

The Role of Commitment Along the Start-up Process

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Abstract

This study elucidates the twofold role of entrepreneurial commitment along the start-up process. It collects two waves of data from Greek nascent entrepreneurs. Based on the mindset theory of action phases and a longitudinal examination of the gestation process, we show that entrepreneurs who combine goal intentions with high commitment to an action plan progress toward venture creation. Applying the Rubicon model, we demonstrate the evolution of entrepreneurial intentionality from the motivational to volitional phases and prove that entrepreneurial commitment mediates the relationship between intentions and future start-up actions. These findings can help entrepreneurial ecosystems' stakeholders align support initiatives.

Keywords: Entrepreneurial commitment, Goal intention, Rubicon model, Business gestation process

1. Introduction

Recent evidence shows a discrepancy between the number of people who wish to become entrepreneurs and those who actually create new ventures (e.g. Delanoë-Gueguen and Fayolle, 2018; Mwange, 2018; Nabi et al., 2017; Treffers et al., 2019; Weiss et al., 2019). Several entrepreneurial studies have discussed the factor that distinguishes individuals who act to become entrepreneurs from those who wish to become entrepreneurs. Since the seminal works of Shaper and Sokol (1982) and Ajzen (1991), it has been commonly accepted that intended behavior drives venture creation and the adoption of entrepreneurial behavior (Krueger, 2009). In this regard, Krueger (2009) questioned the unidimensional nature of entrepreneurial intentions and proposed a dynamic evolutionary perspective of them. According to this perspective, intentions evolve from an initial interest to core entrepreneurial intentions through entrepreneurial commitment and are expressed through entrepreneurial actions for the creation of a new venture. Reynolds and Curtin (2008) are also aligned with the rationale that intentions should not only express individuals' interest in entrepreneurship but also reveal goal commitment. Therefore, they describe venture creation as a process that requires nascent entrepreneurs to focus on planning and invest effort and time to implement that plan (Kickul et al., 2009; Reynolds and Curtin, 2009). In other words, entrepreneurs should have the goal intention to become entrepreneurs and commit themselves to an action plan for venture creation (Van Gelderen et al., 2015). In this context, based on the intention models, entrepreneurial studies have focused on the first stage of the entrepreneurial process, namely the conception of a new enterprise. These studies have attempted to explore the process leading to the formation of entrepreneurial intentions (Liñán and Fayolle, 2015; Schlaegel and Koenig, 2014). However, they have paid limited attention to the second and the most crucial stage of the entrepreneurial process—the start-up process (Delanoë-Gueguen and Fayolle, 2018). This gap has led to an open debate about the future direction of nascent entrepreneurship research; this debate highlights the need for novel, theory-driven conceptual models, which could link goal-setting with goal-striving theories (Gollwitzer, 2012; Keller et al., 2019) and explain the different cognitive process before and after the formation of entrepreneurial intentions (Carsrud and Brännback, 2011; Fayolle and Liñán, 2014; Fayolle et al., 2014; Liñán and Fayolle, 2015; Schlaegel and Koenig, 2014). Several theoretical and empirical studies propose two complementary directions for the investigation of the intention-action link, based on the concepts of implementation intentions and commitment (e.g. Adam and Fayolle, 2015; Delanoë-Gueguen and Fayolle, 2018; Hueso et al., 2020; Van Gelderen et al., 2015). The most prevailing theory in this new research stream is the mindset theory of action phases (Gollwitzer, 2012) and its Rubicon model (Gollwitzer, 1990; Heckhausen and Gollwitzer, 1987). This model combines the motivational and volitional cognitive states, wherein the former and latter are driven by goal and implementation intentions, respectively.

Drawing on the mindset theory of action phases, this empirical study explores the role of entrepreneurial commitment as a cognitive mechanism in linking entrepreneurial intentions with start-up actions. Specifically, we investigate the nature of the effect (moderation or mediation) of commitment in the relationship between intentions and actions, using a unique set of longitudinal data collected from nascent entrepreneurs participating in various settings (start-up contests, business incubators/accelerators, and postgraduate entrepreneurship courses). We provide evidence that commitment moderates and mediates at a cross-sectional level and a longitudinal level, respectively. These findings support the theoretical perspective of the Rubicon model (Heckhausen, 2000), according to which individuals cross the entrepreneurial Rubicon only if they are fully committed to becoming an entrepreneur (moderation effect) and have the power to overcome their resistance to change (Fayolle et al., 2011). Since this decision is followed by a cognitional shift from a motivational to a volitional stance, the predictive power of entrepreneurial goal intentions ceases to exist and commitment becomes the main explanatory factor (mediation effect) of an individual's engagement in future start-up activities (Delanoë-Gueguen and Fayolle, 2018).

This study contributes to the literature in three ways. First, it corresponds to the need for integrated, theory-driven conceptualizations linking intention-based models with the theories of goal-striving (Krueger, 2009; Liñán and Fayolle, 2015; Shook et al., 2003). The proposed conceptual framework integrates the Rubicon model (Heckhausen, 2000) with Krueger's (2009) perspective of the dynamic evolution of entrepreneurial intentionality, thereby illustrating the different mindsets of nascent entrepreneurs along the phases of the start-up process. Second, the empirical evidence advances the current knowledge on the critical link between intention and action. Specifically, our findings demonstrate that while entrepreneurial intentions are a prerequisite for entrepreneurial behavior, individuals' entrepreneurial commitment determines successful venture creation as individuals increase their engagement in the start-up process (Adam and Fayolle, 2015; Delanoë-Gueguen and Fayolle, 2018; Liñán and Fayolle, 2015; Treffers et al., 2019). Third, our longitudinal design and the use of the sample in a variety of contexts and engagement levels contribute toward eliminating several biases prevalent among the nascent entrepreneurs, such as the common method bias (Chang et al., 2010; Podsakoff et al., 2003), the hindsight bias (Cassar and Craig, 2009) and the survivorship bias (Cassar, 2007). This allows us to draw more robust conclusions.

This study also provides meaningful practical implications for educators, the designers of nascent entrepreneurship support programs, and investors or other stakeholders in the start-up ecosystem. By

connecting each mindset phase to the intentionality dimensions, we advance the knowledge on the different support expectations and training or mentoring needs of nascent entrepreneurs at the different stages of the start-up process. Specifically, individuals in the pre-decision phase would benefit from a training program to cultivate a deliberative mindset and, in turn, formulate strong entrepreneurial intentions. Accordingly, individuals with an implemental mindset should participate in mentoring sessions for nascent entrepreneurs to understand the value of commitment and streamline their entrepreneurial activity.

The rest of the paper proceeds as follows. Section 2 proposes a conceptual framework to investigate the possible moderating or mediating effect of entrepreneurial commitment in the relationship between intentions and actions. Section 3 describes the method and Section 4 presents the empirical results of our hypotheses testing. Finally, Section 5 discusses the findings and their theoretical contribution and practical implications, the study's limitations, and our perspectives for future research.

2. Theoretical Framework

2.1 Intention-Action Gap in the Start-up Process

Within the scope of this study, we define entrepreneurship as a process during which an entrepreneur decides to exploit an opportunity to create new value via the creation of a new venture (Hindle and Klyver, 2011; Reynolds et al., 2005). According to Reynolds and Curtin (2008), venture creation is associated with three major stages. The first stage focuses on the conception of a new enterprise. In this stage, individuals take a decision, alone or in teams, to initiate the creation of a new firm. The second stage is referred to as the gestation or start-up process; it involves the identification and organization of resources and stakeholders for the establishment of a new firm. The third stage, namely the birth of a new firm, marks the culmination of the start-up phase of a firm and its subsequent growth trajectory.

According to the nascent entrepreneurship literature, during the start-up process, the intentions of nascent entrepreneurs lead them to undertake purposeful actions to create a new venture (Aldrich and Cliff, 2003; Baron, 2008; Carter et al., 1996). This start-up formation process occurs over time as entrepreneurs establish connections with individuals and organizations, acquire resources outside the newly established boundaries of the firm, and engage critical stakeholders in committing to the concept of the new venture (Low and Abrahamson, 1997; Shook et al., 2003). Thus, the theoretical framework of this study views the start-up process from a transitional perspective, which starts with the development of entrepreneurial goal intentions (Krueger and Carsrud, 1993) and culminate when start-up actions translate intentions into a new venture (Bird, 1988).

Since the formation of entrepreneurial intentions is the first crucial step in the new venture creation process, it is important to build a common understanding of its definition. According to the literature, entrepreneurial intentions capture the self-acknowledged convictions of individuals inclined to set up a new business ventures (Thompson, 2009) and are formulated prior to individuals' decision to act (Krueger, 2005). Concerning their mental state (Bird, 1992), intentions reveal individuals' willingness and capability to become entrepreneurs and, in some case, their motivation to create a new venture (Fitzsimmons and Douglas, 2011; Liñán and Fayolle, 2015; Schlaegel and Koenig, 2014).

However, intention-based models focus on antecedents of intentions and disregard the timing of venture creation (Krueger et al., 2000). As Shook et al. (2003: 383) point out, "It may be a relatively long or short time after intent develops before a new venture opportunity is even identified." In an attempt to theorize the dynamic nature of intentions, Krueger (2009) reasons that only a few who want to become entrepreneurs act accordingly to create a new venture. Based on this reasoning, he proposes a dynamic, three-stage view of intentionality. According to this view, entrepreneurial intentions evolve from an initial entrepreneurial "interest" to core intentions characterized by commitment toward entrepreneurial behavior to a progress toward nascency, which is the genuine expression of entrepreneurial intentions through activities aimed at venture creation (Krueger, 2009).

Identifying the insufficient knowledge and the lack of empirical evidence on the intention-action gap, Fayolle and Liñán (2014) call for a more comprehensive exploration of the different dimensions of entrepreneurial intentionality and propose two complementary directions—implementation intentions and entrepreneurial commitment. Based on the findings from their systematic literature review, Liñán and Fayolle (2015) encourage entrepreneurship researchers to apply the implementation intention theory (Gollwitzer, 1999) in studying the link between intention and behavior. This emphasis can be attributed to the fact that the implementation intention is a self-regulatory strategy, which is operationalized in the "if-then" form, and hence it can lead to a better goal-attainment and help individuals have a greater inclination to act on their intentions. The strength of commitment toward the goal and the plan is crucial to the effectiveness of the implementation intention (Ajzen et al., 2009; Gollwitzer, 1999). However, the entrepreneurial literature has paid limited attention to the role of entrepreneurial commitment in the relationship between intention and behavior (Adam and Fayolle, 2015).

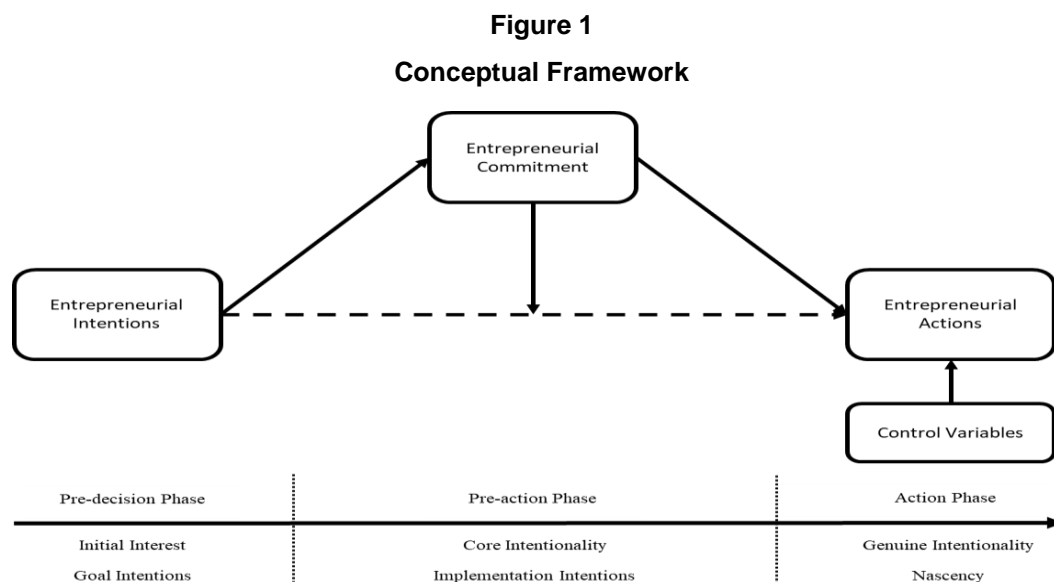
Despite the fact that the role of commitment is under-investigated in the context of nascent entrepreneurship, its relationship with decision-making and action is well-established in the fields of social and cognitive psychology. In this context, researchers argue that people are not committed through their ideas or feelings but through their actions or behaviors (Kiesler, 1971). In the same vein, Festinger (1964) defines commitment as a decision that directly influences future behaviors. According to Beauvois and Joule (1981), in any given situation, the more an individual acts, the more the individual witnesses an increase in own commitment levels. They also indicate that the degree of freedom (real or perceived) an individual experiences during decision-making determines the individual's level of commitment. Some psychologists define commitment as the force that stabilizes the behavior of individuals (Brickman et al., 1987) and gives them the strength to pursue their desired course of action, despite the obstacles in the process or the attractiveness and potential of alternative options (Dubé et al., 1997).

The notion of commitment is extended by Bruyat (1993) dynamic model of venture creation. According to this model, an individual's commitment to the venture creation process provides an understanding of the timing of the initiation of the entrepreneurial process and that of the emergence of the organization, respectively. The culmination of commitment is reflected by the stage in which the entrepreneur will be driven to progress with the launch of the project. Once fully committed to the process, the individual will be driven to launch the project in order to avoid the high cost of disengagement. Fayolle et al. (2011) define entrepreneurial commitment as the moment when the individual starts devoting most of own time; energy; and financial, intellectual, relational, and emotional resources to own project. According to their perspective, commitment is the result of an action that leads to more actions. In this regard, commitment is a binding act after which an actor will experience a reduced degree of freedom. This partial loss of freedom can be attributed to the two dimensions that accompany the actor's acceptance to make a commitment. On the one hand, they participate in a series of almost irreversible actions and, on the other hand, commitment leads to other related actions that individuals fail to perceive at the time of making a commitment. Moreover, commitment includes the total commitment of resources, which automatically excludes any other project (Fayolle et al., 2011).

In summary, it is understood that there is an urgent need to redefine the meaning of entrepreneurial intentionality in order to include the dynamic perspective of the start-up process; it also crucial to conduct an empirical investigation of the relationship between intention and behavior based on robust theories that explain both goal-setting and goal-striving cognitions (Adam and Fayolle, 2015; Delanoë-Gueguen and Fayolle, 2018; Keller et al., 2019; Liñán and Fayolle, 2015; Weiss et al., 2019). In this regard, we propose a conceptual framework built on the theory that potential entrepreneurs proceed toward start-up activities only after making a commitment to accomplish venture creation.

2.2 Conceptual Model

As in the past, theories from cognitive psychology (e.g., Ajzen (1991) Theory of Planned Behavior) have been applied to explain entrepreneurial intentionality. In the same way, we apply the mindset theory of action phases (Gollwitzer, 1990, 2012) and its Rubicon Model (Heckhausen, 1987; Heckhausen and Gollwitzer, 1987) to investigate the phases of the start-up process and the role of commitment in the relationship between intentions and actions. According to the proposed conceptual model, the start-up process is divided into three phases, beginning with individuals' initial entrepreneurial interest and culminating with the creation of the venture.



During the pre-decision phase, individuals express entrepreneurial intentions or possess goal intentions of becoming entrepreneurs. These intentions are the results of a deliberative evaluation process of the alternative career choices. As the literature on entrepreneurial intentionality suggests, during this phase, individuals ascertain the suitability of an entrepreneurial career on the basis of their perception of the desirability and the feasibility of the ensuing entrepreneurial behavior (Douglas and Shepherd, 2002; Fitzsimmons and Douglas, 2011; Thompson, 2009). According to Gollwitzer (2012), since individuals cannot ascertain the outcome of their decisions, it is crucial to deliberate between potential action by exercising open-mindedness toward any available information. Therefore, feasibility- and desirability-related information should be analyzed, respectively, in an objective and impartial manner. This approach can help individuals to turn entrepreneurial desires into binding goal intentions that are genuinely attractive and can be realized (Delanoë-Gueguen and Fayolle, 2018; Gollwitzer, 2012). After setting goal intentions, individuals proceed to the pre-action phase or, in line with the Rubicon model, cross the entrepreneurial Rubicon. During this phase, individuals transition from a deliberative to an implemental phase, wherein they focus on the accomplishment of the goal-behavior. Specifically, individuals plan their actions to become entrepreneurs through the creation of a venture. In order to succeed, they must commit themselves to the implementation of the plan and the accomplishment of the goal (Gollwitzer, 1993, 1999; Gollwitzer and Brandstätter, 1997). This study demonstrates how commitment drives entrepreneurs to a stage wherein the goal of successful venture creation occupies their professional life (the allocation of time and resources and the absence of any alternative professional commitment). Hence, in this phase, individuals' decisions are influenced by the volitional, and not the motivational, factors. During this phase, individuals are expected to exhibit close-mindedness, which would favor the selective processing of information to support the chosen goal. In order to increase commitment toward the chosen goal, individuals must assess the goal's feasibility in an overly optimistic way and desirability in a partial manner, with the advantages exceeding the disadvantages of the process.

The final action phase begins when individuals start executing their plan of becoming entrepreneurs by acting accordingly. In this phase, individuals are governed by an actional mindset that helps them to sustain the course of action and ignore disruptive cues from their environment and themselves (Gollwitzer, 1990). While persistent and highly committed individuals witness the successful completion of the action phase and the creation of the venture, the less committed individuals abandon their effort and fail to create their start-up.

2.3 Hypotheses Building

In the context of this study, entrepreneurial intentions are defined as an individual's goal-intentions to become an entrepreneur. They are the results of an individual's deliberate decision to engage fully in accomplishing the goal of venture creation and believing own potential to achieve this goal. Based on the perspective of the Rubicon model (Heckhausen, 2000), individuals with strong goal intentions will cross the entrepreneurial Rubicon only if they are fully committed to the act of becoming entrepreneurs (moderation effect) and have the power to overcome their resistance to change (Fayolle et al., 2011). In this regard, it must be noted that the transition between the phases is accompanied by a cognitional shift in the individuals—from a deliberative to an implemental stance. As a result, the more the individuals engage in start-up activities, the more their initial motivations will translate into commitment toward venture creation. Therefore, as individuals move toward the final action phase, the predictive power of entrepreneurial goal intentions fades away and commitment becomes the main explanatory factor (mediation effect) of individuals' level of engagement in start-up activities (Delanoë-Gueguen and Fayolle, 2018).

Building on Heckhausen and Gollwitzer (1987) proposition that crossing the Rubicon should be hypothesized as a discrete switch in individuals' mindsets, we argue that, at a given time, individuals' goal intentions transform into concrete actions only if their commitment exceeds a certain threshold. Based on the vast empirical evidence supporting that venture creation is a long-lasting process, we expect the transition from the pre-action to the action phase to be a gradual process; this transition gathers pace as individuals increase their engagement in the start-up activities. During this period, nascent entrepreneurs should evince high levels of commitment, since commitment is the volitional factor that can help them to remain focused on the accomplishment of their goal. Hence, we argue that the individuals' initial goal intentions do not directly influence the level of entrepreneurial activity accomplished one year after the initiation of the gestation period. However, the effect of intentions is mediated by nascent entrepreneurs' level of commitment during the start-up process. Based on these arguments, we hypothesize the following:

Hypothesis 1: At a cross-sectional level, entrepreneurial commitment moderates the relationship between entrepreneurial intentions and the level of the entrepreneurial activity.

Hypothesis 2: At a longitudinal level, entrepreneurial commitment (T2) mediates the relationship between initial entrepreneurial intentions (T1) and the final level of the entrepreneurial activity (T2).

3. Methodology

3.1 Research Design and Method

To test the hypotheses, this study adopts a social survey design, with data collection at two points in time (Bryman and Bell, 2015). This approach combines a cross-sectional and longitudinal quantitative research design. It is the most suitable method for testing the hypotheses of the proposed model because of the following reasons. In the first wave (T1) of data collection, the method allows us to reach the maximum sample size of the niche population (approximately 1,200 nascent entrepreneurs in Greece). In the second wave of data collection (T2 after 12 months), the method allows us to test the causal effects of entrepreneurial commitment on the relationship between intentions and actions for venture creation. In both the waves of data collection, this study employs the web survey method as the main research instrument. The use of structured online questionnaires (one for each wave) is attributed to the advantages of self-completion questionnaires over the structured interviews (Bryman and Bell, 2015).

3.2 Sample

This study embraces the recommendations of Fayolle and Liñán (2014) in regard to the necessity of sampling from a variety of contexts. Following techniques similar to multistage sampling (Dillman et al., 2014), we cluster the target population of nascent entrepreneurs into the following three groups: (a) participants of business incubators/accelerators, (b) participants of start-up contests, and (c) postgraduate students enrolled in at least one entrepreneurship course. To ensure a representative sample of each subpopulation, we stratified the programs of each group, from the biggest to the smallest; subsequently, we followed the disproportionate sampling procedure (Dillman et al., 2014). For the first two groups, we decided to sample approximately 64% of all individuals, namely those in the four most popular incubators/accelerators and the two biggest start-up contests. For the students, we decided to sample all of the students because this group had the smallest size; additionally, students undertaking entrepreneurial study may not have entrepreneurial intentions, which is a prerequisite characteristic for this study.

In the first wave of data collection of the 860 participants, 220 completed the questionnaires. After performing a data validation process for missing data and outliers (Hair et al., 2006), we excluded 17 questionnaires from the final analysis; this yielded a sample of 203 nascent entrepreneurs and a response rate of approximately 24%, which is comparable to other studies on the entrepreneurial process (Kautonen et al., 2013; Van Gelderen et al., 2015). In the second wave of data collection (after 12 months), we sampled respondents who had indicated their willingness to participate in both the waves and provided us with their email address. From the 203 nascent entrepreneurs of the first wave, 105 individuals agreed to participate in the follow-up study; the data validation yielded a sample of 61 individuals and a response rate of 58%. Details about the population and the sample size are presented in Table 1.

Table 1
Population and sample size

Groups	Population	Sample	Completed Sample	Completed Sample for analysis	% Response Rate
Participants of incubators/accelerators	585	335	85	83	25
Participants of start-up contests	387	285	62	60	21
MBA students	240	240	73	60	25
Total T1	1212	860	220	203	24
Total T2	203	105	61	61	58

Table 2 provides demographic information of the adults in the total sample and the data collection waves. The total sample comprised 61% men. The average age and work experience of respondents accounted for 33.5 years and 10 years, respectively. The proportion of respondents having an entrepreneurial parent and a monthly income below 1000 euros accounted for 36.5% and 55%, respectively.

Table 2
Respondents' profile

	Only T1	T1 and T2	Total
Number of persons	142	61	203
MBA students (percent)	30	31	30.5
Male (percent)	62	59	61
Age (average years)	33	34	33.5
Work Experience (average years)	10	11	10
Entrepreneurial Parents (percent)	37	34	36.5
Income < 1000 euros (percent)	55	56	55

3.3 Generalizability of Results and Non-response Bias

To ensure the generalizability of our findings (T1), we examine whether the respondents differ from the general population of nascent entrepreneurs in Greece. Based on the national annual entrepreneurship report 2018–2019 of the Global Entrepreneurship Monitor (GEM), the comparison did not indicate notable age-based or gender-based differences between our sample and that of the respective population (Tsakanikas et al., 2019). We also compare the characteristics of our sample with the dataset of the panel study of entrepreneurial dynamics (PSED I, II) (Reynolds, 2011; Reynolds and Curtin, 2009). The comparison shows that the average age in our sample (33.5 years) is slightly lower than the corresponding age in the PSED II dataset (39 years); the participation of women sampled in this study is slightly higher than the 37% representation in the PSED II dataset.

To check for the non-response bias in the second wave and ensure that the results of the second wave can be generalized to the sample of the first wave, we examine (a) if the participants of T1 and T2 differed from the non-participants and (b) if individuals who expressed their willingness to participate in both waves differed from those who did not provide contact details crucial for their inclusion into the second wave. Concerning the entrepreneurial intentions, commitment, and activity, we test for any statistically significant difference in the means between groups; to this end, we use the one-way analysis of variance (ANOVA). Results from the comparisons indicate that, in all instances, the differences between the samples of the two waves of data collection were not statistically significant ($p > 0.05$), and thereby confirm the absence of non-response bias.

Table 3
Differences between participants of the first wave and those of both waves

	Participants only in T1	Participants in T1 and T2	F	p-value
Number of persons	142	61		
Entrepreneurial Intentions	5.62	5.87	2.00	0.159
Entrepreneurial Commitment	4.97	5.28	2.28	0.133
Entrepreneurial Actions	0.44	0.45	0.11	0.744

Table 4
Differences between potential participants for both the waves and those who denied participating in the second wave

	Potential participants of both waves	Respondents of T1 who deny participating in T2	F	p-value
Number of persons	105	98		
Entrepreneurial Intentions	5.72	5.67	0.12	0.729
Entrepreneurial Commitment	5.04	5.09	0.08	0.772
Entrepreneurial Actions	0.42	0.47	1.09	0.298

3.4 Measurement of Variables

In both T1 and T2 waves, entrepreneurial activity is measured on the basis of the scale of start-up activities of PSED II (Reynolds, 2011). Specifically, we adapted the scale based on the national particularities and the focus

of the study (only pre-launch activities), as described in Appendix 1. In both the waves, entrepreneurial commitment is measured on the basis of a four-item scale from the entrepreneurial profile questionnaire (EPQ) (Welsch, 1998) and the PSED I. According to Liao et al. (2005) these four items measure the commitment toward and focus of entrepreneurs on their entrepreneurial ventures. Specifically, the items refer to the extent to which an entrepreneur spends time and resources on venture creation and the extent to which the entrepreneur gives up other pursuits to create and own a business. Entrepreneurial intentions are measured by the six-item scale of Liñán and Chen (2009). Based on the recommendations and findings of prior studies, we control for the effects of age, gender, monthly income, and academic entrepreneurship education on entrepreneurial activity (e.g., Delanoë-Gueguen and Fayolle, 2018; Mwangi, 2018; Nabi et al., 2017; Treffers et al., 2019; Weiss et al., 2019; Xavier-Oliveira et al., 2015)

4. Analysis and results

This study uses the STATA software (version 13.0) to conduct the statistical analysis. Table 5 presents the descriptive (mean, standard deviation, min, and max) and summary statistics of the confirmatory factor analysis used to verify variable structures. The figures show the chi-square values and the multiple indexes comparative fit index (CFI), standardized root mean square residual (SRMR), and root mean square error of approximation (RMSEA) indicating a good model fit (Bollen, 1990; Hu and Bentler, 1999). The interitem reliability coefficient of the measures was found acceptable, according to the organizational attribute reliability standards suggested by Van de Ven and Ferry (1980). The arithmetic mean of the scores was computed to create a composite indicator that measures each variable, which will be used for further statistical analysis.

Table 5
Descriptive, Confirmatory Factor Analysis, and Reliability Summary

Variable	Mean	SD	Min	Max	$\chi^2(df)$	$p > \chi^2$	CFI	SRMR	RMSEA	α
Entrepreneurial Intentions	5.69	1.14	1.83	7.00	3.24(5)	0.66	1.00	0.01	0.00	0.91
Entrepreneurial Commitment (T1a)	5.06	1.35	1.00	7.00	1.23(1)	0.27	1.00	0.01	0.03	0.81
Entrepreneurial Commitment (T2b)	5.02	1.45	1.50	7.00	4.45(2)	0.11	0.98	0.03	0.15	0.90

a Number of observations: 203

b Number of observations: 61

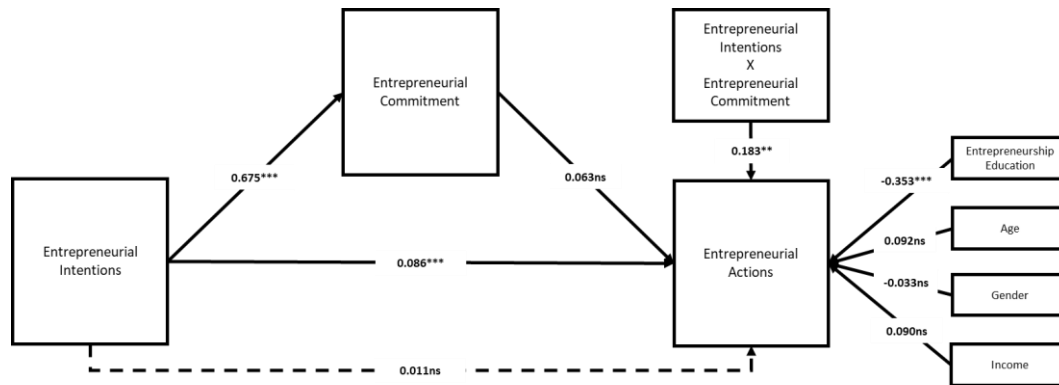
To test the hypotheses of both the conceptual models (T1 and T2), this study performs a path analysis—a subset of the structural equation modeling (SEM). We chose the path analysis over the linear regression analysis because path analysis permits the simultaneous estimation of multiple causal relationships (Kline, 2005; Medsker et al., 1994). It is also more appropriate than the full-fledged SEM as it optimizes the sample size relative to the parameter estimates, allowing us to model the full complexity of the tested relationships while keeping the number of estimated parameters reasonable for the 203 (T1) and 61 (T2) observations (Hardy and Bryman, 2009; Hu and Bentler, 1999).

4.1 Path Analysis for the T1 Model

The hypothesized T1 path model is in line with suggestions of Hu and Bentler (1999), for samples $N \leq 250$; it also provides an excellent fit to the data, with the goodness-of-fit indices based on the recommended criteria ($\chi^2(5df) = 8.12$, $p > \chi^2 = 0.15$, $RMSEA = 0.056$, $CFI = 0.985$, $TLI = 0.961$, $SRMR = 0.025$). Overall, the model explains 61% of the variance in entrepreneurial actions. Figure 2 presents the standardized coefficients of the T1 path model, and Table 6 presents the specifications of the maximum-likelihood estimates.

Concerning control variables, we found a negatively statistically significant relationship between an individual's academic entrepreneurship education and entrepreneurial actions ($\beta = -0.353$, $p = 0.000$); this implies that non-academic entrepreneurship education (i.e., training in business incubators/accelerators and start-up contests) is more favorable for the entrepreneurial activity. However, we found a statistically non-significant ($p > 0.1$) relationship between an individual's age ($\beta = 0.092$, $p = 0.145$), gender ($\beta = -0.032$, $p = 0.596$), and monthly income ($\beta = 0.090$, $p = 0.158$) and the individual's entrepreneurial actions.

Figure 2
SEM Path Analysis Results for T1 Model



Note: ns=non-significant; *p < 0.05; **p < 0.01; ***p < 0.001. Dotted lines represent indirect (mediation) effects.
 Number of observations = 202; χ^2 (5df) = 8.12; $p > \chi^2 = 0.150$; RMSEA = 0.056; SRMR = 0.025; CFI = 0.985; TLI = 0.961; $R^2 = 0.61$

Table 6
Maximum-likelihood estimates for the T1 path model

	Standardized Coefficients	OIM Standard Errors	z	P> z	[95% Confidence Interval]	
DV-Entrepreneurial Commitment						
Entrepreneurial Intentions	0.675	0.034	20.05	0.000	0.609	0.741
_cons	0.387	0.278	1.39	0.164	-0.158	0.931
DV-Entrepreneurial Actions						
Entrepreneurial Commitment	0.063	0.078	0.81	0.417	-0.090	0.216
Entrepreneurial Intentions	0.325	0.081	4.00	0.000	0.166	0.485
Intentions × Commitment	0.183	0.062	2.92	0.003	0.060	0.305
Entrepreneurship Education	-0.353	0.057	-6.23	0.000	-0.463	-0.242
Age	0.092	0.063	1.46	0.145	-0.032	0.216
Gender	-0.032	0.061	-0.53	0.596	-0.153	0.088
Income	0.090	0.064	1.41	0.158	-0.035	0.216
_cons	-0.601	0.480	-1.25	0.210	-1.541	0.339
var(e.EC)	0.544	0.045			0.462	0.641
var(e.EA)	0.645	0.049			0.555	0.749

LR test of model vs. saturated: $\chi^2(5) = 8.12$, Prob > $\chi^2 = 0.150$ n=202

A simultaneous examination of the direct and indirect effects rejects the hypothesis that entrepreneurial commitment mediates the relationship between entrepreneurial intentions and entrepreneurial actions, at cross-sectional level. Specifically, the indirect effect of entrepreneurial intentions on entrepreneurial actions is not statistically significant ($\beta = 0.043$, $p = 0.419$), while the corresponding direct effect is ($\beta = 0.325$, $p = 0.000$). Conversely, an examination of the product terms shows that the effect of entrepreneurial intentions on entrepreneurial actions is positively dependent on the level of entrepreneurial commitment at the same time. Specifically, the product coefficient of the interaction between entrepreneurial intentions and entrepreneurial commitment is statistically significant ($\beta=0.183$, $p=0.003$). Therefore, we conduct a simple slope analysis to test the nature of this interaction effect (Aiken et al., 1991). According to this analysis, we create plots for the significant moderating variable (i.e., entrepreneurial commitment) by using values of one standard deviation below mean (low EC), one at mean (medium EC), and one standard deviation above mean (high EC). Subsequently, we test the significance of these slopes using a bootstrapping approach with 5,000 replications (Hayes, 2013; Preacher et al., 2007) to obtain standard errors and confidence intervals. We prefer this approach over the normal theory-based approach because the biased corrected and percentile confidence intervals are non-symmetric and can better reflect the sampling distribution of the interaction effects. Figure 3 shows the plots for the direct effect of entrepreneurial intentions on entrepreneurial actions and the moderating effects of entrepreneurial commitment on the relationship between entrepreneurial intentions and entrepreneurial actions. These plots suggest that the interaction effects increase slowly with an increase in the value of the moderator

variable. In other words, the positive relationship between intentions and actions strengthens with an increase the commitment levels, supporting Hypothesis 1. Table 7 presents the significance tests of the slopes.

Figure 3
Moderating Effects of Entrepreneurial Commitment on the Relationship
between Entrepreneurial Intentions and Actions
(T1 Model)

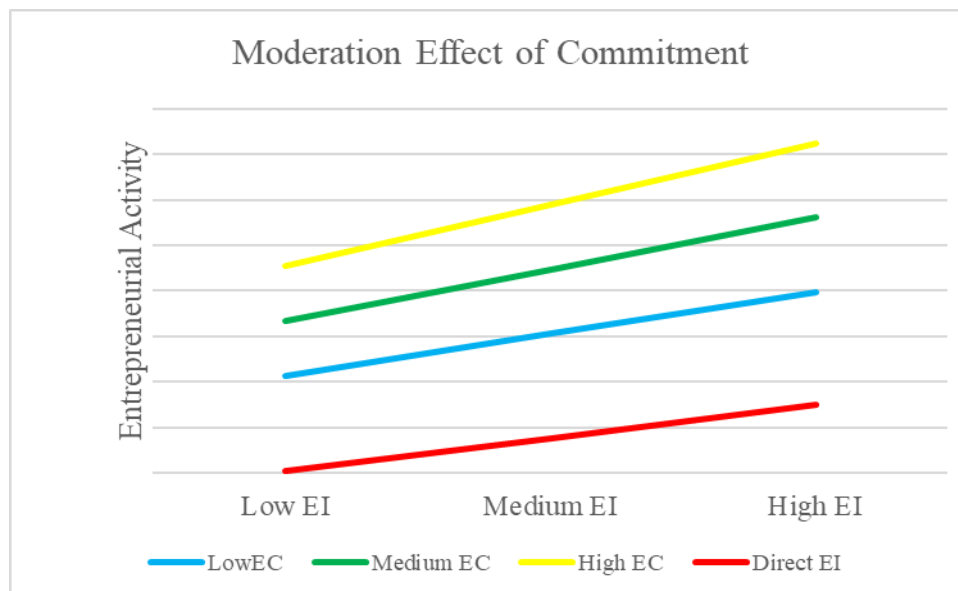


Table 7
Simple slope analysis for the moderating effects of entrepreneurial commitment on the relationship
between entrepreneurial intentions and actions for the T1 model

	Observed Coefficients	Bias	Bootstrap Standard Errors	z	P> z	[95% Confidence Interval]		
Low EC	0.201	-0.003	0.068	2.940	0.003	0.067	0.334	(N)
						0.065	0.334	(P)
						0.070	0.341	(BC)
Medium EC	0.249	-0.004	0.088	2.820	0.005	0.076	0.422	(N)
						0.072	0.420	(P)
						0.077	0.426	(BC)
High EC	0.297	-0.005	0.109	2.730	0.006	0.084	0.510	(N)
						0.079	0.505	(P)
						0.084	0.511	(BC)

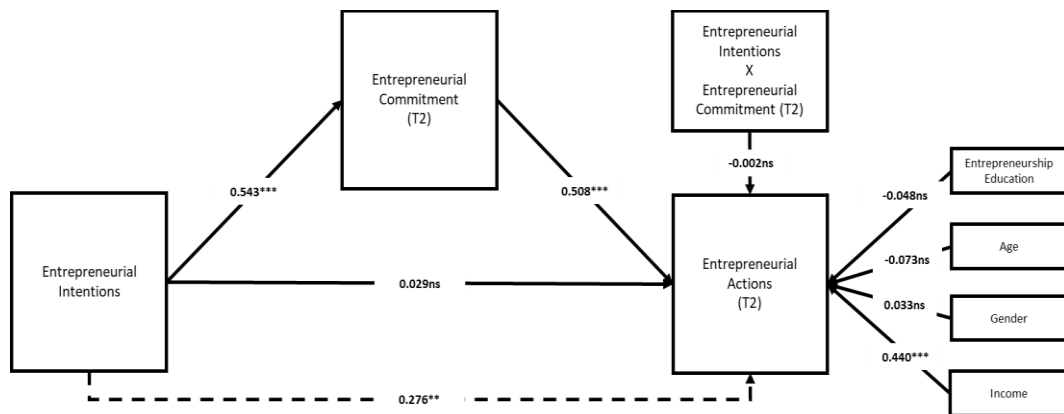
Notes: (N) normal-based confidence interval, (P) percentile confidence interval, (BC) bias-corrected confidence interval

4.2 Path Analysis for the T2 Model

The hypothesized T2 path model provides an excellent fit to the data, with the goodness-of-fit indices based on the recommended criteria ($\chi^2(5df) = 4.68$, $p > \chi^2 = 0.46$, $RMSEA = 0.000$, $CFI = 1.000$, $TLI = 1.016$, $SRMR = 0.044$) and explains 48% of the variance in entrepreneurial actions. Figure 4 presents the standardized coefficients of the T2 path model, and Table 8 presents the specifications of the maximum-likelihood estimates.

Figure 4

SEM Path Analysis Results for T2 Model



Note: ns=non-significant; *p < 0.05; **p < 0.01; ***p < 0.001. Dotted lines represent indirect (mediation) effects.
 Number of observations = 55; χ^2 (5df) = 4.68; $p > \chi^2 = 0.456$; RMSEA = 0.000; SRMR = 0.044; CFI = 1.000; TLI = 1.016; $R^2 = 0.48$

Table 8

Maximum-likelihood estimates for the T2 path model

	Standardized Coefficients	OIM Standard Errors	z	P> z	[95% Confidence Interval]	
DV-Entrepreneurial Commitment (T2)						
Entrepreneurial Intentions	0.543	0.088	6.18	0.000	0.371	0.715
_cons	0.530	0.660	0.80	0.422	-0.764	1.823
DV-Entrepreneurial Actions (T2)						
Entrepreneurial Commitment (T2)	0.508	0.114	4.45	0.000	0.284	0.732
Entrepreneurial Intentions	0.029	0.121	0.24	0.810	-0.209	0.267
Intentions x Commitment (T2)	-0.002	0.098	-0.02	0.987	-0.194	0.191
Entrepreneurship Education	-0.048	0.102	-0.47	0.636	-0.249	0.152
Age	-0.073	0.103	-0.71	0.477	-0.276	0.129
Gender	0.033	0.105	0.32	0.753	-0.173	0.239
Income	0.440	0.100	4.41	0.000	0.244	0.636
_cons	-1.199	0.783	-1.53	0.126	-2.733	0.336
var(e.EC_T2)	0.705	0.095			0.541	0.919
var(e.EA_T2)	0.514	0.085			0.372	0.710

LR test of model vs. saturated: $\chi^2(5) = 8.12$, Prob > $\chi^2 = 0.150$ n=202

Concerning the control variables for the T2 path model, there is a statistically non-significant ($p > 0.1$) relationship between an individual's age ($\beta = -0.073$, $p = 0.477$), gender ($\beta = 0.033$, $p = 0.753$), and academic entrepreneurship education ($\beta = -0.048$, $p = 0.636$) and the individual's entrepreneurial actions (T2). Conversely, an individual's monthly income is significantly positively related to the individual's entrepreneurial activity ($\beta = 0.440$, $p = 0.000$).

An examination of the direct and indirect effects supports the hypothesis that entrepreneurial commitment (T2) mediates the relationship between entrepreneurial intentions and entrepreneurial actions after 12 months. Specifically, the indirect effect of entrepreneurial intentions on entrepreneurial actions (T2) is positive and statistically significant ($\beta = 0.276$, $p = 0.002$), while the corresponding direct effect is not significant ($\beta = 0.029$, $p = 0.810$). In order to assess the significance of the mediating effect, we follow the procedures outlined by Baron and Kenny (1986) and use the Sobel (1982) test, which determines the magnitude of the change in the beta-coefficient for a predictor variable after the entry of another predictor variable (mediator) into the model. As illustrated in Table 9, all the four Baron and Kenny's (1986) conditions are satisfied and the mediating effect is statistically significant, with the Sobel test statistic at 2.878 ($p = 0.004$). Specifically, the model (c) suggests that entrepreneurial intentions are statistically significant and positively related to T2's entrepreneurial actions ($\beta = 0.101$, $p = 0.024$). Models (a) and (b) indicate that entrepreneurial intentions are positively related to T2's entrepreneurial commitment ($\beta = 0.713$, $p = 0.000$), and T2's entrepreneurial commitment is positively related to T2's entrepreneurial actions ($\beta = 0.128$, $p = 0.000$). Conversely, model (c) shows that the effect of entrepreneurial intentions on T2's entrepreneurial actions becomes statistically non-significant when controlling for the effect of T2's entrepreneurial commitment ($\beta = 0.010$, $p = 0.825$).

Table 9

Mediating effect of T2's entrepreneurial commitment in the relationship between entrepreneurial intentions and T2's entrepreneurial actions

Variables	Model a IV → Mediator	Model b Mediator → DV	Model c IV → DV	Model c' IV → DV Mediator controlled
Entrepreneurial Intentions	0.713***		0.101*	0.010ns
Entrepreneurial Commitment (T2)		0.128***		
Control Variables				
Intentions x Commitment (T2)	0.048ns	-0.001ns	0.006ns	-0.001ns
Entrepreneurship Education	-0.259ns	-0.040ns	-0.073ns	-0.040ns
Age	0.014ns	-0.003ns	-0.001ns	-0.003ns
Gender	0.282ns	0.024ns	0.061ns	0.024ns
Income	0.277ns	0.173***	0.209***	0.173***
F	4.35***	7.44***	4.72***	7.44***
R2	0.352	0.526	0.371	0.526
Adjusted R2	0.271	0.455	0.292	0.455
Sobel test statistic				2.878**

Note: ns non-significant; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. $n = 55$

Conversely, an examination of the product terms rejects the hypothesis that T2's entrepreneurial commitment moderates the relationship between entrepreneurial intentions and T2's entrepreneurial actions; this is based on the finding that the product coefficient of the interaction between entrepreneurial intentions and T2's entrepreneurial commitment is not statistically significant ($\beta = -0.002$, $p = 0.987$).

5. Discussion and Conclusion

This empirical study elucidates the role of entrepreneurial commitment along the start-up process. Based on the mindset theory of action phases (Gollwitzer, 2012) and a longitudinal examination of the gestation process, we show that although a large number of individuals may have entrepreneurial goal intentions, only few who are fully committed toward the goal of creating a venture cross the entrepreneurial Rubicon. The validation of hypothesis 1 (the moderating effect of commitment) indicates that the formation of strong goal intentions and a high level of commitment to an action plan can help individuals to proceed with the initiation of the start-up activities. The validation of hypothesis 2 (the mediating effect of commitment) confirms the theory of the individuals' transition from a motivational to volitional mindset when they move from the pre-decision to pre-action phase. Specifically, we demonstrate that the initial goal intentions of nascent entrepreneurs do not affect directly the future entrepreneurial activity, but entrepreneurial commitment mediates the relationship between intentions and future actions. Therefore, we conclude that the role of commitment is twofold. At the early stages of the start-up process, commitment binds individuals to initiate the necessary actions for new venture creation and, after the initiation of actions, commitment helps them to remain focused on the accomplishment of their goal.

5.1 Theoretical Contributions

This study provides several contributions to the literature. First, it corresponds to the need for integrated, theory-driven conceptualizations linking intention-based models with theories of goal-striving (Krueger, 2009; Liñán and Fayolle, 2015; Shook et al., 2003). The proposed conceptual framework (Gollwitzer, 1990, 2012) integrates the Rubicon model (Heckhausen, 2000) with Krueger's (2009) perspective of the dynamic evolution of entrepreneurial intentionality. In this way, we illustrate the different mindsets of nascent entrepreneurs along the phases of the start-up process; we also demonstrate the evolution of intentions from an initial entrepreneurial interest to (i.e., forming entrepreneurial goal intentions) to core intentionality (i.e., forming entrepreneurial commitment) to the venture creation, which is the genuine expression of the entrepreneurial intentionality (i.e., entrepreneurial activity).

Second, the empirical evidence provided here advances current knowledge concerning the critical link between intention and action. In this way, the study explains why some people act on their entrepreneurial intentions, while others fail to maintain their commitment toward the accomplishment of the goal intentions. Specifically, our findings show that while entrepreneurial intentions are prerequisite factor for entrepreneurial behavior, the individuals' entrepreneurial commitment determines successful new venture creation; in this regard, it must be noted that entrepreneurial commitment increases when individuals increase their engagement in entrepreneurial activities (Adam and Fayolle, 2015; Delanoë-Gueguen and Fayolle, 2018; Liñán and Fayolle, 2015; Treffers et al., 2019).

Third, our longitudinal design and the use of the sample in a variety of contexts and engagement levels contribute towards eliminating a series of biases prevalent among nascent entrepreneurs, such as the common method bias (Chang et al., 2010; Podsakoff et al., 2003), the hindsight bias (Cassar and Craig, 2009) and the survivorship bias (Cassar, 2007). In addition, we identify and test complex/non-linear relationships and prove the causality order between entrepreneurial intentions, commitment, and new venture creation, by using data from two different time periods and synthesizing the sample (BarNir et al., 2011; Fayolle and Liñán, 2014; Fitzsimmons and Douglas, 2011; Krueger, 2009; Liñán and Fayolle, 2015; Pollack et al., 2012). Furthermore, the use of SEM, and more specifically path analysis, allowed us to test simultaneously the presence of a moderating or a mediating effect of commitment in the relationship between intentions and actions.

5.2 Practical Implications

This study provides meaningful practical implications for both nascent entrepreneurs and their supportive ecosystem, namely educators, designers of nascent entrepreneurship support programs, investors, and policymakers.

In general, the empirical evidence supports our perspective of a phase changing start-up process during which entrepreneurial commitment plays a twofold role. At first, the formation of strong entrepreneurial commitment helps individuals transform their dreams and wishes into concrete start-up actions. In other words, the formation of commitment is the catalytic factor that helps individuals proceed from the aspiring to the nascent mode, by transitioning from a deliberative to an implemental mindset. This transition is accompanied by a shift from a motivational to a volitional stance; this switch also changes the supportive needs of nascent entrepreneurs. Second, the conservation of high levels of commitment during the new venture creation process helps nascent entrepreneurs to implement their action plan and stay focused until its successful completion. However, the state of close-mindedness, which is characteristic in the advanced stages of the start-up process, could drive individuals to chase chimeras and suffer disappointment. Thus, it is important to possess the ambidextrous skill of staying highly committed to a plan and sustaining the ability to foresee possible dead ends.

Furthermore, the role of commitment along the start-up process is enhanced by the geographical context of the study, that is, Greece; a peripheral country of the European Union (EU) with an idiosyncratic entrepreneurial environment. Based on the formal data of the Hellenic Statistical Authority (ELSTAT), Greece has been a member country of the EU since 1981; it is located in the south-eastern borders of Europe and has a geographical size of 132,000 km². The Greeks account for 92% of the total population of Greece (10.8 million); almost one third (35%) of this population lives in Athens, the capital of Greece. Referring to gender and age, 49% of the resident population are men, and 45% are below 39 years of age (51% men and 49 women). In 2019, the gross domestic product (GDP) of Greece was € 194 billion, which is the lowest GDP per capita in the Euro area, in terms of purchasing power standards (ELSTAT, 2020). Owing to the long-lasting economic crisis, the domestic entrepreneurial environment in Greece continues to lag behind that of most European innovation countries in several dimensions. According to the most recent report of the Global Entrepreneurship Monitor (Tsakanikas et al., 2019), the entrepreneurial hurdles in Greece can be attributed to the lack of a single strategic framework and targeted policies to encourage entrepreneurship. Other important factors that hinder the development of entrepreneurship are the high barriers to entry in new markets and the rather ambiguous entrepreneurial culture. Finally, although Greece holds the third position in overall entrepreneurship, among the European innovation countries (16.8% of the population aged 18-64 years are entrepreneurs or self-employed), the country's percentage of nascent entrepreneurship (6.4%) is below the average (10.1%). In terms of the National Entrepreneurship Context Index (NECI), Greece occupies one of the last positions; this finding highlights the importance and need for policies that will encourage and support entrepreneurship in the country.

Thus, this research provides evidence that can help policymakers and all the stakeholders of entrepreneurial ecosystems align the entrepreneurship supportive initiatives among the European countries. Specifically, based on the differentiated support expectations and training or mentoring needs of nascent entrepreneurs at the different stages of the start-up process, we make the following propositions for educators, practitioners, and policymakers engaged in nascent entrepreneurship supportive initiatives. These proposals are aligned to the needs of the Greek entrepreneurial environment.

Potential entrepreneurs in a very early stage, who are supposed to be open-minded and have a deliberative mindset, can benefit from a formal educational program, like a bachelor's, diploma, or a master's degree in entrepreneurship. These degrees can help them to cultivate their skills, realize their future dreams, and formulate strong entrepreneurial intentions. Educational institutions should attempt to foster and strengthen the perceptions of entrepreneurial feasibility and desirability in an objective and impartial manner. This can be achieved by acquiring skills and experience and realistic entrepreneurship training courses and new venture internships. This will also help individuals to ascertain the suitability of entrepreneurship as a career choice and, in turn, contribute toward early disengagement or the formulation of entrepreneurial goal intentions (Delanoë-Gueguen and Fayolle, 2018; Gollwitzer, 2012; Heckhausen, 2000).

Accordingly, individuals who have crossed the entrepreneurial Rubicon should participate in supporting programs for nascent entrepreneurs to better understand the value of commitment and streamline their entrepreneurial activity. Specifically, individuals with an implemental or actional mindset can be better supported by programs, such as incubators, accelerators, or co-working spaces; these programs will provide them the opportunity to develop their implementation intentions. The emphasis of these programs should not be constrained to how individuals will act to create a start-up but should be expanded to assist them maintain high commitment levels. Since these programs prompt automatic actions and help entrepreneurs to fight anxiety and maintain behaviors throughout the new venture creation process, they can help nascent entrepreneurs to form implementation intentions and, in turn, increase the likelihood of initiation behaviors (Adam and Fayolle, 2015). In addition, in advanced stages of the start-up process, nascent entrepreneurs suffer from close-mindedness and subjectivity; they often persist on specific aspects of their project, regardless of the feedback (Brandstätter et al., 2003; Gollwitzer, 2012; Heckhausen and Gollwitzer, 1987). In such situations, mentoring sessions can help nascent entrepreneurs to realize the dead-ends and adopt a more pivotal strategy.

5.3 Limitations and Future Research Directions

Although carefully designed, this study has some limitations, which, at the same time, can provide meaningful suggestions for further research. First, there is a need for additional evidence to ensure the consistency of the results concerning the dynamic nature of commitment and its role along the start-up process. Second, data should be collected from more than one country to reflect on the overall situation of entrepreneurship in the European context. Therefore, it would be appropriate to test the applicability of the proposed framework in different national contexts. However, since the collection of big datasets could be difficult in some peripheral countries of the EU, owing to the lack of data on nascent entrepreneurship, it is proposed that future research should be based on longitudinal, secondary data drawn from established multinational datasets, such as the PSED II, the global university entrepreneurial spirit students' survey (GUESSS), and the global entrepreneurship monitor (GEM).

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Appendix 1. List of measurement items and sources of variables

Scales	References
<p>Entrepreneurial Activity For the following start-up activities please indicate if you have completed the action, if you are going to do it soon, or if you think it is irrelevant for the creation of your venture.</p> <ol style="list-style-type: none"> 1. Thinking/Writing first business idea. 2. Gathering start-up specific information. 3. Visiting start-up specific events. 4. Organizing start-up team. 5. Determining our role and participation in the new venture. 6. Talking with potential clients. 7. Talking with potential suppliers, distributors. 8. Preparing a business plan. 9. Talking with an accountant, lawyer. 10. Looking for facilities, equipment. 11. Buying/Renting facilities, equipment. 12. Saving money to invest. 13. Investing own money. 14. Asking for funding. 15. Getting financial support. 16. Devoting on a full-time basis. 17. Developing models/prototypes. 18. Applying for license/patent. 19. Forming legal entity. 20. Determining our role and participation in the operation of the new venture. 21. Hiring employees. 	PSED II
<p>Entrepreneurial Intentions Please indicate (from 1 to 7) the extent to which you agree with the following statements:</p> <ol style="list-style-type: none"> 1. I am ready to do anything to be an entrepreneur. 2. My professional goal is to become an entrepreneur. 3. I will make every effort to start and run my own firm. 4. I am determined to create a firm in the future. 5. I have very seriously thought of starting a firm. 6. I have the firm intention to start a firm someday. 	Liñán and Chen, 2009
<p>Entrepreneurial Commitment Please indicate (from 1 to 7) the extent to which you agree with the following statements:</p> <ol style="list-style-type: none"> 1. Owning my own business is more important than spending time with my family. 2. There is no limit as to how long I would give a maximum effort to establish my business. 3. I would rather own my own business than pursue another promising career. 4. My personal philosophy is to do “whatever it takes” to establish my own business. 	Liao et al., 2005