's alpha for this scale was 0.79. We excluded respondents from this study if this variable had the values 4 or 5, indicating that respondents did not wish to pursue academic careers. To capture the subjective probability dimension we multiplied each item by the assessed probability (reverse coded: 0.1 = "very likely" to 0.9 = "very unlikely").

**Willingness to be geographically mobile** We developed a Likert-type scale using four items: "to achieve a better position I would be willing to live abroad," "the opportunity of being mobile was an incentive for me to choose an academic career," "due to private circumstances a move to another city would be extremely difficult (reverse coded)," "I see my professional future outside of Austria" (1 = "strongly disagree" to 5 = "strongly agree"). Cronbach's alpha for this scale was 0.71.

**Research activity** Respondents indicated the share (as a percentage) of their working time they devoted to research activities.

**Networking activity** Respondents indicated the share (as a percentage) of their working time they devoted to networking activities.

**Workplace autonomy** We used three items of the operational flexibility scale developed by Clark (2001): "I determine where I place my time and energies at work;" "others direct my activities at work," (reverse coded) and "I have a say in what goes on at work" (1 = "strongly disagree" to 5 = "strongly agree"). Cronbach's alpha for this scale was 0.69.



**Self-attribution of previous career success** Study participants were asked: “Which of the following factors contributed to your achievement of the current position at this university?” Of the possible factors, we considered “personal effort and outstanding performance” (1 = “not at all” to 5 = “completely”).

**Career stage** Respondents indicated whether they hold a predoc or postdoc position (0 = predoc, 1 = postdoc).

**Control variables** We included four control variables. The first was *gender*, coded 0 for men and 1 for women. According to previous research, academic career prospects and experiences in academia differ between women and men (e.g. Dorenkamp and Weiß 2017; Nielsen 2016). *Age* was measured in 5-year categories to ensure anonymity (1 = under 26 years, 2 = 26–30, ..., 5 = 41 years and older). We considered age because of its correlation with career stage. *Family responsibilities*, which may restrict geographical mobility an which both women and men may perceive as threatening their academic career success (e.g. Damaske et al. 2014), were measured by several questions regarding respondents’ households. Having neither children nor other persons in need of care was coded 0, whereas having at least one child and/or caring for at least one person was coded 1. *Time until current employment contract terminates* was measured as the difference in months between the survey date and the expiration date of an individual’s current employment contract. We considered this variable because both the salience and the degree of career insecurity may vary over the term of a contract.

## Results

Table 1 presents means, standard deviations, and correlations of the studied variables.

According to Table 1, only a few correlation coefficients are statistically significant. VIF levels were smaller than 5, indicating that multicollinearity is not an issue in the data.

Table 2 presents the results of a linear regression analysis of *academic career insecurity*. Model A includes control variables only. Model B, in which all variables are entered, yields a share of variance explained of 21% ( $F_{10,141} = 5.04, p < 0.01$ ).

Hypothesis 1 states that the willingness to be geographically mobile is associated with lower levels of academic career insecurity. In support of this hypothesis, this variable is negatively related to academic career insecurity ( $\beta = -0.29, p < 0.01$ ).

Hypothesis 2 states that the share of working hours dedicated to research is associated with lower levels of academic career insecurity. In support of this hypothesis, research activity is negatively related to academic career insecurity ( $\beta = -0.23, p < 0.01$ ).

Hypothesis 3 states that the share of working hours dedicated to networking is associated with lower levels of academic career insecurity. In support of this hypothesis, networking activity is negatively related to academic career insecurity ( $\beta = -0.19, p < 0.05$ ).

Hypothesis 4 states that workplace autonomy is associated with lower levels of academic career insecurity. As Table 2 shows, the data did not support this hypothesis. Although autonomy is negatively related to career insecurity (see Table 1), in the regression model its coefficient is statistically nonsignificant ( $\beta = -0.11, ns$ ).

**Table 1** Means, standard deviations, and bivariate correlations of the study variables<sup>a</sup>

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1. Academic career insecurity (0.1; 2.7)	1.02	0.47										
2. Willingness to be geographically mobile (1; 5)	2.85	1.02	-0.26 <sup>***</sup>									
3. Research activity (per cent)	56.09	25.57	-0.18 <sup>*</sup>	-0.01								
4. Networking activity (per cent)	7.40	7.09	-0.09 <sup>***</sup>	0.01	-0.44 <sup>***</sup>							
5. Workplace autonomy (1; 5)	3.74	0.77	-0.25 <sup>***</sup>	0.03	0.26 <sup>***</sup>	0.03						
6. Self-attribution of previous career success (1; 5)	4.36	0.75	-0.20 <sup>***</sup>	-0.02	-0.09	0.11	0.06					
7. Career stage (1 = postdoc)	0.41	0.49	-0.24 <sup>***</sup>	-0.05	0.03	-0.01	0.14 <sup>*</sup>	0.07				
8. Gender (1 = woman)	0.58	0.50	0.00	0.03	-0.05	0.15 <sup>*</sup>	-0.04	-0.05	-0.09			
9. Age (five groups)	3 <sup>b</sup>		-0.01	-0.13 <sup>+</sup>	-0.12 <sup>+</sup>	0.05	0.08	0.00	0.50 <sup>**</sup>	-0.07		
10. Family responsibilities (1 = yes)	0.26	0.44	-0.07	-0.25 <sup>***</sup>	0.00	-0.15 <sup>*</sup>	0.16 <sup>*</sup>	0.03	0.30 <sup>**</sup>	-0.05	0.50 <sup>**</sup>	
11. Time until employment contract terminates (months)	18.43	14.36	0.01	-0.07	-0.16	0.05	0.06	0.09	-0.01	-0.10	0.00	0.10

<sup>a</sup>  $n = 152$ . Correlation coefficients are Pearson's or Spearman's, according to their level of measurement

<sup>b</sup> Median; 3 = 31–35 years

<sup>+</sup>  $p < 0.10$

<sup>\*</sup>  $p < 0.05$

<sup>\*\*\*</sup>  $p < 0.01$

**Table 2** Regression analysis results of academic career insecurity<sup>a</sup>

	Model A			Model B		
	<i>b</i>	S.E.	$\beta$	<i>b</i>	S.E.	$\beta$
Willingness to be geographically mobile				-0.13	0.04	-0.29**
Research activity				0.00	0.00	-0.23**
Networking activity				-0.01	0.01	-0.19*
Workplace autonomy				-0.07	0.05	-0.11
Self-attribution of previous career success				-0.11	0.05	-0.18*
Career stage				-0.24	0.08	-0.25**
Gender	0.00	0.08	0.00	-0.01	0.07	-0.01
Age	0.01	0.04	0.03	0.06	0.04	0.14
Family responsibilities	-0.10	0.10	-0.09	-0.15	0.10	-0.14
Time until employment contract terminates	0.00	0.00	0.02	0.00	0.03	0.00
Intercept	0.99	0.14		2.45	0.30	
$R^2$		0.01			0.26	
Adjusted $R^2$		-0.02			0.21	
$F$		0.22			5.04**	
$\Delta R^2$					0.25	

<sup>a</sup>  $n = 152$ +  $p < 0.10$ \*  $p < 0.05$ \*\*  $p < 0.01$ 

Hypothesis 5 states that self-attribution of previous career success is associated with lower levels of academic career insecurity. In support of this hypothesis, self-attribution is negatively related to academic career insecurity ( $\beta = -0.18$ ,  $p < 0.05$ ).

Hypothesis 6 states that researchers at the predoc stage perceive higher academic career insecurity than those at the postdoc stage. This hypothesis is clearly supported by the data. Career stage is negatively related to academic career insecurity ( $\beta = -0.25$ ,  $p < 0.01$ ).

To account for a potential common method bias, we used various control procedures. As a procedural remedy, we guaranteed response anonymity and assured respondents data would be kept confidential. As for statistical remedies, we applied Harman's one-factor test (Harman 1976) and the marker variable technique suggested by Malhotra et al. (2006), using *time until employment contract terminates* as marker variable. The results of the two procedures suggest that common method bias presents no serious problem for this study.

Furthermore, to examine the robustness of the regression results, we used a random sample comprising 100 cases out of the original 152. The regression results using the random sample are very similar to those of the model that uses the original sample, indicating robustness of the regression results.

## Discussion

The purpose of this article was to examine the antecedents of academic career insecurity, conceptualised as the subjective perception that emerges from the interrelation of the strength

of an individual's desire to pursue an academic career and her/his subjective assessment of the probability of achieving this goal. Specifically, it examined how factors associated with boundaryless careers and protean careers affect academic career insecurity among early-career researchers.

The findings suggest that an individual's willingness to be geographically mobile is a decisive factor for academic career insecurity. In line with previous research (e.g. Morano-Foadi 2005; Richardson and Zikic 2007), the findings highlight a potentially problematic consequence of mobility requirements. This factor may play a particularly important role for career insecurity not only in academia but also in other professional contexts (Loacker and Sliwa 2016). Yet in academia, geographical mobility seems to be particularly crucial, since moves result not only from professional development needs but also from fixed-term employment contracts, legislation, and the scarcity of professorships.

This study also found that the share of working hours dedicated to research and networking, self-attribution of previous career success, and being at the postdoc stage are associated with lower levels of academic career insecurity. One explanation of these findings is that positive career and work experience, a growing professional network, and increasing familiarity with the rules of the game over time provide early-career researchers with experiences they need to feel secure about their future careers. Previous research supports this interpretation, showing that researchers develop career scripts through intense interaction with different social and institutional contexts (Duberley et al. 2006). Yet another explanation of our findings may be selection processes. In these, both self-selection and university procedures of personnel selection will contribute to an overall picture in which geographically mobile, self-confident, research- and networking-committed, and experienced individuals perceive less academic career insecurity than their counterparts who display these characteristics to a lesser extent. Thus, further research is needed to identify effects of learning, self-selection, and institutional practices.

Our findings concerning career stage are opposite to Höge et al. (2012), who state that researchers at the postdoc stage perceive higher career insecurity than those at the predoc stage. We explain this difference as resulting from differences in scope. Whereas Höge and colleagues refer to future careers in general, we focus on academic careers only.

Contrary to our expectations, this study found that autonomy at the workplace is not related to academic career insecurity. This finding suggests that a lack of guidance by others may thwart benefits associated with discretion at the workplace. As Hall (1996) pointed out, “[m]any people cherish the autonomy of the protean career, but many others find this freedom terrifying” (p. 10). Interestingly, whereas the bivariate correlational analyses (see Table 1) indicate that workplace autonomy is negatively related to academic career insecurity, in the regression models, the research and networking activity variables suppress the effect of workplace autonomy on academic career insecurity. One explanation of these findings could be that only those individuals who use their autonomy to devote more of their time to research and networking activities perceive less academic career insecurity. Yet, more research is needed to understand the relation of workplace autonomy and career insecurity, which may rest on a bundle of relations with countervailing effects.

Overall, this study illuminates a set of individual factors that impact academic career insecurity. Given the high salience of insecurity associated with early stages of academic careers, insight into what might help to diminish it is important. However, knowledge about individual-level factors, the focus of this article, does not address the fact that academic career insecurity is also driven strongly by structural factors (Duberley et al. 2006; Herschberg et al. 2015; Kaulisch and Enders 2005; Teichler and Höhle 2013).

This study has several implications for theory. By specifying the concept of academic career insecurity, we provide more nuanced insights into factors associated with workplaces in higher education organisations. Our conceptualisation of academic career insecurity as resulting from the interplay of the desire to pursue an academic career and the subjective probability of achieving this goal could inform future research. In addition, this study demonstrates the usefulness of the concepts of boundaryless and protean careers in higher education research. These two concepts proved to be effective in identifying relevant factors out of the large pool of potential antecedents of academic career insecurity, and they offer theoretical explanation in interpreting the research findings. At the same time, this study points to the limits of the two concepts. The boundaryless and protean career concepts emphasise individual agency while at the same time downplaying structural career constraints. Specifically, the fact that they do not differentiate between cases in which individuals voluntarily choose these kinds of career paths and cases in which context determines career behaviour obscures the interplay of structural constraints with individual behaviour and attitudes (also see Kaulisch and Enders 2005; Hartz 2012). Thus, future research using these concepts should examine this interplay to obtain better understanding of both positive and negative outcomes of boundaryless and protean careers.

We also see important practical implications of our study findings, especially concerning the design of faculty development programmes. The boundaryless and protean career concepts suggest that academics may hardly expect that their careers are “managed” by their current employing university. Even more so, they may not seek external advice and assistance in navigating their careers (Hall 2004). However, universities striving for the professionalisation of their human resource management and the avoidance of “waste of talent” may wish to provide their faculty with effective measures aimed at career success. Thus, following Hall (2004), who already pointed out this dilemma, we identified several “critical organisational leverage points” (Hall 2004: 9) based on our study findings.

Various actors, such as a university’s management, supervisors, or other associations aiming at the promotion of early-career researchers, can contribute to reducing the negative effects of objectively insecure career paths in higher education. For instance, they should encourage and enable individuals to devote large amounts of time to research and networking activities. This implication resonates with previous research highlighting that stories of career success in academia should be made transparent to facilitate early-career researchers navigating their careers (Baruch 2013; Sutherland 2017). Further, university managers and other actors can enhance the willingness of individuals to be geographically mobile by assisting them in contacting researchers at other institutions, providing financial support for conference visits or temporary stays abroad, and/or by assisting them in managing family obligations.

The finding that researchers at the predoc stage perceive higher academic career insecurity than those at the postdoc stage may imply that those who are less experienced are especially in need of counselling or other forms of support. At the same time, career development programmes should take account of the particular needs attached to different career stages (also see McAlpine and Emmioglou 2015; Puljak and Sharif 2009; Reybold and Alamia 2008).

This study has several limitations. *First*, the ability to generalise from our findings is restricted because we considered only one university in one country. However, a big advantage of our sample is the homogeneity of the individuals’ working conditions within the same institutional environment. For instance, the reputation of a university might be negatively related to career insecurity (see also Baruch 2013). In addition, a university’s location might affect the willingness to be geographically mobile. By focusing on one university, this study controlled for these factors. Nevertheless, future research in other universities and/or countries

is needed. Such research should also examine effects of country differences in academic career systems. For instance, is academic career insecurity of researchers at the predoc stage lower in those systems where PhD students fully concentrate on their studying (e.g. in the US model, UK, France, Scandinavian countries) rather than working as research and teaching assistants, as in the Germanic model? And in what ways do different kinds of tenure systems relate to academic career insecurity?

*Second*, this study focuses on early-career researchers employed by a university. These individuals may experience less academic career insecurity than those who draw on other financial resources, such as grants or part-time jobs outside academia. Hence, future research should also consider researchers who desire academic careers but currently are not employed by universities. Likewise, researchers at later career stages are interesting to study. Even if they have tenure or otherwise permanent employment contracts, the question is, whether they perceive academic career insecurity, too—perhaps in the form of fear of failing to reach certain levels of research output or highly valued grants, or the fear that their working conditions worsen due to new policies of their university?

*Third*, because of strict anonymity rules originating from legislation and the policy of the university where the data originated, this study was not able to consider an individual's scientific discipline or her/his performance. Moreover, it was not possible to identify the supervisors of the respondents. As a consequence, this study draws an incomplete picture of the antecedents of academic career insecurity, since the number of job vacancies, individual performance, and the supervisor's capabilities and reputation affect career opportunities (Scaffidi and Berman 2011; van der Weijden et al. 2016). Thus, future research taking these factors into account is needed. Methodologically, either a data set that links survey responses with university records or a qualitative approach using interview data would be appropriate.

In conclusion, despite sharing objectively quite similar working conditions, this study shows that early-career researchers perceive academic career insecurity to different extents. The study identified a set of factors at the individual level that help academics in navigating their careers in a system that rests on the principles of “up or out” and “survival of the fittest.” The improved knowledge of these factors, together with the new conceptualisation of academic career insecurity as emerging from interaction between the desire for and the perceived probability of an academic career, may provide fruitful avenues for further theorising on careers in higher education.

**Acknowledgements** Open access funding provided by University of Graz. We wish to thank all survey respondents for their time, the two anonymous reviewers for their helpful comments, and especially Barbara Hey for initiating this research.

**Open Access** This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

## References

- Arthur, M. B. (1994). The boundaryless career: a new perspective for organizational inquiry. *Journal of Organizational Behavior*, 15(4), 295–306.

- Arthur, M. B., & Rousseau, D. M. (Eds.). (1996). *The boundaryless career: a new employment principle for a new organizational era*. New York: Oxford University Press.
- Baldwin, R. G., & Blackburn, R. T. (1981). The academic career as a developmental process. *Journal of Higher Education*, 52(6), 598–614.
- Baruch, Y. (2013). Careers in academia: The academic labour market as an eco-system. *Career Development International*, 18(2), 196–210.
- Baruch, Y., & Hall, T. D. (2004). The academic career: a model for future careers in other sectors? *Journal of Vocational Behavior*, 64(2), 241–262.
- Briscoe, J. P., Hall, D. T., & Frautschy DeMuth, R. L. (2006). Protean and boundaryless careers: an empirical exploration. *Journal of Vocational Behavior*, 69(1), 30–47.
- Caplow, T., & McGee, R. J. (1958). *The academic marketplace*. New York: Basic Books.
- Clark, S. C. (2001). Work cultures and work/family balance. *Journal of Vocational Behavior*, 58(3), 348–365.
- Colakoglu, S. N. (2011). The impact of career boundarylessness on subjective career success: the role of career competencies, career autonomy, and career insecurity. *Journal of Vocational Behavior*, 79(1), 47–59.
- Damaske, S., Howard Ecklund, E., Lincoln, A. E., & White, V. J. (2014). Male scientists' competing devotions to work and family: changing norms in a male-dominated profession. *Work and Occupations*, 41(4), 477–507.
- Dany, F., Louvel, S., & Valette, A. (2011). Academic careers: the limits of the 'boundaryless approach' and the power of promotion scripts. *Human Relations*, 64(7), 971–996.
- De Janasz, S. C., & Sullivan, S. E. (2004). Multiple mentoring in academe: developing the professional network. *Journal of Vocational Behavior*, 64(2), 263–283.
- De Witte, H., & Näswall, K. (2003). 'Objective' vs. 'subjective' job insecurity: consequences of temporary work for job satisfaction and organizational commitment in four European countries. *Economic and Industrial Democracy*, 24(2), 149–188.
- Dowd, K. O., & Kaplan, D. M. (2005). The career life of academics: bounded or boundaryless? *Human Relations*, 58(6), 699–721.
- Dorenkamp, I., & Weiß, E.-E. (2017). What makes them leave? A path model of postdocs' intentions to leave academia. *Higher Education*, **online first**. <https://doi.org/10.1007/s10734-017-0164-7>.
- Drennan, J., Clarke, M., Hyde, A., & Politis, Y. (2013). The research function of the academic profession in Europe. In U. Teichler & E. Höhle (Eds.), *The work situation of the academic profession in Europe: findings of a survey in twelve countries* (pp. 109–136). Dordrecht: Springer.
- Duberley, J., Cohen, L., & Mallon, M. (2006). Constructing scientific careers: change, continuity and context. *Organization Studies*, 27(8), 1131–1151.
- Eby, L. T., Butts, M., & Lockwood, A. (2003). Predictors of success in the era of the boundaryless career. *Journal of Organizational Behavior*, 24(6), 689–708.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: an introduction to theory and research*. Reading, MA: Addison-Wesley.
- Gallie, D., Felstead, A., Green, F., & Inanc, H. (2017). The hidden face of job insecurity. *Work, Employment and Society*, 31(1), 36–53.
- Gappa, J. M., Austin, A. E., & Trice, A. G. (2007). *Rethinking faculty work: higher education's strategic imperative*. San Francisco, CA: Wiley.
- Greenhalgh, L., & Rosenblatt, Z. (1984). Job insecurity: toward conceptual clarity. *Academy of Management Review*, 9(3), 438–448.
- Greenhalgh, L., & Rosenblatt, Z. (2010). Evolution of research on job insecurity. *International Studies of Management and Organization*, 40(1), 6–19.
- Hakala, J. (2009). The future of the academic calling? Junior researchers in the entrepreneurial university. *Higher Education*, 57(2), 173–190.
- Hall, D. T. (1996). Protean careers of the 21st century. *The Academy of Management Executive*, 10(4), 8–16.
- Hall, D. T. (2004). The protean career: a quarter-century journey. *Journal of Vocational Behavior*, 65(1), 1–13.
- Hall, D. T., & Mirvis, P. H. (1995). The new career contract: developing the whole person at midlife and beyond. *Journal of Vocational Behavior*, 47(3), 269–289.
- Harman, H. H. (1976). *Modern factor analysis*. Chicago: University of Chicago Press.
- Hartz, R. (2012). Everything must change in order to stay the same. *Zeitschrift für Personalforschung*, 26(1), 82–86.
- Herrmann, A., Hirschi, A., & Baruch, Y. (2015). The protean career orientation as predictor of career outcomes: evaluation of incremental validity and mediation effects. *Journal of Vocational Behavior*, 88, 205–214.
- Herschberg, C., Benschop, Y., & van den Brink, M. (Eds.). (2015). Constructing excellence: the gap between formal and actual selection criteria for early career academics. Garcia Working Papers No. 2, Trento.
- Höge, T., Bruculeri, A., & Iwanowa, A. N. (2012). Career insecurity, goal conflicts, and well-being among young scientists: a study in three countries. [Karriereunsicherheit, Zielkonflikte und Wohlbefinden bei

- Nachwuchswissenschaftlerinnen und -wissenschaftlern: Eine Drei-Länder-Studie]. *Zeitschrift für Arbeits- und Organisationspsychologie*, 56(4), 159–172.
- Huang, G.-H., Lee, C., Ashford, S., Chen, Z., & Ren, X. (2010). Affective job insecurity: a mediator of cognitive job insecurity and employee outcomes relationships. *International Studies of Management and Organization*, 40(1), 20–39.
- Jepsen, D. M., Sun, J. J.-M., Budhwar, P. S., Klehe, U.-C., Krausert, A., Raghuram, S., & Valcour, M. (2014). International academic careers: personal reflections. *International Journal of Human Resource Management*, 25(19), 1309–1326.
- Jöstl, G., Bergsmann, E., Lüftenegger, M., Schober, B., & Spiel, C. (2012). When will they blow my cover? The impostor phenomenon among Austrian doctoral students. *Zeitschrift für Psychologie*, 220(2), 109–120.
- Kaulisch, M., & Enders, J. (2005). Careers in overlapping institutional contexts: the case of academe. *Career Development International*, 10(2), 130–144.
- Kim, T. (2017). Academic mobility, transnational identity capital, and stratification under conditions of academic capitalism. *Higher Education*, 73(6), 981–997.
- Kreckel, R., & Zimmermann, K. (2014). *Hasard or tenure track—an international comparison of academic careers [Hasard oder Laufbahn—Akademische Karrierestrukturen im internationalen Vergleich]*. Leipzig: Akademische Verlagsanstalt.
- Langenberg, H. (2001). Uncertainty of short term contracts is turning talent away from science. *Nature*, 410(6830), 849–850.
- Loacker, B., & Sliwa, M. (2016). ‘Moving to stay in the same place?’ Academics and theatrical artists as exemplars of the ‘mobile middle’. *Organization*, 23(5), 657–679.
- Malhotra, N. K., Kim, S. S., & Patil, A. (2006). Common method variance in IS research: a comparison of alternative approaches and a reanalysis of past research. *Management Science*, 52(12), 1865–1883.
- McAlpine, L., & Emmiöglu, E. (2015). Navigating careers: perceptions of sciences doctoral students, post-PhD researchers and pre-tenure academics. *Studies in Higher Education*, 40(10), 1770–1785.
- Morano-Foadi, S. (2005). Scientific mobility, career progression, and excellence in the European research area. *International Migration*, 43(5), 133–162.
- Mueller, E. F., Flickinger, M., & Dorner, V. (2015). Knowledge junkies or careerbuilders? A mixed-methods approach to exploring the determinants of students’ intention to earn a PhD. *Journal of Vocational Behavior*, 90, 75–89.
- Musselin, C. (2010). *The market for academics*. New York: Routledge.
- Nielsen, M. W. (2016). Gender inequality and research performance: moving beyond individual-meritocratic explanations of academic advancement. *Studies in Higher Education*, 41(11), 2044–2060.
- Petersen, A. M., Riccaboni, M., Stanley, H. E., & Pammolli, F. (2012). Persistence and uncertainty in the academic career. *Proceedings of the National Academy of Sciences*, 109(14), 5213–5218.
- Pratt, M. G. (2015). Assessing candidate quality: lessons from ethnography (and accountants). *Journal of Management Inquiry*, 24(3), 340–344.
- Puljak, L., & Sharif, W. D. (2009). Postdocs’ perceptions of work environment and career prospects at a US academic institution. *Research Evaluation*, 18(5), 411–415.
- Reybold, L. E., & Alamia, J. J. (2008). A developmental perspective of women faculty experiences. *Journal of Career Development*, 35(2), 107–128.
- Richardson, J., & Zikic, J. (2007). The darker side of an international academic career. *Career Development International*, 12(2), 164–186.
- Roach, M., & Sauermann, H. (2010). A taste for science? PhD scientists’ academic orientation and self-selection into research careers in industry. *Research Policy*, 39(3), 422–434.
- Scaffidi, A. K., & Berman, J. E. (2011). A positive postdoctoral experience is related to quality supervision and career mentoring, collaborations, networking and a nurturing research environment. *Higher Education*, 62(6), 685–698.
- Shattock, M. (Ed.). (2014). *International trends in university governance: autonomy, self-government and the distribution of authority*. Oxon and New York: Routledge.
- Spurk, D., Kauffeld, S., Meinecke, A. L., & Ebner, K. (2016). Why do adaptable people feel less insecure? Indirect effects of career adaptability on job and career insecurity via two types of perceived marketability. *Journal of Career Assessment*, 24(2), 289–306.
- Sutherland, K. A. (2017). Constructions of success in academia: an early career perspective. *Studies in Higher Education*, 42(4), 743–759.
- Teichler, U., & Höhle, E. A. (Eds.). (2013). *The work situation of the academic profession in Europe: findings of a survey in twelve countries*. Dordrecht: Springer.
- Valentine, J. C., DuBois, D. L., & Cooper, H. (2004). The relation between self-beliefs and academic achievement: a meta-analytic review. *Educational Psychologist*, 39(2), 111–133.



- van den Brink, M., & Benschop, Y. (2012). Gender practices in the construction of academic excellence: sheep with five legs. *Organization*, *19*(4), 507–524.
- van der Weijden, I., Teelken, I., de Boer, M., & Drost, M. (2016). Career satisfaction of postdoctoral researchers in relation to their expectations for the future. *Higher Education*, *72*(1), 25–40.
- Vander Elst, T., Richter, A., Sverke, M., Näswall, K., De Cuyper, N., & De Witte, H. (2014). Threat of losing valued job features: the role of perceived control in mediating the effect of qualitative job insecurity on job strain and psychological withdrawal. *Work and Stress*, *28*(2), 143–164.
- Van Maanen, J. (2015). The present of things past: ethnography and career studies. *Human Relations*, *68*(1), 35–53.
- Waaijer, C. J. F., Belder, R., Sonneveld, H., van Bochove, C. A., & van der Weijden, I. C. M. (2017). Temporary contracts: effect on job satisfaction and personal lives of recent PhD graduates. *Higher Education*, *74*(2), 321–339.
- Ylijoki, O.-H. (2010). Future orientations in episodic labour. Short-term academics as a case in point. *Time and Society*, *19*(3), 365–386.
- Ylijoki, O.-H. (2013). Boundary-work between work and life in the high-speed university. *Studies in Higher Education*, *38*(2), 242–255.