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Cognitive adaptability and narrow personality traits: Proposing a person–entrepreneurship fit for established entrepreneurs in South Africa

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Background: The person–entrepreneurship fit has been confirmed for new ventures, but has not been determined for established entrepreneurs. Personality traits and entrepreneurial cognitions are seen as important factors that lead to long-term performance, which is needed for established entrepreneurs to survive.

Objectives: A model is proposed which suggests that a closer association between certain narrow personality traits and the cognitive adaptability dimensions indicates a closer person–entrepreneurship fit.

Method: A quantitative approach was followed whereby 2650 established entrepreneurs in South Africa were surveyed, and a multiple regression analysis was conducted.

Results: Most studies on personality are conducted using the five-factor model of personality traits, and not necessarily the narrow traits. In this regard, new narrow traits emerged within the five main personality traits. The findings increase the understanding of the cognitive adaptability, and how it relates to these discrete narrow personality traits.

Conclusion: The findings of this study may inform the policymakers who are trying to encourage entrepreneurial activity, and the transition of nascent entrepreneurs to established entrepreneurs in the context of developing as well as developed markets. Educators could incorporate the cognitive adaptability dimensions in entrepreneurial training and support programmes, which could encourage nascent and start-up entrepreneurs to become established entrepreneurs.

Keywords: Person–entrepreneurship fit; cognitive adaptability dimensions; big five personality traits; narrow personality traits; established entrepreneurs.

Introduction

Entrepreneurship typifies a setting where uncertainty is generally high; therefore, 'fit' is an important construct for venture performance and success (Naman & Slevin, 1993). Kristof (1996) investigated fit from a person–organisation fit perspective and found that there is a compatibility between individuals and the jobs they undertake. Drawing from the person–organisation fit theory, Markman and Baron (2002) introduced a person–entrepreneurship fit model that identified various individual factors, such as self-efficacy, opportunity identification, persistence, human capital and social capital, as well as social skills that influence new venture creation. However, scholars suggest that the model is not fully inclusive with respect to these factors and that other elements, such as personality traits (Costa & McCrae, 1992a) and cognition (Bajwa, Shahzad, & Aslam, 2017), probably also play a role in determining the model. In this article, cognition from a cognitive adaptability viewpoint is investigated to address this gap.

Haynie and Shepherd (2009) describe the cognitive adaptability 'as the ability to effectively change decision policies (i.e. to learn), given feedback (inputs) from the environmental context in which cognitive processing is embedded'. Based on metacognition and social cognition, cognitive adaptability consists of five factors: goal orientation, metacognitive knowledge, metacognitive experience, metacognitive choice and monitoring (Bajwa et al., 2017; Nelson, 1996; Schacter, 1996). These factors are not dispositional traits, but rather cognitive factors, which can be learnt and improved upon by means of training and experience (Haynie, Shepherd, Mosakowski, & Earley, 2010). Together with the personality traits, entrepreneurial cognition assists researchers in understanding the how, why and what of entrepreneurial thinking and behaviour (e.g. Krueger, 2017). Research on the entrepreneurial personality typically draws from

the five-factor model of personality traits (FFM), which consists of openness to experience, conscientiousness, extraversion, agreeableness and neuroticism (Costa & McCrae, 1992a; Digman, 1990). Previous evidence demonstrates that openness to experience, conscientiousness and extraversion is positively linked, while neuroticism is negatively linked, to entrepreneurs (Bajwa et al., 2017; Zhao, Seibert, & Lumpkin, 2010). Furthermore, while Costa and McCrae (1992a) introduced several narrow personality traits or facets within each of the FFM traits, these narrow traits and their relation to cognitive adaptability are yet to be determined.

Globally, entrepreneurship is frequently depicted as an unstable career, linked to high failure rates (Failla, Melillo, & Reichstein, 2017). This perspective is especially applicable in South Africa, given the high failure rate of start-up businesses (80% fail within the first three years) (Herrington, Kew, & Kew, 2015). Yet, established business activity has increased since 2001 in South Africa (Herrington et al., 2015), leading scholars Mitchelmore and Rowley (2010) to conduct a research on how to facilitate this transition from a start-up phase into an established phase. Despite the majority of research in South Africa on entrepreneurship being conducted on student and nascent entrepreneurs (Urban, 2012), the above-mentioned research highlights the need to investigate established entrepreneurs, who are defined as entrepreneurs that have progressed past the start-up stage of their business and have been operating for over three and a half years (Nieman & Nieuwenhuizen, 2009). Both personality traits (Leutner, Ahmetoglu, Akhtar, & Chamorro-Premuzic, 2014) and cognitive adaptability (Haynie, 2005) have been linked to entrepreneurial performance outcomes beyond the business start-up. Furthermore, the individuals select work environments that suit their personality, attitudes and interests, and which increase their job fulfilment as well as performance (Markman & Baron, 2003; Zhao et al., 2010). Building on this existing work, a person–entrepreneurship fit model is proposed, which posits that positive (and negative) relationships between certain narrow personality traits and cognitive adaptability dimensions indicate such a fit for established entrepreneurs.

This article has some important implications for theory and practice. From a theoretical perspective, most studies are conducted on the big five personality traits and not necessarily on the narrow traits. With one of the largest studies conducted among established entrepreneurs in South Africa (sample size of 2650), this study identifies two new narrow traits within the broad personality traits. Other researchers can include these two traits in order to contribute to the extension of the Neuroticism, Extraversion, Openness five-factor inventory (NEO-FFI). This article contributes to person–entrepreneurship fit theory by demonstrating that it can be determined if one strives to become an established entrepreneur, and not only for the creation of new ventures. For business practice, we determine the best possible narrow personality trait and cognitive adaptability dimension fit for established entrepreneurs. This finding is not only significant for South Africa but also carries far wider applicability, as it increases the understanding of cognitive adaptability and its relationship with the narrow personality traits. It may assist national policymakers in encouraging more entrepreneurial behaviour in the context of developing as well as developed markets. Understanding the match between the narrow personality traits and cognitive adaptability dimensions should facilitate the understanding of ways to encourage start-up and nascent entrepreneurs to move beyond the start-up stage. To this end, these findings may assist educators to incorporate cognitive adaptability in their training programmes in an effort to increase the number of entrepreneurs that become established.

Theoretical foundation and hypotheses development

The person–entrepreneurship fit

The literature person–entrepreneurship fit originates from person–organisation fit theory (Markman & Baron, 2002, 2003). It is important to determine whether person–organisation fit is a task of the person, the circumstances or the interaction between the two, as well as the relationship between such fit and venture performance (Markman & Baron 2002). It is acknowledged that entrepreneurs go through a personal process of person–job matching in a similar fashion to other kinds of career choices (Zhao et al., 2010). Consistent with the processes identified in person–organisation fit and person–entrepreneurship fit theories (Markman & Baron, 2003), it is expected that entrepreneurs learn and adjust their actions based on their personality, attitudes and interests. Furthermore, it is suggested that person–entrepreneurship fit refers to the outcomes of similarities between persons, their attitudes, knowledge, skills, abilities and personality, and the various tasks that they need to fulfil while starting and managing an entrepreneurial venture (Markman & Baron, 2002). This article investigates person–entrepreneurship fit from an established entrepreneur perspective. In this regard, several activities seem to be particularly unique to existing or established entrepreneurs. While start-up ventures focus on launching a new venture (Thompson, 2009), established ventures focus on opportunity assessment (Shane & Venkataraman, 2000) and long-term firm performance (Le Roux & Bengesi, 2014). Previous research also suggests a strong link between the big five personality traits and entrepreneurial cognition (Bajwa et al., 2017). While extending the logic of this research to cognitive adaptability, it is likely that individuals with personality traits linked to entrepreneurs, such as openness to experience, conscientiousness and extraversion (Zhao et al., 2010), are more cognitively adaptable (Bajwa et al., 2017). Indeed, research shows that entrepreneurs with high levels of extraversion, openness to experience and conscientiousness are closely linked to entrepreneurial success and performance (Schmitt-Rodermund, 2001).

Cognitive adaptability and personality traits of established entrepreneurs

Haynie (2005) postulates that metacognition is better studied in established entrepreneurs who have moved beyond the business creation phase. The five dimensions of cognitive adaptability were developed and empirically investigated by Haynie and Shepherd (2009), and are briefly described as follows: (1) Goal orientation refers to how a person reaches their individual, social and business goals; (2) Metacognitive knowledge refers to a reliance on what is already known regarding oneself and others; (3) Metacognitive experience centres around experiences, emotions and intuitions while interpreting and executing goals to control a dynamic environment; (4) Metacognitive choice, also referred to as metacognitive strategy, involves choosing the best option from various decision frameworks to interpret and execute in a dynamic environment; and (5) Monitoring refers to looking for and using feedback information to reassess one's metacognitive knowledge, experience, choice and goal orientation, with the aim of 'controlling' a dynamic environment.

Narrow personality traits

Table 1 categorises the big five personality traits as well as the narrow traits (Costa & McCrae, 1992a; Digman, 1990) according to the personal attributes that characterise them. Each wide-ranging personality trait has numerous interrelated narrow traits or factors (Ghaemi & Sabokrouh, 2015). Costa and McCrae (1992b) and later Saucier (1998) identified 12 factor-analytically derived scales from the NEO-FFI item clusters, as indicated in Table 1.

No other study, as far as can be determined, has been conducted on the narrow personality traits in conjunction with the cognitive adaptability in entrepreneurship. The motivation for investigating the narrow personality traits is provided in evidence, which shows that, relative to the broad FFM traits, the narrow traits were linked to more detailed entrepreneurial outcomes, and were more closely linked to business performance and achievement (Leutner et al., 2014; Rauch & Frese, 2007). This relates directly to the person–entrepreneurship fit model that is suggested in Figure 1, whereby entrepreneurial cognition represents the link between the entrepreneurial personality, mind set and environment.

TABLE 1: Neuroticism, Extraversion, Openness five-factor inventory narrow traits.

Big five personality traits	Narrow traits	Personal attributes of each trait
Neuroticism	Negative affect	Depressed, sad, worried, afraid and insecure
	Self-reproach	Sad, afraid, insecure, depressed and troubled
Extraversion	Positive affect	Elated, happy, pleased, positive and animated
	Sociability	Gets along with others and is talkative
	Activity	Spirited, lively, excited, dominant and influential
Openness to experience	Unconventionality	Conservative, traditional and unusual
	Intellectual interest	Philosophical, deep, intelligent and knowledgeable
	Aesthetic interest	Artistic, imaginative, tolerant and curious
Agreeableness	Prosocial orientation	Welcoming, kind, enjoyable, thoughtful, obliging and warm
	Non-antagonistic orientation	Not grumpy, egotistical, ill-tempered, volatile, unfriendly or confrontational
Conscientiousness	Orderliness	Organised, efficient, neat, systematic and thorough
	Goal striving	Dedicated, ambitious, persistent and productive

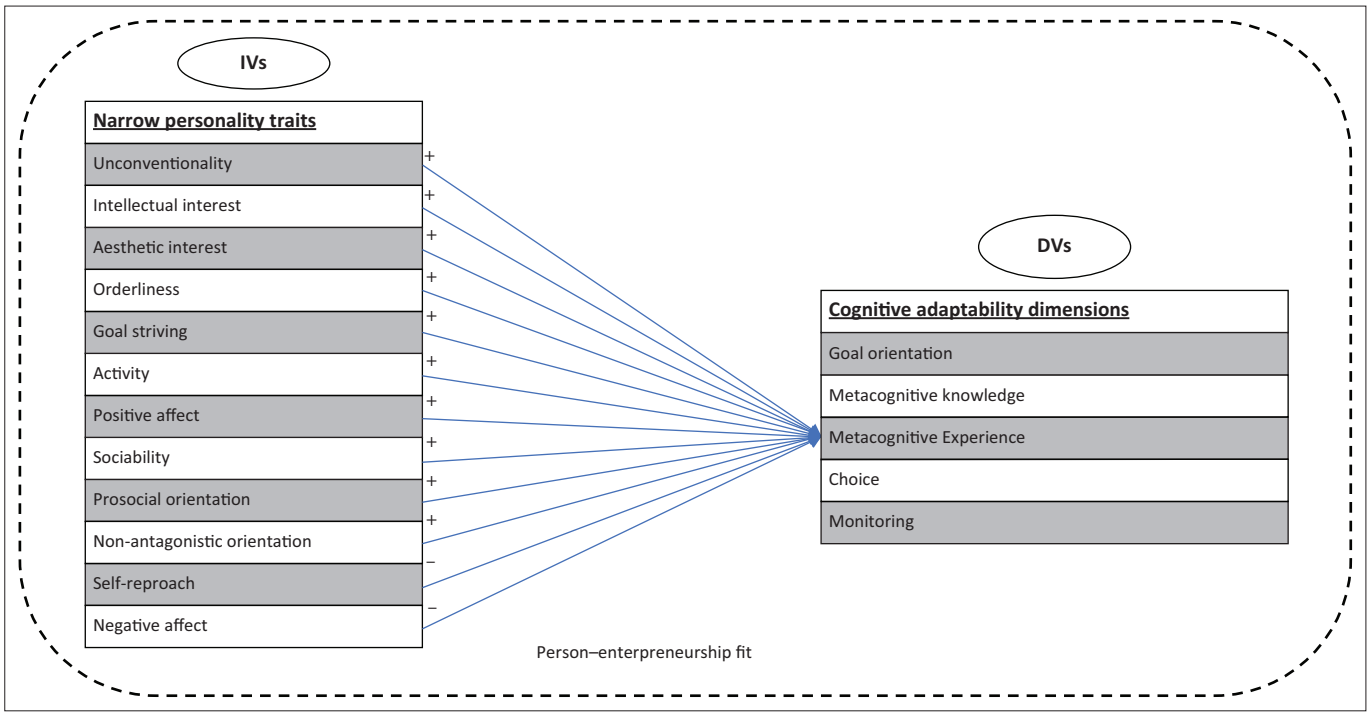
Source: Adapted from Saucier, G. (1998). Replicable item-cluster subcomponents in the NEO five-factor Inventory. *Journal of Personality Assessment*, *70*, 263–276. https://doi.org/10.1207/s15327752jpa7002_6

Linking the narrow personality traits to the various dimensions of cognitive adaptability

Openness to experience is related to a high-learning goal orientation (Bajwa et al., 2017). Uy, Sun and Foo (2017) found that the high-learning, goal-oriented entrepreneurs are likely to participate in more experimental tactics that need more resources to control for uncertainty and difficulties. Barrick, Mount and Strauss (1993) state that the attributes of openness to experience, and more specifically the narrow facets of intellectual interest and unconventionality, are salient for starting a new venture, and should remain so for the survivability of the venture. Likewise, entrepreneurs high on intellectual interest will tend to adjust to challenging and new entrepreneurial contexts (Rasmussen & Berntsen, 2010). Ghaemi and Sabokrouh (2015) confirmed that individuals who are curious, imaginative and tolerant (aspects associated with the narrow trait of aesthetic interest) are also high on the metacognitive choice dimension. A high degree of self-monitoring seems to counteract low openness to experience (Barrick, Parks, & Mount, 2005).

Conscientiousness is strongly and positively related to the goal orientation for both the orderliness and goal-striving facets (Barrick et al., 1993). Work goal orientation, hard work and perseverance towards one's goals in the face of challenges (goal-striving trait) are closely associated with entrepreneurship (Locke, 2000). Furthermore, the narrow trait of goal striving, an acknowledged predictor of work performance, is related to knowledge sharing (Matzler, Renzl, Müller, Herting, & Mooradian, 2008; Wang & Yang, 2007). In addition, goal striving is also related to emotions associated with attentiveness, an aspect of positive affect (Clark & Watson, 1991; Watson, 2000), which is strongly related to metacognitive strategies (choice) (Ghaemi & Sabokrouh, 2015). Regarding the narrow trait – orderliness – Noftle and Robins (2007) found that responsible, organised and efficient people are likely to avoid negative outcomes, and, hence, experience reduced negativity by being more adaptable and upholding interpersonal responsibilities.

All three of the narrow traits of extraversion are likely to be strongly related to goal orientation. Extraversion as a whole has a positive influence on cognitive adaptability (Bajwa et al., 2017), particularly knowledge sharing (Ferguson, Paulin, & Bergeron, 2010) and metacognitive strategies (choice) (Turban, Stevens, & Lee, 2009). Ghaemi and Sabokrouh (2015) demonstrated that students high on positive affect and



IV, independent variable; DV, dependent variable.

FIGURE 1: Proposing a model of person–entrepreneurship fit for established entrepreneurs.

activity more regularly employed these strategies compared to students measuring low on these narrow traits. Sociability is the primary trait underlying social behaviour and one's efforts to get along with other people (Barrick et al., 2005). At the same time, individuals high on self-monitoring view social contexts as an opportunity to develop a favourable image and standing in social collectives (Gangestad & Snyder, 2000).

Agreeableness has been significantly and positively associated with increased effort to be adaptable (Bajwa et al., 2017). The narrow trait of prosocial orientation is positively associated with mastery goals, yet negatively associated with performance goals (Mccabe, Van Yperen, Elliot, & Verbraak, 2013), which creates an undecided foundation for the goal orientation dimension. Matzler et al. (2008) evidenced that the non-antagonistic orientation was positively associated with knowledge sharing. The prosocial orientation has been associated with individuals better understanding and empathising with others' emotions and aims, and other types of social cues (e.g. DeYoung et al., 2010; Graziano, Habashi, Sheese, & Tobin, 2007; Nettle & Liddle, 2008). It is, therefore, hypothesised that:

> **H1:** There is a person–entrepreneurship fit for established entrepreneurs, if each of the narrow personality traits, namely, openness to experience (unconventionality, intellectual interest and aesthetic interest), conscientiousness (orderliness and goal striving), extraversion (positive affect, sociability and activity), and agreeableness (prosocial orientation and non-antagonistic orientation) are positively related to all of the cognitive adaptability dimensions.

Both the self-reproach and negative affect are negatively associated with the motivation to set goals and form expectations (Judge & Ilies, 2002). Neuroticism is related to depression, anxiety and instability, suggesting that this trait might not be linked to the aim of sharing knowledge (Wang & Yang, 2007). Self-reproach has consistently been associated with negative affect (Rasmussen & Berntsen, 2010), and prior work has not indicated an association between metacognitive strategy (choice) and both the narrow traits of neuroticism (Ayhan & Türkyılmaz, 2015). The literature proposes negative relationships between the constructs; therefore, it is hypothesised that:

> **H2:** There is a person–entrepreneurship fit for established entrepreneurs, if the narrow personality traits of neuroticism (self-reproach and negative affect) are negatively related to all the cognitive adaptability dimensions.

Proposing a person–entrepreneurship fit model

In Figure 1, it is posited that when the narrow personality traits of openness to experience, conscientiousness, extraversion and agreeableness are positively related, but the narrow personality traits of neuroticism are negatively related to cognitive adaptability, there exists a closer person–entrepreneurship fit for established entrepreneurs. Furthermore, if these positive relationships are present in entrepreneurs, it should result in more entrepreneurial ventures moving beyond the start-up stage into more established ventures (Haynie, 2005; Markman & Baron, 2002).

Methodology

A simple random sampling method was employed using a random sampling frame of 15 000 established entrepreneurs, acquired from a local market research company and proportionally stratified on the basis of gender, industry and provincial location. The final sample comprised 2650 established entrepreneurs, resulting in a realised response

rate of 17.67%. A screening question ensured that only established entrepreneurs who have operated their business for over three and a half years (Nieman & Nieuwenhuizen, 2009) were included. Data collection was done through an online survey approach, distributed via email.

The majority of respondents were men (68.75%) and 31.25% were women. Most (48.64%) were 50–69 years of age, followed by 38.83% who were 36–49 years of age. A total of 984 respondents had an undergraduate degree from a university (37.1%), while 580 had a postgraduate honours degree (21.9%) and 386 (14.6%) had only completed secondary school and had no further education. The three most significant industry sectors that the respondents' businesses operated in were: (1) professional, scientific and technical activities (12.8%), (2) finance and insurance service activities (12.3%), and (3) manufacturing (11.6%).

Measures and internal consistency

The narrow personality traits were assessed using the NEO-FFI developed by Costa and McCrae (1992b). This instrument consists of 60 statements on a 4-point Likert scale, ranging from 1 = 'strongly disagree' to 4 = 'strongly agree'. The NEO-FFI instrument has been widely used in both psychology and entrepreneurship research. Importantly, the scale has recently been shown to have high construct, convergent and discriminant validity (Perera, Mcilveen, Burton, & Corser, 2015), and has been demonstrated to be reliable in a range of contexts with the five scales it is composed of, yielding internal consistency values between 0.68 and 0.86 (Costa & McCrae, 1992a; Murray, Rawlings, Allen, & Trinder, 2003). The cognitive adaptability scale includes the measurement of goal orientation, metacognitive knowledge, metacognitive experience, metacognitive choice and monitoring, measured by means of a 36-item inventory designed by Haynie and Shepherd (2009).

Exploratory factor analysis (EFA) was employed, using principal axis factoring extraction with promax rotation to assess the factor structure of these constructs. Using Kaiser's (1974) well-known criterion of retaining factors with eigenvalues exceeding 1, an additional two new narrow traits emerged which were not found in Saucier's (1998) study. For agreeableness, a new trait named meekness or tender-mindedness emerged; and for neuroticism, the new trait named depression emerged. Meekness can be defined as being quiet, gentle and always ready to do what other people want without expressing your own opinion (Bradbury, Deuter, & Turnbull, 2015). Depression involves features such as a negative mood, hopelessness and despair (Linton & Shaw, 2011). With the inclusion of these new factors, 48.9% and 53.2% of the variance in agreeableness and neuroticism were explained, respectively. Exploratory factor analysis for cognitive adaptability was also conducted and seven factors emerged rather than the five identified by Haynie and Shepherd (2009). The two new cognitive adaptability factors are prior metacognitive experience and prior metacognitive knowledge. Prior metacognitive knowledge and experience refer to previous knowledge and experience that the entrepreneurs gained, while current metacognitive knowledge and experience refer to current knowledge and experience that they have when measurement was undertaken. With the inclusion of these two new factors, 52.2% and 47% of the variance in metacognitive experience and knowledge were explained, respectively. These newly identified factors in both the NEO-FFI and cognitive adaptability scales are included and tested as part of the proposed model to potentially gain more nuanced and novel insight into the relationships which garner a person–entrepreneurship fit.

Table 2 indicates the internal consistency-reliabilities (Cronbach's alpha values) for the relevant latent factors in this study. These values for the 21 factors ranged from 0.51 to 0.79. Cronbach's alphas of 0.50–0.60 are considered sufficient for exploratory research (Hinton, McMurray, & Brownlow, 2014). In Table 2, three of the factors of Cronbach's alpha values were between 0.5 and 0.6 and eight of the factors were between 0.6 and 0.7. According to Hinton et al. (2014), Cronbach's alphas between 0.5 and 0.7 are considered moderately reliable, and therefore these 11 factors of Cronbach's alpha values are deemed acceptable. George and Mallery (2003) agree and state that Cronbach's alpha values below 0.5 are deemed unacceptable in exploratory research. Consequently, the Cronbach's alpha coefficients were deemed acceptable for the

TABLE 2: Cronbach's alphas for the narrow personality traits (sub-factors) and the cognitive adaptability dimensions.

Factor	Cronbach's alpha
Cognitive adaptability sub-factors	
GO	0.776
Current MK	0.750
Prior MK	0.670
Prior ME	0.762
Current ME	0.716
Choice	0.688
Monitoring	0.733
Openness to experience sub-factors	
Unconventionality	0.516
Intellectual interest	0.544
Aesthetic interest	0.710
Conscientiousness sub-factors	
Orderliness	0.659
Goal striving	0.787
Extraversion sub-factors	
Activity	0.610
Positive affect	0.627
Sociability	0.673
Agreeableness sub-factors	
Meekness	0.721
Prosocial orientation	0.531
Non-antagonistic orientation	0.675
Neuroticism sub-factors	
Depression	0.614
Self-reproach	0.730
Negative affect	0.683

GO, goal orientation; Current MK, current metacognitive knowledge; Prior MK, prior metacognitive knowledge; Prior ME, prior metacognitive experience; Current ME, current metacognitive experience; Choice, metacognitive choice.

present study, particularly given their exploratory nature and the fact that the NEO-FFI instrument has been extensively validated in prior research (Perera et al., 2015). Exploratory factor analysis also formed a validity test that ensured both convergent (between factors) and discriminant (comparison between cognitive adaptability and the NEO-FFI instrument) validities.

Analytical procedure

Standardised multiple regression was performed to test the hypothesised relationships. Structural equation modelling (SEM) was not used for the testing of hypotheses for two reasons. First, SEM is particularly useful in testing complex models with mediating variables; however, this article aimed to test bivariate regression paths, which indicates that multiple regression is suitable (Kline, 2016). Second, a requirement of SEM is that the measurement model achieves a suitable level of 'fit' to proceed with the estimation of regression paths (Kline, 2016). In this regard, confirmatory factor analysis was employed to evaluate measurement model fit, and, based on generally acknowledged threshold values for the model fit indices, SEM was deemed inappropriate due to unacceptable fit (Kline, 2016). Therefore, multiple regression analysis was conducted on the broad factors as well as the narrow personality sub-factor traits together with the seven cognitive adaptability dimensions based on the factor structure which emerged through EFA.

Findings

Hypotheses testing

To test the hypotheses, Table 3 presents the regression analysis results of the narrow personality traits regressed on the seven cognitive adaptability factors. Based on this, it is evident that aesthetic interest has positive relationships with all the seven cognitive adaptability dimensions. Intellectual interest (openness to experience); goal striving (conscientiousness); activity (extraversion); positive affect (extraversion); and prosocial orientation (agreeableness) have positive relationships with most of the cognitive adaptability dimensions except with prior metacognitive knowledge. Finally, meekness (agreeableness) has positive relationships with most of the cognitive adaptability dimensions except with prior metacognitive experience. These findings suggest that some, but not all, narrow personality traits are required to achieve a person–entrepreneur fit.

Ethical consideration

Ethical clearance was obtained from the Faculty of Economic and Management Sciences at the University of Pretoria, as this article forms part of Dr H. Morallane's PhD dissertation.

Discussion

This article's hypotheses and proposed model suggested that certain narrow traits should be positively associated, while others should be negatively associated, with the cognitive adaptability dimensions to indicate a person–entrepreneur fit. In this regard, a few notable relationships were found. When considering the openness to experience narrow traits, unconventionality was positively associated with goal orientation, prior metacognitive knowledge, metacognitive choice and monitoring, but had negative relationships with goal orientation and metacognitive choice. Interestingly, unconventionality was most strongly related to prior metacognitive knowledge. Although intellectual interest had the most significant relationships with all the seven dimensions of cognitive adaptability, which is consistent with prior work (Ghaemi & Sabokrouh, 2015; Rasmussen & Berntsen, 2010), the relationships were not all positive. Intellectual interest was a negative predictor of prior metacognitive knowledge, suggesting that an entrepreneur's reliance on prior knowledge decreases their openness to new experiences. The aesthetic interest is the only narrow trait that revealed positive – albeit not all significant – relationships with all of the cognitive adaptability dimensions, and this finding is consistent with Ghaemi and Sabokrouh (2015).

When measuring the narrow traits of conscientiousness, goal striving was the most consistently as well as significantly related to the seven cognitive adaptability dimensions. This finding aligns with works by Ghaemi and Sabokrouh (2015), Barrick et al. (1993) and Locke (2000). However, goal striving and prior metacognitive knowledge were negatively related, which contradicts the literature where goal striving is related to knowledge sharing (Matzler et al., 2008; Wang & Yang, 2007). Orderliness had one negative relationship, namely, with prior metacognitive experience, which differs from Noftle and Robins (2007) who found a positive association between orderliness and metacognitive experience.

When determining the three narrow traits of extraversion, activity was the most significantly related to the various cognitive adaptability dimensions. Consistent with suggestions by Bajwa et al. (2017), activity and positive affect indicated positive relationships with most dimensions. However, this was not the case for prior metacognitive knowledge, which contrasts with prior work that found a positive relationship between extraversion and knowledge sharing (Ferguson et al., 2010). Overall, more active, energetic and powerful personality traits tend to increase cognitive adaptability among established entrepreneurs, which aligns with suggestions in the literature (Ghaemi & Sabokrouh, 2015; Turban et al., 2009). Sociability is a negative predictor of prior metacognitive experience, current metacognitive experience, metacognitive choice and monitoring. This is a somewhat surprising finding, as it was expected that entrepreneurs who get along with others and are talkative would have positive relationships with all of the cognitive adaptability dimensions.

When considering the two narrow traits of agreeableness and the cognitive adaptability dimensions, both the prosocial orientation and non-antagonistic orientation mostly had positive relationships with the cognitive adaptability dimensions. Prosocial orientation had the majority of the

TABLE 3: Multiple linear regression results for the narrow personality traits (sub-factors) with each of the cognitive adaptability dimensions (sub-factors).

Sub-factors	DV: Cognitive adaptability dimensions													
	GO		Current MK		Prior MK		Prior ME		Current ME		Choice		Monitoring	
	Std BC	*p*	Std BC	*p*	Std BC	*p*	Std BC	*p*	Std BC	*p*	Std BC	*p*	Std BC	*p*
IV: Openness to experience sub-factors														
Unconventionality	-0.053**	-	-0.016	-	0.127**	-	0.035	-	-0.020	-	-0.063**	-	-0.052**	-
Intellectual interest	0.276**	-	0.359**	-	-0.123**	-	0.122**	-	0.308**	-	0.250**	-	0.255**	-
Aesthetic interest	0.107**	-	0.095**	-	0.024	-	0.006	-	0.019	-	0.057**	-	0.122**	-
R^2	0.100	-	0.160	-	0.020	-	0.020	-	0.095	-	0.067	-	0.093	-
F (p-value)	97.5	0.000	168.5	0.000	18.3	0.000	18.0	0.000	93.1	0.000	63.6	0.000	90.6	0.000
IV: Conscientiousness sub-factors														
Orderliness	0.052**	-	-0.029	-	0.055**	-	-0.146**	-	0.179**	-	-0.010	-	0.030	-
Goal striving	0.481**	-	0.471**	-	-0.259**	-	0.229**	-	0.473**	-	0.338**	-	0.413**	-
R^2	0.262	-	0.207	-	0.054	-	0.036	-	0.350	-	0.111	-	0.185	-
F (p-value)	418.7	0.000	308.49	0.000	67.75	0.000	44.7	0.000	636.5	0.000	147.1	0.000	268.9	0.000
IV: Extraversion sub-factors														
Activity	0.278**	-	0.254**	-	-0.036	-	0.185**	-	0.287**	-	0.173**	-	0.170**	-
Positive affect	0.094**	-	0.173**	-	-0.116**	-	0.088**	-	0.137**	-	0.118**	-	0.156**	-
Sociability	-0.056**	-	-0.108**	-	0.075**	-	-0.086**	-	-0.101**	-	-0.093**	-	-0.110**	-
R^2	0.093	-	0.102	-	0.013	-	0.043	-	0.108	-	0.046	-	0.055	-
F (p-value)	90.28	0.000	99.9	0.000	11.6	0.000	39.9	0.000	106.3	0.000	42.5	0.000	51.6	0.000
IV: Agreeableness sub-factors														
Meekness	0.036	-	0.027	-	0.027	-	-0.097**	-	0.068**	-	0.054**	-	0.065**	-
Prosocial orientation	0.193**	-	0.297**	-	-0.200**	-	0.165**	-	0.232**	-	0.218**	-	0.260**	-
Non-antagonistic orientation	-0.101**	-	-0.124**	-	0.042	-	-0.161**	-	-0.142**	-	-0.118**	-	-0.082**	-
R^2	0.035	-	0.080	-	0.036	-	0.054	-	0.053	-	0.046	-	0.066	-
F (p-value)	31.8	0.000	76.3	0.000	32.8	0.000	50.2	0.000	49.6	0.000	42.05	0.000	62.19	0.000
IV: Neuroticism sub-factors														
Depression	-0.025	-	-0.078**	-	0.075**	-	-0.105**	-	-0.040	-	-0.097**	-	-0.049**	-
Self-reproach	-0.219**	-	-0.191**	-	0.074**	-	-0.105**	-	-0.286**	-	-0.102**	-	-0.115**	-
Negative affect	0.071**	-	0.055**	-	-0.191**	-	0.149**	-	-0.009	-	0.110**	-	0.076**	-
R^2	0.039	-	0.042	-	0.023	-	0.021	-	0.096	-	0.018	-	0.021	-
F (p-value)	35.4	0.000	38.4	0.000	20.8	0.000	19.2	0.000	93.7	0.000	15.8	0.000	19.3	0.000

IV, independent variable; DV, dependent variable; Std BC, Standardised beta coefficient; GO, goal orientation; Current MK, current metacognitive knowledge; Prior MK, prior metacognitive knowledge; Prior ME, prior metacognitive experience; Current ME, current metacognitive experience; Choice, metacognitive choice.

*, $p < 0.05$; **, $p < 0.01$.

significant relationships with the cognitive adaptability factors and showed the strongest relationships. This finding is in agreement with suggestions by DeYoung et al. (2010) that agreeableness leads to better understanding, empathy and consideration of people's feelings, aims and emotional condition. However, prosocial orientation was negatively associated with prior metacognitive knowledge. This could mean that a reliance on prior metacognitive knowledge could reduce the likelihood of an individual being polite, considerate and unassuming of others. Overall, the finding revealed that a prosocial orientation increases the likelihood that one is cognitively adaptable. Non-antagonistic orientation was statistically and significantly related to all the factors aside from prior metacognitive knowledge, yet interestingly, these correlations are mostly negative. The new narrow trait, meekness, was statistically significantly related to prior and current metacognitive experience, metacognitive choice and monitoring.

When testing the three narrow traits of neuroticism, negative relationships with the cognitive adaptability dimensions are hypothesised (Bajwa et al., 2017; Rasmussen & Berntsen, 2010). Both self-reproach and depression revealed negative relationships with all the dimensions except prior metacognitive knowledge, and interestingly, negative affect has five positive relationships. Based on the above discussion, not all hypothesised positive relationships were significant and positive. Therefore, H1 cannot be accepted. Furthermore, not all hypothesised negative relationships were significant and negative; therefore, H2 cannot be accepted. However, the results of this article indicate that the person–entrepreneurship fit for established entrepreneurs appears to be more complex and nuanced than originally proposed. For example, negative affect was positively related to many of the cognitive adaptability dimensions, suggesting that this sub-factor may have counterintuitive benefits in terms of a person–entrepreneur fit. Furthermore, the newly identified narrow personality traits (meekness and depression) have added additional insight into the personality factors that may facilitate or inhibit this fit.

Conclusion

This article extends the theories of person–organisation fit to the domain of entrepreneurship research. Building on the person–entrepreneurship fit work of Markman and Baron (2002), this fit was investigated from an established entrepreneur perspective. As proposed in Figure 1, the closer the positive relationships between the narrow personality traits of openness to experience, conscientiousness, extraversion and agreeableness and the cognitive adaptability of established entrepreneurs, the better the person–entrepreneurship fit will be. However, this could not be confirmed in this article. Thus, H1 and H2 could not be accepted. Nonetheless, it is possible to confirm that a person–entrepreneurship fit could be present if an entrepreneur has a positive relationship between the aesthetic interest and the cognitive adaptability dimensions. This article further revealed two new narrow personality traits; these were meekness (sub-facet of agreeableness) and depression (sub-facet of neuroticism). An important finding is that established entrepreneurs with self-reproach (neuroticism) are the least cognitively adaptable, and will possibly have the poorest person–entrepreneurship fit. Therefore, this article confirms the view that neuroticism is not a personality trait that will contribute to the person–entrepreneurship fit for established entrepreneurs in South Africa.

This study makes several contributions. First, the findings of this article hold value and are applicable to both the domains of entrepreneurship and psychology. By bridging the literatures from personality and metacognitive psychology, this article provides a robust and empirically testable model that may promote (rather than inhibit) adaptable decision-making and cognition in light of a dynamic entrepreneurial context. Second, from a developing country perspective, seven dimensions of cognitive adaptability were found rather than the five dimensions found by Haynie and Shepherd (2009) in a developed country context. To this end, this article provides a more nuanced perspective of the factors required to achieve a person–entrepreneurship fit, and serves to build on prior work on cognitive adaptability in the South African context (Botha & Bignotti, 2017). For example, the results show that the newly formed factor, prior metacognitive knowledge, had negative relationships with most of the narrow personality traits, and might not be one of the dimensions that one would include in a South African entrepreneurial training programme. With one of the largest studies conducted among established entrepreneurs in South Africa (2650), this article has important implications from a practical point of view. It highlights the fact that focus should be placed on six of the cognitive adaptability dimensions in the design of pedagogical programmes, which could augment learning and engender adaptable thinking, long-term survival and performance. Furthermore, it indicates what narrow traits are required to achieve a person–entrepreneurship fit in a developing country, namely, the South African context. Given the size and diversity of the sample, these findings can be regarded as reasonably robust and, hence, have implications for understanding the entrepreneurial personality and cognition in the South African context. Third, these findings hold significant implications for entrepreneurship scholars both locally and abroad, as 14 factor-analytically generated narrow traits emerged from the NEO-FFI in this study. The two newly derived narrow personality traits, meekness and depression, can be included in future scales and can serve to build on the NEO-FFI narrow trait structure indicated by Saucier (1998). Finally, this article contributes by focusing on established entrepreneurs. It is imperative to understand the personality and cognitive factors that lead to the transition of nascent entrepreneurs to established, successful entrepreneurs in order to facilitate the development of nascent entrepreneurs (Davidsson, 2018). Consequently, this study may be of value to entrepreneurs at various stages of the entrepreneurial life cycle, as they can compare their cognitive adaptability and personality traits with those of established entrepreneurs, which could assist in determining their

person–entrepreneurship fit and enable aspiring start-up entrepreneurs to pursue entrepreneurial careers.

Limitations and future research avenues

There is limited literature on the relationships between these constructs, likewise on cognitive adaptability within the field of entrepreneurship, and even more limited are studies focusing on established entrepreneurs as opposed to nascent and start-up entrepreneurs. Future research can expand on this study, especially on the dimension of prior metacognitive knowledge. As the big five personality and cognitive adaptability sub-factors were derived from this article, the level of generalisability of these more nuanced factors to other empirical contexts requires further exploration. It will be interesting to compare the results of the person–entrepreneurship fit model suggested in this article with a replicable study conducted in a developed country. As the person–entrepreneurship fit model is not all-encompassing with regard to the various individual-difference factors, additional factors such as those found in the literature about new venture creation fit (Markman & Baron, 2002, 2003) should also be tested on established ventures. Finally, it is recognised that this research was cross-sectional in nature, raising the question of reverse causality. Future research thus has the opportunity to longitudinally explore these psychological and cognitive factors in relation to various entrepreneurial performance outcomes to more clearly establish the causal mechanisms leading to a person–entrepreneurship fit.

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Competing interests

The authors have declared that no competing interests exist.

Authors' contributions

H.M. collected the data as part of her PhD in entrepreneurship dissertation; she also contributed to the findings and literature review. M.B. prepared the literature review, methodology, findings and discussions of the article, and transformed the section of the dissertation into a research article.

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