



Contents lists available at ScienceDirect

Journal of Business Venturing

journal homepage: www.elsevier.com/locate/jbusvent



How entrepreneurial intentions influence entrepreneurial career choices: The moderating influence of social context



Azzurra Meoli^{a,*}, Riccardo Fini^a, Maurizio Sobrero^a, Johan Wiklund^b

^a Department of Management, University of Bologna, Via Capo di Lucca, 34, 40126, Bologna, Italy

^b Whitman School of Management, Syracuse University, 721 University Ave, Syracuse, NY, 13244, United States

ARTICLE INFO

Keywords:

Entrepreneurial intention
Entrepreneurial career choice
New venture creation
Intention-behavior link
Graduate entrepreneurship

ABSTRACT

In this paper, we build on social cognitive career theory to examine the relation between entrepreneurial intention and new venture creation (i.e., the entrepreneurial career choice). We model how contextual influences at different levels may favor or inhibit the translation of entrepreneurial intention into new venture creation. Using unique longitudinal data from almost the entire population of Italian university graduates, we are able to assess how the immediate (i.e., the influence of relevant others) and larger context (i.e., organizational and environmental influences) affect new venture creation. Our research contributes to the emerging literature of the intention-behavior link in entrepreneurship.

1. Executive summary

The formation of entrepreneurial intentions is a popular topic in entrepreneurship research and entrepreneurial intentions are often used as a proxy for entrepreneurial action. However, entrepreneurial intentions often don't translate into action. This study builds on social cognitive career theory (SCCT, see Lent and Brown, 2013; Lent et al., 1994, 2000) to address how the social context of an individual complements entrepreneurial intentions to affect career transitions into entrepreneurship. Specifically, we show how context in terms of the immediate context surrounding the individual (i.e., the influence of relevant others), and the larger context (i.e., organizational and environmental influences) affects the relationship between entrepreneurial intention and new venture creation.

The empirical analysis is based on two-wave longitudinal survey data from the bulk of the population of Italian university students in their final year of study. Entrepreneurial intentions were measured before graduation. A year later, we collected information on new venture creation, to assess individuals' entrepreneurial career choice. Results show that context plays an important role in explaining why people do or do not act on their intentions. Relevant others and organizational influences enhance individuals' likelihood of creating a new venture, whereas environmental influences may inhibit new venture creation. These results are more pronounced for higher level of intentions vis-à-vis lower ones.

These findings add new knowledge to the intention-behavior relationship in entrepreneurship. Specifically, this study shows how context affects the process by which some individuals but not others decide to create a new venture. In practical terms, our research highlights the indispensable role of universities' professional services and dedicated infrastructures in supporting students with entrepreneurial intention in their process of new venture creation.

* Corresponding author.

E-mail addresses: azzurra.meoli@unibo.it (A. Meoli), riccardo.fini@unibo.it (R. Fini), maurizio.sobrero@unibo.it (M. Sobrero), jwiklund@syr.edu (J. Wiklund).

2. Introduction

The labor market has changed drastically in recent years. Workforce diversity, rapid technological changes, and increased globalization have transformed traditional organizational structures and work environments, leading to important changes in how individuals enact their careers (Sullivan and Baruch, 2009). As such, entrepreneurship is becoming a popular career option among younger generations, not least among university students (Edelman et al., 2016). Universities increasingly support such activities and scholars have started examining student entrepreneurship, often proxying it with the formation of entrepreneurial intentions (e.g., Criaco et al., 2017; Souitaris et al., 2007; Zellweger et al., 2011). Yet, recent research suggests that while many form entrepreneurial intentions, only a small fraction turn these intentions into any type of entrepreneurial behaviors (Goethner et al., 2012; Joensuu-Salo et al., 2015; Kautonen et al., 2015b; Rauch and Hulsink, 2015), let alone choosing entrepreneurship as their career¹. Thus, there is a growing interest in understanding the relationship between entrepreneurial intention and new venture creation. In this paper, we contribute to this developing literature.

The theory of planned behavior (Ajzen, 1991, 2011/2014) and the entrepreneurial event model (Shapero, 1984) are the main conceptual frameworks used to model the antecedents and consequences of entrepreneurial intentions. Although we agree that entrepreneurial intentions may constitute a necessary criterion for starting a new venture, we contend that they are not sufficient because other factors influence the extent to which entrepreneurial intentions turn into new venture creation. We therefore build on Bandura's social cognitive theory (e.g., Bandura, 1986), and specifically its application within the career literature (social cognitive career theory, [SCCT], see Lent and Brown, 2013; Lent et al., 1994, 2000). This theory emphasizes how social context, in particular social modeling, complements internal motivations in driving behavior. As such, it provides a comprehensive theoretical framework, allowing us to assess under what conditions entrepreneurial intentions lead to new venture creation.

We develop a theoretical framework that differentiates between more or less proximal contexts and defines their influence in transforming university graduates' intentions into new venture creation. The more proximal contexts are represented by the set of social relationships surrounding the prospective entrepreneurs, who interact with their family, peers, and mentors looking for support, role-models and advice. The more distal context is represented by the larger economic environment where intentions are developed, where individuals consider the alternatives available, and where they make their career choices influenced by associated resource constraints and opportunities. In between are the universities where graduates have studied and where they have (or do not have) the opportunity to benefit from different types of support targeting entrepreneurial activities.

We tested our framework using 20,754 valid responses to a two-wave longitudinal survey that covered entrepreneurial intentions and new venture creation for about 1/3 of all students who graduated from 64 Italian universities in the fall of 2014. The responses to the questionnaires were complemented by university-level information on structures dedicated to supporting students' entrepreneurship, which was retrieved from a unique database that included repeated annual information on all Italian universities between 2000 and 2014, and the population of its 55,000 academics (Bolzani et al., 2014). Data on the environmental and regional characteristics were retrieved from the statistical office of the European Union.

Our study provides several contributions to the study of the intention–behavior link in entrepreneurship. First, we expand and enrich the focus of entrepreneurial intentions and how they contribute to generating new ventures by leveraging SCCT to examine and model the role of contextual variables. In particular, we provide a consistent and parsimonious framework for examining how entrepreneurial intentions, together with contextual variables, influence venture creation and we expand the singular focus on individual intentions inherent in other intention models. Entrepreneurs are socially embedded (Aldrich and Ruef, 2006; Dahl and Sorenson, 2009); the context in which they operate influences outcomes (Aldrich and Zimmer, 1986). We need to disentangle the effect of such contextual influences to properly identify their roles and drivers, as we do in this paper.

Second, building on SCCT, which addresses how individuals form career interests and make related career choices, allows us to view new venture creation from a career perspective. We therefore link it to the wider body of career literature, which considers the decision to create a new venture as one of many options available to individuals in their process of choosing a career (e.g., Burton et al., 2016). Hence, adopting a career perspective, we may consider entrepreneurship as a first step along a career path.

Third, by developing and testing our intentional model on university graduates, we add new knowledge to the growing literature on academic entrepreneurship. As noted above, graduating students are particularly important in terms of academic entrepreneurship (e.g., Astebro et al., 2012; Wright and Mustar, 2019) but are also unique. They are at a stage when they are 'forced' to make a career choice. Unlike earlier-stage students or employees, they are unable to procrastinate their engagement in entrepreneurship by continuing their studies or remaining with an employer. Such procrastination is otherwise common among other types of individuals (e.g., McMullen and Shepherd, 2006; van Gelderen et al., 2015). This brings particular salience to whether they act on their intentions. Understanding why they choose entrepreneurship as a career path is also relevant because initial career choices tend to have long-lasting implications for an individual's professional and personal life.

3. Prior research on entrepreneurial intentions and behavior

The creation of a new venture is often viewed as an intentional, planned behavior (e.g., Krueger, 1993; Krueger et al., 2000) and entrepreneurial intentions have therefore received extensive attention in the entrepreneurship literature (e.g., Bird, 1988; Kolvereid,

¹ We will hereafter refer to "new venture creation" as the students' choice to start a career as entrepreneurs. We intend new-venture creation to be a means of enacting the entrepreneurial career choice.

1996; Krueger, 1993; Krueger et al., 2000). This research is inspired by the broader body of intention literature, which generally finds reasonable correlations between intentions and subsequent behavior. For example, a meta-analysis of the theory of planned behavior (TPB, see Ajzen, 1991, 2011/2014) shows that intentions explain between 20 % and 30 % of the variance in behavior (Armitage and Conner, 2001). Similarly, another systematic review finds that across a range of behaviors intentions account for 28 % of the variance on average (Sheeran, 2002). This means that 70%–80 % of the variance of how intentions are transformed into behaviors remains unexplained, suggesting an important role for additional explanatory factors (Sheeran, 2002).

An important element to consider is that intentions can explain some behaviors better than others. Entrepreneurship is likely among those behaviors that are explained poorly by intentions alone. First, intentions predict behaviors better when related to a single action (e.g., exercise or dieting) than when representing the outcome of a series of actions performed over time (Sheeran, 2002). Moreover, intentions predict behaviors that are under strict volitional control (e.g., eating healthy) better than those influenced by external conditions or the actions of others (Sheeran, 2002). Next, intentions better predict behaviors that are simple (e.g., choosing a healthy menu option) rather than complex (Sheeran and Orbell, 2000). Finally, intentions better predict behaviors with ultimate outcomes that occur soon after the act (e.g., voting in an election) and with a relatively clear link between actions and outcomes (e.g., donating blood; e.g., Ajzen, 1991).

Entrepreneurship meets few of the characteristics of behaviors that are strongly influenced by intentions because entrepreneurship is complex, consists of many actions, entails high uncertainty, is not under strict volitional control, and is characterized by a long lag between actions and outcomes. The intention–behavior link in the entrepreneurial context may therefore be weaker than in many other contexts (Orbeil et al., 1997), suggesting that intention alone is not an ideal predictor of entrepreneurial behavior.

We therefore conducted a systematic review² to locate the relevant literature (the resulting papers are presented in Table 1). Although the first applications of intentions and TPB in the entrepreneurship context hailed at least as far back as 1993 (i.e., Krueger and Carsrud, 1993), the first study examining how intentions influence entrepreneurial behavior was published as recently as 2012.

To date, 13 empirical studies have been published. Four studies (i.e., Goethner et al., 2012; Joensuu-Salo et al., 2015; Kautonen et al., 2015b; Rauch and Hulsink, 2015) examined only the direct link between intentions and behavior. They found that intentions predict behavior, but the explanatory power of intentions was weak for the reasons we observe in our paper.

The remaining studies tested the effect of moderators. One of these studies (Kautonen et al., 2013) provided justification for the interaction based on TPB (perceived behavior control is the moderator). The remaining ones drew on some alternative theories, or followed an empirical approach to identify the moderators. Six of these studies examined individual-level moderators or mediators, such as sex (Shinnar et al., 2018); action planning and positive fantasies (Gielnik et al., 2014); action-related emotions (van Gelderen et al., 2015); age-based self-image (Kautonen et al., 2015a); career motivations (Delanoë-Gueguen and Liñán, 2018); or proactive personality (Neneh, 2019). The last two studies examined how context moderates the relationship between intentions and behavior, as we do in our study. Kibler et al. (2014) examined how the self-perceived regional social legitimacy of entrepreneurship moderates the relationship. In addition to studying how age and gender moderate the relationship between intentions and entrepreneurial behavior, Shirokova et al. (2015) examined the following moderators: family business background, university support for student entrepreneurship, and self-perceived societal uncertainty avoidance.

In terms of dependent variables capturing entrepreneurial behavior, these studies varied greatly. Several relied on the Panel Study of Entrepreneurial Dynamics (PSED) for identifying the behaviors related to nascent entrepreneurship (e.g., informal contacts with potential customers or working on a business plan). Others asked a single question related to the extent of engagement in business startup (Delanoë-Gueguen and Linan, 2018; Joensuu-Salo et al., 2015); the commitment in terms of effort, time, and money spent (Kautonen et al., 2015a, 2015b; Kibler et al., 2014; van Gelderen et al., 2015); the level of action ranging from taking no action to completing the startup of a business (Kautonen et al., 2013; Shinnar et al., 2018); and whether or not a business had been started (Gielnik et al., 2014; Goethner et al., 2012).

This detailed literature review helped us to position our contribution vis-à-vis the cutting edge of literature in the field. In particular, this paper differentiates itself for the following reasons. First, the dominant theory applied in the context of entrepreneurial behavior and intentions is exclusively TPB. We show why and how SCCT is a feasible alternative, allowing us to view new venture creation from a career perspective and to link it to the wider body of career literature, as has been called for in this literature (e.g., Burton et al., 2016). Second, we provide a consistent and parsimonious theoretical framework for identifying relevant moderators, going beyond Kautonen et al. (2013) who focused only on perceived behavior control, and Kibler et al. (2014) and Shirokova et al. (2015), who either focused on specific contextual variables or relied on prior empirical findings to identify the boundary conditions. Third, as we were interested in entrepreneurship as a career choice, we examined actual venture creation as a dependent variable. Not until the business has been created can the actual career choice be considered made. Previous research has focused on initial engagement in (nascent) entrepreneurship rather than actual business startup (Kibler et al., 2014; Shirokova et al., 2015). Finally, we relied on longitudinal data on a sample of individuals who were about to make an important career choice, and then measured the outcome after that choice, as with cross-sectional data it is likely that the behavior itself influences intention

² Relevant papers were located using Scopus. Two sets of keywords (“intention”) AND (“entrepreneurial behavior*” OR “start-up” OR “action*” OR “new-venture”) were searched for in titles and abstracts. This search produced 680 documents. After excluding conference papers, reviews, books, book chapters, and journal articles that did not deal with the intention–behavior link, we retained 43 articles. We read them and included 13 of them in the literature review that dealt specifically with the intention–behavior link (i.e., measuring intention and consequent behavior) and were relevant for the development of our theory.

Table 1
Summary of Studies Linking Entrepreneurial Intention and Behavior.

Authors	Dependent Variable (Theoretical Construct)	Dependent Variable (Measure)	Main Independent Variables	Moderator	Sample	Findings
Goethner et al. (2012)	Academic entrepreneurship (behavior)	Participation in the founding of a firm	Entrepreneurial intention	None	496 scientists. Longitudinal data	Entrepreneurial intentions forecasted entrepreneurial behavior while certain barriers had a diminishing influence on this relationship.
Kautonen et al. (2013)	Entrepreneurial behavior	Entrepreneurial behavior measured as an ordinal variable: (0) Not considering starting a business; (1) Thinking about it; (2) Taking steps; (3) Started in last 3 years	1. Entrepreneurial intention 2. Attitude 3. Perceived behavioral control 4. Subjective norms	Perceived behavior control	117 random individuals. Longitudinal data	Attitude, perceived behavioral control, and subjective norms were significant predictors of entrepreneurial intention; and intention and perceived behavioral control were significant predictors of subsequent behavior.
Gielnik et al. (2014)	New venture creation	New venture creation measured as a dummy variable: (1) started a new venture; (0) otherwise	1. Entrepreneurial intention 2. Positive fantasies 3. Action planning	1. Action planning 2. Time	96 nascent entrepreneurs. Longitudinal data	Entrepreneurial intention positively affected new venture creation. Action planning moderated the effects of entrepreneurial goal intentions and positive fantasies on new venture creation.
Kibler et al. (2014)	Start-up behavior	Start-up behavior measured with three items that addressed the amount of effort, time, and money the individual spent towards starting a business	Entrepreneurial intention	Regional social legitimacy	984 random individuals. Longitudinal data	Entrepreneurial intention positively predicted behavior. The effect of intention was stronger when regional social legitimacy was high. However, the effect varied depending on the socio-economic features of the region.
Joensuu-Salo et al. (2015)	Entrepreneurial behavior	Measured by "are you currently starting your own business? (e.g., you are working on a business idea or other plans)"	1. Attitude 2. Perceived behavioral control 3. Subjective norms	None	3754 students. Cross sectional data	Entrepreneurial intention and characteristics (innovativeness, tolerance of ambiguity, creative problem solving) positively affected behavior.
Kautonen et al. (2015a)	Entrepreneurial behavior	Entrepreneurial behavior measured with three items that addressed the amount of effort, time, and money the individual spent towards starting a business	Entrepreneurial intention	Age-based self-image	672 random individuals. Longitudinal data	Individual's age-based self-image moderated the entrepreneurial intention-behavior link: the positive entrepreneurial potential in terms of individuals' age positively affected the likelihood of turning start-up intention into subsequent behavior.
Kautonen et al. (2015b)	Entrepreneurial behavior	Entrepreneurial behavior measured with three items that addressed the amount of effort, time, and money the individual spent towards starting a business	Entrepreneurial intention	None	969 random individuals. Longitudinal data	Entrepreneurial intention and perceived behavioral control were significant predictors of subsequent behavior. They explained 31% of the variation in subsequent behavior.
Rauch and Huisink (2015)	Entrepreneurial behavior	Entrepreneurial behavior measured with a list of 19 behaviors covering an entire set of activities associated with the creation of a new business venture	Entrepreneurial intention	None	74 students. Longitudinal data	The intention to become an entrepreneur affected entrepreneurial behavior, and entrepreneurship education had a positive impact on entrepreneurial behavior.
Shirokova et al. (2015)	Scope of start-up activities	Entrepreneurial behavior measured with a list of start-up activities adopted from Global Entrepreneurship Monitor (GEM) and Panel Study of Entrepreneurial Dynamics (PSED)	Entrepreneurial intention	1. Family entrepreneurial background 2. Gender 3. Age	70,164 graduating students (GUESS data). Gross sectional data	There was a significant positive association between entrepreneurial intentions and the scope of start-up activities. This association was reinforced or weakened by a set of factors (see moderator column).

(continued on next page)

Table 1 (continued)

Authors	Dependent Variable (Theoretical Construct)	Dependent Variable (Measure)	Main Independent Variables	Moderator	Sample	Findings
Van Gelderen et al. (2015)	Taking action	Taking action measured with three items that addressed the amount of effort, time, and money the individual spent for starting a business	Entrepreneurial intention	5. Uncertainty avoidance 1. Trait self-control 2. Action doubt 3. Action fear 4. Action aversion	161 random individuals. Longitudinal data	Entrepreneurial intention positively predicted behavior. Self-control positively moderated the relationship between intention and action, and countered the rise of action-related fear, doubt, and aversion.
Delanoë-Gueguen Lafán (2018)	Entrepreneurial behavior	Entrepreneurial behavior measured as a dummy variable that was: (1) if the individual was involved in a start-up project; (0) otherwise	Entrepreneurial intention	1. Promotion- related career motivations 2. Prevention related motivations	155 graduating students. Longitudinal data	The prevention-related motivation of job security played a predominant inhibiting role throughout the process. Meanwhile, autonomy and managing the whole process, both promotion-related aspects, exerted their positive influence at different stages of the entrepreneurial journey, respectively
Shinnar et al. (2018)	Start-up behavior	Entrepreneurial behavior measured as an ordinal variable: (0) not started a business; (1) undertaken at least one activity for starting a business (2) created a new business	Entrepreneurial intention	Gender	179 undergraduate students. Longitudinal data	Entrepreneurial intention positively predicted start-up behaviors. Men were more likely to act on their intentions compared to women.
Neneh (2019)	Entrepreneurial behavior	Entrepreneurial behavior measured by counting the number of gestational activities performed (nine items)	Entrepreneurial intention	1. Alertness- trait competitiveness 2. Proactive personality	533 students. Cross- sectional data	There was a link between entrepreneurial intention and subsequent behavior, which was positively moderated by individuals' proactive personality.

strength (see e.g., Delmar and Wiklund, 2008). The following sections develop and show the testing of our socio-cognitive model of entrepreneurial career choice.

4. A socio-cognitive model of entrepreneurial career choice: the case for context

To develop our theory, we drew from career literature and incorporated grounded ideas from entrepreneurship theory and practice to propose a model for examining how entrepreneurial intentions and contextual variables influence new venture creation. Social cognitive career theory (SCCT, see Lent and Brown, 2013; Lent et al., 1994, 2000) builds on Bandura's social cognitive theory (Bandura, 1986) to address how the social context in which an individual is nested complements the individual's intention to engage in a given career, affecting career transitions (Lent and Brown, 2013). SCCT is one of the most accepted and validated models that explain the process by which individuals form career interests and make related career choices. In particular, in SCCT, contextual influences moderate the relationship between intention and career behavior, namely the process by which individuals form and implement career choices by reinforcing the relationship under favorable environmental conditions and by weakening it under less favorable ones (Lent et al., 2000). A career approach, therefore, could help clarify how individuals' entrepreneurial intention is translated into an entrepreneurial career choice by the creation of a new venture.

The effect of contextual influences often depends on how individuals assess and respond because any opportunity, resource, or difficulty faced is affected by individual interpretation (Astin, 1984; Lent et al., 2000; Vondracek et al., 1986). We are more likely to translate our interests into goals and act upon them if we perceive the environment supports us (Lent et al., 2000). For example, research shows how the support of fathers influences the educational plans and career expectations of high school girls (McWhirter et al., 1998), and faculty support and encouragement among engineering students correlates with their academic performance (Hackett et al., 1992) as well as persistence (Schaefers et al., 1997). Conversely, we are less likely to engage in career paths if we perceive that our efforts in those directions are impeded by contextual factors. For example, workplace discrimination has been used to explain difficulties related to the career development of women (Richie et al., 1997; Swanson et al., 1996) and racial-ethnic minority group members (Swanson et al., 1996).

SCCT therefore deviates from intentional theories typically applied in entrepreneurship, such as the entrepreneurial events model and the theory of planned behavior (see Schlaegel and Koenig, 2014 for a review). Both theories are purely psychological and place intentions at center stage. Although we agree that entrepreneurial intentions are the starting point in the journey of new venture creation, studies have shown that intentions alone are not sufficient (Kautonen et al., 2015a; Kibler et al., 2014; Shirokova et al., 2015; van Gelderen et al., 2015) and other factors affect the extent to which entrepreneurial intentions lead to new venture creation.

As with intention theories, SCCT recognizes the direct path between career interests (intentions) and subsequent career choices. At the same time, however, it emphasizes that contextual influences affect how the process unfolds and how individuals' interests are translated into actual choices. As such, individuals are influenced in their choices by perceived and objective characteristics of the context, and several proximal, or less proximal, facets influence the relationship between intentions and career-related choices. In particular, Lent et al. (1994) suggested that the environment might be represented as a series of concentric circles that surrounds individuals. The person can be seen as nested in the inner circle surrounded by their immediate social contacts (i.e., family, friends, and mentors), which is in turn encircled by the larger societal context (e.g., organization and macroeconomic conditions).

The following paragraphs develop a set of hypotheses on how these different contextual conditions may support or hinder the translation of graduates' entrepreneurial intentions into an entrepreneurial career choice. Fig. 1 summarizes our conceptual model.

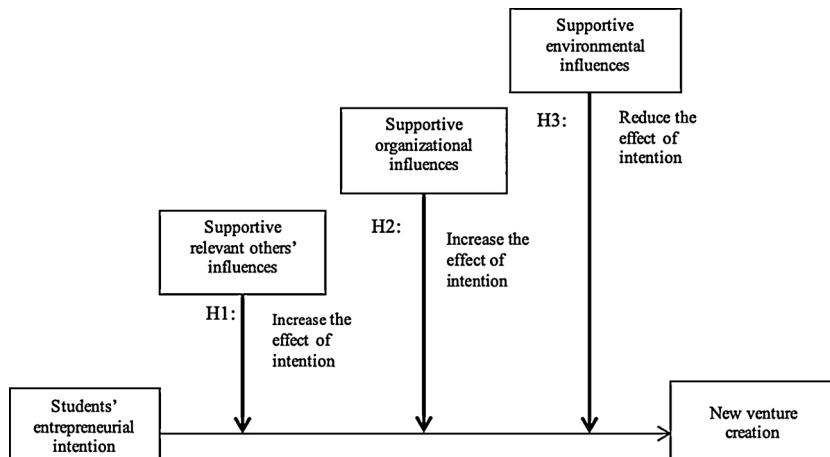


Fig. 1. Conceptual Model.

4.1. Relevant others' influences

According to SCCT, the process by which individuals form career interest and then implement related career choices is affected by environmental characteristics (Lent et al., 2000). In particular, the inner circle, which is represented by individuals' relevant others (i.e., family, peers, mentors), invariably influences their career choices.

For graduates who are making career-related decisions and are at the brink of entering the labor market for the first time, the behaviors and opinions of relevant others might be critical. They have very limited prior personal experience on which to base their career choices and turn to other sources for inspiration. The decision to start a new venture is risky and surrounded by uncertainty. In conditions of uncertainty, individuals typically experience anxiety and fear, which tend to block engagement in action and lead to procrastination and inaction (e.g., Paulus, 2007). Moreover, entrepreneurial behavior is complex and it is difficult to know what actions to perform, as well as the likely outcomes of different actions. In the process of starting a new venture, individuals face unique challenges related to acquiring the human, financial, and physical resources needed (Bolzani et al., 2019; Sorenson and Audia, 2000).

Relevant others (i.e., family, peers, and mentors) may serve as a "filter that distills perception of structural barriers" (Lent et al., 2000, p. 45). People tend to observe, be inspired by, and mimic those whom they admire and respect. Such social modeling involves not only understanding of appropriate courses of action, but also the motivation to engage in that behavior and confidence in one own's ability to perform the actions required for the desired outcomes successfully. Thus, relevant others provide access to valuable information (Kacperczyk, 2013), help build relevant knowledge (Baron and Henry, 2010) and provide critical resources (Brush et al., 2001; Hansen, 1995) that may mitigate perceptions of fear, uncertainty, and barriers constraining the career choice of individuals (Lent et al., 2000).

As noted, family, peers, and mentors exert particularly strong influence in the career process. Family represents the earliest and most immediate relational set in which graduates are embedded and its influences on entrepreneurship have been examined comprehensively in entrepreneurship literature, showing the importance of family as a source of early-stage funding (Bygrave et al., 2003; Steier, 2003), information, contacts (Steier, 2007, 2009), and moral support (Renzulli et al., 2000). In the specific context of student entrepreneurship, a recent study of Edelman et al. (2016) showed how family plays a critical role for graduates who decide to enter entrepreneurship, providing instrumental support in terms of social and financial capital and social relationships. In particular, family social capital positively affects the scope of start-up activities, while family financial capital is negatively associated with start-up activities (Edelman et al., 2016).

Also, by being aware of and observing the entrepreneurial activities of student peers, university graduates can understand what is required to operate a business, find motivation for engaging in entrepreneurship, and increase their confidence in taking another step forward. Several studies (e.g., Kacperczyk, 2013; Lazear, 2004; Nanda and Sørensen, 2010; Sørensen, 2007) showed that individuals in the workplace engage in social interactions that facilitate information exchange, knowledge acquisition, and the development of individuals' attitudes and values toward entrepreneurship. In particular, Bercovitz and Feldman (2008) provided evidence that individuals, in the workplace, are more likely to engage in entrepreneurial activities if their local peers are actively involved in entrepreneurship. Thus, having peers with prior entrepreneurial experiences increase the likelihood of becoming entrepreneurs (Bercovitz and Feldman, 2008; Kacperczyk, 2013; Nanda and Sørensen, 2010). University peers are students' workplace relational set and represent a second relevant source of direct social influence. Being connected with individuals at university who have already managed the entrepreneurial process reduces uncertainty about entrepreneurship for those students.

University professors, finally, can represent critical mentors for university graduates. They serve as role models and provide information, access to networks, and practical skills (Hayter et al., 2017). In the case of graduate students, being surrounded by professors engaged in entrepreneurship might support the translation of entrepreneurial intentions into the creation of a new venture. In an organization, a mentor is defined as a senior member who provides support, advice, and feedback to a less experienced member for their career and personal development (Hunt and Michael, 1983; Kram, 1985; Noe et al., 2002). Mentors share valuable knowledge and experience, and individuals exposed to mentoring engage in vicarious learning: they observe actions, retain information, assimilate ideas, and create new knowledge (Bandura, 1977; Holcomb et al., 2009; Kram, 1996; Kolb and Kolb, 2005; Lankau and Scandura, 2002).

Taken all together, the abovementioned arguments suggest that the multi-faceted support provided by the relevant others of graduates (i.e., family, peers, and mentors) could strengthen the relation between entrepreneurial intention and new venture creation. We therefore hypothesize the following:

Hypothesis 1. *The effect of entrepreneurial intention on new venture creation is stronger when graduates are exposed to supportive relevant others.*

4.2. Organizational influences

The organizational environment is the second circle surrounding any individual. It provides additional support in career process development, providing the knowledge, skills, and motivation necessary to address uncertainty and foster the pursuit of career interests. Universities in particular are the specific organizational environment in which students are embedded during their curricular activities and, increasingly so, during extra-curricular ones. In the last decades, universities have changed their strategic behavior, becoming a space for potential opportunities and a constant source of innovation (Etzkowitz et al., 2000). They are playing an active role in the promotion and support of the entrepreneurial activities of their community and in particular of those of their students (Astebro et al., 2012). They have become a source of new entrepreneurs, not only among academics but also among students,

creating new generations of entrepreneurs (Torrance et al., 2013).

To do so, universities started putting in place different initiatives. First of all, in the past decade, they have increased dramatically the number of entrepreneurship-related courses (European Commission, 2012; Eesley et al., 2016; Hoppe, 2016). These courses offer specific entrepreneurship knowledge and skills for starting a new venture or acting more entrepreneurially, and support the message that entrepreneurship is both socially accepted and represents an alternative career path to employment (Walter et al., 2013). A second critical initiative is the development by universities of programs supporting entrepreneurship that encourage students to engage in the entrepreneurial process. These programs include activities such as business plan competitions, incubators, accelerators, or mentoring programs designed to support the development of students' entrepreneurial ideas at different stages (Nielsen and Lassen, 2012; Shirokova et al., 2015). They provide the opportunity to experience entrepreneurship, test prototypes, and develop networks and relevant ties that may provide access to critical resources necessary for the creation of a new venture. For example, students might get in touch with venture capitalists, successful entrepreneurs, and experienced mentors, to facilitate entrepreneurial opportunity exploitation. Finally, the strategic role of the technology transfer office (TTO) has changed over the years. In the early 80 s, it was created to develop competence and resources to support patenting and technology transfer activities among academics (Siegel et al., 2007), and to act as a hub between academia and business. To date, as universities have focused more on entrepreneurship, TTOs have started developing more entrepreneurial competencies in order to support the new venture creation process and the diffusion of an entrepreneurial culture among academics and students (Matt and Schaffer, 2018).

Taken all together, these elements show how universities are working to create an environment for their students that is supportive for individuals who have an interest in becoming an entrepreneur, enhancing their motivation and capabilities (Walter et al., 2013). Being a graduate of a university that is proactively working along these lines can therefore make a significant difference by helping to remove individuals' perception of barriers and difficulties and exert a significant positive effect on the intention–new venture creation relationship. Therefore, we hypothesize:

Hypothesis 2. *The effect of entrepreneurial intention on new venture creation is stronger when graduates are exposed to supportive organizational influences.*

4.3. Environmental influences

In the process of making career choices, individuals are influenced not only by their proximal circles (i.e., relevant others and organizational influences), but they are also affected by the objective and perceived larger environment. In particular, Lent et al. (2000) argued that in the process of translating career intentions into choices, individuals may choose to avoid the path chosen because they perceive insurmountable barriers to entering or advancing in their career. Moreover, barriers are domain and context specific, and they prevent a course of action but not all the alternatives (Lent et al., 2000).

Research on the regional dimension of entrepreneurship has identified and assessed the importance of structural and demographic characteristics (Armington and Acs, 2002; Reynolds et al., 1994), as well as cultural (e.g., Shinnar et al., 2012) and institutional ones (Engle et al., 2011). In particular, supportive environmental influences, such as regional economic prosperity, provide the enabling conditions for the creation of a new venture: the affluence of a region affects the ease at which people can enact entrepreneurial careers (Audretsch and Keilbach, 2004; Bergmann et al., 2016; Reynolds et al., 2004). Therefore, economic prosperity is expected to affect entrepreneurship positively, being that a wealthy context stimulates consumption and investments, which in turn lead to the creation of more entrepreneurial opportunities (Audretsch and Keilbach, 2004). Thus, individuals in wealthy contexts may perceive the availability of more entrepreneurial opportunities, which may increase their willingness to create a new venture (Bosma and Schutjens, 2011). In addition, studies on science-based entrepreneurship have shown that regional economic prosperity is positively related to the quantity and quality of academic spin-offs in the region (Audretsch and Lehmann, 2005; Casper, 2013). However, in a recent study on student entrepreneurs, Bergmann et al. (2016) provided evidence that regional economic prosperity may not increase students' propensity to enter entrepreneurship. In particular, regional prosperity does not affect venture creation per se, but strongly predicts venture survival and growth. In a career-choice context like ours, this suggests a competition between responding to a vibrant job market, rich with opportunities and eager to recruit new graduates, and the possibility of pursuing one's own venture by leveraging the favorable characteristics of the regional economic environment.

Becoming an entrepreneur is one of the most complex, risky and unstructured choice that an individual can make (Campbell, 1992). In a wealthy context characterized by an abundance of job opportunities, the opportunity costs of entrepreneurship might also increase (Bosma and Schutjens, 2011), particularly for graduates entering the job market for the first time. It then follows that environmental influences, proxied by the economic conditions of a region, might have different and contrasting effects on the relationship between entrepreneurial intentions and new venture creation depending on which type of individuals we are referring to. For instance, a wealthy and developed regional context may facilitate academics to act upon their intentions and establish a spin-off (Aldridge and Audretsch, 2011), but it may hinder students' intentions to create a new venture because they might be attracted by other career opportunities offered by the context.

Hence, for supportive environmental influences, graduates with intentions to start a new venture might be less likely to translate their intentions into new venture creation, because attracted by other job opportunities. Therefore, we suggest that:

Hypothesis 3. *The effect of entrepreneurial intention on new venture creation is weaker when graduates are exposed to supportive environmental influences.*

5. Research design

5.1. Research design and sample

To test our hypotheses, we needed data on individuals who were in a particular career stage and exposed to contextual characteristics relevant for their career transition. We also needed to observe individuals over time. We therefore built a unique dataset.

Our data were collected as part of the annual survey of Italian university seniors administered by AlmaLaurea, an inter-university consortium including, as of 2015, 64 of 96 Italian universities (www.alma-laurea.it/en). Taken together, these 64 universities enroll 90 % of Italian university students. Since 1998, the survey has been sent to students, usually a month before their graduation date, with an average yearly response rate of about 94 %. The survey gathers detailed demographic and personal information. Respondents are polled further one year after graduation to monitor their employment status.

The original questionnaire and its follow-up were modified to collect specific information on the intention to start a new venture and on the enactment of such intention. Between September and December 2014, this modified version of the survey was sent out to the 64,710 students graduating at the end of the year from the 64 participating universities, with a response rate of 94 % (61,115 responses). In Round 1, we collected data on individuals' entrepreneurial intentions and several other control variables. Twelve months later, between September and December 2015, the 61,115 Round 1 respondents were surveyed again, with 23,456 responses and a 37 % response rate. This Round 2 focused on our dependent variable: new venture creation.

After checking for missing values, the final dataset used 20,754 responses and covered the entrepreneurial intentions and new venture creation of about 1/3 of all students who graduated from 64 Italian universities in fall of 2014. The mean age of the respondents at graduation was 25 years; 61 % were female; 62 % completed a bachelor's degree; and 27 % completed a master's degree or above. The remaining completed a single cycle degree (10 %) and old cycle degree³ (1 %). About 52 % were in STEMM (science, technology, engineering, math and medicine), 39 % in social sciences, with the remaining 9 % in humanities or sports education. In order to have a homogenous dataset, we excluded the very low percentage of foreign students from the sample (about 500, or 2 % of the sample)⁴.

The responses to the questionnaires were complemented with university-level information retrieved from the TASTE database ([Bolzani et al., 2014](http://bolzanietal2014.com)), which stores primary and secondary longitudinal data on Italian academics. The TASTE database includes repeated annual information on the population of 55,000 academics, employed by the 2400 departments of the 96 Italian universities between 2000 and 2014. Furthermore, the database tracks academic spinouts and their founders. We used this information to identify faculty mentors with previous entrepreneurial experience and university structures dedicated to supporting students' entrepreneurship, as presented in the following section.

Finally, data on the environmental and regional characteristics were retrieved from Eurostat (ec.europa.eu/eurostat). Eurostat is the statistical office of the European Union that provides statistics at country, regional, and province levels to enable comparisons between countries and regions.

5.2. Variables and measures

5.2.1. Dependent variable: new venture creation

During Round 2 of data collection, to capture graduates' choice of becoming entrepreneurs, we asked, "*Did you start a new venture over the past year?*" We coded the variable equal to 1 if the student started a new venture during the year following graduation and 0 otherwise. As of December 2015, within one year from their graduation, 425 students reported having started a new venture (about 2 % of the respondents). We used the creation of a new venture as a proxy for engaging in an entrepreneurial career. In some countries, it may be possible to set up a venture with little effort for reasons other than pursuing an entrepreneurship career, such as, for example, tax arbitrage. In Italy, according to many international observatories (e.g., World Bank, 2018), starting a new venture is associated with extensive efforts, bureaucracy and costs, and only those who are seriously motivated to pursue an entrepreneurship career would go through the trouble of starting a new venture.⁵

5.2.2. Independent variable: entrepreneurial intention

Individuals' entrepreneurial intention was the key independent variable of our model. During Round 1, students were administered the [Liñán and Chen \(2009\)](http://lijanandchen2009.com) scale, which consisted of the following 6 items assessed on a 7-point Likert scale: "*I am ready to do anything to be an entrepreneur*"; "*My professional goal is to become an entrepreneur*"; "*I will make every effort to start and run my own venture*"; "*I am determined to create a venture in the future*"; "*I have very serious thoughts of starting a venture*"; and "*I have a strong intention to start a venture someday*". Based on the collected responses, the Cronbach's Alpha was equal to 0.95, giving us confidence about the reliability of our measure.

³ Italian university system before the "Bologna Process".

⁴ As a robustness check, foreign students were included in the regressions and the results were identical.

⁵ Information about the process of starting a venture is available at the official website of the Italian Government (<http://www.impresainnunziorno.gov.it/web/l-impresa-e-l-europa/doing-business-in-italy>). Italy is ranked 46 among 190 countries in 'ease of doing business,' according to the latest World Bank annual ranking (<https://tradingeconomics.com/italy/ease-of-doing-business>).

5.2.3. Moderators

The variables characterizing the social context were analyzed through Principal Component Analysis (PCA). The aim was to consider the inter-item differences within homogeneous classes to obtain higher-level factors. Following our conceptual framework, we distinguished three main components representing the three moderators: (1) relevant others' influences, (2) organizational influences, and (3) environmental influences. For any given component, we retained the factors with eigenvalues greater than 1 (Kaiser, 1958).

The first component, *relevant others' influences*, encompassed three items: *entrepreneurial parents*, *entrepreneurial mentors*, and *entrepreneurial peers*. Consistent with social cognitive theory (Bandura, 1986), we operationalized these variables as the extent to which each of these groups of people engaged in the behavior at hand (entrepreneurship) and, therefore, to the extent to which they can serve as sources of social modeling. The item *entrepreneurial parents* accounted for the most recent professional positions of both parents.

We created a variable that was equal to 1 if either the mother or the father was an entrepreneur or self-employed, equal to 2 if both parents were entrepreneurs or self-employed, and 0 otherwise. Among our respondents, about 20 % (3837) had at least one self-employed parent and about 3 % (639) had both parents self-employed.

The item *entrepreneurial mentor* assessed the relationship between a student and an entrepreneurial mentor. To graduate, all Italian seniors must write a thesis under the supervision of a faculty member who can have a profound influence on the student and represents the most central mentor in their career. AlmaLaurea recorded the first and last name of the supervisor, as well as their university and department's affiliation. We matched the names and departmental affiliations of the academics in the TASTE database with the contact details of the students' thesis mentors. Out of 14,000 academic mentors, almost 6 % of were currently involved in entrepreneurial activities. This figure is consistent with the percentage of academic entrepreneurs in Italy, which is equal to about 4 % of the population of 55,000 academics employed in the Italian university system between 2000 and 2014 (reference withheld). In our case, we aimed to assess the relationship between students and their academic supervisor and/or co-supervisor who are entrepreneurs (i.e., founder of an academic spin-off). In particular, first we created an index that captured whether the students' thesis supervisor or co-supervisor or both were entrepreneurs; the values ranged between 0 and 2. Second, we weighted this index for the duration of the thesis (expressed in months). Because the maximum thesis duration is 12 months, the variable entrepreneurial mentor varied from 0 to 24 (the latter captured the case in which both mentors are entrepreneurs and the thesis lasted 12 months).

The item *entrepreneurial peers* captured the extent to which student peers were engaged in entrepreneurial activities. We focused on the peers closest to a student, those the student would most likely talk to, learn from, and imitate. Specifically, we examined whether students graduating in the same year from the same program had also started a venture during the program. The variable was a ratio between the number of peer entrepreneurs and the total number of students in the class. The ratio varied between 0 and 0.5.

The component *relevant others' influences*, which included the three aforementioned items, was operationalized using one factor (only one eigenvalue > 1). It was standardized and ranged between -0.49 and 15.08, explaining 34 % of the component variance.

The second component was *organizational influences*. At the university level, consistent with previous research (e.g., Fini et al., 2012), we accounted for the role played by some university infrastructures and facilities created to support students' entrepreneurial activities. In particular, as of 2014, the component included: a dummy variable to account for the presence ($= 1$) or absence ($= 0$) of a *TTO*; a dummy to capture the presence ($= 1$) or absence ($= 0$) of a *university-incubator*; and a variable that measured the cumulative number of university administrative staff who attended the *Netval training program*. Netval is the Italian association for the valorization of results from public research. It was established in 2002 and has 57 university and 7 public research centers (www.netval.it) among its participants, and it offers training courses on a yearly basis. The rationale for including this variable was that the higher the number of staff trained by Netval, the greater the university's effort in supporting entrepreneurial activities.

The component *organizational influences* was operationalized using one factor (only one eigenvalue > 1); it was standardized and ranged between -2.5 and 2.1 explaining 64 % of the component variance.

The last component was *environmental influences* and it considered, as of 2014, a set of indicators of the economic development of the region in which universities operate. The information was retrieved using the Eurostat regional database at NUTS 2 level. As the first item, we used the log of the regional *GDP*, a measure that has been frequently used in studies on regional entrepreneurship to capture regional economic prosperity (Bosma and Sternberg, 2014). The second item was focused on regional job dynamics (e.g., Kibler et al., 2014), with the *employment* variable calculated as the ratio between the number of employed individuals aged between 20 and 64 and the total population of the same age group. The third item accounted for the presence of *innovative startups* in the region, calculated as the cumulative number of innovative ventures established as of 2014 in that region. According to the Italian Start-Up Act (www.startup.registroimprese.it), innovative startups are newly established firms satisfying at least one of the following criteria: investing at least 15 % of their expenses in R&D; having at least 1/3 of the total workforce enrolled in a PhD program, holding a PhD, or working as researchers; having at least 2/3 of the total workforce holding a master's degree; and owning or licensing a patent or software.

The component *environmental influences* was operationalized using one factor (only one eigenvalue > 1); it was standardized and ranged between -2.2 and 2.6, explaining 65 % of the component variance.

Table 2 reports the descriptive statistics and the PCA results for the three components.

5.2.4. Control variables

Based on previous studies suggesting a gender bias in new venture creation and entrepreneurial intentions (e.g., Schlaegel and Koenig, 2014), we set a dummy *gender* equal to 1 for men and 0 for women. We also controlled for the *age* of the students, which

Table 2
Principal Component Analysis.

Components	Items	Mean	SD	Item 1	Item 2	Item 3
Relevant others' influences (Individual-level)	1. <i>Self-employed parents</i>	0.22	0.48	1		
	2. <i>Entrepreneurial mentors</i>	0.20	1.19	0.01	1	
	3. <i>Entrepreneurial peers</i>	0.15	0.04	0.01	0.0004	1
# of factors with eigenvalues > 1				1		
Eigenvalue					1.01	
Proportion of variance explained					0.34	
Organizational influences (University-level)	1. <i>TTO</i>	0.91	0.28	1		
	2. <i>Netval training courses</i>	28.53	26.36	0.29	1	
	3. <i>Incubator</i>	0.38	0.48	0.22	0.76	1
# of factors with eigenvalues > 1				1		
Eigenvalue					1.91	
Proportion of variance explained					0.64	
Environmental influences (Regional-level)	1. <i>GDP</i>	115.39	61.03	1		
	2. <i>Employment</i>	0.56	0.10	0.36	1	
	3. <i>Innovative startups</i>	42.56	6.31	0.23	0.76	1
# of factors with eigenvalues > 1				1		
Eigenvalue					1.95	
Proportion of variance explained					0.65	

N = 20,754. TTO – Technology Transfer Office; GDP – Gross Domestic Product.

The numbers reported in the table (Item 1, 2 and 3) are pairwise correlations.

potentially influences both the likelihood of starting a venture (Kolvereid and Moen, 1997; Lévesque and Minniti, 2006) and entrepreneurial intentions (Schlaegel and Koenig, 2014). Previous work experience may also affect individuals' entry into entrepreneurship (Kolvereid and Moen, 1997) and we set a dummy, *work experience*, equal to 1 if respondents indicated having prior work experience and 0 otherwise. Finally, we controlled for whether the student was working at the time of graduation, including another dummy variable, *work currently*, equal to 1 if the respondent was working at the time of graduation, and 0 otherwise.

Another set of control variables was related to individual's preferences. Specifically, we controlled for graduates' preferences for autonomy (McClelland, 1961), income (Evans and Leighton, 1989), the importance of career development, the importance of job stability, and the importance of job prestige and flexibility. We measured all variables using a 4-point Likert-like scale. We also controlled for academic performance by using students' final grades (ranging from 66 to 110 with honors), educational background (i.e., social sciences, STEMM, and other), type of degree (bachelor's, master's, single cycle, and other type of degree), and social class, which, consistent with the operationalization by Cobalti and Schizzerotto (1994), was based on parents' socioeconomic status (e.g., middle class and working class).

6. Results

To test our hypotheses, we used different techniques and relied on a series of robustness checks. Given that our dependent variable was dichotomous, we specified a logit model to analyze the likelihood of a graduate setting up a new venture within one year after graduation. Due to the non-linearity of the selected estimation technique, the interaction coefficient was not sufficient to draw conclusions about the effect of the interaction on the dependent variable. We therefore used the partial derivatives of the interaction terms to assess both their magnitude and statistical significance (Ai and Norton, 2003; Fini et al., 2018; Gruber et al., 2013).

Table 3 reports the descriptive statistics and pairwise correlations of the variables included in the model. The mean for new venture creation was 0.02, suggesting that only 2 % of graduates actually started a venture within the first year after graduation. Notably, the intention to start a venture was positively correlated with new venture creation (0.08). All remaining correlations were generally low, suggesting that multicollinearity should not bias our results.

Table 4 presents the results of our logit model. The coefficients reported in the table are exponentiated coefficients (Odds Ratio). To control for potential correlated errors across observations, we employed heteroskedasticity robust standard errors, adjusted for university and school clusters. In Model 1, we first tested the baseline model, which included the control variables, the main effect of entrepreneurial intention, the three moderators (i.e., relevant others' influences, organizational influences, and environmental influences), and the 19 regional dummies. In Model 2, we excluded the regional dummies and we included the 63 university dummies. From Model 3 onward, we excluded the university and regional dummies, as we unpacked the university- and regional-fixed effects, to assess the effects of university and regional characteristics on new venture creation. In Models 4, 5, and 6, we tested the hypotheses, interacting entrepreneurial intentions with the moderators, one at a time. Model 7 tested the fully specified model.

Looking at controls, consistent with prior results (Kolvereid and Moen, 1997), work experience positively affected the likelihood of starting a new venture across all model specifications. Job prestige positively affected new venture creation, with individuals starting a new venture attributing high value to pursuing a prestigious career. Job stability, as expected, was negatively correlated with our dependent variable, confirming that for those who were looking for a stable position, entrepreneurship was not a viable

Table 3

Descriptive Statistics and Pairwise Correlations.

Variable	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10
1 New venture creation	0.02	0.13	0	1	1									
2 Gender	0.39	0.49	0	1	0.02	1								
3 Age	25.12	3.57	20	50	0.03	0.05	1							
4 Work experience	0.61	0.49	0	1	0.03	0.02	0.16	1						
5 Work currently	1.79	0.41	0	2	-0.01	0.00	-0.22	-0.37	1					
6 Job preference: income	3.47	0.71	0	4	0.01	0.00	-0.02	-0.02	0.04	1				
7 Job preference: prestige	2.99	0.90	0	4	0.02	0.01	-0.01	-0.04	0.03	0.44	1			
8 Job preference: flexibility	2.92	0.83	0	4	0.02	-0.04	0.05	-0.01	0.00	0.39	0.42	1		
9 Job preference: career	3.50	0.74	0	4	0.01	0.06	-0.05	-0.01	0.04	0.66	0.51	0.32	1	
10 Job preference: stability	3.56	0.73	0	4	-0.01	-0.10	-0.06	-0.05	0.06	0.55	0.36	0.35	0.47	1
11 Job preference: autonomy	3.27	0.80	0	4	0.02	-0.05	0.02	0.00	0.01	0.38	0.42	0.45	0.37	0.37
12 Academic performance	104.14	8.40	74	113	-0.02	-0.13	-0.04	-0.13	0.07	-0.06	-0.04	-0.03	-0.05	-0.04
13 Class: working class	0.28	0.45	0	1	0.01	0.03	-0.04	-0.03	0.03	0.00	0.01	-0.01	0.03	-0.04
14 Field: STEMM	0.52	0.49	0	1	0.02	0.19	-0.01	-0.14	0.10	0.02	0.02	0.00	0.00	0.02
15 Field: social science	0.39	0.49	0	1	-0.02	-0.16	0.02	0.12	-0.08	0.01	0.00	0.01	0.04	-0.02
16 Field: other	0.09	0.28	0	1	-0.01	-0.05	-0.01	0.05	-0.04	-0.05	-0.03	-0.01	-0.06	0.00
17 Degree: other	0.01	0.09	0	1	-0.01	-0.07	0.07	0.04	-0.04	-0.05	-0.02	-0.01	-0.09	-0.01
18 Degree: bachelor	0.62	0.49	0	1	-0.01	-0.01	-0.30	-0.01	0.03	0.01	0.01	0.01	-0.01	0.06
19 Degree: single cycle	0.10	0.30	0	1	0.00	-0.04	0.11	-0.04	0.07	0.01	0.04	0.00	0.02	0.02
20 Degree: master	0.27	0.45	0	1	0.02	0.05	0.24	0.03	-0.08	-0.01	-0.03	-0.01	0.01	-0.07
21 Entrepreneurial intention	3.02	1.61	1	7	0.08	0.19	0.05	0.11	-0.07	0.14	0.20	0.08	0.22	-0.01
22 Comp1: Relevant others' inf.	0.00	1.01	-0.49	15.08	0.02	0.01	0.00	0.01	-0.02	0.02	0.02	0.01	0.03	-0.01
23 Comp2: Organizational inf.	0.00	1.38	-2.52	2.16	-0.01	0.06	-0.05	0.07	-0.05	-0.08	-0.11	-0.06	-0.09	-0.09
24 Comp3: Environmental inf.	0.00	1.39	-2.22	2.57	-0.02	0.01	-0.09	0.09	-0.08	-0.10	-0.14	-0.07	-0.13	-0.11
11	12	13	14	15	16	17	18	19	20	21	22	23	24	
11 1														
12 -0.03 1														
13 0.03 0.01 1														
14 -0.02 0.09 -0.01 1														
15 0.00 -0.14 0.01 -0.84 1														
16 0.02 0.08 0.00 -0.32 -0.24 1														
17 0.00 0.02 -0.01 -0.10 0.11 -0.03 1														
18 0.02 -0.35 -0.07 0.02 -0.06 0.07 -0.12 1														
19 0.04 0.06 0.11 0.06 0.00 -0.10 -0.03 -0.42 1														
20 -0.04 0.34 0.00 -0.04 0.04 -0.01 -0.06 -0.78 -0.20 1														
21 0.13 -0.15 0.04 0.02 0.01 -0.05 -0.06 0.01 -0.02 0.02 1														
22 0.03 0.01 0.44 -0.03 0.02 0.01 0.02 -0.08 0.08 0.03 0.05 1														
23 -0.07 -0.04 0.03 0.06 -0.07 0.01 0.01 -0.05 -0.06 0.09 -0.06 -0.06 1														
24 -0.07 -0.04 0.06 0.01 -0.01 -0.02 0.02 0.00 -0.06 0.04 -0.10 0.03 0.63 1														

N = 20,754 Pairwise correlations above |0.02| are significant at 0.01.

Gender = 1 if male; Field: other = humanities or sport education; Degree: other = old cycle degree.

option.

The results supported Hypothesis 1, which states that relevant others' influences increase the likelihood that entrepreneurial intentions would result in starting a new venture. The interaction effect between intentions and relevant others was positive and statistically significant in both Model 4 (OR = 1.062, $p < 0.05$) and Model 7 (OR = 1.066, $p < 0.05$). We also found support for Hypothesis 2; the interaction effect between individuals and organizational influences was positive and statistically significant in both Models 5 (OR = 1.048, $p < 0.05$) and 7 (OR = 1.099, $p < 0.01$). Finally, Hypothesis 3 was partially supported. The interaction term between intentions and environmental influences was negative but not statistically significant in Model 6, becoming statistically significant in Model 7 (OR = 0.932, $p < 0.05$).

However, the interpretation of interaction effect in nonlinear models is complex, because its magnitude, signs, and significance may vary across observations (Hoetker, 2007). Thus, we used graphical analysis to provide a better understanding of the interaction's effects in Model 7.

In particular, we computed the marginal effect of entrepreneurial intention on new venture creation across the range of all possible values [1;7]. The analysis suggested that the effect of entrepreneurial intention on firm creation was always positive and statistically significant, and increased as intention increased. Then, we plotted the predicted values of entrepreneurial intentions interacted with high and low levels of the three moderators (operationalized at one standard deviation [SD] above and below the mean, respectively). We calculated the predicted values at specified values of covariates (please also refer to the further analysis section for supplementary analysis).

First, in Fig. 2, we plotted the predicted value of firm creation across the whole range of entrepreneurial intention at a higher (one SD above the mean) and lower (one SD below the mean) level of relevant others' influences. The simple slope analysis suggested that

Table 4

Logit Model Results: New Venture Creation.

	Model 1 New venture creation (0/1)	Model 2 New venture creation (0/1)	Model 3 New venture creation (0/1)	Model 4 New venture creation (0/1)	Model 5 New venture creation (0/1)	Model 6 New venture creation (0/1)	Model 7 New venture creation (0/1)
Gender	0.884 (0.100)	0.898 (0.101)	0.868 (0.102)	0.870 (0.102)	0.864 (0.101)	0.868 (0.102)	0.866 (0.102)
Age	1.035* (0.015)	1.035* (0.015)	1.035* (0.014)	1.036* (0.014)	1.035* (0.014)	1.036* (0.014)	1.036* (0.014)
Work experience	1.355* (0.167)	1.355* (0.168)	1.345* (0.177)	1.343* (0.176)	1.354* (0.179)	1.343* (0.177)	1.350* (0.178)
Work currently	1.076 (0.151)	1.097 (0.155)	1.053 (0.155)	1.065 (0.157)	1.058 (0.155)	1.052 (0.154)	1.068 (0.157)
Job preference: income	1.002 (0.113)	1.004 (0.113)	1.017 (0.120)	1.022 (0.121)	1.017 (0.120)	1.017 (0.120)	1.021 (0.121)
Job preference: prestige	1.161 + (0.093)	1.155 + (0.093)	1.176* (0.095)	1.175* (0.095)	1.176* (0.095)	1.176* (0.095)	1.176* (0.095)
Job preference: flexibility	1.039 (0.080)	1.036 (0.080)	1.036 (0.084)	1.037 (0.084)	1.035 (0.084)	1.036 (0.084)	1.033 (0.084)
Job preference: career	0.908 (0.094)	0.911 (0.095)	0.905 (0.100)	0.903 (0.100)	0.897 (0.099)	0.907 (0.100)	0.904 (0.101)
Job preference: stability	0.773** (0.062)	0.769*** (0.061)	0.769*** (0.061)	0.767*** (0.061)	0.775** (0.062)	0.767*** (0.061)	0.771** (0.061)
Job preference: autonomy	1.078 (0.089)	1.071 (0.088)	1.056 (0.094)	1.058 (0.095)	1.053 (0.094)	1.057 (0.095)	1.053 (0.094)
Academic performance	0.989 (0.007)	0.988 (0.007)	0.989 (0.007)	0.989 (0.007)	0.989 (0.007)	0.989 (0.007)	0.989 (0.007)
Class: working class	1.049 (0.124)	1.039 (0.124)	1.115 (0.138)	1.099 (0.136)	1.115 (0.138)	1.115 (0.138)	1.100 (0.136)
Field: STEMM	1.439 + (0.317)	1.722* (0.407)	1.604* (0.378)	1.596* (0.379)	1.614* (0.382)	1.600* (0.377)	1.593 + (0.380)
Field: social science	1.016 (0.233)	1.117 (0.275)	1.116 (0.267)	1.113 (0.268)	1.119 (0.268)	1.114 (0.266)	1.103 (0.267)
Degree: Bachelor	2.053 (2.116)	1.871 (1.940)	2.174 (2.261)	2.132 (2.210)	2.186 (2.271)	2.175 (2.261)	2.157 (2.234)
Degree: Single cycle	2.049 (2.126)	1.836 (1.918)	2.143 (2.237)	2.107 (2.194)	2.153 (2.246)	2.143 (2.237)	2.131 (2.218)
Degree: Master	2.721 (2.799)	2.586 (2.673)	2.827 (2.934)	2.783 (2.880)	2.849 (2.956)	2.826 (2.933)	2.818 (2.917)
Entrepreneurial intention	1.349*** (0.049)	1.346*** (0.048)	1.334*** (0.052)	1.323*** (0.053)	1.340*** (0.052)	1.332*** (0.053)	1.317*** (0.052)
Comp1: Relevant others' influences			1.080 + (0.046)	0.830 (0.105)	1.080 + (0.046)	1.080 + (0.046)	0.823 (0.103)
Comp2: Organizational influences				0.981 (0.053)	0.983 (0.054)	0.821 + (0.083)	0.981 (0.053)
Comp3: Environmental influences				0.950 (0.050)	0.948 (0.050)	0.946 (0.050)	0.991 (0.116)
Entrepreneurial intention *					1.062 * (0.027)		1.066 * (0.027)
Comp1: Relevant others' influences						1.048 * (0.024)	1.099 ** (0.032)
Entrepreneurial intention *							
Comp2: Organizational influences							
Entrepreneurial intention *							
Comp3: Environmental influences							
Constant	0.002*** (0.004)	0.002*** (0.004)	0.003*** (0.005)	0.003*** (0.005)	0.003*** (0.005)	0.003*** (0.005)	0.003*** (0.005)
Regional fixed-effects	Included	Not included	Not included	Not included	Not included	Not included	Not included
University fixed-effects	Not included	Included	Not Included	Not Included	Not Included	Not Included	Not Included
Observations	20,754	20,754	20,754	20,754	20,754	20,754	20,754
Log likelihood	-1,800.97	-1,775.82	-1,784.24	-1,781.49	-1,782.07	-1,784.12	-1,776.17
Chi2	187.59	228.55	165.09	182.14	165.77	167.12	195.16

(continued on next page)

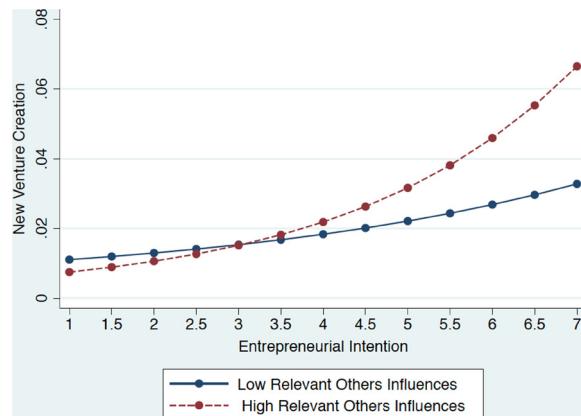
Table 4 (continued)

	Model 1 New venture creation (0/1)	Model 2 New venture creation (0/1)	Model 3 New venture creation (0/1)	Model 4 New venture creation (0/1)	Model 5 New venture creation (0/1)	Model 6 New venture creation (0/1)	Model 7 New venture creation (0/1)
Pseudo R2 (MacFadden's)	0.05	0.06	0.05	0.05	0.05	0.05	0.05

Robust standard errors, clustered at university and school level, in parentheses:

+ $p < 0.10$. * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

Note: Coefficients are Odds Ratio. For variable "social class," the omitted category is *middle class*. For variable "Educational Background," we omitted the category *other*. For variable "Type of Degree" we omitted the category *other*.

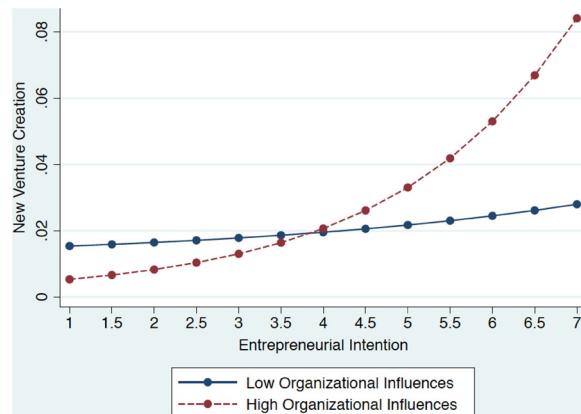
**Fig. 2.** Relevant Others' Influences and New Venture Creation.

Note: Plots of the predicted values from Model 7 estimated keeping all variables at their means.

when all variables were at their means, the impact on firm creation significantly differed between high and low relevant others' influences for level of intentions higher than 5. Furthermore, the marginal effect of entrepreneurial intention on firm creation was statistically significant across all levels of relevant others' influences [-0.5; 15] and increased as relevant others' influences increased.

In Fig. 3 we report the predicted value of entrepreneurial intentions for high and low level of organizational influences (at one SD above and below the mean, respectively). The analysis suggested that for entrepreneurial intention higher than 6, the effect of higher organizational influences was statistically significant and stronger than the effect of lower ones. Furthermore, the marginal effect of entrepreneurial intention on firm creation was statistically significant for levels of organizational influences greater than -1.6 (the variable ranged between -2.2 and 2.5) and increased as organizational influences increased. This meant that for low levels of organizational influences, entrepreneurial intention never translated into firm creation.

Finally, Fig. 4 exhibits the effect of entrepreneurial intention on firm creation for high and low level of environmental influences (at one SD above and below the mean, respectively). The analysis showed that for entrepreneurial intention higher than 5 the effect of

**Fig. 3.** Organizational Influences and New Venture Creation.

Note: Plots of the predicted values from Model 7 estimated keeping all variables at their means.

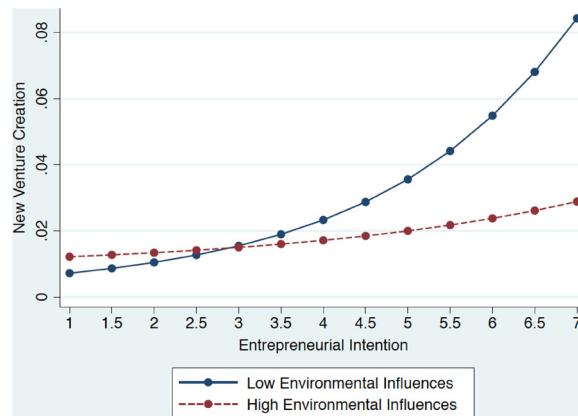


Fig. 4. Environmental Influences and New Venture Creation.

Note: Plots of the predicted values from Model 7 estimated keeping all variables at their means.

higher environmental influences (vis-à-vis lower ones) significantly hindered the likelihood of creating a new company. Furthermore, the marginal effect of entrepreneurial intention on firm creation is statistically significant for levels of environmental influences smaller than 1.8 (the variable ranged between -2.2 and 2.5) and increased for weaker environmental influences. This meant that for high levels of environmental influences, entrepreneurial intention never translated into firm creation.

As an additional control for the non-linear nature of the selected specification, we followed [Ai and Norton \(2003\)](#) and calculated the magnitude and standard errors of both the secondary moderating effect (i.e., the true moderation) and the structural moderating effect (see Appendix, Fig. A1-6). Our analysis indicated that the secondary moderating effect was positive and statistically significant ($Z\text{-score} > 1.96$) for relevant others' influences in more than 70 % of the cases, whereas for organizational influences, the secondary moderating effect was positive and statistically significant ($Z\text{-score} > 1.96$) in more than 50 % of the cases. By contrast, it was negative and statistically significant ($Z\text{-score} < -1.96$) for environmental influences in more than 60 % of the cases. These results further strengthen our primary findings.

6.1. Robustness checks and further analysis

To corroborate our results, we submitted our data to a set of robustness checks and additional analysis. All results available upon request.

First, even if the 37 % response rate in Round 2 was similar to or better than response rates in other entrepreneurship studies (e.g., [Kautonen et al., 2015a](#); [van Gelderen et al., 2015](#)), some attrition may have been present, biasing our results. We therefore ran simple mean comparisons between the first and second survey waves; the results showed some statistically significant differences between means but negligible effect sizes.

Second and related, because differences might be due not only to the large sample size, we then used a two-step Heckman procedure ([Certo et al., 2016](#); [Heckman, 1976](#)) to correct for non-response bias. In the first step, we employed a probit specification to estimate the likelihood that a student would answer in Round 2, calculating the corresponding inverse Mills ratio to be included in the second stage outcome equations (i.e., new venture creation models). We used the level of individuals' computer web skills as an exclusionary restriction (i.e., a variable that predicts the probability of answering the Round 2 questionnaire without affecting the probability of starting a new venture). We assumed those who, in Round 1, reported having higher computer and web skills were those who would most likely answer Round 2; they would more likely be online, checking their emails more often, thus increasing their likelihood of answering the second wave of the survey. We then re-estimated the logit model to predict new venture creation, including the inverse Mills ratio among the covariates, bootstrapping the standard errors 1,000 times. The results provided strong support for our primary findings and are available upon request.

Third, in the main analysis, we computed the predictive margins of entrepreneurial intention on firm creation by keeping all covariates at their means (both continuous and categorical ones). In order to profile specific groups of graduates, we estimated the predictive margins at representative values of the covariates. In particular, we focused on the dummy variable *gender* (0 for female, 1 for male), and on the categorical variables *field*, which took the value of 1 for STEM disciplines, the value of 2 for social science disciplines, and the value of 3 for humanities. As the percentage of graduate in humanities represented only 9 % of graduates, we focused on STEM and social science only. Thus, we predicted new venture creation at specific values of gender and field, keeping all the other covariates at their means. In particular, we considered the following combinations: a) female in STEM, b) female in social science, c) male in STEM, d) male in social science. As for the main effect, results suggested that for a high level of intention (i.e., intention = 7), the female in STEM group (combination a) was more likely to create a new venture compared to other groups (combinations b, c and d). These results were corroborated by the moderation analysis; our results suggested that for a high level of intentions, in presence of supportive relevant others, supportive organizational influences, and non-supportive environmental influences (i.e., wealthy context), female in STEM was more likely to start a new venture compared to the three other groups.

Fourth, to control for the extent to which the three selected moderations may have affected both entrepreneurial intention and behavior at the same time, we specified a generalized structural moderated-mediation model (Preacher et al., 2007) in which the three boundary conditions simultaneously predicted entrepreneurial intention and moderated the relationship between entrepreneurial intention and new venture creation. The conditional indirect effects of the three moderators on new venture creation mediated by intentions, albeit significant, were virtually equal to zero. By contrast, the direct effect of intentions on new venture creation was equal to 0.32 ($p < 0.001$); going up to 0.55 ($p < 0.001$) when relevant others' and organizational influences were high (1 SD above the mean) and environmental influences were low (1 SD below the mean); going down to 0.08 ($p > 0.1$) when relevant others' and organizational influences were low (1 SD below the mean) and environmental influences were high (1 SD above the mean). Standard errors were bootstrapped 1000 times.

Finally, in order to account for the imbalance of the dependent variable (only 2 % of entrepreneurs), we followed King and Zeng's (2001) estimation method for reducing small-sample bias in maximum likelihood estimations. Results were confirmed. Also, we tested our specification on a subsample of students who had stronger intentions to become entrepreneurs (i.e., intentions equal to 1 SD or more above the mean). Again, results were robust.

7. Discussion

This study contributes to understanding the relationship between entrepreneurial intentions and new venture creation. Despite the growing interest among scholars in investigating the conditions in which intentions lead to entrepreneurial behavior, how contextual influences affect this relationship is still unclear. Of over 20,000 university graduates, only 2 % reported starting a new venture one year after graduation. In this study, we showed that environmental influences should be taken into account in order to understand better why some individuals but not others finally decide to start a new venture.

7.1. Relevant others', organizational, and environmental influences

Our first main finding concerns the role of relevant others. We provide evidence that individuals surrounded by supportive relevant others are more likely to enact their entrepreneurial intentions by establishing a new venture. Graduates' proximal context, characterized by family, university peers, and mentors, serves as a way to overcome external barriers, providing the cognitive resources needed to cope with such barriers. By showing how access to information, resources, and knowledge from influential individuals may be conducive to an entrepreneurial career, these results further corroborate the importance of social context in fostering entrepreneurship (Aldrich and Ruef, 2006; Audia and Rider, 2006; Dahl and Sorenson, 2009; Fisher and Stafford, 1999; Sørensen, 2007; Tinsley and Faunce, 1980).

As for organizational influences, our results suggest that universities, by facilitating the exchange of information and acquisition of knowledge, support graduates in the process of new venture creation. Our results show that graduates who have high entrepreneurial intention and are exposed to high organizational support toward entrepreneurship are more likely to create a new venture compared to those exposed to low organizational support. Moreover, we observe that for low level of organizational support toward entrepreneurship, intention never translate into new venture creation. Therefore, university's support is critical for graduates making career choices, and in particular for those who have the intention to pursue an entrepreneurial career.

Finally, although research on entrepreneurship shows how supportive environmental influences are conducive to entrepreneurship in general, it provides little insight into the effect on graduates' entrepreneurial choice. In particular, supportive environmental influences mean the presence of alternative job opportunities, which make, *ceteris paribus*, graduates with high entrepreneurial intention less likely to start a new venture. Moreover, results show that graduates exposed to a regional context, characterized by a high GDP and high employment and innovative start-ups rates, never translate their intention into venture creation. They are attracted by other careers, postponing or abandoning their intentions of entering entrepreneurship. The labor market has changed over the years and is mainly characterized by flexible employment (Baron, 2012). Thus, organizations are becoming smart and flexible; they are looking for individuals who might fit these characteristics. Hence, graduates exhibiting high entrepreneurial intentions might be attracted to and fit well into these organizations because they represent valuable alternative career options.

In addition, our study shows that there is a certain variance between different groups of graduates. In particular, for high level of intentions, in presence of supportive relevant others and supportive organizational influences, the female in STEMM group is more likely to start a new venture compared to female in social science and to male enrolled either in STEMM or social science groups.

7.2. Implications for theory and future research directions

These results suggest several implications for theory. First, they confirm that distinguishing two complementary levels of analysis is relevant to explicating how individuals translate their entrepreneurial intentions into venture creation. According to SCCT (Lent et al., 2000), the first one focuses on the cognitive–person variables that lead individuals to exercise personal agency in the career development process. The second one concerns the paths through which several additional factors (i.e., contextual influences) affect career choice behavior of individuals. In the process of creating a new venture (i.e., starting an entrepreneurial career), the formulation of entrepreneurial intention alone is not sufficient for individuals to act (e.g., van Gelderen et al., 2015). Moreover, entrepreneurship is under limited volitional control and several external factors influence an individual's decision to act upon intentions (Ajzen, 1991; Wiklund and Shepherd, 2003). Once individuals form entrepreneurial intentions, contextual influences might support

or inhibit their decisions to create a new venture. In order to understand why some individuals enact their career interests in entrepreneurship while others don't, therefore, research must fully investigate the different elements that affect the process of translating intentions into new venture creation.

A second theoretical contribution is the use of social cognitive career theory (SCCT) to predict new venture creation. We extend the use of SCCT to entrepreneurship, with a specific focus on the context and the concepts of proximal and distal factors. With our study, we are able to distinguish between contextual support and barriers, and we provide evidence of the positive effect of proximal environmental influences on individuals' career decisions to start up a new venture. Relevant others and university influences, which represent the graduates' immediate environment, support graduates with high entrepreneurial intentions by providing economic and non-economic resources that are essential in the start-up phase of a venture. On the other hand, the munificence of the economic context that surrounds the graduates might exert a different effect than the one predicted by regional innovation systems research. Graduate students with the intention to start a new venture might be attracted by alternative career options and decide to postpone or abandon their intentions to become an entrepreneur.

The results of this research suggest that entrepreneurial entry might be considered one of the many career options that individuals may decide to pursue in their life. To understand why some pursue an entrepreneurial career, we show that it is important to conceptualize entrepreneurship from a career perspective and examine the conditions under which it unfolds (i.e., proximal and organizations influences, economic conditions). In particular, we may consider entrepreneurship as a bridge to other career opportunities (Earle and Sakova, 2000). Individuals may decide to enter entrepreneurship because it is, at that time, the best available option and then they may decide to transition to other jobs because of lack of success or the attraction of other opportunities. As Burton et al. (2016) suggested, for many individuals who create new ventures, entrepreneurship should not be considered as an end state but a transitional one. In particular, young people in the process of entering in the labor market for the first time may choose to enter into entrepreneurship early but this choice may not be final, as they can transition into paid employment at some later state. And the reverse could be true as well. Future studies should explore how an entrepreneurial career might evolve over time and how entrepreneurial experiences affect individuals' overall career patterns.

This study focuses on objective environmental influences. Further research might address how individuals perceive these influences and the extent to which perception of external characteristics varies among individuals, affecting their career choice. In particular, it would be interesting to explore how individuals perceive several barriers to career goal achievement (e.g., Luzzo, 1993; Lent et al., 2000). Even if individuals possess high levels of entrepreneurial intentions, they may avoid acting on these intentions because they perceive insurmountable barriers to entry. The perception of critical barriers and the degree to which individuals have confidence in the ability to overcome these barriers may affect the process that leads from intention to the choice of becoming entrepreneur. Therefore, it may be relevant to understand how coping efficacy, which is the ability to manage and overcome complex situations (Bandura, 1997), affects the perception of external barriers. One could argue that individuals who have high levels of coping efficacy are more likely to engage in efforts to overcome difficulties that are associated with a particular goal or objective, such as starting a new venture. Individuals encounter different barriers that can prevent engagement in an entrepreneurial activity, and it would be interesting to understand how different levels of coping efficacy might affect this relation.

7.3. Practical implications

We investigate the relationship between entrepreneurial intention and the choice of an entrepreneurial career among graduates who are on the brink of entering the labor market for the first time. We provide evidence that a growing number of young men and women in the whole of Italy consider entrepreneurship to be a realistic career option. The empirical findings further suggest that the immediate context surrounding the individual and the larger context influence the process of translating intention into an entrepreneurial career.

Our results should be of great interest to universities and policymakers. Universities are highly institutionalized organizations and resistant to change. Over the last twenty years, they have been encouraged to foster entrepreneurial activities through the introduction of several mechanisms, such as professionalized technology transfer offices or dedicated policies supporting academic spin-offs (Grimaldi et al., 2011). Research in entrepreneurship has analyzed mechanisms to foster entrepreneurship among academics and students extensively (Aschhoff and Grimpe, 2014; Bergmann et al., 2018; Ferrante et al., 2018; Fini et al., 2016; Wright et al., 2017). However, several studies show that these supportive mechanisms are not always effective in fostering entrepreneurial intentions (von Graevenitz et al., 2010; Clarysse et al., 2011). With our study, we provide evidence that universities could be more efficient in the process of translating intentions into entrepreneurial career choices.

Universities need to create favorable conditions for entrepreneurial processes as a possible criterion to anticipate graduates' behaviors. Supporting interactions among graduates with entrepreneurial intentions, their peers who are engaged in entrepreneurship, and academic entrepreneurs may strengthen the venture creation process. Universities have to work more in this direction to boost their graduates' entrepreneurial intentions, especially for those who may not have a relevant and supportive proximal environment.

A second relevant implication concerns the role of university professional services and dedicated infrastructures for the promotion of entrepreneurship. These infrastructures should be considered as an additional opportunity to increase graduates' awareness of the alternatives. In terms of direct success, our results show that dedicated infrastructures work only for graduates who have high intentions to start up a new venture. Although this might be of help in understanding the marginal success of many universities in promoting entrepreneurship, we believe that it offers several insights into the many ways through which universities might help their graduates make their career choice. As this is particularly true for women graduating in STEMM disciplines, the role of universities

emerges as critical in bridging a well-documented gender opportunity gap in entrepreneurship (e.g., [Blume-Kohout, 2014](#)).

7.4. Limitations and conclusion

Our data were collected in two-time intervals with one year in between. It would be useful to collect data in several waves to understand fully the length of the time span between entrepreneurial intentions and an entrepreneurial career choice, and to distinguish reasoned procrastination dedicated to proper planning from inaction.

Many of our variables were operationalized as dummies. However, the corresponding effects can be expressed as a continuum. Moreover, although we relied on data mapping the environment in an objective way that might affect the entrepreneurial process, it would be relevant to account for individuals' perceptions as well. Future research could focus on a more detailed modeling of these effects, disentangling their components and their marginal contributions. Finally, although the [Liñán and Chen \(2009\)](#) scale has been extensively used to measure entrepreneurial intentions in the state of the art of the literature (e.g., [Criaco et al., 2017; Shirokova et al., 2015](#)) we acknowledged that it might fall short in adequately capturing time-related aspects, not precisely contextualizing the measure of intention in a specific time window.

Our starting base included almost the entire population of Italian university seniors, which allowed us to focus on a specific institutional environment, and the high number of respondents offered a robust base to estimate our models. Interinstitutional differences have emerged as relevant for understanding the pace and attitude of universities around the globe in supporting their students' engagement in entrepreneurial activities ([Foss and Gibson, 2015; Van Loy et al., 2011](#)). Similar conclusions have also been reached by general surveys on the distribution of entrepreneurial activities in different countries, such as the Global Entrepreneurship Model⁶ (GEM) or the Global University Entrepreneurial Spirit Survey⁷ (GUESS), as well as by studies using a multi-country comparative perspective ([Autio et al., 2013](#)).

Despite these limitations, we show that the definitive choice to start a new venture is affected by environmental characteristics, such as the most proximal and the more distal environment that surround individuals. Entrepreneurial intentions are not always translated into entrepreneurial career choices and, more generally, into related entrepreneurial behaviors. Individuals need to perceive external support that can help them in the execution of their intentions for the creation of a new venture. We must account for this pattern when we study the intentions–behavior relationship.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.jbusvent.2019.105982>.

References

- Ai, C., Norton, E., 2003. Interaction terms in logit and probit models. *Econ. Lett.* 80, 123–129.
- Ajzen, I., 1991. The theory of planned behavior. *Organ. Behav. Hum. Decis. Proces.* 50, 179–211.
- Ajzen, I., 2011/2014. Theory of Planned Behavior. Retrieved from. <http://people.umass.edu/aizen/tpb.html>.
- Aldrich, H.E., Zimmer, C., 1986. Entrepreneurship through social networks. In: Sexton, D.L., Smiler, R.W. (Eds.), *The Art and Science of Entrepreneurship*. Ballinger, Cambridge, MA, pp. 3–23.
- Aldrich, H.E., Ruef, M., 2006. *Organizations Evolving*, second ed. Sage, Thousand Oaks, CA.
- Aldridge, T.T., Audretsch, D.B., 2011. The Bayh-Dole Act and scientist entrepreneurship. *Res. Policy* 40, 1058–1067.
- Armitage, C.J., Conner, M., 2001. Efficacy of the theory of planned behaviour: a meta-analytic review. *Br. J. Soc. Psychol.* 40, 471–499.
- Armington, C., Acs, Z.J., 2002. The determinants of regional variation in new firm formation. *Reg. Stud.* 36, 33–45.
- Astebro, T., Bazzazian, N., Braguinsky, S., 2012. Startups by recent university graduates and their faculty: implications for university entrepreneurship policy. *Res. Policy* 41, 663–667.
- Astin, H.S., 1984. The meaning of work in women's lives: a sociopsychological model of career choice and work behavior. *Couns. Psychol.* 12, 117–126.
- Aschhoff, B., Grimpe, C., 2014. Contemporaneous peer effects, career age and the industry involvement of academics in biotechnology. *Res. Policy* 43, 367–381.
- Audia, P.G., Rider, C.I., 2006. Entrepreneurs as organizational products revisited. In: Baum, J.R., Frese, M., Baron, R.A. (Eds.), *The Psychology of Entrepreneurship*. Lawrence Erlbaum Associates, Mahwah, NJ, pp. 113–130.
- Audretsch, D.B., Lehmann, E.E., 2005. Does the knowledge spillover theory of entrepreneurship hold for regions? *Res. Policy* 34, 1191–1202.
- Audretsch, D.B., Keilbach, M., 2004. Entrepreneurship capital and economic performance. *Reg. Stud.* 38, 949–959.
- Autio, E., Pathak, S., Wennberg, K., 2013. Consequences of cultural practices for entrepreneurial behaviors. *J. Int. Bus. Stud.* 44, 334–362.
- Bandura, A., 1977. *Social Learning Theory*. General Learning Press, New York.
- Bandura, A., 1986. *Social Foundations of Thought and Action: a Social Cognitive Theory*. Prentice Hall, Englewood Cliffs, NJ.
- Bandura, A., 1997. *Self-efficacy: the Exercise of Control*. Freeman, New York, NY.
- Baron, R.A., Henry, R.A., 2010. How entrepreneurs acquire the capacity to excel: insights from research on expert performance. *Strat. Entrep. J.* 4, 49–65.
- Baron, R., 2012. *Entrepreneurship: an Evidence-based Guide*. Edward Elgar Publisher, Northampton, MA.
- Bercovitz, J., Feldman, M., 2008. Academic entrepreneurs: organizational change at the individual level. *Organ. Sci.* 19, 69–89.
- Bergmann, H., Hundt, C., Sternberg, R., 2016. What makes student entrepreneurs? On the relevance (and irrelevance) of the university and the regional context for student start-ups. *Small Bus. Econ.* 47, 53–76.
- Bergmann, H., Geissler, M., Hundt, C., Gräve, B., 2018. The climate for entrepreneurship at higher education institutions. *Res. Policy* 47, 700–716.
- Bird, B., 1988. Implementing entrepreneurial ideas: the case for intention. *Acad. Manag. Rev.* 13, 442–453.
- Blume-Kohout, M.E., 2014. Understanding the Gender Gap in STEM Fields Entrepreneurship. Retrieved from. U.S. Small Business Administration Office of Advocacy

⁶ The Global Entrepreneurship Monitor is the world's foremost study of entrepreneurship (gemconsortium.org).

⁷ Global University Entrepreneurial Spirit Students' Survey (GUESS) investigates students' career-choice intentions across the globe (guesssurvey.org).

- Report No. 424. <https://ssrn.com/abstract=2506835>.
- Bolzani, D., Fini, R., Grimaldi, R., Santoni, S., Sobrero, M., 2014. Fifteen Years of Academic Entrepreneurship in Italy: Evidence from the TASTE Project. Technical Report. University of Bologna.
- Bolzani, D., Fini, R., Napolitano, S., Toschi, L., 2019. Entrepreneurial teams: an input-process-outcome framework. *Found. Trends® Entrep.* 15 (2), 56–258.
- Bosma, N., Schutjens, V., 2011. Understanding regional variation in entrepreneurial activity and entrepreneurial attitude in Europe. *Ann. Reg. Sci.* 47, 711–742.
- Bosma, N., Sternberg, R., 2014. Entrepreneurship as an urban event? Empirical evidence from European cities. *Reg. Stud.* 48, 1016–1033.
- Brush, C.G., Greene, P.G., Hart, M.M., 2001. From initial idea to unique advantage: The entrepreneurial challenge of constructing a resource base. *Acad. Manag. Exec.* 15, 64–80.
- Burton, M.D., Sørensen, J.B., Dobrev, S.D., 2016. A careers perspective on entrepreneurship. *Entrep. Theory Pract.* 40, 237–247.
- Bygrave, W., Hay, M., Ng, E., Reynolds, P., 2003. Executive forum: a study of informal investing in 29 nations composing the Global Entrepreneurship Monitor. *Venture Capital: Int. J. Entrep. Finance* 5, 101–116.
- Campbell, C.A., 1992. A decision theory model for entrepreneurial acts. *Entrep. Theory Pract.* 17, 21–27.
- Casper, S., 2013. The spill-over theory reversed: the impact of regional economies on the commercialization of university science. *Res. Policy* 42, 1313–1324.
- Certo, S.T., Busenbark, J.R., Woo, H., Semadeni, M., 2016. Sample selection bias and Heckman models in strategic management research. *Strateg. Manage. J.* 37, 2639–2657.
- Clarysse, B., Tartari, V., Salter, A., 2011. The impact of entrepreneurial capacity, experience and organizational support on academic entrepreneurship. *Res. Policy* 40, 1084–1093.
- Cobalti, A., Schizzerotto, A., 1994. *La Mobilità Sociale in Italia*. Il Mulino, Bologna.
- Criaco, G., Sieger, P., Wennberg, K., Chirico, F., Minola, T., 2017. Parents' performance in entrepreneurship as a "double-edged sword" for the intergenerational transmission of entrepreneurship. *Small Bus. Econ.* 49, 841–864.
- Dahl, M.S., Sorenson, O., 2009. The embedded entrepreneur. *Eur. Manag. Rev.* 6, 172–181.
- Delanoë-Gueguen, S., Liñán, F., 2018. A longitudinal analysis of the influence of career motivations on entrepreneurial intention and action. *Can. J. Adm. Sci.* In press.
- Delmar, F., Wiklund, J., 2008. The effect of small business managers' growth motivation on firm growth: a longitudinal study. *Entrep. Theory Pract.* 32, 437–457.
- Earle, J.S., Sakova, Z., 2000. Business start-ups or disguised unemployment? Evidence on the character of self-employment from transition economies. *Labour Econ.* 7, 575–601.
- Eesley, C., Bai Li, J., Yang, D., 2016. Does institutional change in universities influence high-tech entrepreneurship? Evidence from China's project 985. *Organ. Sci.* 27, 446–46.
- Engle, R.L., Schlaegel, C., Dimitriadi, N., 2011. Institutions and entrepreneurial intent: a cross-country study. *J. Dev. Entrep.* 16, 227–250.
- Evans, D.S., Leighton, L.S., 1989. Some empirical aspects of entrepreneurship. *Am. Econ. Rev.* 79, 519–535.
- Edelman, L.F., Manolova, T., Shirokova, G., Tsukanova, T., 2016. The impact of family support on young entrepreneurs' start-up activities. *J. Bus. Ventur.* 31, 428–448.
- European Commission, 2012. Effects and Impact of Entrepreneurship Programmes in Higher Education. Brussels.
- Etzkowitz, H.A., Webster, A., Gebhardt, C., Terra, B.R.C., 2000. The future of the university and the university of the future: Evolution of ivory tower to entrepreneurial paradigm. *Res. Policy* 29, 313–330.
- Ferrante, F., Federici, D., Parisi, V., 2018. The entrepreneurial engagement of Italian university students: some insights from a population-based survey. *Stud. High. Educ.* 1–24.
- Fini, R., Grimaldi, R., Marzocchi, G.L., Sobrero, M., 2012. The determinants of corporate entrepreneurial intention within small and newly established firms. *Entrep. Theory Pract.* 36, 387–414.
- Fini, R., Jourdan, J., Perkmann, M., 2018. Social valuation across multiple audiences: the interplay between ability and identity judgments. *Acad. Manag. J.* 61, 2230–2264.
- Fini, R., Meoli, A., Sobrero, M., Ghiselli, S.F., Ferrante, 2016. Student Entrepreneurship: Demographics, Competences and Obstacles. Consorzio Interuniversitario AlmaLaurea, Bologna.
- Fisher, T.A., Stafford, M.E., 1999. Reliability and validity of the career influence inventory: a pilot study. *J. Career Assess.* 7, 187–202.
- Foss, L., Gibson, D.V., 2015. *The Entrepreneurial University: Context and Institutional Change*. Routledge, London.
- Gielnik, M.M., Barabas, S., Metzger, J.R., Frese, M., Namatovu-Dawa, R., Scholz, F.A., Walter, T., 2014. A temporal analysis of how entrepreneurial goal intentions, positive fantasies, and action planning affect starting a new venture and when the effects wear off. *J. Bus. Ventur.* 29, 755–772.
- Goethner, M., Martin Obschonka, M., Silbereisen, K.R., Cantner, U., 2012. Scientists' transition to academic entrepreneurship. *Econ. Psychol. Determ.* 33, 628–641.
- Grimaldi, R., Kenney, M., Siegel, D.S., Wright, M., 2011. 30 years after Bayh-dole: reassessing academic entrepreneurship. *Res. Policy* 40, 1045–1057.
- Gruber, M., MacMillan, I.C., Thompson, J.D., 2013. Escaping the prior knowledge corridor: what shapes the number and variety of market opportunities identified before market entry of technology start-ups? *Organ. Sci.* 24, 280–300.
- Hackett, G., Betz, N.E., Casas, J.M., Rocha-Singh, I.A., 1992. Gender, ethnicity, and social cognitive factors predicting the academic achievement of students in engineering. *J. Couns. Psychol.* 39, 527–538.
- Hansen, E.L., 1995. Entrepreneurial networks and new organization growth. *Entrep. Theory Pract.* 19, 7–19.
- Hayter, C.S., Lubinsky, R., Maroulis, S., 2017. Who is the academic entrepreneur? The role of graduate students in the development of university spinoffs. *J. Technol. Transf.* 42, 1237–1254.
- Heckman, J.J., 1976. The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models. *Ann. Econ. Soc. Measur.* 5, 475–492.
- Holcomb, T.R., Ireland, R.D., Holmes, R., Mitt, M.H., 2009. Architecture of entrepreneurial learning: exploring the link among heuristics, knowledge, and action. *Entrep. Theory Pract.* 33, 167–192.
- Hoetker, G., 2007. The use of logit and probit models in strategic management research: critical issues. *Strateg. Manage. J.* 28, 331–343.
- Hoppe, M., 2016. Policy and entrepreneurship education. *Small Bus. Econ.* 46, 13–29.
- Hunt, D.M., Michael, C., 1983. Mentorship: a career development training tool. *Acad. Manag. Rev.* 8, 475–485.
- Joensuu-Salo, S., Varamäki, E., Viljamaa, A., 2015. Beyond intentions – what makes a student start a firm? *Educ. + Train.* 57, 853–873.
- Kacperczyk, A.J., 2013. Social influence and entrepreneurship: the effect of university peers on entrepreneurial entry. *Organ. Sci.* 24, 664–683.
- Kaiser, H.F., 1958. The varimax criterion for analytic rotation in factor analysis. *Psychometrika* 23, 187–200.
- Kautonen, T., van Gelderen, M., Tornikoski, E.T., 2013. Predicting entrepreneurial behaviour: a test of the theory of planned behaviour. *Appl. Econ.* 45, 697–707.
- Kautonen, T., Hatak, I., Kibler, E., Wainwright, T., 2015a. Emergence of entrepreneurial behaviour: the role of age-based self-image. *J. Econ. Psychol.* 50, 41–51.
- Kautonen, T., van Gelderen, M., Fink, M., 2015b. Robustness of the theory of planned behavior in predicting entrepreneurial intentions and actions. *Entrep. Theory Pract.* 39, 565–674.
- Kibler, E., Kautonen, T., Fink, M., 2014. Regional social legitimacy of entrepreneurship: implications for entrepreneurial intention and start-up behaviour. *Reg. Stud.* 48, 995–1015.
- King, G., Zeng, L., 2001. Logistic regression in rare events data. *Polit. Anal.* 9, 137–163.
- Kolb, A.Y., Kolb, D.A., 2005. Learning styles and learning spaces: enhancing experiential learning in higher education. *Acad. Manag. Learn. Educ.* 4, 193–212.
- Kolvereid, L., 1996. Prediction of employment status choice intentions. *Entrep. Theory Pract.* 21, 47–57.
- Kolvereid, L., Moen, O., 1997. Entrepreneurship among business graduates: does a major in entrepreneurship make a difference? *J. Eur. Ind. Train.* 21, 154–160.
- Kram, K.E., 1985. *Mentoring at Work: Developmental Relationships in Organizational Life*. Scott Foresman, Glenview, IL.
- Kram, K.E., 1996. A relational approach to career development. In: Hall, D., Associates (Eds.), *The Career Is Dead—Long Live the Career*. Jossey-Bass, San Francisco, pp. 132–157.
- Krueger, N.F., 1993. The impact of prior entrepreneurial exposure on perceptions of new venture feasibility and desirability. *Entrep. Reg. Dev.* 5, 5–21.
- Krueger, N., Carsrud, A., 1993. Entrepreneurial intentions: Applying the theory of planned behaviour. *Entrep. Reg. Dev.* 5, 315–330.

- Krueger, N.F., Reilly, M.D., Carsrud, A.L., 2000. Competing models of entrepreneurial intentions. *J. Bus. Ventur.* 15, 411–432.
- Lankau, M.J., Scandura, T.A., 2002. An investigation of personal learning in mentoring relationships: content, antecedents, and consequences. *Acad. Manage.* 45, 779–790.
- Lazear, E.P., 2004. Balanced skills and entrepreneurship. *Am. Econ. Rev.* 94, 208–211.
- Lent, R.W., Brown, S.D., 2013. Social cognitive model of career self-management: toward a unifying view of adaptive career behavior across the life span. *J. Couns. Psychol.* 60, 557–568.
- Lent, R.W., Brown, S.D., Hackett, G., 1994. Toward a unifying social cognitive theory of career and academic interest, choice, and performance [Monograph]. *J. Vocat. Behav.* 45, 79–122.
- Lent, R.W., Brown, S.D., Hackett, G., 2000. Contextual supports and barriers to career choice: a social cognitive analysis. *J. Couns. Psychol.* 47, 36–49.
- Lévesque, M., Minniti, M., 2006. The effect of aging on entrepreneurial behavior. *J. Bus. Ventur.* 21, 177–194.
- Liñán, F., Chen, Y.W., 2009. Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrep. Theory Pract.* 33, 593–617.
- Luzzo, D.A., 1993. Ethnic differences in college students' perceptions of barriers to career development. *J. Multicult. Couns. Dev.* 21, 227–236.
- Matt, M., Schaeffer, V., 2018. Building entrepreneurial ecosystems conducive to student entrepreneurship: new challenges for universities. *J. Innov. Econ. Manage.* 25, 9–32.
- McClelland, D., 1961. *The Achieving Society*. Van Nostrand, Princeton, NJ.
- McMullen, J.S., Shepherd, A., 2006. Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Acad. Manag. Rev.* 31, 132–152.
- McWhirter, E.H., Hackett, G., Bandalos, D.L., 1998. A causal model of the educational plans and career expectations of Mexican American high school girls. *J. Couns. Psychol.* 45, 166–181.
- Nanda, R., Sørensen, J.B., 2010. Workplace peers and entrepreneurship. *Manage. Sci.* 56, 1116–1126.
- Neneh, B.N., 2019. From entrepreneurial alertness to entrepreneurial behavior: the role of trait competitiveness and proactive personality. *Pers. Individ. Dif.* 138, 273–279.
- Nielsen, S.L., Lassen, A.H., 2012. Identity in entrepreneurship effectuation theory: a supplementary framework. *Int. Entrep. Manag. J.* 8, 373–389.
- Noe, R.A., Greenberger, D.B., Wang, S., 2002. Mentoring: what we know and where we might go. *Res. Pers. Hum. Resour. Manag.* 21, 129–173.
- Orbell, S., Hodgdon, S., Sheeran, P., 1997. Implementation intentions and the theory of planned behavior. *Pers. Soc. Psychol. Bull.* 23, 945–954.
- Paulus, M.P., 2007. Decision-making dysfunctions in psychiatry-altered homeostatic processing? *Science* 318, 602–606.
- Preacher, K.J., Rucker, D.D., Hayes, A.F., 2007. Addressing moderated mediation hypotheses: theory, methods, and prescriptions. *Multivariate Behav. Res.* 42, 185–227.
- Rauch, A., Hulsink, W., 2015. Putting entrepreneurship education where the intention to act lies: an investigation into the impact of entrepreneurship education on entrepreneurial behavior. *Acad. Manag. Learn. Educ.* 214, 187–204.
- Renzulli, L.A., Aldrich, H., Moody, J., 2000. Family matters: gender, networks, and entrepreneurial outcomes. *Soc. Forces* 79, 523–546.
- Reynolds, P.D., Storey, D.J., Westhead, P., 1994. Cross-national comparisons of the variation in new firm formation rates. *Reg. Stud.* 28, 443–456.
- Reynolds, P.D., Carter, N.M., Gartner, W.B., Greene, P.G., 2004. The prevalence of nascent entrepreneurs in the United States: Evidence from the panel study of entrepreneurial neural dynamics. *Small Bus. Econ.* 23, 263–284.
- Richie, B.S., Fassinger, R.E., Linn, S.G., Johnson, J., Prosser, J., Robinson, S., 1997. Persistence, connection, and passion: a qualitative study of the career development of highly achieving African American-Black and White women. *J. Couns. Psychol.* 44, 133–148.
- Schaefers, K.G., Epperson, D.L., Nauta, M.M., 1997. Women's career development: Can theoretically derived variables predict persistence in engineering majors? *J. Couns. Psychol.* 44, 173–183.
- Schlaegel, C., Koenig, M., 2014. Determinants of entrepreneurial intent: a meta-analytic test and integration of competing models. *Entrep. Theory Pract.* 38, 291–332.
- Shapero, A., 1984. The entrepreneurial event. In: Kent, C.A. (Ed.), *The Environment for Entrepreneurship*. D.C. Heath & Company, Lexington, MA, pp. 21–40.
- Sheeran, P., 2002. Intention-behavior relations: a conceptual and empirical review. *Eur. Rev. Soc. Psychol.* 12, 1–36.
- Sheeran, P., Orbell, S., 2000. Using implementation intentions to increase attendance for cervical cancer screening. *Health Psychol.* 18, 283–289.
- Shinnar, R.S., Giacomini, O., Janssen, F., 2012. Entrepreneurial perceptions and intentions: the role of gender and culture. *Entrep. Theory Pract.* 36, 465–493.
- Shinnar, R.S., Hsu, D.K., Powell, B.C., Zhou, H., 2018. Entrepreneurial intentions and start-ups: are women or men more likely to enact their intentions? *Int. Small Bus. J. Res. Enterp.* 36, 60–80.
- Shirokova, G., Osiyevskyy, O., Bogatyreva, K., 2015. Exploring the intention-behavior link in student entrepreneurship: moderating effects of individual and environmental characteristics. *Eur. Manag. J.* 31, 1–14.
- Siegel, D.S., Veugelers, R., Wright, M., 2007. Technology transfer offices and commercialization of university intellectual property: performance and policy implications. *Oxford Rev. Econ. Policy* 23, 640–660.
- Sørensen, J.B., 2007. Bureaucracy and entrepreneurship: workplace effects on entrepreneurial entry. *Adm. Sci. Q.* 52, 387–412.
- Sorenson, O., Audia, P.G., 2000. The social structure of entrepreneurial activity: geographic concentration of footwear production in the United States, 1940–1989. *Am. J. Soc.* 106, 424–462.
- Souitaris, V., Zerbinati, S., Al-Laham, A., 2007. Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources. *J. Bus. Ventur.* 22, 566–591.
- Steier, L., 2003. Variants of agency contracts in family-financed ventures as a continuum of familial altruistic and market rationalities. *J. Bus. Ventur.* 18, 597–618.
- Steier, L., 2007. New venture creation and organization: a familial sub-narrative. *J. Bus. Res.* 60, 1099–1107.
- Steier, L., 2009. Where do new firms come from? Households, family capital, ethnicity, and the welfare mix. *Family Bus. Rev.* 22, 273–278.
- Sullivan, S.E., Baruch, Y., 2009. Advances in career theory and research: a critical review and agenda for future exploration. *J. Manage.* 35, 1542–1571.
- Swanson, J.L., Daniels, K.K., Tokar, D.M., 1996. Measuring perceptions of career-related barriers: the career barriers inventory. *J. Career Assess.* 4, 219–244.
- Tinsley, D.J., Faunce, P.S., 1980. Enabling, facilitating, and precipitating factors associated with women's career orientation. *J. Vocat. Behav.* 17, 183–194.
- Torrance, W.E.F., Rauch, J., Aulet, W., Blum, L., Burke, B., D'Ambrosio, T., Zurbuchen, T., 2013. Entrepreneurship Education Comes of Age on Campus: the Challenges and Rewards of Bringing Entrepreneurship to Higher Education. Ewing Marion Kauffman Research Paper.
- Van Gelderen, M., Kautonen, T., Fink, M., 2015. From entrepreneurial intentions to actions: self-control and action-related doubt, fear, and aversion. *J. Bus. Ventur.* 30, 655–673.
- Van Loy, B., Landoni, P., Callaert, J., van Pottelsberghe, B., Sapsalis, E., Debackere, K., 2011. Entrepreneurial effectiveness of European universities: an empirical assessment of antecedents and trade-offs. *Res. Policy* 40, 553–564.
- Vondracek, F.W., Lerner, R.M., Schulenberg, J.E., 1986. Career Development: a Life-span Developmental Approach. Erlbaum, Hillsdale, NJ.
- Von Graevenitz, G., Harhoff, D., Weber, R., 2010. The effects of entrepreneurship education. *J. Econ. Behav. Organ.* 76, 90–112.
- Walter, S.G., Parboteeah, K.P., Walter, A., 2013. University departments and self-employment intentions of business students: a cross-level analysis. *Entrep. Theory Pract.* 37, 175–200.
- Wiklund, J., Shepherd, D., 2003. Aspiring for, and achieving growth: the moderating role of resources and opportunities. *J. Manag. Stud.* 40, 1919–1941.
- Wright, M., Siegel, D.S., Mustar, P., 2017. An emerging ecosystem for student start-ups. *J. Technol. Transf.* 42, 909–922.
- Wright, M., Mustar, P., 2019. Student Start-ups: The New Landscape of Academic Entrepreneurship. Forthcoming.
- Zellweger, T., Sieger, P., Halter, F., 2011. Should I stay or should I go? Career choice intentions of students with family business background. *J. Bus. Ventur.* 26, 521–536.