Higher Education Policy
https://doi.org/10.1057/s41307-024-00348-1

ORIGINAL ARTICLE

Should I Stay or Should I Go? The Interplay Between Scientific and Entrepreneurial Passion in Shaping the Frustration–Intention Relationship in the Academia

Marco Balzano[1,2] · Guido Bortoluzzi[3] · Aldijana Bunjak[4] · Matej Černe[5]

Abstract
Academic careers come with many joys but are frequently accompanied by frustration. In the present study, we provide a multi-dimensional measure of academic frustration. Using a sample of 312 differently frustrated academics across the globe, our study develops a new perspective on academic frustration and academics' intention to stay or leave academia. We empirically investigate the interaction between academic frustration and scientific and entrepreneurial passion in predicting four different intention outcomes: spin-off, startup, leaving academia, and changing university. Our findings indicate that scientific passion positively determines the intention to stay in academia, whereas entrepreneurial passion prompts academics to opt out of academic careers when overly frustrated. This study contributes to multiple literature and offers practical implications for academics and institutions. From a policy perspective, we seek to provide guidance on how to deal with the intentions and actions of frustrated academics.

Keywords Academic frustration · Scale development · Frustration · Scientific passion · Entrepreneurial passion · Intention to stay/leave

Introduction

> "The tears, frustration, and laughter, they're all part of me. I've lived it as hard as I could. I won't erase it!" *Kagari Atsuko, Little Witch Academy*
> "Something is going to break, and we are close to breaking" *Craig Hicks, Teacher*
> "Dear Professor, when 90% of us fail, it isn't because we didn't try, it's because you're a terrible teacher" *Many students, everywhere*

Academia is a strange world to live in. On the one hand, it is filled with passion, joy, and intrinsic motivation, and, on the other hand, related to tears, sadness, and

Extended author information available on the last page of the article

Published online: 13 March 2024

frustration. Passion for research and teaching is a precondition for embarking on an academic career. Otherwise, the reasons why people decide to work during nights, and sacrifice leisure time with family, friends, and weekends would be difficult to understand.

On the other hand, frustration may arise over time. From a wide angle, frustration represents an intense negative emotion due to stress caused by failure or one's inability to achieve desired goals (Jeronimus & Laceulle, 2017). Although working in academia has been traditionally considered a stress-free occupation (Thorsen, 1996), administrative work, constant pressure to publish, job security, and technological advances among others significantly changed the academic work conditions into a more difficult and less pleasant occupation (Aljabr et al., 2022; Grüning & De Angelis 2022; Huisman & Teelken, 2008); Powell et al., 1983; Shi et al., 2021). It is worth noticing how neoliberal policies drive universities toward profit-driven activities, prioritizing revenue generation through patents, corporate partnerships, and commercial ventures. This shift from a focus on pure knowledge creation to profit-oriented endeavors is a source of frustration for academics (Loveday, 2018). Studies reported that 55% of US universities and college faculty have strongly considered either changing careers or retiring early (Fidelity Investments, 2020).

Overall, we argue that academia has numerous sources of frustration that are linked to "the usual suspects" related to organizational frustration antecedents and constituents (see Lewandowski, 2003; Heacox & Sorenson, 2007, for reviews) as well as context-specific academic drivers of hopelessness and heartbreak (Hernaus & Černe, 2021; Wohrer, 2014; *Reviewer 2 must be stopped*[1])[2]. Although much anecdotal evidence related to academic frustration has been provided, research on the topic remains scarce. Moreover, most of the research focused on the frustration of students and schoolteachers (e.g., Kim, 2011; Kinman, 2001; Mahmood, 2009; Pappa et al., 2020; Velde et al., 2021) and much less on academics. Calls have been made to provide new measures of academic dissatisfaction and to conceptualize and validate a multi-dimensional and robust measure of academic frustration (Torrisi & Pernagallo, 2020; Sword et al., 2018). Moreover, only limited research investigated the outcomes of such occupational frustration depending on different academics' needs and motivation or decision to leave academia. Against this backdrop, in this study we attempt to address the following research question:

RQ: How can we measure academic frustration, and how is it linked to scientific and entrepreneurial passion, and exit option intentions?

[1] *Reviewer 2 must be stopped* is a Facebook group created on February 28, 2009, that as of January 2024 hosts 158,000 people from the academia around the world. These followers gathered to share mostly bad experiences from their everyday work life and "fight in the name of science and all that is fair in life." The group has 400 posts in a month on average. Thus, it is a highly active group as well as very frustrated but may still be a passionate group of people aiming at changing their occupation.

[2] The statement has been exagerated on purpose.

To address this question, borrowing insights from frustration–aggression theory (Fox & Spector, 1999) and the model of organizational frustration (Spector, 1978), we examine how academic frustration relates to different types of actions. Also, we distinguish among four potential "exit" options for academics: (intention to) create a spin-off, launch a startup, leave academia, or change university. We argue that academics will show different intentions depending on their experienced frustration. Furthermore, we hypothesize that this relationship is moderated by two individual factors: academic and entrepreneurial passion.

The present study offers multiple contributions to the literature. First, it contributes to the existing literature on academic (dis)satisfaction by developing a multidimensional scale for academic frustration. Second, by identifying four possible outcomes stemming from academic frustrations, we provide a dual pathway model of academic frustration outcomes that depend on the interplay of frustration and passion. Third, we extend the current discussion on the consequences of individual frustration beyond the context of "machine bureaucracies" (Mintzberg, 1979) where it mainly originated. By bringing the discussion into "professional bureaucracies" (i.e., universities), we identified a new perspective on academic frustration. Theoretical and practical implications follow.

Theory and Hypotheses

What Causes Academic Frustration?

Frustration arises from interference with the attainment or maintenance of goals, and specifically occurs when goal-directed activities are hindered (Spector, 1978). Interference with goal attainment can occur through the blocking of instrumental responses to achieve a goal or removing the goal so that responses are unable to achieve it (Rosselini & Selingman, 1975). The goal may involve physical objects or symbolic, social entities, such as status or praise. The nature of the goal sets limits to the ways through which it can be blocked. Similarly, an acquired goal can be lost by interferences with behaviors essential to its maintenance or by the removal of the goal. The strength of frustration is impacted by the importance of the blocked goal to the individual, the degree of interference (partial or total), and the number of interferences (e.g., supervisors, subordinates, co-workers, other people, rules, procedures, environment, formal structure) per unit time (Amsel et al., 1961).

Nowadays, academics are experiencing increased job demands similar to those of people in large corporations across all fields of expertise (Shin & Jung, 2014). They are also more time-pressured than before as they must accommodate highly imposed self- and others' expectations from their work. Academics must often manage and meet different deadlines simultaneously: teaching, writing academic contributions, publishing, and administrative and student services. On the other hand, the frustration may intensify as people working in academia are often less

paid than other professionals working in industries demanding lower educational requirements (Fredman & Doughney, 2012).

How do Academics React to Frustrations?

The frustration–aggression theory holds that individuals who are hindered from achieving their goals develop frustration that may be manifested in aggressive behaviors, such as retaliation against the "guilty." Building on this, scholars focused on workplace frustration and its behavioral consequences (Robinson & Bennett, 1995; Spector, 1978; Storms & Spector, 1987). In this setting, individuals respond to frustration in different ways. A first reaction consists in voluntarily damaging the production process and/or the environment through work slowdowns, strikes, sabotage, and theft (Lawrence & Robinson, 2007). Frustrated workers may decide to leave an organization and search for other situations where they can achieve their goals (Postareff et al., 2017). Alternatively, they can remain and decide to forgo their goals (Wöhrer, 2014), though such behavior may lead to anger, depression, and burnout (e.g., Lewandowski, 2003). The most common reaction, particularly to mild frustration, is to respond differently response or find alternative and unblocked ways to achieve the goal (Fox & Spector, 1999). The type of reaction depends on individuals' tolerance to frustration and external conditions, including organizational climate and relationships with supervisors and peers (Reio, 2011).

Research on workplace frustration is significantly influenced by the social and economic contexts of the 1970s. Big corporations frequently functioning as "machine bureaucracies" (in the words of Henry Mintzberg) were at the core of organizational theories. Machine bureaucracies are characterized by strict task accomplishments and punishment systems that may easily generate supervisors' and subordinates' aggressive reactions and behaviors (Hornstein & de Guerre, 2006). Unlike large corporations, universities are in different contexts (some would say aggressiveness is better masked and more subtle) and are more similar to professional bureaucracies. Academic work conditions may determine one's motivation to retain the current job role. People under high stress and frustration are likely to change their jobs, though they may like their current work.

People leave their academic jobs and search for a different profession for a variety of reasons. These reasons include a perceived lack of support, long working hours, work–life imbalance, and competition, among others (Ryan et al., 2012). Exit options for academics are significantly broad worldwide. Although specific modalities depend on national regulations, we could identify four general options. A few of these options require academics to leave academia (such as, in certain countries, launching and managing a new non-research-related career), whereas others are more compatible with the academic career (such as launching a spin-off). Whether and how academics will react to frustration also depends upon individual aspiration, ambitions, and desires related to their academic pursuits and achievements (Ryan & Deci, 2000) and academic identity, referring to how much a person sees themselves mainly in the context of the organization and role or as a member of a profession (Ibarra, 1999). The alignment of frustrations with initial aspirations can determine

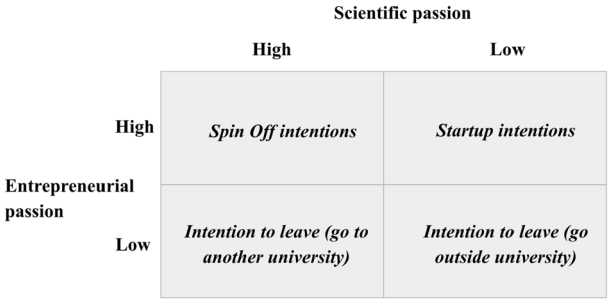

Fig. 1 Academics frustration and its possible outcomes scenarios

persistence or consideration of departure (Atta-Owusu & Fitjar, 2022). A strong academic identity fosters resilience, as individuals with a profound connection to their academic roles may endure challenges to maintain their sense of purpose (Waitere et al., 2011; Winter, 2009). Furthermore, individuals deriving self-worth from academic acknowledgment and high in academic aspiration may be more affected by frustrations when coupled with a lack of recognition (Gale & Parker, 2015). The presence or absence of social and institutional support further molds these responses, with a robust support network and positive institutional climate possibly encouraging perseverance (Balven et al., 2018). Furthermore, the transformation of higher education institutions in response to government policies and funding directives has significantly impacted the individual academic's identity. As academic roles evolve due to institutional changes, the pressure to balance research, teaching, and managerial/administrative responsibilities creates tension between the perceived professional identity and the expectations set by their employing organizations (Billot, 2010).

In sum, based on the presented literature review, we identify the possible options of academics in response to academic frustration: (a) undertaking a spin-off, (b) launching a startup, (c) leaving academia for another job, or (d) joining another university. In this study, we relate academic frustration to the intention of academics to pursue one of the four above options. Figure 1 provides an overview of the four possible scenarios underlying academics' frustration and possible outcomes.

Academic Frustration and Startup Intentions

Academics may decide to leave academia when feeling overly stressed and frustrated at their work. Frustration may result from unmet expectations or one's failure to achieve desired goals (Gelbrich, 2010). Work overload and long working hours are related to high stress levels and may influence one's decision to stay or leave the current work position. These conditions indicate that the decision to leave academia may be driven by internal motivation, such as increased academic frustration influenced by personal factors, including low scientific passion. In this perspective, academic frustration is evoked by feelings of stress, anxiety, and irritation (Hart

& Staveland, 1988) that may impair academic motivation and the opportunity to achieve established career goals. Scholars work on academic tasks, often requiring multiple mandatory tasks simultaneously (e.g., teaching, supervision, and writing papers).

Additionally, they are often invited to contribute to businesses and various foundations (e.g., think tanks), allowing them to expand their professional networks outside academia. Whether they would venture into entrepreneurship depends on their greater inclination toward entrepreneurial passion rather than scientific passion. Bird (1989) argued that entrepreneurs are passionate, full of emotional energy, drive, and spirit. Entrepreneurial passion has been studied from different theoretical perspectives: the passion for work (Baum et al., 2001), the dualistic model of passion (Vallerand et al., 2003; 2015), entrepreneurial passion (Cardon et al., 2009), and perceived passion (Chen et al., 2009). Entrepreneurial passion is defined as "consciously accessible, intense positive feelings experienced by engagement in entrepreneurial activities associated with roles that are meaningful and salient to the self-identity of the entrepreneur" (Cardon et al., 2009, p. 517). Thus, it represents a strong positive feeling experienced by consciously gaining strong positive emotions and participating in business activities related to a role that is meaningful to the self-identification of the entrepreneur.

Indeed, for many entrepreneurs, the desire to build an organization is a motivating factor. The founder's role is central to the self-concept of the entrepreneur (Cardon et al., 2009; 2013). Entrepreneurs often need achievement as reflected in establishment activities, which supports that they have achieved certain business accomplishments. Entrepreneurs who are passionate about entrepreneurship mainly enjoy the entrepreneurship process and often expand identities that are intertwined with business characteristics (Cardon et al., 2009). Many entrepreneurs are not motivated by the desire to build an organization but by their conscious effort to develop and expand their businesses (Cardon et al., 2013). Similarly, academics who experience strong entrepreneurial passion during academic frustration may be motivated to pursue an entrepreneurial career but not an academic career:

H1: Frustrated academics with high intentions to launch a startup exhibit high levels of entrepreneurial passion and low levels of scientific passion.

Academic Frustration and the Intention to Leave Academia

Although academics have relative autonomy in their work, new managerial regulations have also changed such aspects. Many policies are imposed on academics pushing them to perform high, provide high-quality services and funding, and perform numerous administrative works while increasing their teaching hours. In turn, these situations may negatively influence one's perception of his/her work. Work overload and long working hours are related to high levels of stress and influence one's decision to stay or leave the current work position.

Academics, particularly young scholars, who are at the beginning of their academic career, may experience great passion for their work but, at the same time,

are encouraged to put their dreams to change the world on hold until after tenure (Bertucci, 2015). Additionally, low wages and the lack of job security along with work–life (im) balance and market competition may significantly increase faculty turnover. Thus, academics may decide to leave academia when feeling overly stressed and frustrated at their work. Frustration may result from unmet expectations (Carvalho & Santiago, 2010) or one's failure to achieve desired goals (Gelbrich, 2010). These factors may mitigate scientific passion. However, the absence of scientific passion does not necessarily mean that person has to exhibit entrepreneurial passion. Frustrated academics who decide not to leave their job may opt for applying their scientific knowledge to practical issues of managerial relevance. Similarly, building a network with non-profit organizations and private sectors opens new opportunities for academics to explore alternative job options. Thus:

H2: Frustrated academics with high intention to leave academia (go outside the university setting) exhibit low levels of entrepreneurial and scientific passion.

Academic Frustration and the Intention to Change University

Passion is a feeling that influences activity and motivation toward an endeavor that one enjoys, finds meaningful, and chooses to do (Vallerand et al., 2003). From this angle, academics who display a passion for their work may be ready to perform various tasks that provide them with a sense of purpose and meaning. Academic work passion is an emotionally positive response to one's work requirements, where employees show persistence and commitment to various situations that are part of their daily job.

Scientific passion is often stimulated by intrinsic motivation rather than monetary rewards. Intrinsic motivation is underpinned by processes such as high autonomy and flexibility at work, growth and promotional opportunities, a sense of connectedness, and close collaborations with peers (Kraimer et al., 2019; Ryazanova & McNamara, 2016). Scientific passion refers not only to individuals' cognition but also to their actual intention and behavior at work (Permarupan et al., 2013). Thus, academics who experience frustration at their current university position may change the university and give their scientific passion a "second chance" before completely leaving academia (Bedeian et al., 2010). As their inner motivation, namely, passion, is primarily linked to scientific work, we assume these individuals would not be further motivated to start any entrepreneurial project but rather change their current university and stay in the academia:

H3: Frustrated academics with high intention to leave their current university (but stay in academia) exhibit low levels of entrepreneurial passion and high levels of scientific passion.

Academic Frustration and the Intention to Spin-off

To the high amount of workload, high expectations, and negative experiences, academics may be drawn by the idea to establish their careers outside academia but still stay within the boundaries of their work during their academic years (e.g., Alzaanin, 2021). The intention to leave academia may reduce the sources of academic frustration. However, the case may be otherwise when they are blindly passionate about their teaching and research and ready to commit to several years of working on publications, which may not produce their best benefit.

The literature on academic entrepreneurship and spin-off is informative, indicating that scientific passion drives individuals to pursue their academic endeavors beyond university settings. Academia is a source of new knowledge and technology, and it has increasingly become involved in the foundation of firms; these firms are often based on new technologies originated by academic research (Miranda et al., 2017). Spin-off refers to venturing into business initiatives promoted by members of the university community. The members are characterized by their activities based on the exploitation of new processes, products, and services arising from the knowledge acquired and results generated in the university. Academic entrepreneurship lies on the idea that a wide range of scientific research takes place within universities and that certain research results may have commercial applications capable of generating revenue for those universities (Wood, 2011). Motivational factors for such a decision include business experience, networking, and characteristics of the research group and entrepreneurial team (Rasmussen, 2011). Thus:

H4: Frustrated academics with high intention to spin-off exhibit high levels of entrepreneurial and scientific passion.

Methods

Data Collection and Sample Characteristics

Our sample includes individuals who worked in the academia at the time of completion of the survey. The respondents come from more than 40 countries around the world (e.g., the USA, the UK, China, Russia, Germany, Brazil, and Australia). During the data collection, we distributed the questionnaire through snowball sampling techniques on social media and other online platforms (e.g., Facebook, LinkedIn, and online forums), targeting academics. Data were collected from 2020 to 2021, and the anonymity of all respondents was guaranteed (Podsakoff et al., 2003). To increase the reliability of the obtained data, we introduced an attention check and reverse items during the development of the survey to check for unengaged participants (i.e., extremely low variance among responses and/or extremely limited time to complete the survey) and inconsistent responses (i.e., discrepancies and failure

Table 1 Sample characteristics

Characteristic	*n*	%
Gender		
Female	163	52.24
Male	136	43.59
Other/Not specified	13	4.17
With kids		
Yes	126	40.38
No	173	55.45
Not specified	13	4.17
Academic position		
PhD student	47	15.06
Post Doc	18	5.77
Assistant Professor	98	31.41
Associate Professor	68	21.79
Full Professor	48	15.38
Other/Not specified	33	10.58
Years in Academia		
3 or less	41	13.14
4-8	90	28.85
9-15	74	23.72
16-25	68	21.79
More than 25	39	12.50
Scientific discipline		
Social Sciences and Humanities	190	60.90
Physical Sciences and Engineering	76	24.36
Life Sciences	34	10.90
Not specified	12	3.85

$n = 312$.

of the attention check). In total, our dataset included a sample of 312 academics. Table 1 below presents some key sample characteristics.

Given the scope of this study, we did not focus on a specific group of academics based on their current academic position, scientific discipline, or countries. As data leveraged on snowball sampling techniques, "social sciences and humanities" is the most populated cluster (as all four authors belong to this population). On the contrary, data are significantly balanced in terms of covered academic position, and gender and childhood are also heterogeneous.

Measures

All latent constructs were measured on a 5-point Likert scale as reported in Table 2. Spin-off intentions, startup intentions, scientific passion, and entrepreneurial passion have been adopted from Huyghe et al. (2016). To develop a measure of academic

Table 2 Items and reliability of latent variables

	Cronbach's Alpha	AVE
Spin-off intentions - 3 items	.877	.713
How likely is it that, in the foreseeable future:		
1. You will engage in the founding of a university spin-off?		
2. You will engage in the establishment of a company based upon an idea and/or technology developed at the University?		
3 You will participate in the founding of a firm to commercialize your research?		
Startup intentions - 2 items	.820	.695
How likely is it that, in the foreseeable future:		
1. You will pursue a career as entrepreneur?		
2. You will start your own business?		
Scientific passion - 4 items	.874	.647
1. I cannot live without engaging in scientific research.		
2. I have difficulty imagining my life without scientific research.		
3. I have almost an obsessive feeling for scientific research.		
4. My mood depends on me being able to succeed in doing scientific research.		
Entrepreneurial passion - 8 items	.919	.616
Respondents were asked to indicate their degree of agreement with the following statements:		
1. It is exciting to figure out new ways to solve unmet market needs that can be commercialized.		
2. Searching for new ideas for products/services to offer is enjoyable to me.		
3. I am motivated to figure out how to make existing products/services better.		
4. Scanning the environment for new opportunities really excites me.		
5. Inventing new solutions to business problems is an important part of who I am.		
6. I frequently think about inventing new solutions to business problems.		
7. Identifying and developing new business opportunities is central to how I define myself. 8. I would feel a loss if I were forced to give up searching for new solutions to business problems		

Table 2 (continued)

Academic frustration (self-developed)	*Std. Ld.*	Cronbach's Alpha	AVE
a) Dissatisfaction with Red tape - 3 items		.807	.608
1. Administrative activities take up too much of my working time	.604		
2. Managing bureaucracy at my institution is complex.	.826		
3. I get frequently irritated by the level of red tape in my organization	.883		
b) Satisfaction with teaching/relationships with students - 3 items (to be reversed)		.754	.508
1. Students appreciate my teaching	.782		
2. My students are motivated	.678		
3. I am satisfied with my teaching activity	.690		
c) Satisfaction with job progression - 3 items (to be reversed)		.783	.557
1. I am/was satisfied with the promotional process overall	.728		
2. I understand/understood the criteria for achieving promotion	.644		
3. I feel/felt supported in my advancement for promotion	.855		
d) Dissatisfaction with evaluation of research - 2 items		.707	.547
1. In general, I think that the peer review system is not fair	.714		
2. In my experience, the quality of reviewers is not high	.772		
NFI .959, NNFI .991 CFI .994 IFI .994 RFI .941			
CFA Goodness of Fit (RMSEA) .975 (.023)			
Sample Size: 312			

$n = 312$.

frustration, we conducted three systematic phases to implement the scale. This step will be discussed in the ensuing section. Table 2 below presents the final scale conceptualized as a formative construct comprised of four main subdimensions.

The intention to leave the current university and academia has been adapted from Shalley et al. (2000). The authors measured the intention to leave a job with the following item: "Taking everything into consideration, how likely is it that you will make a genuine effort to find a new job with another employer within the next year?" Drawing from Shalley et al. (2000), we developed our measures of the intention to leave academia or the current university. We developed the following questions: "Taking everything into consideration, will you make a real effort to find a new job outside the university?" and "Taking everything into consideration, will you make a real effort to find a new job at another university?"

Scale Development and Validation

To develop a consistent and feasible measure of academic frustration, we adopted the guidelines for scale development from the psychometric literature (Bagozzi & Yi, 1988; Cortina, 1993; DeVillis, 1991). As a result, we entered a rigorous three-step process based on (1) item generation, (2) item allocation and refinement, and (3) scale validation.

Item Generation

The first step involves generating a pool of potential scale items related to academic frustration. We started our analysis by developing an initial list of the possible causes of academic frustration. Then, we conducted open-ended reviews of extant literature and a series of informal meetings with academics (Clark & Watson, 1995; Cronbach et al., 1955). The meetings were based on the collected qualitative data on the main factors causing frustration within the academic context. During this phase, we annotated several insights into the determinants of academic frustration. All information collected was analyzed ex-post through qualitative word clustering and in vivo coding procedures to determine the main evidence regarding our inquiry. Next, following Vogt et al.'s (2004) recommendation, we organized a focus group with 14 academics in which the participants had to discuss further the main reasons behind the potential sources of academic frustration. We also integrated the generated insights into the detailed review of related literature, analysis of similar items and scales, and feedback from colleagues and personal anecdotes (Carlson et al., 2006). Subsequently, we allocated each insight to a wider category.

At the end of this process, 6 clusters were generated, centered on the dissatisfaction with: (1) red tape (i.e., red tape activities require considerable time, are overwhelming, and provoke irritation); (2) teaching and/or the relationship with students (i.e., students do not appreciate their teaching, are not well motivated, do not provide many stimuli, or are found to be not currently satisfied with their teaching activities in general academics); (3) job progression (i.e., the lack of meritocracy, unfair hiring

systems, and biased evaluation systems); (4) fundraising (i.e., fundraising activities require considerable time and are overwhelming, making it difficult to gain access to funds and find reliable partners; the university does not reward them accordingly in proportion to their fundraising capability); (5) peers (i.e., maintaining good relationships is difficult with peers who often do not provide adequate support or perceive a pronounced imbalance between their workload and that of their colleagues); (6) research evaluation (i.e., academics have the impression that peer-reviewed systems are not fair, the quality of reviewers is low, and ground-breaking papers receive extremely severe criticisms).

Item Allocation and Refinement

Drawing on the item generation phase, we moved to the item allocation and refinement step. We refined the wording and eliminated redundancy, retaining a pool of 21 items (Reich et al., 2018) as presented in Appendix A. Accordingly, the first version of the questionnaire was built. The items related to dissatisfaction with job progression and teaching/relationships with students have been reversed to check for acquiescence response bias (Herche & Engelland, 1996).

The questionnaire was administered in two waves to purify and validate a scale for academic frustration. This method has also been conducted with other scale development processes (e.g., Reich et al., 2018). In the first phase, we retained all 21 items to perform the first selection of items. Item allocation and refinement were based on a restricted sample of observations, whereas the scale validation procedure was enriched based on the generated evidence from the first wave of data collection. Then, in the second wave, we refined our questionnaire and thus validated our constructs on a sample of 312 academics.

After collecting a sample of 108 respondents, we moved to the data screening phase to detect unengaged participants, inconsistent responses, and potential outliers, leading to a pilot sample of 91 observations. This initial sample constituted the basis for principal component exploratory factor analysis (EFA) with a varimax rotation based on a correlation matrix. To identify the optimal number of factors, we relied on multiple criteria, including an assessment of eigenvalues and average variance extracted (AVE) (Ford et al., 1986; Stevens, 1992). Moreover, we checked for non-redundant items to avoid within-factor correlated measurement errors (Bagozzi & Yi, 1988).

After assessing different EFA models, the optimal number of factors for the principal component EFA was 4 (11 of the 21 initial items were empirically selected using the "nFactor" function in RStudio 3.6.2). Accordingly, we compared the principal component EFA model from the item generation phase with the optimal number of factors and obtained significantly better results in the second case. Furthermore, we conducted a confirmatory factor analysis (CFA) to ensure that the distinction is warranted. The results indicated that the four-factor model fits the data significantly better than the six-factor model (e.g., the RMSEA decreased from 0.064 to 0.015, whereas the goodness of fit increased from 0.818

Table 3 Principal component analysis of academic frustration

	Principal component 1	Principal component 2	Principal component 3	Principal component 4
RED1	0.761	0.042	−0.152	0.072
RED2	0.882	0.070	−0.123	0.110
RED3	0.903	−0.033	−0.091	0.124
TEA1	−0.011	0.822	0.046	0.242
TEA2	0.075	0.804	−0.101	−0.241
TEA3	0.024	0.756	0.091	0.115
PRO1	−0.091	0.210	0.714	−0.310
PRO2	−0.050	−0.192	0.803	0.061
PRO3	−0.342	0.112	0.702	−0.183
RES1	0.130	0.083	−0.200	0.836
RES2	0.143	0.051	−0.071	0.821
Proportion of variance	0.30	0.26	0.23	0.22
Cronbach's Alpha	0.828	0.710	0.663	0.686

to 0.929). Table 3 below reports the final configuration of the multi-dimensional construct from the principal component EFA.

Scale Validation

The last phase includes the determination of operational measures through the CFA model. This phase was conducted at the end of the second wave of data collection and is thus based on a sample of 312 academics (sample characteristics are reported in Table 1).

To assess the reliability of each subdimension belonging to our multi-dimensional conceptualization of academic frustration, we calculated Cronbach's alpha and AVE. Table 2 presents the standardized loadings for each selected item.

The final 11 items, grouped into 4 subdimensions, lead to our formative measure of academic frustration based on dissatisfaction with red tape, teaching/students, job progression, and research evaluation (Table 2). To assess the internal consistency of each subdimension, we verified that each reported subdimension exceeded the threshold of 0.70 (Nunnally, 1978).

To test convergent validity, we computed the AVE for each subdimension of academic frustration. The figures exceed the minimum threshold of 0.50. Then, we calculated the composite reliability values. The results were confirmatory of the validity as they exceed the threshold of 0.70 (Nunnally, 1978).

To evaluate discriminant validity, we estimated a model that set the correlation of two of the factors at 1 and compared it with the measurement model with the estimated correlations based on χ^2 values (Anderson & Gerbing, 1988). If the χ^2 value for the measurement model is significantly lower than the case in which the

Table 4 Correlation among variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Academic frustration	–												
2. Spin-off intentions	.034	–											
3. Startup intentions	.069	.566***	–										
4. Intention to change University	.135*	.204***	.310***	–									
5. Intention to leave Academia	.237***	.237***	.542***	.429***	–								
6 Entrepreneurial passion	.063	.428***	.460***	.226***	.254***	–							
7. Scientific passion	−.021	.145**	.025	.092	−.182***	.252***	–						
8. Years in Academia	−.054	−.078	−.162***	−.306***	−.339***	−.158***	−.050	–					
9. Academic position	−.095*	−.138**	−.229***	−.238***	−.379***	−.117**	−.033	.557***	–				
10. Scientific discipline	.117**	.145**	−.054	−.044	−.041	−.066	−.062	−.059	−.014	–			
11. Country	−.149***	.047	.074	−.006	−.141**	.006	.022	−.177***	.027	−.184**	–		
12. Kids	.057	.013	.016	−.027	−.041	.056	−.069	−.044	.150***	.350***	−.076	–	
13. Gender	.017	.035	−.032	−.017	−.050	−.017	−.043	−.041	.051	.474***	−.098*	.492***	–
Means	3.019	2.169	2.808	2.891	2.712	3.063	2.875	13.345	–	–	–	.404	–
Standard deviations	.510	1.13	1.246	1.342	1.325	1.107	1.052	10.230	–	–	–	.491	–

Numbers are rounded to the nearest thousand. ***$p<.01$; **$p<.05$; *$p<0.1$. $n=312$.

Table 5 Means and standard deviations across quadrants

	Scientific Passion			
	High	Low		
	Spin-off	Startup	High	Entrepreneurial passion
Academic frustration (AF)	3.226 (.454)	3.107 (.495)		
Scientific passion (SP)	3.154 (.981)	2.940 (1.075)		
Entrepreneurial passion (EP)	3.655 (.778)	3.604 (.837)		
AF x SP	10.489 (4.333)	9.518 (4.584)		
AF x EP	11.841 (3.234)	11.340 (3.542)		
SP x EP	11.674 (4.645)	10.800 (5.064)		
	Leave to another University	Leave outside University		
Academic frustration (AF)	3.147 (.485)	3.035 (.485)	Low	
Scientific passion (SP)	3.008 (.985)	2.662 (1.036)		
Entrepreneurial passion (EP)	3.149 (.987)	3.356 (.982)		
AF x SP	9.767 (4.324)	8.404 (4.322)		
AF x EP	10.018 (3.821)	10.327 (3.757)		
SP x EP	9.537 (4.654)	9.160 (4.789)		

correlation is forced to 1.00, then discriminant validity holds. In our model, this process required several χ^2 difference tests. The analysis outlined that the results were statistically significant, meeting the discriminant validity requirement. Finally, to assess the overall reliability of the overall construct, we computed the goodness of fit coefficients and RMSEA. The results reported in Table 2 show that each value exceeds the minimum thresholds set by extant literature (Ullman and Bentler, 2007).

Regarding the test for nomological validity of the academic frustration scale, we report the correlation coefficients and their statistical significance for the considered variables in Table 4 below. As illustrated, academic frustration is positively and significantly correlated with the intention to leave academia ($\rho = 0.237$, $p < 0.01$) and change the current university ($\rho = 0.135$, $p < 0.1$).

Moreover, academic frustration is negatively and significantly correlated with academic seniority as more advanced academic positions are less "academically" frustrated than younger scholars ($\rho = -0.095$, $p < 0.10$). As expected, academic frustration is positively correlated with spin-off and startup intentions and negatively correlated with scientific passion, though these figures do not reach statistical significance in our sample of academics.

Hypothesis Testing

To test our hypotheses, we consistently grouped individuals into four quadrants. Such quadrants were obtained by splitting the file according to the outcomes; each quadrant has participants with mean + 1 SD and above for each outcome, enabling us to focus on their conditions regarding passion and frustration and their interaction. As the outcomes are not necessarily exclusive, the quadrants do not necessarily consist of completely different respondents; the same academic can be present in two or more quadrants simultaneously. The analysis aims to compare these extreme groups.

Table 5 provides the descriptive statistics (means and SDs) for each construct and their interactions. To test the hypotheses, we conducted MANOVAs exploring the effects of conditions on a specific outcome and comparing across different conditions. The results indicate that academics significantly differ across the quadrants in scientific passion ($F[3, 375] = 3.776$, $p < 0.05$), entrepreneurial passion ($F[3, 375] = 6.274$, $p < 0.01$), the interaction between academic frustration and scientific passion ($F[3, 375] = 3.364$, $p < 0.05$), the interaction between academic frustration and entrepreneurial passion ($F[3, 375] = 4.824$, $p < 0.01$), and the interaction between scientific passion and entrepreneurial passion ($F[3, 375] = 4.855$, $p < 0.01$).

In the quadrant of the intention to startup, academics exhibit high levels of entrepreneurial passion ($M = 3.604$, $SD = 0.837$; significantly higher than in the intention to leave academia and intention to leave university quadrant; significantly higher than the general mean) and low levels of scientific passion ($M = 2.940$, $SD = 1.075$; significantly lower than in the spin-off quadrant; significantly lower than the general mean). Thus, hypothesis 1 is supported.

In the intention to leave academia (go outside the university setting) quadrant, academics exhibit low levels of entrepreneurial passion ($M = 3.356$, $SD = 0.982$; significantly lower than in the spin-off and startup quadrants; significantly lower than the general mean) and scientific passion ($M = 2.662$, $SD = 1.036$; significantly lower than in all other quadrants). Thus, hypothesis 2 is supported. The interaction between scientific and entrepreneurial passion is also significantly the lowest in this quadrant (compared with all other quadrants; $p < 0.05$).

In the intention to leave the current university but stay in the academia quadrant, academics exhibit low levels of entrepreneurial passion ($M = 3.149$, $SD = 0.987$; significantly lower than in all other quadrants) and high levels of scientific passion ($M = 3.008$, $SD = 0.985$; significantly higher than in the intention to startup and leave academia quadrants; significantly higher than the general mean). Thus, hypothesis 3 is supported.

In the spin-off intention, academics exhibit high levels of entrepreneurial passion ($M = 3.655$, $SD = 0.778$; significantly higher than in all other quadrants) and high levels of scientific passion ($M = 3.154$, $SD = 0.981$; significantly higher than in all other quadrants). Thus, hypothesis 4 is supported. The interaction between scientific and entrepreneurial passion is also significantly the highest in this quadrant (compared with all other quadrants; $p < 0.05$).

To enhance the methodological rigor and inspect the validity of our analysis, we carried out a number of robustness checks. First, we conducted a regression analysis

for each quadrant identified in our framework to introduce control variables for capturing the multifaceted nature of academic careers. These controls included country where the academics were currently working, gender, the number of published academic contributions, scientific discipline, and years within academia. The variable of country was incorporated as a control to discern the influences of varying higher education systems and cultural backgrounds, key for interpreting academic motivations and outcomes within an international context (Watt & Richardson, 2020). Gender was controlled for to unveil any differential career trajectories that could sway the results, acknowledging the gender disparities documented in academia (Santos et al., 2021). The number of published academic contributions was included as a proxy for academic productivity (Carpenter et al., 2014). Furthermore, scientific discipline was controlled for, allowing us to accommodate the distinct pressures and norms endemic to various fields of academic inquiry (Perkmann et al., 2021). Years within academia were also accounted for, given the pronounced difference in experiences and perspectives that typically distinguish between early-stage and senior academics (Cidlinská, 2019). Regarding the sample composition (see Table 1), we clarify that while Ph.D. students were included, they were in the minority (47 participants). The majority of participants were Assistant (98 participants), Associate (68 participants), and Full Professors (48 participants). This compositional information was functional to ensure that our results were not overly skewed by the unique circumstances of those early-career academics.

Moreover, we employed Jackknife Resampling techniques (Efron & Tibshirani, 1994; Miller, 1974). This procedure, running the regression models multiple times while systematically excluding individuals from certain countries or academic positions, was designed to detect any undue influence from specific subsets of data. The consistency of the results from this technique with our initial findings supported that the observed relationships were not contingent on specific subsamples of the sample. Lastly, we reassessed the robustness of our latent variable estimates. Initially, scores for latent constructs were derived using parallel approaches. In detail, we subjected these to re-evaluation using congeneric approaches (McNeish & Wolf, 2020) via the CLC estimator (Marzi et al., 2023), which provided an additional layer of robustness of our analysis.

Discussion

Theoretical Implications

Our study offers several theoretical implications. First, we respond to the call to reach higher specificity in studying the nuances of frustration in different contexts by providing a multi-dimensional measure of academic frustration (e.g., Sword et al., 2018; Torrisi & Pernagallo 2020). We introduce a multi-dimensional scale to assess academic frustration. This adds depth to the discourse surrounding individuals' challenges within the academic sphere. Importantly, our efforts complement existing scales that predominantly focus on dissatisfaction in general life domains

(e.g., Longo et al., 2016), providing researchers and practitioners with a tool to explore the nuanced multifaceted nature of educational settings.

Second, by identifying four possible outcomes from individual frustrations in academia, we provide a dual pathway model of academic frustration outcomes. Thus, we enrich the debate on the individual consequences of frustration in organizations. In doing so, we acknowledge the distinct nature of the academic working environment, which is more aptly characterized as a professional bureaucracy.

Moreover, our study underscores some issues behind academic institutions. The dynamics of academia, with its emphasis on intellectual pursuits, research endeavors, and pedagogical responsibilities, present a distinct set of challenges and opportunities compared to more rigidly structured organizational forms. Examining academia as a professional bureaucracy highlights the importance of professional expertise, autonomy, and collaborative engagement in the academic setting, factors that significantly influence the manifestation and consequences of frustration. Furthermore, this study extends the frustration-aggression theory (Fox & Spector, 1999; Spector, 1978). We unveil new layers of understanding regarding the interplay between frustration and subsequent individual reactions. This provides a bridge between the insights derived from frustration-aggression theory and the specific nuances of academic life, offering a tailored lens through which to analyze the consequences of frustration within the academia.

Acknowledging academic joy coexisting with frustration aligns with existing research that recognizes the multifaceted nature of academic experiences (Ssesanga & Garrett, 2005). Also, the investigation into the interplay between academic frustration, scientific passion, and entrepreneurial passion aligns with recent studies exploring the role of individual factors in academic career choices (Hayter & Parker, 2019; Sullivan & Al Ariss, 2021). As well as, our exploration of distinct intention outcomes, including spin-off initiatives, startup ventures, leaving academia, and changing university affiliations, builds on the evolving understanding of the diverse career paths pursued by academics (Huisman et al., 2002). The identification of scientific passion as a positive determinant for the intention to remain in academia echoes research emphasizing the role of intrinsic motivation and commitment in academic careers (Deci & Ryan, 2000).

Practical Implications

Our study offers numerous practical implications. Firstly, our findings elucidate that the roots of academic frustration are multifaceted. Gelbrich (2010) highlighted how frustrations often arise from unmet expectations or one's failure to achieve set goals. Recognizing this, policymakers need to address these intrinsic sources of academic frustration. Deploying regular surveys, feedback mechanisms, and intensive qualitative studies can shed light on academics' individual and collective psyche, ensuring tailored, context-specific interventions.

Secondly, academic frustrations stem from stress, anxiety, and irritations, which can impact motivation and goal achievement (Hart & Staveland, 1988). Bird (1989) and Cardon et al. (2009) emphasized the fervor entrepreneurs embody, suggesting a

possible pathway for those in academia with such leanings. Our study consistently suggests that policymakers should emphasize creating avenues that cater to scientific and entrepreneurial passions, balancing the needs of academics.

Thirdly, providing constructive exit options is crucial. Academics may decide to leave the academy when faced with overwhelming frustrations and stress (Gelbrich, 2010). Our research highlighted the interplay between academic frustration, scientific passion, and entrepreneurial inclinations. Policymakers should understand these nuances and provide avenues for both academic transitions and entrepreneurial pursuits. This might involve the development of flexible career development programs that cater to diverse aspirations, fostering an environment where individuals can pivot their academic trajectories without encountering undue barriers. Moreover, policymakers should recognize the value of entrepreneurial endeavors and the potential for innovation that arises when academics venture into non-traditional career paths. By providing resources, mentorship, and networking opportunities, they can encourage the cultivation of entrepreneurial skills within academic communities.

Fourthly, the evaluation of academic assessment systems is essential. With the growing demands on academics and increasing frustrations, Bertucci (2015) pointed out the pitfalls of the current academic structure, such as the pressure to delay world-changing endeavors until after achieving tenure. A culture that appreciates the multifaceted nature of academic contributions needs to be cultivated, encouraging scholars to explore innovative research, mentorship, and public outreach without the fear of being undervalued or hindered in their professional advancement.

Lastly, our results could center the attention around the potential of open communication. Alzaanin (2021) underscores the detrimental effects of excessive workloads and high expectations on academics, which can potentially decrease their passion for established goals and job satisfaction. Consistently, we underscore the need for transparent dialog and feedback mechanisms between faculty and administration. Addressing the roots of frustration, fostering support systems, offering meaningful exits, revamping evaluation systems, and fortifying communication channels, all contribute to an academic environment where frustrations are preemptively addressed and academics flourish.

Conclusion

At a certain point in their career, academics passionately discuss how toxic academia is. Academia can be a challenging place to work at due to numerous reasons: participating in a research grant lottery, competing with a group of people who do the same thing and often not share valuable information, feeling anxious every day when comparing publicly available research impact metrics with other colleagues, facing unfriendly university systems pushing academics to publish more and ensure new grants, and the possibility of failure regardless of their hard work as everything depends on the luck component. These reasons can trigger feelings of jealousy, anger, bitterness, disappointment, and despair, leading to high levels of frustration and thus a desire to leave academia. People who experience academic frustration and entrepreneurial passion will consider leaving academia to start their business

over time. However, if scientific passion remains dominant, academics may decide either to change the current university or spin-off into a research-related business. This research aims to stimulate further insights into the processes of how university systems should address this important issue and improve academia as a workplace. However, our study is not free of limitations. First, we validated our scales based on a relatively small sample characterized by data that were mainly collected from Italian, Slovenian, and English academics. Hence, the geographical scope of this study is narrower compared with the general study, which could limit generalizability (Netemeyer et al., 2003). Second, our study measures academic frustration in a self-reported assessment Likert scale: it represents a potential weakness because the susceptibility to response biases may compromise the validity of the assessments. Starting from our analysis, and adopting the newly developed scale, future research can enrich the academic debate on academics themselves, possibly enhancing our understanding and examining mitigation strategies regarding the identified sources of academic frustration.

Appendix A

Here, we report the full list of items that have emerged at the end of the item generation phase, allocated among six broad dimensions.

Dissatisfaction with Red tape:

1. Administrative activities take up too much of my working time
2. Managing bureaucracy at my institution is complex
3. I get frequently irritated by the level of red tape in my organization

Dissatisfaction with teaching/relationships with students

4. Students appreciate my teaching
5. My students are motivated
6. My students challenge me
7. I am satisfied with my teaching activity

Dissatisfaction with job progression

8. I have the impression there is no real meritocracy in the progression of academics
9. In my experience the hiring system is not objective
10. Evaluation systems in Academia are biased and do not really reflect the personal capability

Dissatisfaction with fund raising

11. It is extremely time-consuming to collect external research funds (writing projects, responds to EU calls etc.)
12. It is difficult to get funds for my research
13. It is difficult to find reliable research partners
14. I am not awarded for the fund I am able to raise
15. Spending research funds according to the norms and regulations is overwhelming

Dissatisfaction with relationship with peers

16. It is difficult for me to keep good relationship with many colleagues
17. Often I don't feel supported by my colleagues
18. There are big differences between my workload and my colleagues

Dissatisfaction with evaluation of research

19. I have the clear impression that ground-breaking papers receive severe criticism
20. In general I think that the peer review system is not fair
21. In my experience, the quality of reviewers is not high

Funding Open access funding provided by Università degli Studi di Trieste within the CRUI-CARE Agreement.

Declarations

Conflict of interest The authors declare that no competing financial interests or personal relationships could have appeared to influence the work reported in this paper. This research was supported by the Slovenian Research Agency (Grant Numbers J5-4574 and P5-0441).

References

Åkerlind, G.S. (2005) Postdoctoral researchers: roles, functions and career prospects. *Higher Education Research & Development 24*(1): 21–40

Aljabr, N., Chamakiotis, P., Petrakaki, D. and Newell, S. (2022) After-hours connectivity management strategies in academic work. *New Technology, Work and Employment 37*(2): 185–205

Alzaanin, E.I. (2021) Capturing the emotional experiences of English as a foreign language university teachers: a critical perspective. *Language Teaching Research 1362*: 1688211012863

Amsel, A., Ernhart, C.B. and Galbrecht, C.R. (1961) Magnitude of frustration effect and strength of antedating goal factors. *Psychological Reports 8*(2): 183–186

Anderson, J.C. and Gerbing, B. (1988) Structural equation modeling in practice: a review and recommended two-step approach. *Psychological Bulletin 103*(3): 411–423

Atta-Owusu, K. and Fitjar, R.D. (2022) What motivates academics for external engagement? Exploring the effects of motivational drivers and organizational fairness. *Science and Public Policy 49*(2): 201–218

Bagozzi, R.P. and Yi, Y. (1988) On the evaluation of structural equation models. *Journal of the Academy of Marketing Science 16*: 74–94

Balven, R., Fenters, V., Siegel, D.S. and Waldman, D. (2018) Academic entrepreneurship: the roles of identity, motivation, championing, education, work-life balance, and organizational justice. *Academy of Management Perspectives 32*(1): 21–42

Baum, J. R., Locke, E. A., & Smith, K. G. (2001). A multidimensional model of venture growth. *Academy of Management Journal*, *44*(2), 292–303.

Bedeian, A.G., Cavazos, D.E., Hunt, J.G. and Jauch, L.R. (2010) Doctoral degree prestige and the academic marketplace: a study of career mobility within the management discipline. *Academy of Management Learning & Education 9*: 11–25

Bertucci, M.E. (2015) Why, and how, to bridge the "Gap" before tenure: Peer-reviewed research may not be the only strategic move as a graduate student or young scholar. *Political Science & Politics 48*(4): 591–594

Billot, J. (2010) The imagined and the real: Identifying the tensions for academic identity. *Higher Education Research & Development 29*(6): 709–721

Biraglia, A. and Kadile, V. (2017) The role of entrepreneurial passion and creativity in developing entrepreneurial intentions: insights from American homebrewers. *Journal of Small Business Management 55*(1): 170–188

Bird, B. J. (1989). *Entrepreneurial Behavior*. New York, NY: Springer. https://doi.org/10.1007/978-1-4614-3858-8_100312

Cardon, M. S., Gregoire, D. A., Stevens, C. E., & Patel, P. C. (2013). Measuring entrepreneurial passion: Conceptual foundations and scale validation. *Journal of Business Venturing*, *28*(3), 373–396.

Cardon, M. S., Wincent, J., Singh, J., & Drnovsek, M. (2009). The nature and experience of entrepreneurial passion. *Academy of Management Review*, *34*(3), 511–532.

Carlson, D.S., Kacmar, K.M., Wayne, J.H. and Grzywacz, J.G. (2006) Measuring the positive side of the work–family interface: Development and validation of a work–family enrichment scale. *Journal of Vocational Behavior 68*(1): 131–164

Carpenter, C.R., Cone, D.C. and Sarli, C.C. (2014) Using publication metrics to highlight academic productivity and research impact. *Academic Emergency Medicine 21*(10): 1160–1172

Carvalho, T. and Santiago, R. (2010) Still academics after all…. *Higher Education Policy 23*: 397–411

Chen, X. P., Yao, X., & Kotha, S. (2009). Entrepreneur passion and preparedness in business plan presentations: a persuasion analysis of venture capitalists' funding decisions. *Academy of Management Journal*, *52*(1), 199–214.

Cidlinská, K. (2019) How not to scare off women: different needs of female early-stage researchers in STEM and SSH fields and the implications for support measures. *Higher Education 78*(2): 365–388

Clark, L.A. and Watson, D. (1995) Constructing validity: Basic issues in objective scale development. *Psychological Assessment 7*(3): 309–319

Cortina, J.M. (1993) What is coefficient alpha? An examination of theory and application. *Journal of Applied Psychology 78*(1): 98–104

Cronbach, L.J. and Meehl, P.E. (1955) Construct validity in psychological tests. *Psychological Bulletin 52*(4): 281–302

DeVillis, R.F. (1991) *Scale development: theory and applications*, Newbury Park, CA: Sage.
Dollard, J., Miller, N.E., Doob, L.W., Mowrer, O.H. and Sears, R.R. (1939) *Frustration and aggression*, New Haven, CT: Yale University Press.
Efron, B. and Tibshirani, R.J. (1994) *An introduction to the bootstrap*, CRC Press.
Ford, J.K., Maccallum, R.C. and Tair, M. (1986) The application of exploratory factor analysis in applied psychology: a critical review and analysis. *Personnel Psychology 39*(2): 291–314
Fox, S. and Spector, P.E. (1999) A model of work frustration–aggression. *Journal of Organizational Behavior 20*(6): 915–931
Fredman, N. and Doughney, J. (2012) Academic dissatisfaction, managerial change and neo-liberalism. *Higher Education 64*(1): 41–58
Gale, T. and Parker, S. (2015) To aspire: a systematic reflection on understanding aspirations in higher education. *The Australian Educational Researcher 42*: 139–153
Gelbrich, K. (2010) Anger, frustration, and helplessness after service failure: coping strategies and effective informational support. *Journal of the Academy of Marketing Science 38*(5): 567–585
Grüning, B. and De Angelis, G. (2022) The economic and cultural withdrawal of academic teaching in Italy: adjunct professors as a case study. *Higher Education Policy 35*(4): 833–854
Hart, S.G. and Staveland, L.E. (1988) Development of NASA-TLX (Task Load Index): results of empirical and theoretical research. *Advances in Psychology 52*: 139–183
Hayter, C.S. and Parker, M.A. (2019) Factors that influence the transition of university postdocs to non-academic scientific careers: an exploratory study. *Research Policy 48*(3): 556–570
Heacox, N.J. and Sorenson, R.C. (2007) Organizational frustration and aggressive behaviors. *Journal of Emotional Abuse 4*(3–4): 95–118
Herche, J. and Engelland, B. (1996) Reversed-polarity items and scale unidimensionality. *Journal of the Academy of Marketing Science 24*(4): 366–374
Hernaus, T. and Černe, M. (2021) *Becoming an organizational scholar*, UK, Cheltenham: Edward Elgar Publishing.
Hornstein, H.A. and de Guerre, D.W. (2006) Bureaucratic organizations are bad for our health. *Ivey Business Journal 1*(1): 1–4
Huisman, J. and Teelken, C. (2008) Changing conditions for the academic workforce. *Higher Education Policy 21*(3): 301–303
Huisman, J., De Weert, E. and Bartelse, J. (2002) Academic careers from a European perspective: the declining desirability of the faculty position. *The Journal of Higher Education 73*(1): 141–160
Huyghe, A., Knockaert, M. and Obschonka, M. (2016) Unraveling the "passion orchestra" in academia. *Journal of Business Venturing 31*(3): 344–364
Ibarra, H. (1999) Provisional selves: experimenting with image and identity in professional adaptation. *Administrative Science Quarterly 44*: 764–791
Fidelity Investments. 2020. Available at https://connect.chronicle.com/rs/931-EKA-218/images/Covid%26FacultyCareerPaths_Fidelity_ResearchBrief_v3%20%281%29.pdf. Last accessed November 11, 2022.
Jeronimus, B.F., Laceulle, O.M. 2017. Frustration. In book: *Encyclopedia of Personality and Individual Differences*, Ed. 1, Publisher: Springer, New York, Eds. Virgil Zeigler-Hill, & Todd K. Shackelford.
Kim, Y.B. (2011) Top ranked school students' coping of their academic underachievements and failure tolerance. *Korean Journal of Youth Studies. 18*: 31–47
Kinman, G. (2001) Pressure points: a review of research on stressors and strains in UK academics. *Educational Psychology 21*(4): 473–492
Kraimer, M.L., Greco, L., Seibert, S.E. and Sargent, L.D. (2019) An investigation of academic career success: the new tempo of academic life. *Academy of Management Learning & Education 18*(2): 128–152
Lawrence, T.B. and Robinson, S.L. (2007) Ain't misbehavin: workplace deviance as organizational resistance. *Journal of Management 33*(3): 378–394
Lee, Y. and Herrmann, P. (2021) Entrepreneurial passion: a systematic review and research opportunities. *Journal of Small Business Strategy 31*(3): 122–147
Lewandowski, C.A. (2003) Organizational factors contributing to worker frustration: the precursor to burnout. *Journal of Sociology & Social Welfare 30*(4): 175
Longo, Y., Gunz, A., Curtis, G.J. and Farsides, T. (2016) Measuring need satisfaction and frustration in educational and work contexts: the need satisfaction and frustration scale (NSFS). *Journal of Happiness Studies 17*(1): 295–317

Loveday, V. (2018). The neurotic academic: Anxiety, casualisation, and governance in the neoliberalising university. *Journal of Cultural Economy*, *11*(2), 154–166.
Mahmood, Z. (2009) Relationship between perceived parenting styles and levels of depression, anxiety, and frustration tolerance in female students. *Pakistan Journal of Psychological Research 24*(1): 63–78
Marzi, G., Balzano, M., Edigi, L. and Magrini, A. (2023) CLC Estimator: a tool for latent construct estimation via congeneric approaches in survey research. *Multivariate Behavioral Research. 21*: 1–5
McNeish, D.M. and Wolf, M.G. (2020) Thinking twice about sum scores. *Behavior Research Methods 52*(6): 2287–2305
Meyer, L.H. and Evans, I.M. (2005) Supporting academic staff: Meeting new expectations in higher education without compromising traditional faculty values. *Higher Education Policy 18*: 243–255
Miller, R.G. (1974) The jackknife-a review. *Biometrika 61*(1): 1–15
Mintzberg, H. (1979) *The structuring of organizations*, New Jersey: Englewood Cliffs.
Miranda, F.J., Chamorro, A. and Rubio, S. (2017) Determinants of the intention to create a spin-off in Spanish universities. *International Journal of Entrepreneurship and Innovation Management 21*(4–5): 299–317
Nasiru, A., Keat, O.Y. and Bhatti, M.A. (2015) Influence of perceived university support, perceived effective entrepreneurship education, perceived creativity disposition, entrepreneurial passion for inventing and founding on entrepreneurial intention. *Mediterranean Journal of Social Sciences 6*(3): 88–95
Neneh, B.N. (2020) Entrepreneurial passion and entrepreneurial intention: the role of social support and entrepreneurial self-efficacy. *Studies in Higher Education 47*(3): 1–17
Netemeyer, R.G., Bearden, W.O. and Sharma, S. (2003) *Scaling procedures: issues and applications*, Thousand Oaks: Sage Publications.
Nunnally, J.C. (1978) *Psychometric methods*, New York: McGraw-Hill.
Pappa, S., Elomaa, M. and Perälä-Littunen, S. (2020) Sources of stress and scholarly identity: the case of international doctoral students of education in Finland. *Higher Education 80*(1): 173–192
Perkmann, M., Salandra, R., Tartari, V., McKelvey, M. and Hughes, A. (2021) Academic engagement: a review of the literature 2011–2019. *Research Policy 50*(1): 104114
Permarupan, P.Y., Saufi, R.A., Kasim, R.S.R. and Balakrishnan, B.K. (2013) The impact of organizational climate on employee's work passion and organizational commitment. *Procedia-Social and Behavioral Sciences 107*(11): 88–95
Podsakoff, N.P. (2003) Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology 88*(5): 879–903
Postareff, L., Mattsson, M., Lindblom-Ylänne, S. and Hailikari, T. (2017) The complex relationship between emotions, approaches to learning, study success and study progress during the transition to university. *Higher Education 73*: 441–457
Powell, J.P., Barrett, E. and Shanker, V. (1983) How academics view their work. *Higher Education 12*: 297–313
Rasmussen, E. (2011) Understanding academic entrepreneurship: exploring the emergence of university spin-off ventures using process theories. *International Small Business Journal 29*(5): 448–471
Reich, B. J., Beck, J. T., & Price, J. (2018). Food as ideology: Measurement and validation of locavorism. *Journal of Consumer Research, 45*(4), 849–868.
Reio, T.G., Jr. (2011) Supervisor and coworker incivility: testing the work frustration-aggression model. *Advances in Developing Human Resources 13*(1): 54–68
Reviewer 2 must be stopped. Available at: https://www.facebook.com/groups/reviewer2/. Last accessed November 11, 2022.
Robinson, S.L. and Bennett, R.J. (1995) A typology of deviant workplace behaviors: a multidimensional scaling study. *Academy of Management Journal 38*(2): 555–572
Rosellini, R.A. and Seligman, M.E. (1975) Frustration and learned helplessness. *Journal of Experimental Psychology: Animal Behavior Processes 1*(2): 149–157
Ryan, R.M. and Deci, E.L. (2000) Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist 55*(1): 68
Ryan, J.F., Healy, R. and Sullivan, J. (2012) Oh, won't you stay? Predictors of faculty intent to leave a public research university. *Higher Education 63*(4): 421–437
Ryazanova, O. and McNamara, P. (2016) Socialization and proactive behavior: multilevel exploration of research productivity drivers in U.S. Business schools. *Academy of Management Learning & Education 15*(3): 525–548
Santos, J.M., Horta, H. and Amâncio, L. (2021) Research agendas of female and male academics: a new perspective on gender disparities in academia. *Gender and Education 33*(5): 625–643

Scaffidi, A.K. and 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

Shalley, C.E., Gilson, L.L. and Blum, T.C. (2000) Matching creativity requirements and the work environment: effects on satisfaction and intentions to leave. *Academy of Management Journal 43*(2): 215–223

Shi, S., Zhang, Z., Wang, Y., Yue, H., Wang, Z. and Qian, S. (2021) The relationship between college teachers' frustration tolerance and academic performance. *Frontiers in Psychology 12*: 517

Shin, J.C. and Jung, J. (2014) Academics job satisfaction and job stress across countries in the changing academic environments. *Higher Education 67*(5): 603–620

Spector, P.E. (1978) Organizational frustration: a model and review of the literature. *Personnel Psychology 31*(4): 815–829

Ssesanga, K. and Garrett, R.M. (2005) Job satisfaction of university academics: perspectives from Uganda. *Higher Education 50*: 33–56

Stevens, J. (1992) *Applied multivariate statistics for the social sciences*, New Jersey: Erlbaum.

Storms, P.L. and Spector, P.E. (1987) Relationships of organizational frustration with reported behavioural reactions: the moderating effect of locus of control. *Journal of Occupational Psychology 60*(3): 227–234

Sullivan, S.E. and Al Ariss, A. (2021) Making sense of different perspectives on career transitions: a review and agenda for future research. *Human Resource Management Review 31*(1): 100727

Thorsen, E.J. (1996) Stress in academe: what bothers professors? *Higher Education 31*(4): 471–489

Torrisi, B., & Pernagallo, G. (2020). Investigating the relationship between job satisfaction and academic brain drain: the Italian case. *Scientometrics*, *124*(2), 925–952.

Tóth-Király, I., Bőthe, B., Márki, A.N., Rigó, A. and Orosz, G. (2019) Two sides of the same coin: the differentiating role of need satisfaction and frustration in passion for screen-based activities. *European Journal of Social Psychology 49*(6): 1190–1205

Ullman, J.B. (2007) 'Structural equation modeling', in B.G. Tabachnick and L.S. Fildell (eds.) *Using multivariate statistics*, 15th edn, Boston: Pearson Education.

Vallerand, R.J. (2015) *The psychology of passion: A dualistic model*, New York, NY: Oxford University Press.

Vallerand, R.J., Blanchard, C., Mageau, G.A., Koestner, R., Ratelle, C., Leonard, M., et al. (2003) Les Passions De L'ame: on obsessive and harmonious passion. *Journal of Personality and Social Psychology 85*(4): 756–767

Velde, R.V.D., Blignaut van Westrhenen, N., Labrie, N.H. and Zweekhorst, M.B. (2021) 'The idea is nice… but not for me': first-year students' readiness for large-scale 'flipped lectures'—what (de) motivates them? *Higher Education 81*(6): 1157–1175

Vogt, D.S., King, D.W. and King, L.A. (2004) Focus groups in psychological assessment: enhancing content validity by consulting members of the target population. *Psychological Assessment 16*(3): 231

Waitere, H.J., Wright, J., Tremaine, M., Brown, S. and Pausé, C.J. (2011) Choosing whether to resist or reinforce the new managerialism: the impact of performance-based research funding on academic identity. *Higher Education Research & Development 30*(2): 205–217

Watt, H.M. and Richardson, P.W. (2020) Motivation of higher education faculty: (how) it matters! *International Journal of Educational Research 100*: 101533

Winter, R. (2009) Academic manager or managed academic? Academic identity schisms in higher education. *Journal of Higher Education Policy and Management 31*(2): 121–131

Wöhrer, V. (2014) To stay or to go? Narratives of early-stage sociologists about persisting in academia. *Higher Education Policy 27*(4): 469–487

Wood, M.S. (2011) A process model of academic entrepreneurship. *Business Horizons 54*(2): 153–161

Authors and Affiliations

Marco Balzano[1,2] · Guido Bortoluzzi[3] · Aldijana Bunjak[4] · Matej Černe[5]

✉ Guido Bortoluzzi
guido.bortoluzzi@deams.units.it

Marco Balzano
marco.balzano@unive.it

Aldijana Bunjak
aldijana.bunjak@uis.no

Matej Černe
matej.cerne@ef.uni-lj.si

1 Department of Management, Ca' Foscari University of Venice, Cannaregio 873, S. Giobbe, 30121 Venice, Italy

2 KTO Research Center, SKEMA Business School, 60 Rue Fedor Dostoïevski, 06902, Sophia Antipolis, France

3 DEAMS Department, University of Trieste, via Valerio 4/1-34127, Trieste, Italy

4 Business School, University of Stavanger, Kjell Arholms gate 35, 4021 Stavanger, Norway

5 School of Economics and Business, University of Ljubljana, Kardeljeva ploščad 17, 1000 Ljubljana, Slovenia