



From potential to early nascent entrepreneurship: the role of entrepreneurial competencies

Journal:	<i>International Journal of Entrepreneurial Behavior & Research</i>
Manuscript ID	IJEBR-08-2019-0507
Manuscript Type:	Research Paper
Keywords:	Entrepreneurial Intention, Structural equation modelling, Entrepreneurship Education, Decision making

SCHOLARONE™
Manuscripts

From potential to early nascent entrepreneurship: the role of entrepreneurial competencies

Abstract

Purpose. Drawing on the Rubicon model of action phases, this paper analyses the role of perceived entrepreneurial competencies in the preactional phase of the entrepreneurial process, with particular attention to the direct relationship between entrepreneurial competencies and gestation behaviours, and to the moderating role of these competencies in the relationship between intention and nascent activities.

Design/methodology/approach. The study focuses on undergraduate students in their final year at the School of Business and Economics of the University of Granada (Spain). A factorial analysis of entrepreneurial competencies was performed in which two factors were identified, termed: (1) ideation and modelling; and (2) planning and implementation. The above-mentioned relationships were analysed by structural equations modelling.

Findings. Entrepreneurial intention and competencies related to commitment, planning and organisation have a significant direct influence on nascent entrepreneurial behaviour. Both of the entrepreneurial competency factors enhance the relationship between students' entrepreneurial intention and their entrepreneurial gestation activities.

Practical implications. The findings of this study are relevant to potential entrepreneurs and to designers of entrepreneurship support and education programmes, who should be aware of the key competencies and develop them to support the implementation phase.

Originality/value. This paper provides a comprehensive analysis of the role of entrepreneurial competencies in the transition from intention to early nascent business gestation and addresses a valuable and relatively unexplored line of research concerning the interaction effects of intention and perceived competencies on the performance of entrepreneurial gestation activities.

Keywords. Entrepreneurial competencies, Entrepreneurial intention, Rubicon model of action phases, Entrepreneurial gestation behaviour.

Paper type. Research paper

Introduction

Assessment reports of the entrepreneurial phenomenon, such as the Global Entrepreneurship Monitor (Bosma and Kelley, 2019), reveal a persistent gap between the rate of potential entrepreneurs (people with entrepreneurial intention) and the rate of entrepreneurial activity (nascent and new entrepreneurs). Furthermore, a meta-analysis of academic studies on entrepreneurial intention

1
2
3 models highlighted the scarcity of empirical studies analysing the relationship between intention and
4 action, and revealed the limited percentage of variance in actual entrepreneurial behaviour which can
5 be explained by entrepreneurial intention (Schlaegel and Koenig, 2014).
6
7

8 Further analysis is needed of the factors that affect this transition from intention to action (Carsrud and
9 Brännback, 2011; Liñán and Fayolle, 2015), an area of research that is of interest to various
10 stakeholders. For entrepreneurs, a better understanding of the mechanisms underlying the success or
11 failure of a new business venture can enable them to make a more realistic evaluation of their own
12 capabilities. Thus, information, training and support needs can be anticipated and the entrepreneurial
13 process can be advanced with greater confidence. For policymakers, the design of effective education
14 and support policies for entrepreneurship must be based on measures that stimulate the transition
15 towards entrepreneurial behaviour, helping potential entrepreneurs overcome the hurdles that
16 inevitably arise during the start-up process.
17
18
19
20

21 Diverse theoretical models have been proposed concerning the transition from intention to behaviour
22 (Frese, 2009; Gollwitzer, 2012). The Rubicon model of action phases (Heckhausen and Gollwitzer,
23 1987) provides a particularly suitable framework for analysing this transition, as it clearly differentiates
24 the psychological processes involved in setting goals from those activated in striving to achieve them.
25 The formation of intention represents a psychological Rubicon between the deliberative, or
26 predecisional, phase, in which the desirability and perceived viability of a particular goal is analysed,
27 and the implementation (postdecisional or preactional) phase in which a firm commitment is made to
28 translate that goal into action. The predecisional phase has been widely studied in the literature on
29 entrepreneurial intentions, but until recently relatively few empirical studies have been made of the
30 variables involved in the implementation phase (Delanöe-Gueguen and Fayolle, 2019; Gielnik *et al.*,
31 2014; Van Gelderen *et al.*, 2015 and 2018).
32
33
34
35
36
37

38 The tasks to be performed during the entrepreneurial process vary from one stage to the next, as do
39 the entrepreneurial competencies required (Kolvereid and Isaksen, 2006; Mamabolo *et al.*, 2017). An
40 exploratory experiment by Adam and Fayolle (2016) revealed that the lack of skills in addressing the
41 entrepreneurial process is the main obstacle to individuals maintaining their energy during venture
42 creation, especially in the advanced stages of the process. Gümüşay and Bohné (2018) observed that
43 nascent entrepreneurs often find it difficult to access skills and to process the knowledge needed to
44 develop entrepreneurial competencies in the pre-startup phase. Related studies (Alammari, 2018;
45 llouga *et al.*, 2014) have reported that, once the entrepreneurial decision has been made, self-
46 regulation and volitional competencies seem to play a fundamental role in the transformation of
47 intention into actions.
48
49
50
51
52

53 Most studies on the role of entrepreneurial competencies have focused either on their effect on
54 entrepreneurial intention, with particular attention to the competencies most closely related to the
55 initial stages of the process (such as identifying opportunities; see Karimi *et al.*, 2016), or on those
56 needed when the company is up and running, in which case more emphasis is placed on managerial
57 competencies (Loué and Baronet, 2012). However, less is known about the importance of
58
59
60

competencies at the moment when entrepreneurial intentions are being formed and the would-be entrepreneur must take preparatory action (Gümüşay and Bohné, 2018; Rasmussen *et al.*, 2011).

In order to address this perceived research gap and to gain further insights into the approaches discussed above, this study analyses the role played by entrepreneurial competencies in the transition from entrepreneurial intention to nascent behaviour, after the Rubicon crossing defined in the action phases model. It has been shown that in the implementation phase, individuals' perceptions of their abilities influence subsequent performance (Achtziger and Gollwitzer, 2018), and therefore the direct and/or moderating role of entrepreneurial competencies in the transition from intention to nascent behaviour is analysed.

Theoretical background and study hypotheses

The Rubicon model of action phases and its application to entrepreneurship

Within the framework of modern action-oriented volition research, the Rubicon model of action phases (Gollwitzer, 2012; Heckhausen and Gollwitzer, 1987) defines the phases an individual will go through in pursuing a goal (predecisional, post-decisional or preactional, actional and postactional). These phases are separated by three transition points: the formation of the intention (the 'crossing of the Rubicon'), its initiation and its deactivation (see Fig. 1, top).

Insert Figure 1 about here

Various tasks must be addressed in each phase, successively: firstly, deliberate on potential goals and choose those considered most appropriate; then, plan the implementation of the intention; in the third phase, take steps to put the intention into practice; and, finally, evaluate the results obtained. As each phase presents specific challenges, the functions of each stage are associated with different types of mindset (Achtziger and Gollwitzer, 2018). In the predecisional and postactional phases, a deliberative mindset is adopted, in which motivational principles apply and the potential consequences of specific actions must be considered. In contrast, in the preactional and actional phases, an implemented mindset, focusing on volitional aspects, comes into play, and questions on the execution of the project are raised and addressed (Heckhausen and Gollwitzer, 1987).

In entrepreneurial research, various studies have adopted the above approach. Delan e-Gueguen and Fayolle (2019) described the entrepreneurial process in the following terms: in the predecisional phase, the *aspiring entrepreneur* analyses the perceived desirability and viability of entrepreneurship and contemplates entrepreneurial intention; in the preactional and actional phases, the *nascent entrepreneur* implements this intention via gestation actions which may result in business start-up; and in the postactional phase, the *new entrepreneur* evaluates the current situation of the company in order to envisage future directions. In the latter study, and also in related papers by Van Gelderen *et al.* (2015, 2018) and Alammari (2018), this model of action phases is taken as a framework for

1
2
3 analysing the transition from entrepreneurial intention (or its antecedents) to venture creation, in order
4 to characterise the phase of intention implementation.
5

6
7 As shown in Figure 1, the present study focuses on the postdecisional or preactional phase (marked
8 in solid line), once the entrepreneurial intention has been formed and the individual undertakes
9 preparatory action, prior to business creation. The starting point of this phase is that of intention
10 formation. Entrepreneurial intention, which is considered the immediate antecedent of entrepreneurial
11 behaviour (Bird, 1988; Krueger *et al.*, 2000; Thompson, 2009), has been defined as “a self-
12 acknowledged conviction by a person that they intend to set up a new business venture and
13 consciously plan to do so at some point in the future” (Thompson, 2009: 676). Therefore, intention is
14 not only a predictor of future actions, but implies an active commitment to carry them out (Bandura,
15 1991). In the model of action phases, once the Rubicon has been crossed, a commitment to a
16 concrete plan has been made; the next step is to put that intention into practice (Beckmann and
17 Heckhausen, 2018).
18
19
20
21
22

23 Several studies have observed a positive relationship between entrepreneurial intention and
24 behaviour (Kautonen *et al.*, 2015; Rauch and Hulsink, 2015). In other cases, however, no such
25 association has been found, possibly because a certain time must elapse between intention and
26 behaviour (Souitaris *et al.*, 2007). Since the newly-formed intentions cannot usually be implemented
27 immediately, in this phase the individual must perform necessary preparatory activities or wait for
28 suitable opportunities to arise (Achtziger and Gollwitzer, 2018). In this respect, it has been argued that
29 to achieve a deeper understanding of entrepreneurial behaviour, when the general intention to start a
30 new business has already been formed, more specific behaviours related to these activities should be
31 investigated (Tornikoski and Maalaoui, 2019). Accordingly, the following hypothesis is proposed:
32
33
34
35

36 Hypothesis 1: Entrepreneurial intention is positively related to subsequent entrepreneurial gestation
37 behaviour.
38
39

40 *Entrepreneurial competencies in the transition from intention to action*

41
42 According to Ajzen (1991), behavioural achievement depends both on intention and ability. When, as
43 with entrepreneurship, performance is not only subject to factors within volitional control, but also
44 requires the existence of suitable opportunities and/or resources (Kautonen *et al.*, 2013), predictive
45 factors of behaviour other than intention must be considered. Such factors include skills, abilities,
46 knowledge and planning, i.e. an indication of the extent to which the individual will be able to exercise
47 control over the proposed behaviour (Ajzen and Madden, 1986). In this respect, entrepreneurial
48 competencies, or the knowledge, skills and attitudes that affect an individual's willingness and ability
49 to perform the entrepreneurial job successfully (Lackéus, 2015; Man *et al.*, 2002), play a central role
50 in human capital and entrepreneurship research (Marvel *et al.*, 2014). The positive and significant
51 association between these competencies and entrepreneurial behaviour has been empirically tested
52 and demonstrated, whether through the concepts of self-efficacy and perceived behavioural control
53 (Schlaegel and Koenig, 2014) or that of confidence in one's own skills and ability (Arenius and Minniti,
54 2005).
55
56
57
58
59
60

1
2
3 However, for this relationship to be more informative, it is recommended that self-efficacy measures
4 should be clearly related to the specific tasks or behaviours to be performed, instead of relying on
5 more general measures (Kolvareid and Isaksen, 2006). Given that the entrepreneurial process is
6 varied and complex, involving different tasks at different phases of the process, researchers have
7 sought to determine which types of competency might best characterise each stage (Chell, 2013),
8 noting that the impact made by competencies increases as the entrepreneur advances from the
9 potential to the nascent stage (Mickiewicz *et al.*, 2017). Although many entrepreneurial
10 competencies are expected to be applicable to all phases, some may have a stronger influence at
11 certain moments or for specific tasks (Komarkova *et al.*, 2015; Man *et al.*, 2008). In this area, various
12 proposals have been made regarding the competencies associated with different phases or specific
13 tasks, from a process perspective (Bacigalupo *et al.*, 2016; Bozward and Rogers-Draycott, 2017;
14 Mamabolo, 2016; Man *et al.*, 2002; Moberg *et al.*, 2014).

20
21 Both in these theoretical proposals and in other studies that have identified the key competencies
22 required for a specific phase prior to venture creation (Loué *et al.*, 2008; Morris *et al.*, 2013), it has
23 been reported that in the transition from potential to nascent entrepreneur, there are certain very
24 significant competencies, such as creativity, envisioning, opportunity creation and evaluation,
25 conceptual and thinking skills, strategy development, business planning, financial literacy, resource
26 mobilisation, risk-taking and relationship building. All of these are related to the main tasks involved
27 in this phase, namely the recognition and refinement of opportunities, the conceptual identification and
28 development of the business model, and seeking and obtaining the resources needed to set up the
29 company (Bhave, 1994; Van Gelderen *et al.*, 2006).

34
35 As regards the relationship between entrepreneurial competencies and the early stages of
36 entrepreneurial behaviour, researchers have observed a positive significant relationship between
37 these variables, using multidimensional measures of entrepreneurial self-efficacy (McGee *et al.*,
38 2009), balanced measures of competencies in different functional areas (Stuetzer *et al.*, 2013),
39 personal beliefs measures on entrepreneurial competencies and business organization and planning
40 capacities (Kakouris, 2016), and/or measures of specific competencies such as entrepreneurial
41 knowledge (Teixeira and Davey, 2010), social skills (Lamine *et al.*, 2014) or opportunity confidence
42 (Dimov, 2010). Regarding the volitional aspects of the entrepreneurial process (Krueger *et al.*, 2000),
43 several studies have analysed the role of volitional competencies and self-regulation skills in
44 facilitating the transition from entrepreneurial intention to action (Delanöe-Gueguen and Fayolle, 2019;
45 Gielnik *et al.*, 2014; Hikkerova *et al.*, 2016; Van Gelderen *et al.*, 2015, 2018).

50
51 In view of these considerations, the present study examines the direct effect of entrepreneurial
52 competencies on entrepreneurial gestation behaviour, via the following hypothesis:

53
54 Hypothesis 2: Entrepreneurial competencies are positively related to entrepreneurial gestation
55 behaviour.

56
57
58 Furthermore, intention-behaviour relations may be moderated by diverse personal and cognitive
59 variables (Achtziger and Gollwitzer, 2018; Sheeran, 2002). In this sense, self-belief in one's ability to
60

perform the tasks required in entrepreneurship is considered a potential moderator in the transition from intention to behaviour (Lippke *et al.*, 2009). This is consistent with various postulates in the field of psychology, such as the theory of planned behaviour (Ajzen, 1991) or the revised version of Bird's model of the contexts of entrepreneurial intentionality, by Boyd and Vozikis (1994), according to which perceived self-efficacy or perceived behavioural control moderate the transition from intention to action. It is also consistent with goal-setting theory, according to which commitment and self-efficacy are key moderating variables of the goal-performance relationship (Locke and Latham, 2002), and with the theory of motivation (McClelland, 1985), which posits that the strength of motivation and the probability of success (that is, actual skills and self-efficacy beliefs) combine multiplicatively to predict the response strength. Consequently, an individual is expected to initiate entrepreneurial actions not only when the intention exists but also when there is high self-efficacy concerning the perceived requirements of entrepreneurial opportunities (Boyd and Vozikis, 1994). Hence, there is an interaction effect (Ajzen and Madden, 1986). This moderating effect of competencies on the transition from entrepreneurial intention to gestation is addressed in the following hypothesis:

Hypothesis 3: Entrepreneurial competencies moderate the transition from entrepreneurial intention to entrepreneurial gestation behaviour.

In addition, the model incorporates gender, prior entrepreneurial experience and family entrepreneurial background as control variables, in accordance with the literature in this respect, in the view that these might influence perceptions of entrepreneurial competencies, the strength of entrepreneurial intention and the will to undertake the activities necessary for its realisation (Pfeifer *et al.*, 2016; Rauch and Hulsink, 2015; Shirokova *et al.*, 2016).

Method

Data

The study hypotheses were tested by analysing data from undergraduate students in the final year of business-related degree courses at the School of Business and Economics of the University of Granada (Spain). The data were compiled from questionnaires completed by these students at the beginning (September) and end (June) of the academic year. Firstly, the students were asked if they intended to start a new business after graduation. Those who answered affirmatively were then included in the study. The first questionnaire contained items expected to reflect entrepreneurial intentions and competencies, while the second included items to evaluate business gestation behaviour. Participation in the study was voluntary and subject to the provision of signed informed consent. The questionnaires were delivered in paper form and completed in class by the students. The study sample was composed of the students who answered both questionnaires (n= 227). Among these participants, the mean age was 22.6 years, 59% were female, 50% had family members with entrepreneurial experience and 8% had personal entrepreneurial experience.

Measures

This section presents the measures obtained for the study variables, specifying in each case the nature of the relationship between the measure and its constructs (reflective or formative) (Chin, 2010).

Entrepreneurial intention was operationalised as a reflective construct, determined by the six-item scale of entrepreneurial intention proposed and validated by Liñán and Chen (2009). A sample item is: "I will make every effort to start and run my own firm". The items were measured on a seven-point Likert scale.

Entrepreneurial competencies include the six competency areas (opportunity, relationship, conceptual, organising, strategic and commitment) proposed by Man *et al.* (2002), measured according to the seven-point Likert scale developed and validated by Man (2001). This scale represents an integrated framework that encompasses competencies which are specific to the entrepreneurial process, together with managerial competencies and other personal and relationship skills held by the individual. This framework can be used both for practicing and for potential entrepreneurs (Man *et al.*, 2008), and has previously been applied in a study of university students (Farhangmehr *et al.*, 2016). Opportunity competencies were measured with four items, such as "Identify goods or services customers want". Relationship competencies were measured with six items, e.g. "Maintain a personal network of work contacts". Conceptual competencies were measured with seven items, such as "Treat new problems as opportunities". Organising competencies were measured with ten items, e.g. "Plan the organisation of different resources". Strategic competencies were measured with nine items, one of them being "Align current actions with strategic goals". Finally, commitment competencies were measured with four items, such as "Possess an extremely strong internal drive".

To determine whether the responses to the entrepreneurial competencies could usefully be grouped into factors, an exploratory factor analysis was performed, using principal component analysis with varimax rotation. The Bartlett sphericity test produced a significance level of 0.000 and the Kaiser-Meyer-Olkin index was 0.815, thus exceeding the 0.6 threshold and confirming the existence of a correlation between the original variables (Kaiser, 1974). Analysis of the entrepreneurial competencies indicated support for a 2-factor solution, accounting for 79% of the total variance. The factor formed by the relationship between opportunity and conceptual competencies accounted for 39% of the variance (the coefficients of the matrix of rotated components were 0.868, 0.743 and 0.907, respectively). To reflect this composition, this factor was termed *ideation and modelling*. The other factor explained 40% of the variance and included organising, strategic and commitment competencies (the coefficients of the rotated component matrix were 0.890, 0.807 and 0.860, respectively). This factor was termed *planning and implementation*. These two factors were operationalised as formative second-order constructs determined by three reflective first-order constructs (the competencies included in each of the factors).

1
2
3 *Entrepreneurial gestation behaviour* was measured with the scale proposed by Rauch and Hulsink
4 (2015), which includes 19 types of behaviour associated with new venture creation. The participants
5 were given the following statement: "Even though you currently may not be starting a venture, it would
6 be interesting to see whether you have engaged in any steps toward venture creation in the last
7 academic year" and asked to state whether they had taken any of the steps presented (e.g. "Have you
8 developed models or procedures for a product/service?"). The results of the binary yes-no questions
9 were summed and divided by the number of items to obtain an average number of gestation
10 behaviours (Alsos and Kolvereid, 1998; Souitaris *et al.*, 2007).
11
12

13
14
15 *Control variables.* *Gender* was measured using a binary variable taking the value 1 for female and 0
16 for male. *Family entrepreneurial background* was measured by a binary variable taking the value 1
17 when the student had family members (parents, grandparents, siblings, etc.) who had started a new
18 venture and 0 otherwise. *Previous entrepreneurial experience* is a binary variable taking the value 1 if
19 the student currently owned a business or had started one in the past and 0 otherwise.
20
21

22 *Empirical analysis*

23
24
25 The hypotheses shown in Figure 2 were tested using PLS-based structural equation modelling, with
26 the SmartPLS 3.2.6 statistical software package (Ringle *et al.*, 2015). Firstly, the base model was
27 used to test hypotheses H1 and H2. Hypothesis H3 was then tested by means of two additional
28 models, in which the moderation effects of the ideation and modelling (Model 2) and planning and
29 implementation (Model 3) variables were added to the base model.
30
31

32
33 -----
34 Insert Figure 2 about here
35 -----
36
37
38

39 **Results**

40
41 Table 1 show the descriptive statistics for the first-order constructs and their correlations. The
42 variables are not strongly correlated and the variance inflation factor (VIF) values in the sample are
43 below the recommended cutoff of 5.00 (Hair *et al.*, 2017). Therefore, the data do not present problems
44 of multicollinearity.
45
46

47
48 -----
49 Insert Table 1 about here
50 -----
51

52 The PLS results were analysed in two stages: first, by assessing the reliability and validity of the
53 measurement model; and second, by evaluating the structural model (Chin, 2010; Hair *et al.*, 2017). A
54 bootstrap analysis was performed with 5,000 subsamples to estimate the significance of the loadings,
55 weights and path coefficients.
56
57
58
59
60

Measurement model evaluation

The reflective constructs were evaluated according to the reliability and validity of the measures used to represent each one (i.e., outer loadings, Cronbach's alpha, composite reliability, average variance extracted and discriminant validity). The findings are summarised in Table 2. The Cronbach's alpha and composite reliability scores are higher than 0.7; therefore all the variables presented adequate internal consistency (Chin, 2010). The variables were better described by the indicator than by the error term because the outer loadings of the indicators for each construct were always greater than 0.7 (Chin, 2010). The average variance values were greater than 0.5 and so the constructs were assumed to present convergent validity (Hair *et al.*, 2017). Finally, the discriminant validity of the measurement model was confirmed by consideration of the Fornell and Larcker matrix, in which all of the values obtained were lower than those present in the diagonal, while the value of the heterotrait-monotrait (HTMT) ratio of correlations was less than 0.8 (Henseler *et al.*, 2016).

Insert Table 2 about here

The formative constructs (ideation and modelling competencies and planning and implementation competencies) were evaluated according to the indicator weights and the multicollinearity values shown in Table 3. The VIF values were less than 5, and so multicollinearity was not considered to be a problem (Hair *et al.*, 2017). The values of the outer weights were all significant, and the indicators for the constructs were each of similar importance in forming the construct.

Insert Table 3 about here

Structural model evaluation and test of hypotheses

Table 4 show the results obtained for the three models used to test the hypotheses illustrated in Figure 2. Model 1 explained 28.3% of the variance of gestation behaviours, while Models 2 and 3 explained 30.6% and 30.2%, respectively. The predictive capacity of the three models (i.e., the Q2 index) was calculated using the Stone-Geisser test. The values obtained were all above zero, which confirmed the predictive power of the models (Hair *et al.*, 2017). The standardised root mean square residual index, defined as the standardised difference between the observed and the predicted correlations, was less than 0.08, showing that the models had a sufficient degree of fit (Henseler *et al.*, 2016) and presented good structural properties.

Insert Table 4 about here

The results obtained for the base model show there is a positive significant relationship between entrepreneurial intention and gestation behaviour, which supports Hypothesis H1. Regarding the relationship between entrepreneurial competencies and entrepreneurial action, a positive relationship was only obtained, at 1% significance, for the planning and implementation factor. Therefore,

1
2
3 hypothesis H2 is only partially supported. In this model, the effect size (f^2) values of the two significant
4 relationships were 0.068 and 0.078, respectively, and thus were situated between small (0.02) and
5 medium (0.15) effect sizes (Hair *et al.*, 2017).
6
7

8 For the other models, the results obtained reflected a significant positive moderating effect of
9 entrepreneurial competencies related to ideation and modelling (Model 2) and planning and
10 implementation (Model 3) on the relationship between entrepreneurial intention and gestation
11 behaviour, with f^2 values of 0.034 and 0.028, respectively. The moderating effect of entrepreneurial
12 competencies in the transition from intention to action is thus confirmed, and hypothesis H3 is
13 supported.
14
15

16 Finally, with respect to the control variables considered, the results indicate a significant positive
17 relationship between gender and gestation behaviours and between gender and the planning and
18 implementation factor, and a negative one between gender and entrepreneurial intention, suggesting
19 that women are more likely to initiate business gestation behaviours and to present organising,
20 strategic and commitment competencies, but that they have less entrepreneurial intention than men.
21 The results obtained also show that having previous entrepreneurial experience boosts
22 entrepreneurial intentions, as do the entrepreneurial competencies represented in the planning and
23 implementation factor.
24
25
26
27
28
29
30
31

32 Discussion

33 The present study provides empirical evidence that entrepreneurial competencies may affect the
34 transformation of intention into nascent entrepreneurial behaviour. The results obtained show that
35 planning and implementation competencies play a direct and very significant role in this regard. The
36 latter factor incorporates strategic, organising and commitment competencies, as found in previous
37 research in this field, according to which engaging successfully in entrepreneurial activity requires not
38 only business competencies, but also motivational skills, such as commitment, in order to overcome
39 the difficulties that will inevitably be encountered, and thus make good use of entrepreneurial
40 opportunities (Leibenstein, 1987).
41
42
43
44

45 The pre-eminent role of commitment competencies in the post-decisional phase is consistent with the
46 mindset theory of action phases (Gollwitzer, 2012), according to which, when crossing the Rubicon,
47 the individual's commitment to pursuing the chosen goal, i.e., his/her volitional strength, is decisive for
48 the initiation of the behaviour (Achtziger and Gollwitzer, 2018). Previous studies on the
49 implementation phase of entrepreneurial intention have also highlighted the important role played by
50 commitment as a bridge between entrepreneurial intentions and behaviour. In this respect, although
51 intention is a necessary condition for entrepreneurship (Bird, 1988), it is not sufficient unless
52 accompanied by the individual's own commitment, that is, the willingness to invest the energy and
53 dedication necessary to make the project a reality (Adam and Fayolle, 2015).
54
55
56
57
58
59
60

1
2
3 Strategic and organising competencies are needed to accomplish the preactional phase, firstly to
4 implement the intention and then to plan the details of the business project and organise the physical,
5 human and other resources necessary for this purpose. Several authors highlight the value of
6 planning in the pre-startup process, thus facilitating the evaluation of alternative actions and the
7 improvement of strategies (Chwolka and Raith, 2012). It has been shown that potential entrepreneurs
8 who have an effective business plan are more likely to succeed in starting a new firm, especially if
9 their plans are dynamic and can be adapted to changing circumstances (Gruber, 2007). The present
10 study provides additional evidence of the important role played in the advance towards
11 entrepreneurial gestation by the presence of strategic and planning competencies, concerning not
12 only the planning and assignment of tasks, but also the evaluation of trends in the business sector,
13 the recognition of changes that may affect the project, the evaluation of results and the timely
14 redesign of equipment and projects. Finally, organisational competencies also include the
15 organisation of resources, which are crucial to company creation and growth (Baum and Locke,
16 2004). In this initial phase, entrepreneurs are normally faced by significant capital restrictions.
17 Accordingly, they must be able to convince customers, potential employees and other resource
18 providers to have faith in the business idea (Bhidé, 2000) and organise routines to transform these
19 resources into value-added products and services (Delmar and Shane, 2004).

20
21
22
23
24
25
26
27
28 Another important finding of the present study is that, at this stage, the association between planning
29 and implementation competencies and behaviour is even greater than that between entrepreneurial
30 intention and early nascent behaviour, which supports the idea that, once the intention is formed,
31 entrepreneurial engagement becomes more important than intention (Delanöe-Gueguen and Fayolle,
32 2019). It is also confirmed that, for entrepreneurial intention to be translated into behaviour resulting in
33 business creation, the would-be entrepreneur must have the necessary skills and abilities to perform
34 this implementation, as observed by Trevelyan (2009) and Vilanova and Vitanova (2019).

35
36
37
38
39 Entrepreneurial competencies were found to play a significant moderating role in the transition from
40 intention to action. This accords with previous research findings that perceived entrepreneurial self-
41 efficacy moderates the relationship between entrepreneurial intentions and actions (Boyd and Vozikis,
42 1994). However, previous meta-analytical studies considering the moderating role of perceived control
43 (i.e. possession of the knowledge and skills needed to perform the activity in question) have reported
44 conflicting results, and very few papers have corroborated this moderating role (Armitage and Conner,
45 2001; Sheeran, 2002). This may be because researchers generally focus on types of behaviour in
46 which the individual exercises a high degree of control (Sheeran, 2002).

47
48
49
50
51 In entrepreneurship, numerous variables come into play, some of which can escape the individual's
52 control. The interaction of entrepreneurial intentions and self-efficacy has been identified as a
53 significant factor in the prediction of various entrepreneurial outcomes (Newman *et al.*, 2019). One
54 study showed that the interaction between goal specificity and entrepreneurial self-efficacy increases
55 the probability of business start-up continuing, versus abandonment of the project, among nascent
56 entrepreneurs (Hechavarría *et al.*, 2012) and other researchers have confirmed the moderating role of
57 certain variables in the step from intention to business gestation (Van Gelderen *et al.*, 2015; Gielnik *et*
58
59
60

1
2
3 *al.*, 2014; Delanöe-Gueguen and Fayolle, 2019). The present study provides evidence that the
4 interaction between entrepreneurial competencies and intention is significantly associated with the
5 performance of business gestation activities.
6
7

8 With respect to the control variables included in the present study, the negative relationship observed
9 between gender and entrepreneurial intention has been described in previous literature (Haus *et al.*,
10 2013). However, the women in our sample in fact performed more entrepreneurial gestation activities,
11 which contradicts reports of lower participation rates of women in early-stage entrepreneurial activity
12 (Bosma and Kelley, 2019) and other findings in this area (Shirokova *et al.*, 2016). A possible
13 explanation for the results obtained in the present study is that women, in an instrumental mindset,
14 judge their abilities more realistically and choose higher risk options (Hügelschäfer and Achtziger,
15 2014).
16
17
18
19

20 Finally, our observation of significant positive relationships between previous entrepreneurial
21 experience and intention and between experience and certain competencies is also consistent with
22 previous studies (Pfeifer *et al.*, 2016). However, no such association with entrepreneurial gestation
23 behaviour was observed, in contrast to earlier reports. Thus, Van Gelderen *et al.* (2015) observed a
24 positive effect of entrepreneurial experience on business gestation action, arguing that this experience
25 ameliorates the negative emotions associated with the action. Another study, too, has reported that
26 more experienced entrepreneurs tend to perform more business gestation activities (Alsos and
27 Kolvereid, 1998). Nevertheless, further analysis is still needed of this relationship, focusing on each
28 business gestation task separately.
29
30
31
32
33
34
35

36 **Conclusions, implications and limitations**

37

38 The study presented in this paper sheds further light on the main entrepreneurial competencies
39 required to cross the entrepreneurial Rubicon, from the motivational to the implemental phase of
40 business start-up, within the framework of the mindset theory of action phases. The results obtained
41 show that commitment, strategic and organising competencies are the most important qualities
42 needed to successfully address the tasks of business gestation. This finding is consistent with the
43 model of action phases, according to which specific tasks must be assumed during the preactional
44 phase, in which individuals commit themselves to achieving a goal and develop appropriate plans to
45 do so (Achtziger and Gollwitzer, 2018).
46
47
48
49

50 The findings presented are relevant for practitioners and for designers of entrepreneurship education
51 courses and support programmes. Since the implementation phase requires adequate planning and
52 resolute commitment to the business project, potential entrepreneurs should be informed and aware
53 of the skills needed to advance the process successfully. Those responsible for designing and
54 evaluating training programmes should focus not only on increasing students' entrepreneurial
55 intentions, but also on enhancing their competencies, in the knowledge that the outcomes of
56 investment in human capital (knowledge/skills) and the human capital variables related to
57 entrepreneurial tasks are those most strongly associated with entrepreneurial success (Unger *et al.*,
58
59
60

2011). Furthermore, effectiveness could be improved if different types of intervention were implemented for potential and nascent entrepreneurs, because each phase of the entrepreneurial process requires a different mindset and different competencies. Attention should also be paid to developing cognitive capacities and affective commitment (Johannisson, 1991). This could best be achieved through the creation of business plans, an activity that is known to foster the development of entrepreneurial competencies (Tounés *et al.*, 2014), and of experiential learning approaches based on resolving implementation problems in business start-up. This activity would help nascent entrepreneurs transform their business ideas into going concerns with a real chance of viability and sustainability. It would also help them to address and overcome any barriers subsequently encountered.

Finally, some limitations to the present study, which may constitute useful areas for future research, should be acknowledged. Firstly, the measurement of gestational behaviour is based on the number of activities performed, without distinguishing their nature. Analysis of the relationship between different competencies and the specific tasks identified in the literature for nascent entrepreneurship would provide more detailed information about the competencies required for effective business start-up (Bozward and Rogers-Draycott, 2017; Kolvereid and Isaksen, 2006). Secondly, the model considered in this study does not explicitly measure implementation intention, although this is a key variable in the preactional stage of the Rubicon model of action phases, and its mediating role between entrepreneurial intention and action has been reported previously (Van Gelderen *et al.*, 2018). Given the potential role of perceived self-efficacy in translating business plans into actions (Lippke *et al.*, 2009), a useful model could be proposed in which competencies moderated the relationship between goal intention, implementation intention and entrepreneurial behaviour. Finally, the fact that our study is based on a sample of individuals who have not yet completed their degree studies (and for whom the latter goal is expected to be a priority) and was implemented within a single academic year means that the context of analysis is limited, with a scant range of gestational activities being carried out. Therefore, it would be advisable to extend the scope of the study to address other samples of nascent entrepreneurs, using a longitudinal follow-up.

References

- Achtziger, A. and Gollwitzer, P.M. (2018), "Motivation and volition in the course of action", in Heckhausen, J. and Heckhausen, H. (Eds) *Motivation and action*. Springer International Publishing AG, Switzerland, pp. 485-527.
- Adam, A.F. and Fayolle, A. (2015), "Bridging the entrepreneurial intention-behaviour gap: The role of commitment and implementation intention", *International Journal of Entrepreneurship and Small Business*, Vol. 25 No. 1, pp. 36-54.
- Adam, A.F. and Fayolle, A. (2016), "Can implementation intention help to bridge the intention-behaviour gap in the entrepreneurial process? An experimental approach", *The International Journal of Entrepreneurship and Innovation*, Vol. 17 No. 2, pp. 80-88.
- Ajzen, I. (1991), "The theory of planned behaviour", *Organizational Behavior and Human Decision Processes*, Vol. 50 No. 2, pp. 179-211.

- 1
2
3 Ajzen, I. and Madden, T.J. (1986), "Prediction of goal-directed behavior: attitudes, intentions and
4 perceived behavioral control", *Journal of Experimental Social Psychology*, Vol. 22, pp. 453-474.
- 5
6 Alammari, K.M. (2018), *From entrepreneurial intention to action: the role of self-regulation and cultural
7 values. The case of Saudi Arabia*. Thesis. University of Plymouth.
- 8
9 Alsos, G.A. and Kolvereid, L. (1998), "The business gestation process of novice, serial and parallel
10 business founders", *Entrepreneurship Theory and Practice*, Vol. 22 No. 4, pp. 101-114.
- 11
12 Arenius, P. and Minnitti, M. (2005), "Perceptual variables and nascent entrepreneurship", *Small
13 Business Economics*, Vol. 24 No. 3, pp. 233-247.
- 14
15 Armitage, C.J. and Conner, M. (2001), "Efficacy of the theory of planned behaviour: A meta-analytic
16 review", *British Journal of Social Psychology*, Vol. 40 No. 4, pp. 471-499.
- 17
18 Bacigalupo, M., Kampylis, P., Punie, Y., and Van de Brande, G. (2016), *EntreComp: the
19 entrepreneurship competence framework*. Publication Office of the European Union, Luxembourg.
- 20
21 Bandura, A. (1991), "Social cognitive theory of self-regulation", *Organisational Behaviour and Human
22 Decision Processes*, Vol. 50, pp. 248-287.
- 23
24 Baum, J.R. and Locke, E.A. (2004), "The relationship of entrepreneurial traits, skill, and motivation to
25 subsequent venture growth", *Journal of Applied Psychology*, Vol. 89 No. 4, pp. 587-598.
- 26
27 Beckmann, J. and Heckhausen, H. (2018), "Situational determinants of behavior", in Heckhausen, J.
28 and Heckhausen, H. (Eds) *Motivation and action*. Springer International Publishing AG, Switzerland,
29 pp. 113-162.
- 30
31 Bhave, M.P. (1994), "A process model of entrepreneurial venture creation", *Journal of Business
32 Venturing*, Vol. 9, pp. 223-242.
- 33
34 Bhidé, A. (2000), *The origin and evolution of new businesses*, Oxford University Press, New York.
- 35
36 Bird, B. (1988), "Implementing entrepreneurial ideas: the case for intention", *Academy of Management
37 Review*, Vol. 13 No. 3, pp. 442-453.
- 38
39 Bosma, N. and Kelley, D. (2019), *Global Entrepreneurship Monitor. 2018/2019 Global Report*, Gráfica
40 Andes, Chile.
- 41
42 Boyd, N.G. and Vozikis, G.S. (1994), "The influence of self-efficacy on the development of
43 entrepreneurial intentions and actions", *Entrepreneurship Theory and Practice*, Vol. 18 No.4, pp. 63-
44 77.
- 45
46 Bozward, D. and Rogers-Draycott, M. (2017), "Developing a staged competency based approach to
47 enterprise creation", paper presented at International Conference for Entrepreneurship, Innovation
48 and Regional Development, 31 August-1 September, Thessaloniki, Greece.
- 49
50 Carsrud, A. and Brännback, M. (2011), "Entrepreneurial motivations: What do we still need to know?",
51 *Journal of Small Business Management*, Vol. 49 No. 1, pp. 9-26.
- 52
53 Chell, E. (2013), "Review of skill and the entrepreneurial process", *International Journal of
54 Entrepreneurial Behavior & Research*, Vol. 19 No. 1, pp. 6-31.
- 55
56 Chin, W.W. (2010), "How to write up and report PLS analyses", in Vinzi, V.V., Chin, W.W., Henseler,
57 J. and Wang, H. (Eds.) *Handbook of partial least squares. Concepts, methods and application*.
58 Springer, Berlin, pp. 655-690.
- 59
60 Chwolka, A. and Raith, M.G. (2012), "The value of business planning before start-up – A decision-
theoretical perspective", *Journal of Business Venturing*, Vol. 27 No. 3, pp. 385-399.
- Delanöe-Gueguen, S. and Fayolle, A. (2019), "Crossing the entrepreneurial Rubicon: a longitudinal
investigation", *Journal of Small Business Management*, Vol. 57 No. 3, pp. 1044-1065
- Delmar, F. and Shane, S. (2004), "Legitimizing first: Organizing activities and the survival of new
ventures", *Journal of Business Venturing*, Vol. 19 No. 3, pp. 385-410.
- Dimov, D. (2010), "Nascent entrepreneurs and venture emergence: opportunity confidence, human
capital, and early planning", *Journal of Management Studies*, Vol. 47 No. 6, pp. 1123-1153.

1
2
3 Farhangmehr, M., Gonçalves, P. and Sarmento, M. (2016), "Predicting entrepreneurial motivation
4 among university students: The role of entrepreneurship education", *Education + Training*, Vol. 58 No.
5 7/8, pp.861-881.

6 Frese, M. (2009), "Toward a psychology of entrepreneurship—an action theory perspective",
7 *Foundations and Trends in Entrepreneurship*, Vol. 5 No. 6, pp. 437–496.

8
9 Gielnik, M.M., Barabas, S., Frese, M., Namatovu-Dawa, R., Scholz, F.A., Metzger, J.R. and Walter, T.
10 (2014), "A temporal analysis of how entrepreneurial goal intentions, positive fantasies, and action
11 planning affect starting a new venture and when the effects wear off", *Journal of Business Venturing*,
12 No. 29, pp. 755–772.

13 Gollwitzer, P.M. (2012), "Mindset theory of action phases", in Van Lange, P.A. (Ed.) *Handbook of*
14 *theories of social psychology*. Sage, Los Angeles, pp. 526-545.

15 Gruber, M. (2007), "Uncovering the value of planning in new venture creation: A process and
16 contingency perspective", *Journal of Business Venturing*, Vol. 22 No. 6, pp. 782-807.

17
18 Gümüşay, A.A. and Bohné, T.M. (2018), "Individual and organizational inhibitors to the development
19 of entrepreneurial competencies in universities", *Research Policy*, No. 47, pp. 363-378.

20 Hair, J.F., Hult, G.T.M., Ringle, C.M., and Sarstedt, M. (2017), *A primer on partial least squares*
21 *structural equation modeling (PLS-SEM)* (2nd Ed), Sage: Thousand Oaks.

22
23 Haus, I., Steinmetz, H., Isidor, R., and Kabst, R. (2013), "Gender effects on entrepreneurial intention:
24 a meta-analytical structural equation model", *International Journal of Gender and Entrepreneurship*,
25 Vol. 5 No. 2, pp. 130–156.

26 Hechavarria, D.M., Renko, M., and Matthews, C.H. (2012), "The nascent entrepreneurship hub: goals,
27 entrepreneurial self-efficacy and start-up outcomes", *Small Business Economics*, Vol. 39 No. 3, pp.
28 685–701.

29 Heckhausen, H. and Gollwitzer, P.M. (1987), "Thought contents and cognitive functioning in
30 motivational versus volitional states of mind", *Motivation and Emotion*, No. 17, pp.101-120.

31 Henseler, J., Hubona, G. and Ray, P.A. (2016), "Using PLS path modeling in new technology
32 research: Updated guidelines", *Forthcoming Industrial Management & Data Systems*, Vol. 16 No. 1,
33 pp. 2-20.

34
35 Hikkerova L., Ilouga, S.N. and Sahut, J.M. (2016), "The entrepreneurship process and the model of
36 volition", *Journal of Business Research*, No. 69, pp. 1868-1873.

37 Hügelschäfer, S. and Achtziger, A. (2014), "On confident men and rational women: It's all on your
38 mind(set)", *Journal of Economic Psychology*, No. 41, pp. 31–44.

39
40 Ilouga, S.N., Nyock Mouloungni, A.C. and Sahut, J.M. (2014), "Entrepreneurial intention and career
41 choices: The role of volition", *Small Business Economics*, No. 42, pp. 717–728.

42 Johannisson, B. (1991). "University training for entrepreneurship: a Swedish approach",
43 *Entrepreneurship and Regional Development*, Vol. 3 No. 1, pp. 67–82.

44 Kaiser, H. (1974), "An index of factorial simplicity", *Psychometrika*, Vol. 39 No. 1, pp. 31-36.

45
46 Kakouris, A. (2016). "Exploring entrepreneurial conceptions, beliefs and intentions of Greek
47 graduates", *International Journal of Entrepreneurial Behavior & Research*, Vol. 22 No.1, pp. 109-132.

48 Karimi, S., Biemans, J.A., Lans, T., Chizari, M. and Mulder, M. (2016), "The impact of
49 entrepreneurship education: A study of Iranian students' entrepreneurial intentions and opportunity
50 identification" *Journal of Small Business Management*, Vol. 54 No. 1, pp. 187-209.

51 Kautonen, T., Van Gelderen, M. and Tornikoski, E.T. (2013), "Predicting entrepreneurial behaviour: a
52 test of the theory of planned behaviour", *Applied Economics*, Vol. 45 No. 6, pp. 697-707.

53
54 Kautonen, T., Van Gelderen, M., and Fink, M. (2015), "Robustness of the theory of planned behavior
55 in predicting entrepreneurial intentions and actions", *Entrepreneurship Theory and Practice*, Vol. 39
56 No. 3, pp. 655-674.

57 Kolvereid, L. and Isaksen, E. (2006), "New business start-up and subsequent entry into self-
58 employment" *Journal of Business Venturing*, No. 21, pp. 866-885.

- 1
2
3 Komarkova, I., Conrads, J. and Collado, A. (2015), *Entrepreneurship competence: An overview of*
4 *existing concepts, policies and initiatives. In-depth case studies report*, Publications Office of the
5 European Union, Luxembourg.
- 6 Krueger, N.F., Reilly, M.D. and Carsrud, A.L. (2000), "Competing models of entrepreneurial
7 intentions", *Journal of Business Venturing*, Vol. 15 No. 5, pp. 411–432.
- 8
9 Lackeus, M. (2015), *Entrepreneurship in education—what, why, when, how*, OECD Publishing, Paris.
- 10 Lamine, W., Mian, S. and Fayolle, A. (2014), "How do social skills enable nascent entrepreneurs to
11 enact perseverance strategies in the face of challenges? A comparative case study of success and
12 failure", *International Journal of Entrepreneurial Behavior & Research*, Vol. 20 No. 6, pp. 517-541.
- 13 Leibenstein, H. (1987), "Entrepreneurship, entrepreneurial training, and X-efficiency theory", *Journal*
14 *of Economic Behavior and Organization*, Vol. 8 No. 2, pp. 191-205.
- 15 Liñán, F. and Chen, Y.W. (2009), "Development and cross-cultural application of a specific instrument
16 to measure entrepreneurial intentions", *Entrepreneurship Theory and Practice*, Vol. 33 No.3, pp. 593-
17 617.
- 18
19 Liñán, F. and Fayolle, A. (2015), "A systematic literature review on entrepreneurial intentions: Citation,
20 thematic analyses, and research agenda", *International Entrepreneurship Management Journal*,
21 Vol.11 No. 4, pp. 907–933.
- 22
23 Lippke, S., Wiedemann, A.U., Ziegelmann, J.P., Reuter, T. and Schwarzer, R. (2009), "Self-efficacy
24 moderates the mediation of intentions into behavior via plans", *American Journal of Health Behavior*,
25 Vol. 33 No. 5, pp. 521-529.
- 26
27 Locke, E.A. and Latham, G.P. (2002), "Building a practically useful theory of goal setting and task
28 motivation: A 35-year odyssey", *American Psychologist*, Vol. 57, pp. 705–717.
- 29
30 Loué, C. and Baronet, J. (2012), "Toward a new entrepreneurial skills and competencies framework:
31 A qualitative and quantitative study", *International Journal of Entrepreneurship and Small Business*,
32 Vol. 17 No. 4, pp. 455–477.
- 33
34 Loué, C., Laviolette, E.M. and Bonnafous-Boucher, M. (2008), "L'entrepreneur à l'épreuve de ses
35 compétences: éléments de construction d'un référentiel en situation d'incubation", *Revue de*
36 *l'Entrepreneuriat*, Vol. 7 No. 1, pp. 63-83.
- 37
38 Mamabolo, M.A. (2016), *Human capital investments and skill outcomes specific to the different*
39 *entrepreneurship phases*. Thesis. Gordon Institute of Business Science, University of Pretoria.
- 40
41 Mamabolo, M.A., Kerrin, M. and Kele, T. (2017), "Human capital investments as sources of skills: An
42 analysis at different entrepreneurship phases", *Southern African Journal of Entrepreneurship and*
43 *Small Business Management*, Vol. 9 No. 1, pp. a114.
- 44
45 Man, T.W.Y. (2001), *Entrepreneurial competencies and the performance of small and medium*
46 *enterprises in the Hong Kong services sector*. Thesis. Hong Kong Polytechnic University.
- 47
48 Man, T.W.Y., Lau, T. and Chan, K.F. (2002), "The competitiveness of small and medium e
49 enterprises: A conceptualization with focus on entrepreneurial competencies", *Journal of Business*
50 *Venturing*, Vol.17 No. 2, pp. 123-142.
- 51
52 Man, T.W.Y., Lau, T. and Snape, E. (2008), "Entrepreneurial competencies and the performance of
53 small and medium enterprises: An investigation through a framework of competitiveness", *Journal of*
54 *Small Business and Entrepreneurship*, Vol. 21 No. 3, pp. 257-276.
- 55
56 Marvel, M.R., Davis, J.L. and Sproul, C.R. (2014), "Human capital and entrepreneurship research: A
57 critical review and future directions". *Entrepreneurship Theory and Practice*, Vol. 38, pp. 1–22.
- 58
59 McClelland, D.C. (1985), "How motives, skills, and values determine what people do", *American*
60 *Psychologist*, Vol. 40 No. 7, pp. 812-825.
- 61
62 McGee, J.E., Peterson, M., Mueller, S.L. and Sequeira, J.M. (2009), "Entrepreneurial self-efficacy:
63 Refining the measure", *Entrepreneurship Theory and Practice*, Vol. 33 No 4, pp. 965-988.

- 1
2
3 Mickiewicz, T., Nyakudya, F.W., Theodorakopoulos, N. and Hart, M. (2017), "Resource endowment
4 and opportunity cost effects along the stages of entrepreneurship", *Small Business Economics*, Vol.
5 48 No. 4, pp. 953-976.
6
- 7 Moberg, K., Vestergaard, L., Christiansen, S. (Eds) (2014), *How to assess and evaluate the influence*
8 *of entrepreneurship education: A report of the ASTEE project with a user guide to the tools*. Ireland.
9
- 10 Morris, M.H., Webb, J.W., Fu, J. and Singhal, S. (2013), "A competency-based perspective on
11 entrepreneurship education: Conceptual and empirical insights", *Journal of Small Business*
12 *Management*, Vol. 51 No. 3, pp. 352-369.
13
- 14 Newman, A., Obschonka, M., Schwarz, S., Cohen, M. and Nielsen, I. (2019), "Entrepreneurial self-
15 efficacy: A systematic review of the literature on its theoretical foundations, measurement,
16 antecedents, and outcomes, and an agenda for future research", *Journal of Vocational Behavior*, Vol.
17 110 No. February, pp. 403-419.
18
- 19 Pfeifer, S., Šarlija, N. and Sušac, M.Z. (2016), "Shaping the entrepreneurial mindset: Entrepreneurial
20 intentions of business students in Croatia", *Journal of Small Business Management*, Vol. 54 No. 1,
21 pp.102-117.
22
- 23 Rasmussen, E., Mosey, S. and Wright, M. (2011), "The evolution of entrepreneurial competencies: a
24 longitudinal study of university spin-off venture emergence", *Journal of Management Studies*, Vol. 48
25 No. 6, pp. 1314-1345.
26
- 27 Rauch, A. and Hulsink, W. (2015), "Putting entrepreneurship education where the intention to act lies:
28 An investigation into the impact of entrepreneurship education on entrepreneurial behaviour",
29 *Academy of Management Learning & Education*, Vol. 14 No. 2, pp. 187-204.
30
- 31 Ringle, C.M., Wende, S. and Becker, J.M. (2015), *SmartPLS 3*. Boenningstedt: SmartPLS GmbH.
32
- 33 Schlaegel, C. and Koenig, M. (2014), "Determinants of entrepreneurial intent: A meta-analytic test
34 and integration of competing models". *Entrepreneurship Theory and Practice*, Vol. 38 No. 2, pp. 291-
35 332.
36
- 37 Sheeran, P. (2002), "Intention-behavior relations: A conceptual and empirical review", *European*
38 *Review of Social Psychology*, Vol. 12 No. 1, pp. 1-36.
39
- 40 Shirokova, G., Osiyevskyy, O. and Bogatyreva, K. (2016), "Exploring the intention-behavior link in
41 student entrepreneurship: Moderating effects of individual and environmental characteristics",
42 *European Management Journal*, Vol. 34 No. 4, pp. 386-399.
43
- 44 Souitaris, V., Zerbinati, S. and Al-Laham, A. (2007), "Do entrepreneurship programmes raise
45 entrepreneurial intention of science and engineering students? The effect of learning, inspiration and
46 resources", *Journal of Business Venturing*, Vol. 22 No. 4, pp. 566-591.
47
- 48 Stuetzer, M., Obschonka, M. and Schmitt-Rodermund, E. (2013), "Balanced skills among nascent
49 entrepreneurs", *Small Business Economics*, Vol. 41 No. 1, pp. 93-114.
50
- 51 Teixeira, A.A.C. and Davey, T. (2010), "Attitudes of higher education students to new venture
52 creation: the relevance of competencies and contextual factors", *Industry and Higher Education*, Vol.
53 24 No. 5, pp. 323-341.
54
- 55 Thompson, E.R. (2009), "Individual entrepreneurial intent: Construct clarification and development of
56 an internationally reliable metric", *Entrepreneurship Theory and Practice*, Vol. 33 No. 3, pp. 669-694.
57
- 58 Tornikoski, E. and Maalaoui, A. (2019), "Critical reflections – The Theory of Planned Behaviour: An
59 interview with Icek Ajzen with implications for entrepreneurship research", *International Small*
60 *Business Journal: Researching Entrepreneurship*, Vol. 37 No. 5, pp. 536-550.
- Tounés, A., Lassas-Clerc, N. and Fayolle, A. (2014), "Perceived entrepreneurial competences tested
by business plan pedagogies", *International Journal Entrepreneurship and Small Business*, Vol. 21
No. 4, pp. 541-557.
- Trevelyan, R. (2009), "Entrepreneurial attitudes and action in new venture development",
International Journal of Entrepreneurship and Innovation, Vol. 10 No. 1, pp. 21-32.

1
2
3 Unger, J.M., Rauch, A., Frese, M. and Rosenbusch, N. (2011), "Human capital and entrepreneurial
4 success: A meta-analytical review", *Journal of Business Venturing*, No. 26, pp. 341–358.

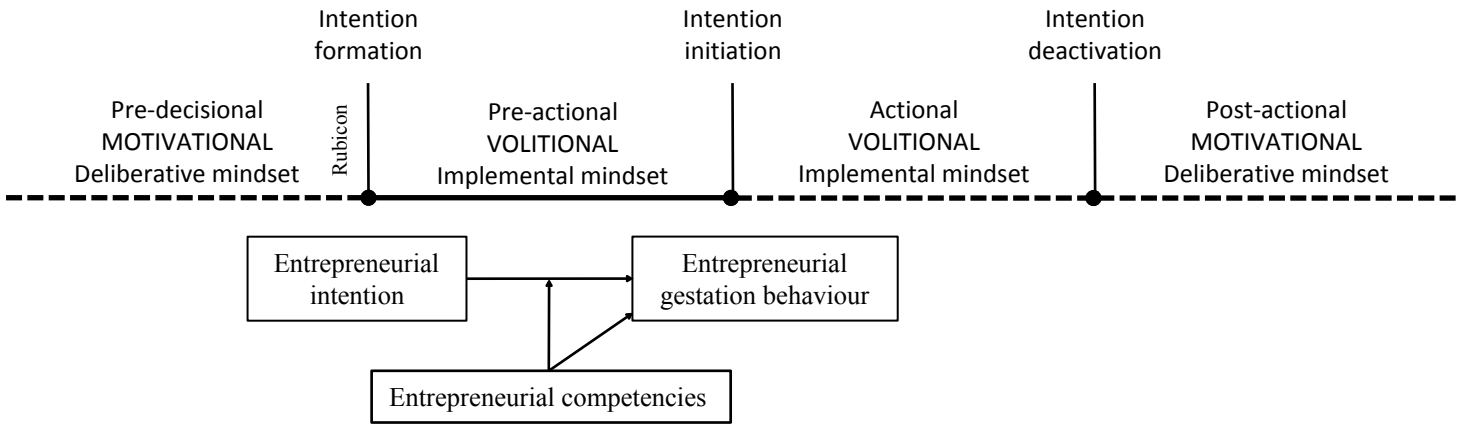
5 Van Gelderen, M., Thurik, R. and Bosma, N. (2006), "Success and risk factors in the pre-startup
6 phase", *Small Business Economics*, Vol. 26 No. 4, pp. 319-335.

7
8 Van Gelderen, M.W., Kautonen, T. and Fink, M. (2015), "From entrepreneurial intentions to actions:
9 Self-control and action related doubt, fear, and aversion", *Journal of Business Venturing*, Vol. 30 No.
10 5, pp. 655–673.

11 Van Gelderen, M., Kautonen, T., Wincent, J. and Biniari, M. (2018), "Implementation intentions in the
12 entrepreneurial process: Concept, empirical findings, and research agenda", *Small Business
13 Economics*, Vol. 51 No. 4, pp. 923-941.

14
15 Vilanova, L. and Vitanova, I. (2019), "Unwrapping opportunity confidence: how do different types of
16 feasibility beliefs affect venture emergence?", *Small Business Economics*.
17 <https://doi.org/10.1007/s11187-019-00159-4>.

Figure 1.
 Rubicon model of action phases (adapted from Heckhausen and Gollwitzer, 1987) and proposed research model



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41

Figure 2.
Hypothesized model

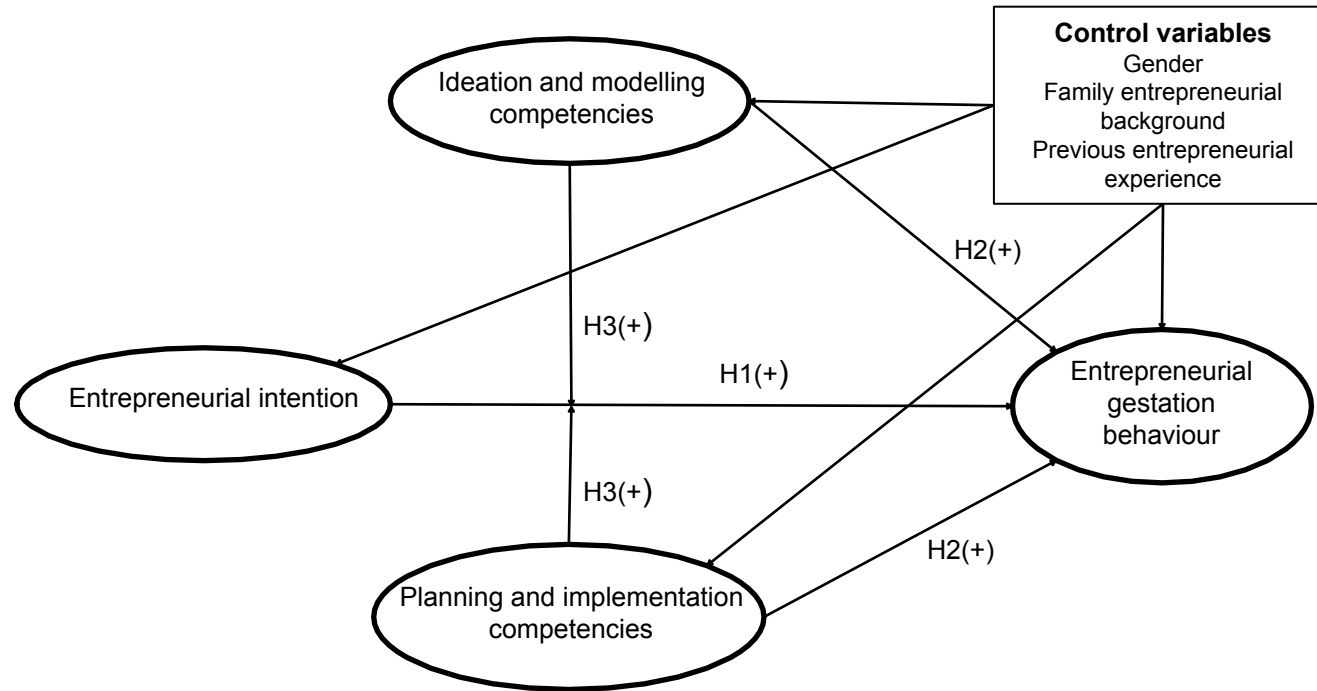


Table 1. Descriptive statistics and correlations of first-order constructs

Variables	Mean	SD	1	2	3	4	5	6	7	8
1. Entrep. Gest. Beh.	0.32	0.21	1							
2. Entrep. Int.	3.79	1.55	.408**	1						
3. Opportunity	4.70	1.08	.275**	.259**	1					
4. Relationship	5.15	1.20	.295**	.267**	.599**	1				
5. Conceptual	4.79	1.21	.294**	.363**	.708**	.651**	1			
6. Strategic	4.54	1.18	.385**	.305**	.430**	.579**	.444**	1		
7. Organising	4.86	1.36	.462**	.415**	.307**	.448**	.243**	.677**	1	
8. Commitment	4.77	1.50	.443**	.272**	.337**	.467**	.321**	.675**	.670**	1

Note. ** $p < .01$ SD: Standard deviation; Entrep. Gest. Beh.: Entrepreneurial gestation behaviour; Entrep. Int.: Entrepreneurial intention.

Table 2. Measurement Model Evaluation (reflective first order-constructs)

Variable	Cronbach's Alpha	Composite reliability	Average Variance Extracted	Outer Loadings ^a
Entrepreneurial intention	.947	.958	.791	.830*** - .912***
Opportunity	.906	.934	.779	.831*** - .906***
Relationship	.938	.951	.764	.851*** - .903***
Conceptual	.939	.951	.734	.792*** - .895***
Strategic	.958	.964	.751	.788*** - .907***
Organising	.965	.970	.763	.821*** - .905***
Commitment	.934	.953	.834	.891*** - .930***

Note. *** $p < .001$.

^a The minimum and maximum values of the outer loadings for the indicators of each reflective construct are shown.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Table 3. Measurement Model Evaluation (formative second-order constructs)

Variable	Outer Weights	Variance Inflation Factor (VIF)
Ideation and modelling		
Opportunity	.348***	2.106
Relationship	.435***	1.844
Conceptual	.361***	2.369
Planning and implementation		
Strategic	.399***	2.229
Organising	.379***	2.203
Commitment	.351***	2.181

Note. *** $p < .001$.

Table 4. Test of hypotheses

	Model 1	Model 2	Model 3
Entrepreneurial intention → Entrepreneurial gestation behaviour (H1)	.251***	.274***	.249***
Ideation and modelling → Entrepreneurial gestation behaviour (H2)	.088	.043	.025
Planning and implementation → Entrepreneurial gestation behaviour (H2)	.293***	.288***	.373***
Control variables¹			
Gender → Entrepreneurial gestation behaviour	.095*	.083*	.093*
Gender → Entrepreneurial intention	-.118*	-.118*	-.118*
Gender → Planning and implementation	.128*	.128*	.128*
Previous entrepreneurial experience → Entrepreneurial intention	.167**	.167**	.167**
Previous entrepreneurial experience → Planning and implementation	.095*	.095*	.095*
Moderation effects			
Entrepreneurial intention x Ideation and modelling → Entrepreneurial gestation behaviour (H3)		.130**	
Entrepreneurial intention x Planning and implementation → Entrepreneurial gestation behaviour (H3)			.140**
R²/Q²			
Entrepreneurial gestation behaviour	.283/.252	.306/.271	.302/.268
Entrepreneurial intention	.046/.029	.046/.029	.046/.029
Ideation and modelling	.020/.003	.020/.003	.020/.003
Planning and implementation	.032/.015	.032/.015	.032/.015

Note. * p < 0.05 ** p < 0.01 *** p < 0.001

¹ Only significant relationships of control variables are shown.