

Entrepreneurial competences: Assessment and predictive value for entrepreneurship

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### **Abstract**

Prior research has stated that entrepreneurs and more specifically their competencies are central to the success of small and medium sized organisations. The current manuscript reports two studies. The first study assesses the psychometric quality of a questionnaire assessing competencies considered to be important for entrepreneurs in the literature. In total, 34,968 (aspiring) entrepreneurs were asked to indicate how often they perform selected behaviours as indicators of their competencies. Results demonstrated the psychometric quality and measurement invariance across groups of the instrument. Competence ratings of aspiring entrepreneurs were consistently and significantly lower than those of nascent and experienced entrepreneurs, however effect sizes were limited. The second study examined the predictive value of these competencies for being active as an entrepreneur three to five years after completing the instrument. Administrative data on the status regarding entrepreneurship was retrieved for a subsample of 3239 participants. Results indicated that perseverance and insight into the market contributed positively to being and remaining active as an entrepreneur.

**Keywords:** Entrepreneurship; Competencies; Instrument Development

## Introduction

The question as to what makes a business a successful business has received a lot of attention in prior research (e.g., Baron & Markman, 2003; Man, Lau, & Chan, 2002; Markman & Baron, 2003; Rauch & Frese, 2007). Multiple authors have stated that the entrepreneur is central to the success of small and medium sized business (Man et al., 2002; Man, Lau, & Snape, 2008; Mulder, Lans, Verstegen, Biemans, & Meijer, 2007; Volery, Mueller, & von Siemens, 2015). Markman and Baron (2003) boldly stated “even economists suggest that firm performance and personal success are determined – to an important extent – by human variability rather than mere exogenous factors such as product differentiation, barriers to entry, or economies of sale” (p. 287). According to Kuratko (2014)

*The entrepreneur is one who undertakes to organize, manage, and assume the risks of a business. Today, an entrepreneur is an innovator or developer who recognizes and seizes opportunities; converts those opportunities into workable/marketable ideas; adds value through time, effort, money or skills; assumes the risks of the competitive marketplace to implement these ideas; and realizes the rewards from these efforts (Kuratko, 2014, p. 23).*

When investigating entrepreneurs’ roles in the start-up or success of small and medium size businesses, two research approaches can be distinguished: the personality and competency approach (Wagener, Gorgievski, & Rijdsdijk, 2010). Where research starting from the personality approach focuses on mostly inflexible traits and fixed dispositions of the individual, studies adopting a competency approach concentrate on aspects of entrepreneurship can be developed. The current study starts from the competency approach because it has been argued that developing entrepreneurial competencies is a more important issue than directly providing more resources and a positive environment (Man et al., 2002). These claims offer a positive perspective for supporting (aspiring) entrepreneurs as most

authors are in agreement that competencies are not fixed traits but can be developed and learned through experience and training (Man et al., 2002; Mulder et al., 2007; Wagener et al., 2010).

The current manuscript, comprising two large-scale studies, investigates entrepreneurship starting from this competency approach. In a first study, the reliability and validity of a survey assessing entrepreneurs' competencies is examined. The second study examines which competencies are predictive for future successful and sustainable entrepreneurship. Administrative data was retrieved about the entrepreneurship status of the participants three to five years after completing the survey.

### **Entrepreneurial Competencies**

In general, competencies have been defined as combined and integrated components of knowledge, skills, and attitudes. As such competencies are changeable, learnable and attainable through experience, training or coaching (Man et al., 2002; Volery et al., 2015; Wagener et al., 2010). Which abilities an entrepreneur needs to possess to run a successful business has been conceptualised in a holistic as well as specific manner. According to Mulder et al. (2007), the holistic notion of competence focuses on 'the ability to successfully meet complex demands in a particular context' (p. 34). However, there are also a lot of authors who preferred to determine the specific competencies entrepreneurs need to possess in order to be successful in a more analytical and behaviour oriented way (e.g., Chwolka & Raith, 2012; Karlsson & Honig, 2009; Man et al., 2002; Markman & Baron, 2003). When identifying which competencies are considered important for entrepreneurs in a variety of sectors, several authors start from the fact that – regardless of sectors or branches– taking risks seems to be an inherent and very important part of the life and success of an entrepreneur (e.g., Estay, Durrieu, & Akhter, 2013; Latham, 2009; Makhbul, 2011; Wagener

et al., 2010). However, taking risks also opens the door for failures and setbacks (Baron & Markman, 2000; Shane & Cenkaraman, 2000) and it is important that entrepreneurs possess the competencies that allow them to deal with these risks and possible consequences. Hence a first competence that has been identified is *perseverance*. Successful entrepreneurs are able to continue vigorously despite these difficulties (McClelland, 1987). Their perseverance enables them to apply themselves to the job and hold on until the goal is reached (Valtonen, 2007). Successful entrepreneurs strive to finish assignments even when they are tired of it. They persevere when facing obstacles or failures (Markman & Baron, 2003; Rauch & Frese, 2007).

However, successful entrepreneurs also seek to reduce risks when planning for the future. For an entrepreneur it is important to think ahead and have a vision for the midterm or even long-term goal(s) of the organisation. The *ability to plan ahead* involves translating their vision into a workable and realistic planning that depicts the different steps necessary to achieve their goals (Brinckmann, Grichnik, & Kapsa, 2010; Chwolka & Raith, 2012; Karlsson & Honig, 2009).

Their *insight into the market* also helps the entrepreneur to assess the potential risks. Successful entrepreneurs know their current and future competitors and how they are positioned within the continuously evolving market (Chwolka & Raith, 2012; De Clercq, Sapienza, Yavuzc, & Zhoua, 2012; Man et al., 2002; Wagener et al., 2010). This continuously evolving market makes it important for entrepreneurs to stay up to date with the latest developments and to maintain a proper position in the market. Successful entrepreneurs become and stay successful when they have the ability and wish to keep on learning to deal with new challenges such as technical and economical changes and innovations. An *orientation towards learning* refers to the fact that successful entrepreneurs search for new knowledge and skills in order to develop themselves. It refers to participating in training and development activities, following up on new developments, knowing where to find relevant

information and being interested in new methods and techniques that are relevant for their profession (Lans, Bergevoet, Mulder, & van Woerkum, 2005; Lans, Hulsink, Baert, & Mulder, 2008).

Taking risks also provides opportunities for success. Successful entrepreneurs possess the *ability to identify and seize these opportunities* (Gras & Mendoza-Abarca, 2014; Man et al., 2002; Markman & Baron, 2003; Philips & Tracey, 2007; Rezaei-zadeh, Hogan, O'Reilly, Cleary, & Murphy, 2014; Tumasjan & Braun, 2012). At the same time they are *aware of potential returns*. They have the ability to gauge the advantages and disadvantages of (financial) decisions as well as assess the factors that contribute to potential profit or loss (Man et al., 2002). Besides identifying and assessing opportunities, risks and returns, an entrepreneur should also be able to make clear-cut decisions. *Decisiveness* is an essential asset for entrepreneurs in order to move ahead (Man et al., 2002; Rezaei-Zadeh et al., 2014; Wagener et al., 2010). Successful entrepreneurs are able to draw conclusions based on different sources of information and recommendations offered for example by experts, consultants, colleagues, in order to advance the organisation. They dare to take decisions even when not everyone agrees with them and the outcome is not fully predictable. Closely related to this is the ability to act independent of others. *Independence* refers to the ability to decide and determine for oneself what to do. It also entails trust in oneself as well as taking responsibility for one's actions (Rauch & Frese, 2007; Wagener et al., 2010). However, this also requires a great deal of *self-knowledge and justified self-confidence*. Successful entrepreneurs score high in self-knowledge enabling them to identify their weaknesses and prioritise which aspects they need to work on by themselves and for which ones they need help from others (Hayward, Forster, Sarasvathy, & Fredrickson, 2010). *Building networks* and the ability to persuade these others are also at the core of successful entrepreneurship (Davidsson & Honig, 2003; McClelland, 1987). It is important for entrepreneurs to be able to

build relevant (internal and external) networks and maintain these networks in order to recruit and retain clients (Baron & Markman, 2003; Man et al., 2002; Markman & Baron, 2003). At the same time, the *ability to persuade* others is beneficial in a variety of situations as it enables entrepreneurs to convince others of their point of view, plan or product (Baron & Markman, 2003; Brush, 2008; Davidsson & Honig, 2003; Markman & Baron, 2003; McClelland, 1987; Wagener et al., 2010). They can benefit from this competency when dealing with clients and employees, and when negotiating with other organisations. Finally, because starting and running a business is a human and social enterprise as well, it is important for entrepreneurs to work in a socially responsible way that balances economic, social and environmental interests and future human consequences. The final competency therefore refers to the ability to conduct oneself and the business at hand in a *social and environmentally conscious* manner (Lans et al., 2008).

### **Study 1**

The first study assesses the psychometric qualities of a survey developed to measure competencies that are considered important for entrepreneurs in the literature. As mentioned several authors have argued that competencies are changeable, learnable and attainable through experience, training or coaching (Man et al., 2002; Volery et al., 2015; Wagener et al., 2010). The literature on professional development and learning demonstrates extensively that employees learn their job to a great extent while doing their job, in other words through gaining experience and by reflecting on these experiences (e.g., Kyndt & Baert, 2013; Tynjälä, 2008). In addition, Cope (2005) states that it is commonly recognized that entrepreneurs are action-oriented and that their learning is primarily based on experiences. Consequently, the construct validity of the questionnaire will be assessed by examining whether the competencies of entrepreneurs with a different amount of experience differ. More

specifically, this study hypothesizes that the competencies of experienced entrepreneurs are higher than the competencies of nascent entrepreneurs, which in turn are higher than the competencies of aspiring entrepreneurs without experience. Special attention is given to the measurement of these competencies because if one truly wants to identify differences between groups it is important to determine whether the instrument measures the underlying constructs in the same way for each group (Iacobucci, 2010). Prior research has however frequently ignored this issue of measurement invariance when comparing groups of entrepreneurs (e.g., DeMartino & Barbato, 2003; Gupta, Turban, Wasti, & Sikdar, 2009; Kautonen, 2008).

## **Study 1: Method**

### **Sample**

From 2007 onwards, every entrepreneur or aspiring entrepreneur in Flanders (a region of Belgium with 6 million inhabitants) that contacted UNIZO (Union of Independent Entrepreneurs), VDAB (Public Employment Service of Flanders) or Syntra (Adult education centres for entrepreneurs) for information or coaching regarding (the start-up of) their business were invited to complete a questionnaire on entrepreneurial competencies.

In May 2014, all data of the completed questionnaires were extracted from the central database used by these three organisations. During a period of about seven years 34,968 participants completed the questionnaire. Table 1 provides an overview of the demographic characteristics of the sample. Participants were at the time of participation active or planning to be active as an entrepreneur in a variety of sectors such as ICT, hospitality, automobile sector, construction, graphical work, agriculture, performing arts, sales, transportation and cleaning services.

### **Instrument**



The instrument contains the twelve competencies that were discussed above and considered relevant for entrepreneurs in different sectors. This questionnaire was developed between 2005 and 2007 in collaboration with entrepreneurs and organisations (UNIZO, VDAB, & Syntra) that support (starting) entrepreneurs (Baert & Camertijn, 2007). The items of the questionnaire are formulated as behavioural indicators and ask (aspiring) entrepreneurs to what degree they perform certain behaviours in their daily as well as professional activities. Behavioural indicators were used because it has been argued that “the mere possession of competencies does not necessarily make an entrepreneur competent. Competencies can only be demonstrated by a person’s behaviour and actions” (Man et al., 2002, p. 133; McClelland, 1998). Behaviours are considered to be proximal outcomes of knowledge and skills (Bird, Schjoedt, & Baum, 2012). In addition, rather than who the entrepreneur is as a person, it is what he/she does that seems to count (Mulder et al., 2007). For every competency eight to ten behavioural indicators were formulated. In total 113 items were included in a pilot version of the instrument. This pilot version was presented to twelve (aspiring, nascent and experienced) entrepreneurs who were asked to complete the questionnaire aloud in order to check the comprehensibility and formulation of the items. Subsequently, 1222 participants completed the pilot version of the questionnaire in the year 2006. Based on principal axis factoring and reliability analyses, the instrument was reduced to 79 items pertaining to twelve competencies (Baert & Camertijn, 2007). Table 2 comprises the number of items for each competency, as well as a sample item. All 79 items (see Appendix) were answered on a 6-point Likert scale with following response options ‘1= never’, ‘2=seldom’, ‘3=sometimes’, ‘4=often’, ‘5=most of the times’, and ‘6=always’.

### **Analysis**

The analyses were started with evaluating the quality of the instrument. The convergent validity of the questionnaire was assessed by means of confirmatory factor analysis. Two

random subsets of the data were compiled using the subset function in R. A first random subset was used to assess the original structure of the data and, if necessary, to adjust the model. The second random subset was used to confirm the identified structure and assess the discriminant validity according to the guidelines of Fornell and Larcker (1981).

Subsequently, the internal consistency of the scales was calculated. The construct validity was assessed through comparing aspiring, nascent and experienced entrepreneurs to each other by means of a MANOVA analysis. Furthermore, different ANOVAs with Tukey post-hoc tests were executed in order to assess the differences and their effect size for each competency separately. However, to determine whether differences between aspiring, nascent and more experienced entrepreneurs are an issue of measurement or reality, the measurement invariance of the instrument across these three groups was assessed first. More specifically, we examined whether the different groups interpret the items and underlying constructs in the same way.

## **Study 1: Results**

### **Evaluating the Instrument**

#### ***Examining and Confirming the Structure***

The analyses were started with examining the model fit of the original instrument within the first subset of the data ( $n = 17484$ ). Results showed that the model fit of a model with twelve factors and their respective items was too low ( $\chi = 13035, 91, df = 3014, CFI = .865, TLI = .858, RMSEA[CI] = .040 [.039; .040], SRMR = .045$ ). In order to improve the model fit the variance of the items explained by its latent factor were examined: eight items with less than 25% explained variance (or standardized loading below .50) were removed, raising the CFI to .874. Subsequently, the modification indices were calculated. Seven items that showed overlap with (several) other latent factors were also removed. The adapted model included

twelve factors and 64 items ( $\chi = 42825.01$ ,  $df = 1886$ , CFI = .909, TLI = .902, RMSEA[CI] = .037 [.037; .038], SRMR = .041). This adapted model was confirmed in the second random subset ( $n = 17484$ ) of the data ( $\chi = 43494,82$ ,  $df = 1886$ , CFI = .902, TLI = .899, RMSEA[CI] = .037 [.037; .038], SRMR = .041). Table 3 presents the results. The internal consistency of the scales were calculated on the entire dataset and ranged from .60 to .87 (see Table 4). These results indicate that the items belonging to the same competency are scored in a similar way by the participants.

### ***Discriminant Validity***

The discriminant validity of the scales was assessed following the guidelines of Fornell and Larcker (1981). In sum, these guidelines state that the average explained variance (AVE) by the factor in the items should be higher than the variance the factor shares with another construct. Table 4 presents the correlations between the different scales as well as the root of the AVE of each scale. In general, the discriminant validity is acceptable, meaning that the different scales measure different things. However, the independence scale does not discriminate well from several other scales. In addition, ‘seizing opportunities’ and ‘insight into the market’ appear to be strongly related. Based on these results, two alternative models were assessed. One in which ‘dependency’ was not included and one in which ‘seeing opportunities’ and ‘insight into the market’ were collapsed into one scale. Neither of these models showed a better fit than the model with twelve factors, hence the twelve-factor solution was selected as the final model.

### **Measurement Invariance Across Groups**

To be able to compare the mean scores of the competencies across different groups it is important to determine that these different groups interpret the individual questions and

underlying competency in a similar way (Van de Schoot, Lugtig, & Hox, 2012). Different levels (less to more demanding) of measurement invariance are distinguished. In sum, measurement invariance across groups is assessed by examining if the structure of the instrument is equal across groups (configural invariance), the factor loadings are equal across groups (metric invariance) and the intercepts of the factors are equal across groups (scalar invariance) (e.g., Van de Schoot, Lugtig, & Hox, 2012). Measurement invariance is established when each additional constraint placed on the model does not decrease the model fit. Ideally, the difference in the chi-square test should not be significant. However, it is known that the chi-square statistic is sensitive to sample size (Iacobucci, 2010). Due to the large sample size in this study the difference in chi-square statistics is not a good indicator. Alternatively, the difference in CFI's of both models can be examined. When the difference between the CFI's of both models is smaller than .01, it can be accepted that the model fit did not decrease too much (Iacobucci, 2010). Table 5 shows that scalar invariance is reached, meaning that three groups with varying experience as an entrepreneur (none, less and more than three years) interpret the underlying constructs in a similar way.

### **Construct Validity: Comparing Aspiring, Nascent and Experienced Entrepreneurs'**

As measurement invariance was established, it is possible to compare the mean scores on the different competencies of aspiring, nascent and experienced entrepreneurs. First, an overall MANOVA was calculated. The multivariate result for the different levels of experience was significant (Pillai's trace = .03,  $F = 20.18$ ,  $df = 2, 15723$ ,  $p < .001$ ). Subsequently, different ANOVAs were executed in order to explore the differences for each competency for the different groups as well as to calculate the effect sizes. The results of the different ANOVAs show that the different groups score significantly different on all competencies except self-knowledge (see Table 6). However, given the large sample size this is not a surprise. Careful

interpretation is advised because the effect sizes ( $\eta^2$ ) are not higher than .02, indicating that the effect is limited or even negligible. What is interesting is that the results of the Tukey post-hoc test reveal that the differences between the groups are consistent. Nascent and more experienced entrepreneurs do not differ significantly from each other, while the aspiring entrepreneurs score significantly lower than both groups.

## **Study 2**

This second study builds on the first study and examines which of the competencies that are considered to be important for entrepreneurs in the literature predict future entrepreneurship. More specifically it was examined whether competencies are predictive for being active as an entrepreneur three to five years after completing the survey.

### **Study 2: Method**

#### **Sample**

The second study was performed on a subsample of the participants involved in study 1. More specifically, administrative data regarding their entrepreneurship-status (i.e. active as an entrepreneur or not) in 2014 was gathered for participants that completed the questionnaire after contacting VDAB ( $n = 7884$ ). In Belgium three years is considered a cut-off point for 'successful' entrepreneurship; entrepreneurs whose companies go bankrupt after three years are not held financially personally responsible for the failure of their business. Therefore, our interest lied in the entrepreneurship-status of participants that completed the survey (see study 1) in 2011 or earlier. Due to legal constraints, information about the current entrepreneurship-status could be retrieved for participants that completed the survey in 2011, 2010, *or* 2009 but not earlier. Consequently, official administrative information could be retrieved for 3239 participants. Table 1 includes an overview of the background

characteristics of this subsample. Table 7 present a summary of the status as an entrepreneur in 2014 of the participants that completed the survey either in 2009, 2010 or 2011.

### **Analyses**

Logistic regression analysis was performed in order to examine which competencies predict entrepreneurship three to five years after completing the instrument. The main interest of this study was to predict whether participants were full-time entrepreneurs (in contrast to those who are not active as an entrepreneur). Therefore participants that had a business next to their main profession (secondary activity) ( $n = 234$ ) or cooperated in the business of their spouse ( $n = 16$ ) were excluded from the analyses. The predictive value of the competencies was assessed for the entire group of participants while controlling for the year they completed the questionnaire rather than analyzing each year separately. This approach was adopted because there were no theoretical or empirical indications that considerable differences would occur between entrepreneurs that have been active for three, four or five years. Next to the competencies, the intention towards entrepreneurship (i.e. interest in entrepreneurship, already in the start-up phase or not sure about starting a business) that participants indicated at the moment of completing the survey (i.e. intention reported in 2009, 2010, or 2011) was included as a predictor in the analysis. Moreover, different background variables were included as control variables (e.g., sex, age, educational degree, experience as an entrepreneur, work experience, employment status at the moment of completing the survey).

### **Study 2: Results**

The results of the logistic regression predicting entrepreneurship three to five years after completing the survey are presented in Table 8. While the majority of the competencies did not significantly predict participants' entrepreneurship-status, perseverance and insight into

the market did contribute positively to being active as an entrepreneur. The ability to persuade was only marginally significant. Social and environmental conscious conduct predicted participants' entrepreneurship-status negatively. Furthermore the results show that the intention towards starting a business at the moment of completing the survey is a significant predictor for being an entrepreneur three to five years after completing the survey. Those participants who were already in the start-up phase in 2009, 2010 or 2011 are more likely to remain active as an entrepreneur; and the same result was found for those interested in starting a business. It is no surprise that participants indicating that they were not sure to start a business (0 score on both dummies) were less likely to be an entrepreneur three to five years later. What is interesting is that having prior work experience or the employment status at the moment of completing the survey were not significant predictors for being and staying an entrepreneur. On the contrary, the educational degree was a positive significant predictor of entrepreneurship.

### **Discussion**

The goal of the first study was to demonstrate the quality of the questionnaire developed to assess twelve entrepreneurial competencies considered important for entrepreneurs' success (e.g., Brinckmann et al., 2010; Chwolka & Raith, 2012; Karlsson & Honig, 2009; Man et al., 2002; Markman & Baron, 2003; Wagener et al., 2010). The large sample size allowed a thorough examination of the structure, reliability and divergent validity of the instrument. In general, our results confirmed the psychometric quality of the instrument. In addition, measurement invariance across groups with different levels of experience was established.

The construct validity of the instrument was assessed through comparing aspiring, nascent and more experienced entrepreneurs' competencies. Based on the literature regarding work-related learning of employees (for a review see Kyndt & Baert, 2013), it was

hypothesized that entrepreneurs with more experience would score higher on the competencies than those with less or no experience. Despite the fact that the results in general confirmed this result, that is, entrepreneurs with experience (more and less than three years) scored their own competencies significantly higher than those entrepreneurs without any experience, however caution is needed as the effect sizes were low. Several explanations might be offered as to why the differences between experienced, nascent and aspiring entrepreneurs are not bigger. First of all, the questionnaire relies on self-report data; it might be that (aspiring) entrepreneurs are too optimistic about their competencies at the start of their project and consequently leave little room for identifying growth. The analyses of measurement invariance do not indicate that one of the groups score the items systematically higher or lower, however, this does not exclude the possibility that participants overestimate their own competencies. Secondly, the current analysis examines mean differences. It might be that certain individuals' competencies increase more than those of others and that these differences can be explained by certain individual or contextual characteristics. The work of Obschonka, Silbereisen, Schmitt-Rodermund, and Stuetzer (2011) for example indicated that entrepreneurs differ from non-entrepreneurs from childhood on. More specifically, early entrepreneurial competence in adolescence positively predicted entrepreneurship. The current study focused on (aspiring) entrepreneurs. In line with the research of Obschonka et al. (2011), it could be concluded that the current study focused on a specific group of adult participants already scoring high on their entrepreneur competencies (in comparison with non-entrepreneurs or individuals without entrepreneurial aspirations) even before starting their business, explaining why the differences between entrepreneurs with and without experience are small.

Future research is thus needed to examine if individual variation exists and which characteristics explain this variation. Furthermore, the current data only allowed us to



identify different categories of experience (no experience, less than three years or more than three years). It is likely that more detailed information regarding the years of experience of the entrepreneur could explain more variance in the competencies.

The second study examined which of the competencies considered important for entrepreneurs in the literature predicted entrepreneurship three to five years after completing the survey. Contrary to our expectations only two of the competencies were significantly positive related to entrepreneurship. It appears that insight into the market and perseverance can be considered crucial for entrepreneurs. Surprisingly given the importance of sustainability nowadays, the competency entailing social and environmental conscious conduct related negatively to entrepreneurship. However, the timeframe in which the survey was completed (2009 to 2011) could potentially explain this result, as ecological sustainability might not have been high on the agenda of entrepreneurs in the period following the economic crisis. This period could also explain why a majority of the competencies deemed important for entrepreneurship were not significant as a predictor for entrepreneurship three to five years after completing the survey. Many authors have argued that successful entrepreneurship depends on many factors interacting in a complex manner; the entrepreneur and his/her competencies and traits is one factor, but also the market factors and conditions play an important role (Baron & Markman, 2003; Man et al., 2008). The difficult market situation in the period that this study was conducted could have made it more difficult – even for very competent entrepreneurs – to start and maintain a business. In addition, the study of Rauch and Frese (2007) showed that the effect of personal characteristics is stronger when these are matched to the specific tasks at hand. In this study, generic competencies – in a sense that they are relevant for entrepreneurs in a wide variety of sectors – were examined, the less specific and task-oriented character could potentially

explain the limited results. More research is needed to examine the role of these generic competencies in interaction with different market conditions. Next to that, it might be interesting to investigate whether the role of these competencies can be different among entrepreneurs from different sectors.

When comparing the demographic characteristics of the subsample of study 2 to the entire sample included in study 1, it can be noticed that the subsample is comparable, except for the work status of the participants. The majority of the participants in study 2 were unemployed at the moment of completing the questionnaire. In line with motivational theories such as the self-determination theory (Deci & Ryan, 2002), it can be hypothesized that starting a business out of extrinsic reasons (e.g., having an income, merely having a job) is less favourable for being a successful entrepreneur. It might be that these extrinsic reasons are more prevalent in a group of unemployed individuals in comparison with those holding a job and quitting this job to build their business. For this specific subsample motivation might therefore have more predictive power for entrepreneurship than the competencies considered important for entrepreneurs. Future research is needed to examine which personal and context factors or combinations thereof could predict entrepreneurship next to entrepreneurs' perseverance and their insight into the market.

The limited predictive value of the different competencies for entrepreneurship could also be explained by the fact that we were not able to control for the fact that the aspiring entrepreneurs also actually started their own business. Consequently, this study does not provide information on failure versus success after actually starting a business. However, we were able to control for the intention participants had regarding starting a business at the moment of completing the survey (i.e. start-up phase, interest, not sure about starting a business). The limited amount of variance that was explained by our analyses, demonstrates

that entrepreneurship is a complex phenomena that requires further attention. Because human behaviour is often the result of an interaction between person and environment, future research could investigate how entrepreneurs' competencies interact with the demands and resources available in the context of the entrepreneur.

Overall, the study of entrepreneurship competencies remains scarce. Study 1 demonstrated the reliability and validity of an instrument for assessing entrepreneurs' competencies through (aspiring) entrepreneurs' self-reported behaviours. However, more insight is needed into the learning processes of entrepreneurs. How do entrepreneurs acquire expertise, is experience enough or is specific and/or additional training and/or coaching also needed? Which factors enhance or inhibit entrepreneurs' competence development through experience?

Study 2 demonstrated that, although limited, entrepreneurs' competencies predict future entrepreneurship. However, the majority of the participants completed the questionnaire before they were active as an entrepreneur. Although behavioural indicators were used, these participants completed the questionnaire with their current or previous employment in mind. Longitudinal research is needed to see whether their behaviour changes and their competencies develop over time after starting their business. In addition, it could be examined whether the development of the competencies is more important than the starting levels of these competencies for entrepreneurship.

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Table 1

*Demographic Characteristics Samples*

Characteristic	Study 1 N	Study 1 %	Study 2 N	Study 2 %
<b>Sex</b>				
Men	17880	51.1	1887	58.26
Women	17088	48.9	1352	41.74
<b>Age</b>				
Younger than 20 years	6871	19.6	66	2.04
21 – 30 years	15177	43.4	956	29.52
31 – 40 years	7068	20.2	1186	36.62
41 – 50 years	4410	12.6	811	25.04
51 – 60 years	1313	3.8	211	6.51
Older than 60 years	129	0.4	9	.27
<b>Experience as entrepreneur</b>				
No experience	30321	86.7	2544	78.54
Less than 3 years	2607	7.5	388	11.98
More than 3 years experience	2040	5.8	307	9.48
<b>Work status</b>				
Student	9695	27.7	16	.49
Employed	8400	24.0	84	2.59
Employed & Student (Evening classes)	5375	15.4	9	.28
Unemployed	11498	32.9	3130	96.63
<b>Work experience within Belgium</b>				
No experience	6263	17.9	199	6.14
Less than 5 years	12781	36.6	757	23.37
Between 5 and 10 years	5811	16.6	677	20.90
More than 10 years	10113	28.9	1606	49.58
<b>Educational degree</b>				
No degree	1168	3.3	87	2.69
Elementary education	2472	7.1	358	11.05
Lower secondary education	4479	12.80	705	21.77
Higher secondary education (Vocational)	5103	14.6	335	10.34
Higher secondary education (Technical)	7925	22.7	342	10.56
Higher secondary education (Art)	896	2.6	47	1.45
Higher secondary education (General)	2926	8.4	177	5.46
University college – Professional Bachelor	3633	10.4	514	15.87
University college – Master	1567	4.5	220	6.79
University	2129	6.1	385	11.89
Foreign degree (not recognized in Belgium)	670	1.9	69	2.13

Table 2

*Overview Instrument and Sample Items*

Competence	Number of items	Sample item
Perseverance	7	If a start an assignment, I finish it, even if I am tired of it
Self-knowledge	5	If I cannot figure it out, I ask others for help
Orientation towards learning	6	I attend training programs in order to be able to do my work better
Awareness of potential returns on investment	7	I know how I can keep the costs of what I do under control
Decisiveness	6	I take difficult decisions by myself
Planning for the future	4	If the situation changes, I adjust my plans
Independence	5	I take responsibility for my own actions
Building networks	8	I know who I can approach if I need help
Ability to persuade	10	I can build a strong argumentation
Seeing opportunities	7	I know which needs and requirements exist in my surroundings
Insight into the market	6	I know who my competitors are
Social & environmentally conscious conduct	7	I do not only consider profit and loss, but also humans and the environment

Table 3

*Study 1: Confirmatory Factor Analysis Subset 2*

Item	Regression weight	Standard error	Standardised regression weight	Critical ratio <sup>a</sup>	R <sup>2</sup>
<i>Perseverance</i>					
PE1	1	b	.68	b	.46
PE2	.1.01	.01	.68	76.27	.46
PE3	.85	.01	.64	72.23	.41
PE4	.93	.01	.68	76.04	.46
PE5	.83	.01	.68	76.13	.46
PE7	1.05	.01	.71	78.82	.50
<i>Self-knowledge</i>					
SK1	1	b	.51	b	.26
SK3	1.02	.02	.60	42.28	.36
SK5	.97	.02	.62	48.19	.39
<i>Orientation towards learning</i>					
FL1	1	b	.60	b	.36
FL2	1.13	.02	.64	62.26	.40
FL3	1.06	.01	.54	55.01	.29
FL4	.98	.01	.76	69.66	.57
FL6	.74	.01	.69	65.65	.47
<i>Awareness potential returns</i>					
AR1	1	b	.63	b	.39
AR2	1.13	.02	.66	68.16	.43
AR3	1.06	.02	.64	66.37	.40
AR4	.98	.01	.70	71.98	.50
AR5	1.14	.02	.69	70.73	.47
AR6	1.09	.02	.66	68.75	.44
<i>Decisiveness</i>					
DE1	1	b	.69	b	.48
DE2	1.01	.01	.72	81.62	.52
DE4	.79	.01	.67	76.21	.44
DE6	.93	.01	.74	84.23	.55
DE7	.87	.01	.57	65.89	.33
<i>Planning for the future</i>					
PF1	1	b	.70	b	.49
PF2	1	.01	.66	71.34	.44
PF3	.91	.01	.66	71.05	.43
PF4	1.06	.01	.68	72.78	.46

<i>Independence</i>					
IN2	1	b	.57	b	.33
IN4	1.36	.02	.65	63.63	.42
IN5	1.09	.02	.65	63.39	.42
<i>Ability to persuade</i>					
AP1	1	b	.73	b	.53
AP2	.95	.01	.69	84.18	.48
AP3	.92	.01	.69	83.59	.47
AP4	.90	.01	.71	86.35	.50
AP5	.84	.01	.64	78.18	.42
AP6	.79	.01	.62	75.65	.39
AP7	.77	.01	.56	67.29	.31
AP8	.80	.01	.57	68.83	.32
AP9	.86	.01	.68	82.89	.46
<i>Building networks</i>					
BN1	1	b	.74	b	.54
BN2	1.02	.01	.77	88.26	.59
BN4	.73	.01	.66	76.57	.44
BN5	.64	.01	.60	69.25	.36
BN7	.73	.01	.62	71.67	.38
<i>Seeing opportunities</i>					
SO1	1	b	.74	b	.55
SO2	.86	.01	.61	74.61	.37
SO3	.98	.01	.68	83.25	.46
SO4	.90	.01	.70	85.99	.49
SO5	.95	.01	.68	83.77	.46
SO6	.73	.01	.65	79.07	.42
SO7	.80	.01	.66	80.70	.43
<i>Insight into the market</i>					
IM1	1	b	.67	b	.45
IM2	.98	.01	.66	72.83	.43
IM3	.96	.02	.58	64.96	.33
IM5	.93	.01	.57	64.14	.32
IM6	1.06	.02	.53	59.56	.28
IM7	.90	.01	.64	70.88	.40
<i>Social and environmentally conscious conduct</i>					
SE1	1	b	.83	b	.69
SE2	1.05	.01	.86	124.41	.74
SE4	.99	.01	.79	112.45	.63
SE5	.76	.01	.64	83.96	.40
SE6	.90	.01	.68	92.08	.47

Note. Estimation Method: Maximum Likelihood.

a. All critical ratios:  $p < .001$

b. Value fixed at 1.00 for model identification purpose, hence no standard error was computed

Table 4

*Study 1: Descriptive Statistics, Internal Consistency, Correlations and Average Explained Variance (Subset 2)*

Scale	<i>M</i>	<i>SD</i>	$\sqrt{\text{AVE}}$	1	2	3	4	5	6	7	8	9	10	11	12
1. Perseverance	4.79	.79	.68	<b>.84</b>											
2. Self-knowledge	4.68	.77	.58	.39	<b>.60</b>										
3. Orientation towards learning	4.86	.77	.60	.52	.43	<b>.78</b>									
4. Awareness potential returns	4.76	.78	.66	.65	.39	.49	<b>.83</b>								
5. Decisiveness	4.52	.79	.68	.61	.32	.44	.54	<b>.79</b>							
6. Planning for the future	4.50	.81	.68	.54	.43	.45	.55	.51	<b>.76</b>						
7. Independence	5.07	.72	.63	.64	.31	.45	.57	.66	.49	<b>.63</b>					
8. Ability to persuade	4.57	.72	.66	.60	.48	.51	.60	.69	.56	.59	<b>.87</b>				
9. Building networks	4.62	.79	.68	.49	.48	.47	.46	.55	.45	.45	.65	<b>.78</b>			
10. Seeing opportunities	4.15	.80	.67	.54	.39	.51	.58	.64	.53	.52	.71	.58	<b>.85</b>		
11. Insight into the market	4.29	.81	.61	.51	.44	.56	.58	.56	.49	.48	.66	.61	.74	<b>.77</b>	
12. Social and environmentally conscious conduct	4.39	.96	.77	.46	.38	.43	.51	.39	.44	.40	.46	.40	.49	.43	<b>.81</b>

*Note:* 6-point Likert scale

Diagonal: Internal consistency scales

$\sqrt{\text{AVE}}$ : Root average explained variance

Table 5

*Study 1: Measurement Invariance across Groups*

	Model				Model comparison		
	$\chi^2$ (df)	CFI	RMSEA	BIC	$\Delta\chi^2$ ( $\Delta$ df)	p-value	$\Delta$ CFI
Model 1 (Configural)	49011.32*** (5658)	.901	.038	2594380.81			
Model 2 (equal loadings)	49316.72*** (5762)	.901	.038	2593681.25	Model 1 vs. 2	305.41 (104)	<.001 .000
Model 3 (+ equal intercepts)	49831.57*** (5866)	.900	.038	2593191.14	Model 2 vs. 3	514.85 (104)	<.001 .001
Model 4 (+ equal means)	50358.58*** (5890)	.899	.038	2593486.23	Model 3 vs. 4	527.01 (24)	<.001 .001

Note: \*\*\*p&lt;.001

Table 6

*Study 1: Results ANOVA*

Scale	<i>df</i>	<i>F</i>	$\eta^2$
Perseverance	2, 17481	96.97***	.01
Self-knowledge	2, 17481	.464	<.001
Orientation towards learning	2, 15723	16.84***	.002
Awareness potential returns	2, 17481	77.78***	.01
Decisiveness	2, 17481	161.8***	.02
Planning for the future	2, 17481	76.81***	.01
Independence	2, 17481	76.33***	.01
Ability to persuade	2, 17481	90.47***	.01
Building networks	2, 17481	55.92***	.01
Seeing opportunities	2, 17478	164.2***	.02
Insight into the market	2, 17467	115.3***	.01
Social and environmentally conscious conduct	2, 17462	83.81***	.01



Table 7

*Study 2: Summary Current Status as an Entrepreneur*

Current status as an entrepreneur	2009	2010	2011	Total
Not an entrepreneur	961	739	542	2242
Entrepreneur: main profession	222	276	249	747
Entrepreneur: secondary activity	84	83	67	234
Cooperator in business spouse	6	5	5	16

Table 8

*Study 2: Results Logistic Regression*

	Estimate	Se	p
(Intercept)	-3.60	1.88	.055
Perseverance	.25	.11	.021*
Self-knowledge	-.07	.07	.332
Orientation towards learning	-.09	.08	.284
Awareness of potential returns on investment	-.05	.10	.623
Decisiveness	.03	.10	.760
Planning for the future	.03	.07	.704
Independence	-.12	.10	.269
Ability to persuade	.21	.13	.062°
Building networks	-.01	.10	.976
Seeing opportunities	-.13	.11	.224
Insight into the market	.21	.10	.041*
Social & environmentally conscious conduct	-.28	.07	<.001***
Sex (female = 1)	-.12	.09	.206
Age	.02	.05	.622
Experience as entrepreneur	.25	.45	.570
Work status (employed = 1)	.06	1.26	.963
Work experience	.28	.21	.183
Dummy year 2009	-.70	.11	<.001***
Dummy year 2010	-.23	.11	.033*
Dummy start up phase	1.33	.35	<.001***
Dummy interest in starting	.89	.35	.011*
Educational degree	.20	.03	<.001***

Note: ° p < .08, \* p < .05, \*\* p < .01, \*\*\* p < .001