

**MEASURING ENTREPRENEUR BEHAVIOUR:
A PSYCHOLOGICAL ACTION THEORY CONCEPTUALISATION
AND SCALE VALIDATION**

by

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Former President Barack H. Obama said at his inaugural address on 20 January 2009, against the backdrop of the beginning of the Great Recession, that: "Starting today, we must pick ourselves up, dust ourselves off, and begin again the work..."

DECLARATION

I, Johannes Michael Smith, hereby declare that this thesis is my own original work for the degree of Doctor of Philosophy (Entrepreneurship) at the University of Pretoria. I have further exercised reasonable care to ensure, to the best of my knowledge, that where other people's work has been used, it has been properly acknowledged and referenced.

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ABSTRACT

Entrepreneurship is change, and specifically at the personal level, it is about the entrepreneur as the agent of change. This personal entrepreneurial act is essential for entrepreneurship to occur.

Through time, and in particular from the 1980s, the focus of research was on answering the question of what the characteristics of an entrepreneur are. The initial answers from psychology were not conclusive. However, meta-analysis studies have lately shown that some of the psychology concepts used, have merit and can thus be used to explain entrepreneur behaviour. Most of the psychology stream of research concerned itself mainly with the intentions or attitude of being entrepreneurial. Yet, it is the doing or execution of the entrepreneurial task, in the context of a dynamic entrepreneurial process that will be the focus of this research. Grounded in the psychology of human agency theory, this research seeks to understand and clarify the construct of entrepreneur behaviour and validate a measurement scale for personal entrepreneur behaviour.

The gap in the literature that this research will address is the lack of a systematically developed theoretical model of personal entrepreneur behaviour and a validated measurement scale. This research will thus be guided by two questions, namely of clarifying, at first, what is personal entrepreneur behaviour, and secondly, how to measure personal entrepreneur behaviour during the initial dynamic stages of the entrepreneurial process.

The importance of the study is found in the answers that it will provide to researchers, educators, entrepreneurs, and funders on the testing of a theoretical model and validated measurement of personal entrepreneur behaviour.

The items used for the personal entrepreneur behaviour scale were taken from existing scales as found in a review of the extant literature on entrepreneur behaviour. A combined purposive and convenience non-probability sample was then drawn of founders or owners of small firms in South Africa. The dimensionality and psychometric properties of the scale

were established with the use of exploratory and confirmatory structural equation modelling. Structural equation modelling was also employed to test the relationships between the concepts of the personal entrepreneur behaviour construct.

Keywords: Action regulation, Action characteristics, Entrepreneur behaviour, Entrepreneurship, Factor analysis, Measurement models, Psychological factors of personal entrepreneur behaviour, Quantitative research, Reliability and validity, Structural equation modelling

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- Lastly, I can but only echo the words of an unknown entrepreneur that I will "accept the responsibility, less than half of any credit, and more than half the blame." for this thesis.

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CHAPTER 1 INTRODUCTION

1.1 BACKGROUND

Entrepreneurship is change, and a person acts to make it happen.

The act of a person, or entrepreneur, is a prerequisite for entrepreneurship to occur and defines the essence of being entrepreneurial (Gartner, Carter & Reynolds, 2010:101; Koppl & Minniti, 2010:226; McMullen & Shepherd, 2006:132; Rauch & Frese, 2000:11; Santos, Caetano & Curral, 2013:663). Entrepreneurship is thus impossible without an entrepreneur (Hansen, Monllor & Shrader, 2016:247). The entrepreneur acts, as an individual or in a group, to pursue, in a determined way, a business opportunity through a process of identifying, evaluation and exploiting opportunities, with the emerging firm as a vehicle, to bring new social and economic value in the form of future goods and services to the market. An entrepreneur is, therefore, the primary agent of change to make value creation, over time, a possibility (Frese, 2009a:438; Gartner, 1988:26; McMullen & Shepherd, 2006:132; OECD, 2016:12; Shane & Venkataraman, 2000:217).

The psychological study of the entrepreneur is not a new endeavour. Particularly from the 1980s, there has been considerable attention paid to this person-centred approach (Grégoire, Noël, Déry & Béchar, 2006:345; Sarasvathy, 2004:713). The work of McClelland (1961:205) on the achievement motivational need of an entrepreneur is in fact where the field of entrepreneurship started. This psychological approach to entrepreneurship has however largely been abandoned, due to a lack of proof of a relationship between the personality of an entrepreneur and their subsequent performance, as well as when Gartner (1988:11) stated, in a narrative review, that the pursuance of this line of questioning on the personality traits of the entrepreneur, was the wrong research question to ask and that the focus should be on the actions of the entrepreneur, rather than on the person (Zhao, Seibert & Lumpkin, 2010:395).

The trait approach to the study of entrepreneurship has, in the process, basically given way to studies of the entrepreneurial firm and the consideration of the environment on

entrepreneurial outcomes. However, meta-analysis studies have recently shown that some of the personality traits do have merit and can be used to explain entrepreneurial behaviour (Rauch & Frese, 2007:370). Researchers thus continued to investigate the individual conditions that fostered entrepreneur behaviour. Why and how some people act or behave entrepreneurially, and others do not, is the research question that is now being pursued in this stream of research (Baron, 2004:223; Baum, Frese & Baron, 2012:xiii; Fisher, 2012:1045; Frese & Gielnik, 2014:414; Shane & Venkataraman, 2000:221).

The activities of entrepreneur behaviour are found in the discovery or creation of a business opportunity, by making judgements, under conditions of uncertainty, on whether an opportunity is feasible, gathering the resources necessary, and establishing a venture or firm in order to pursue the opportunity (Bird, Schjoedt & Baum, 2012:890; Gartner *et al.*, 2010:99; McMullen & Shepherd, 2006:134). It is however assumed that individual entrepreneurs differ in the way that they go about their activities to exploit an opportunity and build a firm to harness the opportunity (Gartner *et al.*, 2010:101). Personal entrepreneur behaviour is thus defined as an omnibus individual-level reflective construct that has as its dimensions a number of psychological concepts such as personality, motivation, and goal implementation action characteristics. Personal entrepreneur behaviour is therefore the within-person differences of how some entrepreneurs are more active than others in identifying and exploiting opportunities and establishing a firm.

Bird *et al.* (2012:890) made an appeal for the further study of entrepreneur behaviour as a result of the renewed emphasis on entrepreneurial action. They defined entrepreneur behaviour as a between-person or overt behaviour phenomenon, which is enacted to create and resource a firm to pursue an opportunity (Bird *et al.*, 2012:891). The work of Bird and her colleagues could also be seen as an attempt to analyse the task demands of an entrepreneur rather than undertaking a psychological or within-person conceptualisation of entrepreneur behaviour. Meanwhile, the important findings on individual differences in constructs of cognition (thinking), emotions (feelings) and personality were thus largely ignored in their conceptualisation of entrepreneur behaviour. The behavioural approach to the study of the entrepreneur therefore continued to focus on overt and observable behaviour. Although such behaviour cannot be denied as part and parcel of entrepreneur

behaviour, it would only be half the picture, as the whole mechanism of how behaviour is activated within the person is overlooked.

Frese (2009a:443) who is working in the business psychology field, corrected this one-sided view by bringing the insights of the world of work to bear on entrepreneur behaviour. He argued that entrepreneurial action or behaviour is, in fact, goal-directed behaviour. The most appropriate lens or theoretical framework to apply to the study of entrepreneur behaviour is therefore the theory of human action and regulation. It is the theory of the person having the agency and metaphorically being able to throw a stone in the water to effect ripple-like change. This theory posits how goals (the stone) change into behaviour (the ripple on the water).

The theoretical foundation of action regulation further specifically enables the researcher to draw on all the prior work done within this theory on the relationships between the affective and cognitive antecedents of action or behaviour (Chen & Mitchell, 2014:1). This thesis will therefore be grounded in human action theory to clarify the construct of entrepreneurial action or behaviour and inform a theoretical model of personal entrepreneur behaviour (Townsend, Mitchell, Mitchell & Busenitz, 2015:95). All actions or behaviour is activated within a specific context, and for entrepreneurship, that context is the dynamic entrepreneurial process and its domains of invention, founding and development of a firm (Bandura, 2015:1037; Cardon, Gregoire, Stevens & Patel, 2013:374). The psychological measurement scale will thus collect information on the dimensions of entrepreneur behaviour from a sample of entrepreneurs and independent business owners, so that inferences can be drawn about the individuals' behavioural functioning in the domains of entrepreneurship (Foxcroft & Roodt, 2009:5; Moerdyk, 2009:3-4).

1.2 PURPOSE

The purpose of the research is to explore, understand and measure, within the context of the entrepreneurial process, the individual psychological dimensions of personal entrepreneur behaviour.

A review of the entrepreneurship literature reveals a conceptual gap, and in particular with regards to the psychological approach thereof, in the understanding of how an entrepreneur acts in response to an identifiable business opportunity. The study thus aims to narrow the gap in the under-researched nature of personal entrepreneur behaviour and develop a valid measurement scale of entrepreneur behaviour or action (Bird *et al.*, 2012:905; Brown & Hanlon, 2016:401; Kerr, Kerr & Xu, 2018:328; Kuckertz, 2017:56). The entrepreneur taking action is now a central theme in entrepreneur psychological research. The research question is, from a psychological perspective in this research stream, how some entrepreneurs are more active than others in pursuing their goal of delivering new value in the form of goods and services to the market (Baron, 2007:168; Bird & Schjoedt, 2009:327; Venkataraman, Sarasvathy, Dew & Forster, 2012:28). This key question, therefore, remains unanswered as to how some entrepreneurs, and not others, are more active in identifying and exploiting opportunities as well as founding a firm to carry the operation forward. The model of personal entrepreneur behaviour that this research will hopefully be able to put forward, in answering this key question, is a model of personal entrepreneur behaviour in which the motivational variable not only mediates the effect of personality traits on action characteristics, but that personality, motivation and action characteristics are all essential constructs in understanding why some entrepreneurs are more proactive than others.

As emphasised, this thesis will only focus on the individual level of the person who is the entrepreneur and with the premise that a well-developed measure, such as the entrepreneurial orientation scale, cannot suffice as it was developed as a firm level measure and not as an individual level measure of entrepreneur behaviour. It was thus developed with the corporate entrepreneurship context in mind and not as an individual psychological concept (Covin & Miller, 2014:12; Krauss, Frese, Friedrich & Unger, 2005:317). This thesis will therefore only focus, from a psychological action theory perspective, on what the entrepreneur does in the initial phases of the entrepreneurial process.

1.3 NATURE OF THE STUDY

The research will review the extant literature on entrepreneur behaviour to identify suitable scales for the measurement of personal entrepreneur behaviour (Spence, Brown, Keeping & Lian, 2014:712).

A cross-sectional survey will then be conducted, employing the personal entrepreneur behaviour scale, on a combined purposive and convenience sample of owners or entrepreneurs of small businesses in South Africa so as to test the theoretical model of personal entrepreneur behaviour and validate its measurement scale (Cooper & Schindler, 2006:423).

The data collected from the survey will be used to determine the factor structure of the dimensions being measured in the scale with the use of exploratory and confirmatory factor analysis. In addition, the psychometric properties will be established of the scale's reliability and its convergent as well as discriminant validity (Crook, Shook, Morris & Madden, 2010:196-197; Seppälä, Lipponen, Bardi & Pirttilä- Backman, 2012:143; Slavec & Drnovsek, 2012:39; Spence *et al.*, 2014:715).

The theoretical model of personal entrepreneur behaviour will lastly employ structural equation modelling to test the measurement model of entrepreneur behaviour as well as the structural model of the relationships between the observed concepts of the entrepreneur behaviour construct.

1.4 PROBLEM STATEMENT

Entrepreneur behaviour is a key construct in the study of entrepreneurship, as it is the individual that needs to act to convert an idea into a viable business. Entrepreneur behaviour is, however, poorly defined and operationalised inconsistently, with most of the self-report scales being used in an ad hoc manner and not being validated (Bird *et al.*, 2012:889; Slavec & Drnovsek, 2012:48). Therefore, there exists a major gap in the extant literature within which entrepreneur behaviour is not properly conceptualised and measured (Hansen *et al.*, 2016:247; Kerr *et al.*, 2018:330). As a result there is a call to examine the psychological dimensions of the personal entrepreneur behaviour construct that explain why some entrepreneurs, and not others, are more active in identifying and exploiting opportunities and founding a firm.

1.5 RESEARCH OBJECTIVES

The specific research objectives that the research will have to achieve, are as follows:

- To determine the psychological dimensions or concepts that make up the personal entrepreneur behaviour construct,
- To measure personal entrepreneur behaviour, in the context of the entrepreneur process, across the domains of inventing and founding of an opportunity, and to test whether such a measurement scale of personal entrepreneur behaviour is valid and reliable, and
- To investigate the relationships between the concepts of the conceptual theoretical model of personal entrepreneur behaviour.

1.6 HYPOTHESES

1.6.1 Thesis statement

The thesis of this research is that some entrepreneurs are more active than others in their entrepreneur behaviour of pursuing valuable business opportunities, in accordance with the psychological action theory perspective, as they have a narrow personality trait of personal initiative, are motivated by entrepreneurial self-efficacy and have activated action characteristics in order to implement their business goals. These psychological dimensions of personal entrepreneur behaviour and the relationships between them constitute a model of such behaviour, which is further, on an individual level, measurable.

1.6.2 Specific hypotheses

The following hypotheses will be investigated, based on a conceptual framework developed from the literature, on the postulation of individual differences in the action regulation of personal entrepreneur behaviour:

H1: Personal entrepreneur behaviour is a multi-dimensional construct consisting of the psychological dimensions of personality, motivation, and action characteristics.

- H2: The psychological dimensions of the personal entrepreneur behaviour construct show internal validity (i.e. construct, convergent and discriminant validity).
- H3: Personal initiative is not positively correlated with entrepreneurial self-efficacy.
- H4: Personal initiative is not positively correlated with action characteristics.
- H5: Entrepreneurial self-efficacy motivation does not mediate the relationship between personal initiative and action characteristics.

1.7 OVERVIEW OF CHAPTERS

The chapters for the thesis follow a traditional structure. Chapter 1 introduces the study of the behaviour of the entrepreneur. The literature is reviewed in Chapter 2, and the area of the study is demarcated with a discussion of the entrepreneurship phenomenon and related concepts of process and person as well as anchoring the psychology of entrepreneur behaviour in a theory of human action. Chapter 3 describes the research methodology of the study and the choices made to bring the research to life. The research results and the discussion of the findings are set out in Chapter 4. Chapter 5 is a summary and conclusion to the study, and it articulates what the contribution of the study is to the body of knowledge in the field of entrepreneurship, as well as the implications thereof and suggestions for future research.

1.8 CONCLUSION

This chapter framed and introduced the research in terms of a quest to answer the question of why some entrepreneurs are more active than others in searching for an opportunity, exploiting it and establishing a firm.

The following chapter will review the extant literature on entrepreneur behaviour and anchor the research within the action regulation theory of behaviour to understand and explain the psychological dimensions of personal entrepreneur behaviour.

CHAPTER 2 THE PSYCHOLOGY OF ENTREPRENEUR BEHAVIOUR

2.1 INTRODUCTION

How do individuals act in creating or discovering valuable opportunities that they then exploit by starting a firm? The answer to this question can be found in the following discussion of the literature on the entrepreneurship phenomenon, the entrepreneurial process and the individual psychological differences in personal entrepreneur behaviour. The theoretical discussion of personal entrepreneur behaviour is then specifically grounded in the psychological action theory, which advances the idea that entrepreneurs or owners of small businesses make the thinkable possible by controlling the implementation of their purposeful actions. Finally, a theoretical model of personal entrepreneur behaviour is presented.

2.2 THE ENTREPRENEURSHIP PHENOMENON

What is entrepreneurship? Entrepreneurship is a widely researched and known phenomenon with a variety of concepts and constructs. Researchers have approached entrepreneurship from different perspectives such as psychology, sociology and economics, or studied entrepreneurship in the context of a small business environment or within existing large organisations, to gain an understanding of it.

For researchers such as Gartner, Carter and Reynolds, entrepreneurship is at its core an organisational event (Acs & Audretsch, 2010:8). The creation or genesis of the firm is thus what entrepreneurship is about. Entrepreneurship should thus only be concerned with the new and novel activities of start-up firms. This view consequently discards all the moments before the firm is born as being something different from entrepreneurship. Gartner influenced this organisational emergence stream of work, in that he was in favour of entrepreneur research only focussing on the study of firm creation or organisational emergence (Acs & Audretsch, 2010:8; Gartner, 1995:69; Gartner, 2001:30).

Shane and Venkataraman argued for the essence of entrepreneurship to be found in opportunities; known as the opportunity perspective (Acs & Audretsch, 2010:3; Shane &

Venkataraman, 2000:217). The need to establish a firm is not a prerequisite for the opportunity perspective on entrepreneurship, as these researchers maintain that entrepreneurship can also occur in established firms or through market mechanisms such as franchising (Eckhardt & Shane, 2010:47). Entrepreneurship is thus not restricted to a specific organisational form but is found where resources and people are put together in a new configuration to exploit an identified opportunity (Shane & Venkataraman, 2000:224; Vecchio, 2003:322). It thus revolves around the creation of newly identified opportunities and the marshalling of resources (Lundström & Stevenson, 2001:58). It is because opportunities are at the centre of this stream, that the research questions revolve around how opportunities for the development of goods and services are discovered, and by whom and in what mode of action are these opportunities exploited (Shane & Venkataraman, 2000:218). When Shane and Venkataraman (2000:217) shared these theoretical ideas about what makes entrepreneurship unique, the field of entrepreneurship took a big step forward to a distinctive academic field in its own right. It was no longer just an applied study of new or small businesses.

Shane (2003:18) defines an opportunity as a new combination of resources in a means-ends framework that is being organised by the entrepreneur for a profit. Entrepreneurship thus begins with an opportunity. Economist such as Schumpeter and Kirzner devoted time to the role and origin of opportunities in the economic framework of entrepreneurship. Schumpeter (1934) allocated, in the economic framework of entrepreneurship, a role to the entrepreneur, without specifying the psychological characteristics of such a person. However, he did insist that the entrepreneur would be innovative, and as such be able to create entrepreneurial opportunities by way of "creative destruction" (Acs & Audretsch, 2010:10). Schumpeter was thus of the view that opportunities are either created (creation theory) or the result of innovation. Kirzner had a contrary view on the concept of opportunity. He believed that an alert entrepreneur would discover existing opportunities (discovery theory). Kirzner (1973) argued that opportunities exist and that people just have different access to the information on the opportunities, therefore entrepreneurs can discover opportunities and do not necessarily have to create them (Shane, 2003:20-21). The idea that entrepreneurial opportunities exist in the first place is based on the Kirzner view of the discovery of a new means-ends relationship or asymmetries in information and beliefs, rather than the Schumpeter creation of an opportunity or innovation view (Shane &

Venkataraman, 2000:220-221). Shane (2003:20) concluded that both types of opportunities (discovered or created) might be present in the economy at the same time.

The psychological characteristics of a person are of utmost importance, at the person and opportunity intersection, for the identification and exploitation of opportunities (Eckhardt & Shane, 2010:47; Rauch, 2014:165; Santos *et al.*, 2013:680). The entrepreneurial opportunity is thus exploited due to the nature of the opportunity and the within personal characteristics of the enterprising person such as displaying self-efficacy or an internal locus of control (Baron, 2012:25; Shane & Venkataraman, 2000:222-223). The focus of entrepreneur research, at an individual level, is thus on the behaviour of the entrepreneur in identifying and creating opportunities from which a business firm can emerge and grow (Brush, Duhaime, Gartner, Stewart, Katz, Hitt, Alvarez, Meyer & Venkataraman, 2003:311). As such the incremental improvement of an opportunity in goods and services falls outside the scope of this view of entrepreneurship (Landström & Johannisson, 2001:244; Shane & Venkataraman, 2000:220).

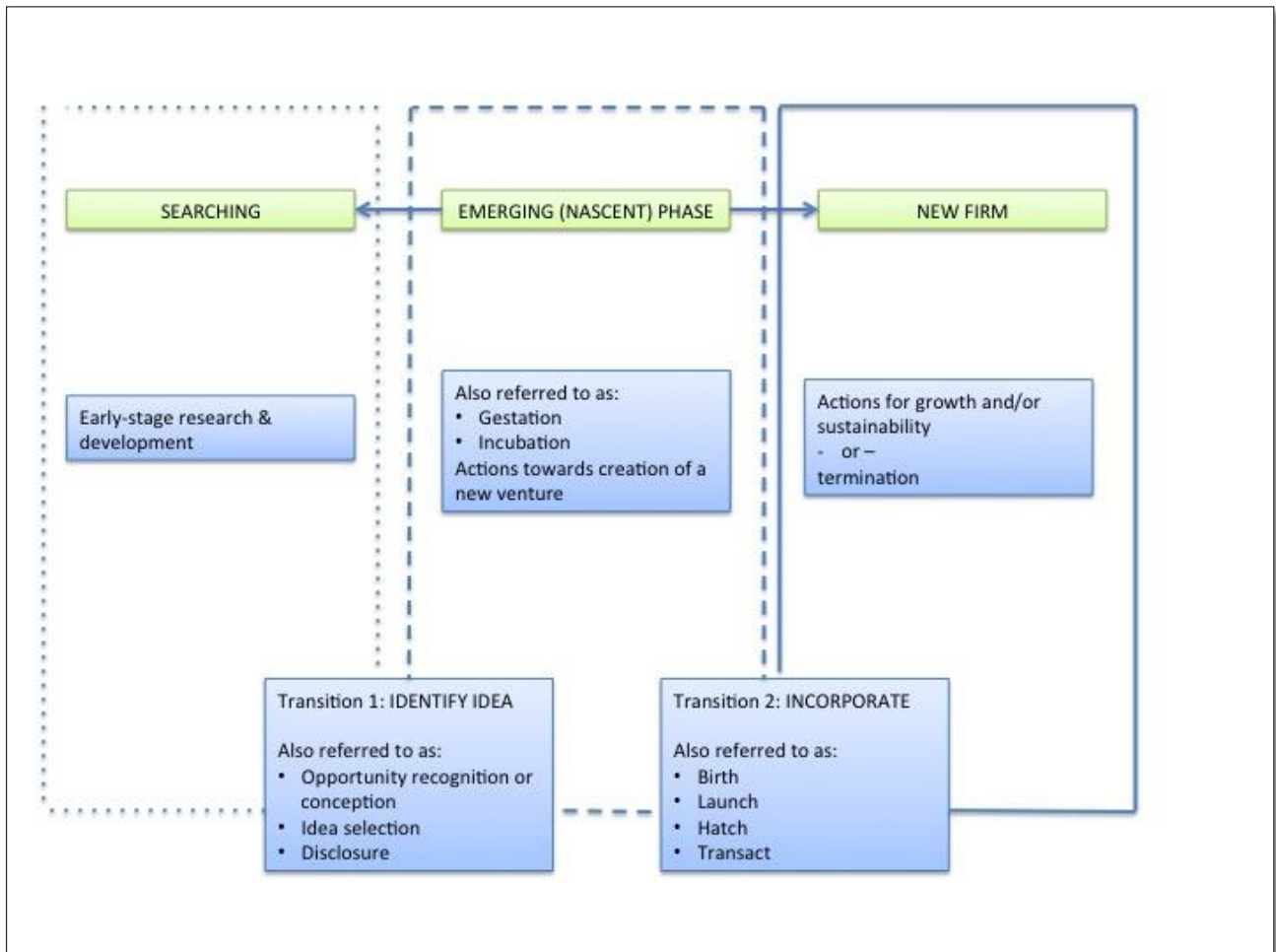
Therefore, entrepreneurship can, in summary, be defined as the creation and/or discovery processes that revolve around opportunity recognition, exploration and exploitation, that occurs on a multilevel (i.e. individual, firm, and society), and in different contexts (i.e. small business, established or family businesses) with the aim of creating future goods and services of value for others (Brush *et al.*, 2003:310-311; Moberg, Vestergaard, Fayolle, Redford, Cooney, Singer, Sailer & Filip, 2014:13).

2.3 THE ENTREPRENEURIAL PROCESS OF EMERGENCE

The entrepreneurial process starts with an opportunity and then curves across different phases, time, and activities undertaken by the entrepreneur so as to make it possible to realise a goal or vision and for a firm to emerge. It is the work area of the entrepreneur. The entrepreneurial process ties the stages of "emergence" and "opportunity" into a process, which occurs in sequences over time, at the level of the firm, in the domain phases of the emergence of opportunities, the evaluation thereof, and the organisation of the opportunities (Baron, 2012:22). The entrepreneurial process combines different elements into a single process, consisting, initially, of information search and opportunity recognition, and then

followed by acquiring of resources (McGee, Peterson, Mueller & Sequeira, 2009a:971). The general phases can be depicted in a synthesised model of the entrepreneurial process as presented in Figure 1.

Figure 1: Synthesised model of the entrepreneurial process



Source: Williams-Middleton (2010:17)

The entrepreneurial process is central to the study of entrepreneur behaviour or actions, as it is across the various phases of the entrepreneur process of value creation that the entrepreneur needs to display the required behaviour to overcome the hurdles of each phase of the entrepreneur process. Stevenson and Jarillo (2007:163) emphasise that the entrepreneur, in seeking to exploit opportunities, follows a specific behavioural path, on his/her own or in an organisation, without regard of the resources under the control of the

entrepreneur. Entrepreneur behaviour, therefore, encapsulates the actions necessary for the discovery-creation, evaluation, and exploitation of opportunities.

The critical actions to be undertaken by the entrepreneur are not the same across all the stages of the entrepreneurial process. Some of the psychological characteristics of the entrepreneur may be more important during the initial stages rather than later during the organisation stages when the emphasis is more on effective leadership and management (Patterson, Kerrin & Gatto-Roissard, 2009:6). In other words, the process places different demands on the entrepreneur or team in searching, planning, marshalling, and implementing the activities required for the pre-launch, launch and post-launch phases of the firm (McGee, Peterson, Mueller & Sequeira, 2009b:971; Moberg *et al.*, 2014:15). The entrepreneur does most of the heavy lifting upfront during the early phase of the new firm and then later in the process of organisational emergence, managerial-leadership is called for (Picken, 2017:8-9). The specific activities undertaken by the entrepreneur is however contingent on the context, which introduces a unique set of constraints and possibilities to be dealt with by the entrepreneur (Parker, Bindl & Strauss, 2010:840). It thus falls on the shoulders of the entrepreneur to take charge with the first step in the entrepreneurial journey. The psychological constructs or characteristics that play a dominant role in each of these entrepreneurial phases are set out in Table 1 below.

Table 1: The psychological constructs per phase of the entrepreneurial process

Psychological		Phase of the entrepreneurial process		
Factor	Construct	Pre-launch	Launch	Post-launch
Cognition	Alertness	Identification		
Cognition	Information processing as per mental ability and creativity	Identification		
Cognition	Information acquisition	Identification		
Cognition	Expertise	Identification		
Cognition	Cognitive biases and heuristics in decision-making	Identification	Exploitation	
Cognition	Practical intelligence or street smarts			Performance
Motive and affect	Growth goals/visions			Performance

Psychological		Phase of the entrepreneurial process		
Factor	Construct	Pre-launch	Launch	Post-launch
Motive and affect	Personal initiative	Identification	Exploitation	Performance
Motive and affect	Passion	Identification	Exploitation	Performance
Motive and affect	Positive and negative affect	Identification		
Actions	Come up with a business idea	Identification		
Actions	Acquiring resources		Exploitation	
Actions	Manage survival and growth			Performance

Source: Frese and Gielnik (2014:417-429)

The entrepreneurial process is, in summary, a process of opportunity exploration, recognition, exploitation, and management of an existing or new firm.

2.4 THE PERSON IN ENTREPRENEURSHIP

Entrepreneurs act: This act creates the value of future goods and services. It is also at the level of the entrepreneur or person that the entrepreneur's actions can be analysed as an individual level construct (Rauch & Frese, 2000:4). These actions normally relate to the activities undertaken in the entrepreneurial process of innovation, opportunity recognition, and use of resources. Entrepreneurs are thus "doers" and not dreamers (Baron, 2012:13) at the nexus of the person intersecting with a valuable business opportunity for value creation (Cardon *et al.*, 2013:374; Lerner, Hunt & Dimov, 2018:54).

Economic writers were the first to identify the entrepreneur as an important role player in the economic system. Economists such as Hayek, Kirzner, and Schumpeter have contributed, over time, much needed thought to the topic of entrepreneurship. In modern times, it was, however, the seminal contribution of Schumpeter that truly planted the seed for a renewed interest in the entrepreneur as the "innovator" (Schumpeter, 2008:132). He described change as happening all the time within the economic system. He aptly coined this essential change process of economic life as "creative destruction" to describe the work or task of the entrepreneur (Rauch & Frese, 2000:26; Schumpeter, 2008:82-83). Schumpeter, and subsequently the Austrian school of economics of Mises and Kirzner, underlined the

subjectivism of economics, as an alternative to the dominant rational view of neoclassical economics. This is expressed by the actions of an entrepreneur in, for example, being "alert", and in so doing, these economists shed light on the conditions under which the entrepreneur is required to step in and exploit opportunities for the benefit of the entrepreneur and society as a whole (Randolph-Seng, Mitchell, Vahidnia, Mitchell, Chen & Statzer, 2015:271).

2.5 ENTREPRENEURSHIP AND BEHAVIOUR: THE ACTION THEORY PERSPECTIVE

Action theory is a meta-theory that links cognition, motivation and action to explain how people initiate and guide their behaviour, through self-regulation, so as to ensure they achieve their desired future goal(s) (Frese, 2012:152). As such, the theories of human action or agency will provide the theoretical justification and be drawn upon in this research to arrive at a fuller understanding of personal entrepreneur behaviour and its determinants. Action regulation thus underpins personal entrepreneur behaviour.

Entrepreneurs make sense of an opportunity by using their perception and mind to arrive at a decision whether to exploit it. The different approaches to sensemaking in entrepreneurship can be categorised as belonging to affect-centred approaches, heuristic and alertness approaches, the effectuation approach, the expertise approach, or action-centric approaches (Randolph-Seng *et al.*, 2015:299-300). Each of these approaches is highlighted below (although the affect-centred approaches are only considered later on as part of the motivational dimension of personal entrepreneur behaviour). The action-centric approach is however discussed in detail, as it is the underlying basis of this research.

The heuristics approach focused on the rules of thumb that entrepreneurs use in their decision-making in an uncertain context (Randolph-Seng *et al.*, 2015:269). When faced with high uncertainty and complexity, entrepreneurs rely on heuristics and biases in their decision-making to reduce the complexity of assessing the likelihood of an outcome (Shepherd, Williams & Patzelt, 2015:37). Common heuristics are employed by entrepreneurs in their decision-making to simplify matters. Other cognitive biases such as "overconfidence" and "illusion of control" have been shown to lower the risk perception of entrepreneurs in perceiving the riskiness of starting a firm, although entrepreneurs were

found, on a risk propensity scale, not to be more predisposed to taking risk than other people (Simon & Shrader, 2012:291).

The alertness approach unpacked Kirzner's notion of alertness to opportunities in terms of distinctive perceptual and cognitive processing skills (Randolph-Seng *et al.*, 2015:271-272). The behaviour of an alert person, as opposed to the non-alert individual, is that the alert person can detect signals and cues for opportunities as they unfold and is willing to act upon it. Such elements of alertness have been found to consist of the behaviours of "scanning and search", "association and connection", and "evaluation and judgement" (Tang, Kacmar & Busenitz, 2012:77). The creative ability of the entrepreneur is thus essential during the initial task of being alert to a new value for the market that is novel, useful and appropriate, and the first step in the innovation process (Duxbury, 2012:10).

Sarasvathy (2001:243) articulated the effectuation approach of entrepreneurs who either made use of prediction logic (causation) or the logic of control (effectuation). The logic of control explains new firm creation in a non-causal way and with a focus on the control over the self, own resources and use of networks (Randolph-Seng *et al.*, 2015:272). It was further found that causation is negatively associated with uncertainty (Chandler, DeTienne, McKelvie & Mumford, 2011:375; Greenberg, McKone-Sweet & Wilson, 2011:26). However, it would appear that including both the logic of causal and effectual decision-making could be beneficial to firm creation (Smolka, Verheul, Burmeister-Lamp & Heugens, 2016:1).

The expertise approach to entrepreneurial cognition research is concerned about how entrepreneurial thinking becomes expertise through practice (Randolph-Seng *et al.*, 2015:270). The expertise, so gained, provides prototype models to the individual as a basis for recognising patterns or connecting the dots to identify opportunities (Baron, 2006:109; Baron & Ensley, 2006:1331). Also, performance when performing the tasks will be improved by engaging in prolonged efforts of deliberate practice (Baron & Henry, 2010:49).

An opportunity is identified in the adaptive action-oriented approach and a course of action decided upon to achieve such an outcome (Randolph-Seng *et al.*, 2015:273). The action component of cognition is activated by firstly forming the intention, as an attitude, to identify an opportunity (Krueger, 2000:5), usually as the result of a growth-orientated mind-set

(Dweck, 2012:614). This is then followed by setting goals and the self-regulation of monitoring progress (Carver & Scheier, 2001:33; Higgins, Kruglanski & Pierro, 2003:293), with a regulatory focus of either being promotional or preventative in action (Higgins, 2000:1219). Lastly, action regulation is about receiving feedback on the actions undertaken (Randolph-Seng *et al.*, 2015:274). A useful theoretical framework and an anchor for this study are therefore to understand entrepreneurial behaviour in terms of the cognitive action regulation theory.

Human agency theory functions in the same way as an algorithm. This algorithm will calculate which action to undertake as the result of combining motivation, thinking and feeling factors (Kahneman, 2011:227). Action regulation theory is an applied psychological theory on how people achieve goals through the use of action and regulation processes. It is the scientific understanding in psychology of how intentions to behave in a certain manner is realised through behaviour (Frese, Fay, Hilburger, Leng & Tag, 1997:140). Thus, goal-oriented behaviour is the result of all action regulation, as human action is conceptualised as purposeful behaviour that follows a specific action sequence of setting goals, collecting information, planning and executing on it, and then monitoring progress through feedback loops (Frese, 2009b:443). Action control theory is thus underpinned by the following four assumptions (Pintrich, 2004:387-388):

- Entrepreneurs play an active role in constructing their own entrepreneurial path;
- Entrepreneurs have the potential to regulate themselves, the entrepreneurial task and some aspects of their context;
- Entrepreneurs can choose to set a goal of founding and developing a new firm that they then can strive for, and adapt their behaviour as they come across discrepancies between their stated goal and the feedback received from their actions; and
- Regulatory activities moderate the relationship between the intra-person characteristics, context and behaviour.

The theory of action regulation states that the entrepreneur will use metacognition scripts or mental representation and self-control (or in lay terms "will power") to initiate or act in the process of emergence of an opportunity (Senge, 2006:163-164). These acts will be in the form of behavioural tasks or routines that the entrepreneur uses to successfully execute the required tasks. Humans, therefore, regulate their actions through the use of behavioural

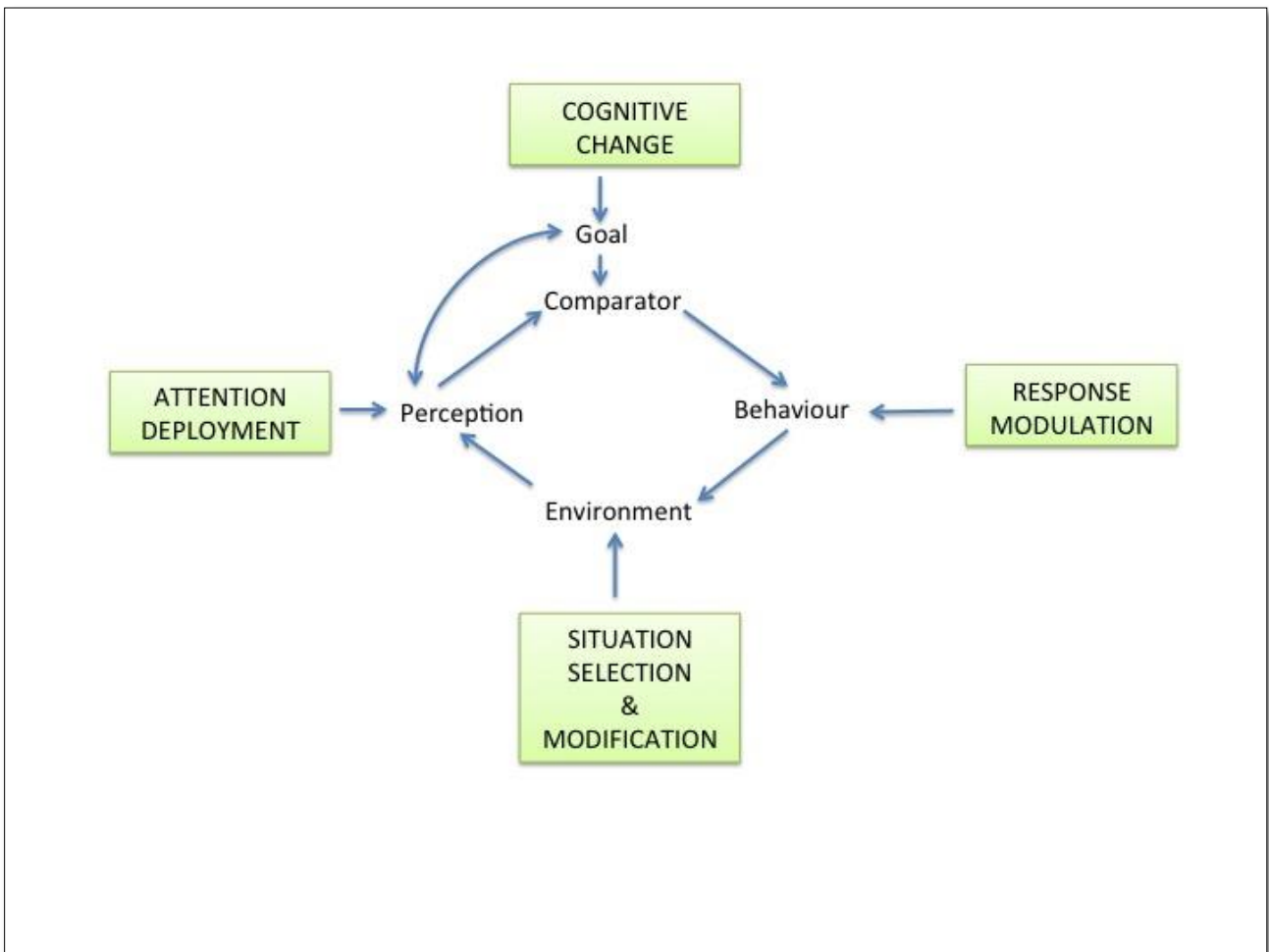
sequences, cognitive structures, and a regulatory focus (Frese, Gielnik & Mensmann, 2016a:197; McMullen & Shepherd, 2006:132). Such actions or behaviours are thus the result of the wilful application by the person of the action regulation process of planning, doing and then receiving feedback on the results thereof Frese and Gielnik (2014:429-430).

2.6 THE SELF-REGULATION OF ENTREPRENEUR BEHAVIOUR

The structure of entrepreneur behaviour is, at its core, a cybernetic cycle of action regulation to control behaviour for the entrepreneurial idea or goal to be realised. Regulation of behaviour translates intention into action. It is how individuals regulate their behaviour in the pursuit and achievement of goals, which were formulated after sense was made of the ambiguity and uncertainty in the environment. Self-regulation is therefore defined as "the governing and directing of attention, resources, or actions towards one's adopted goals" (Weick, Sutcliffe & Obstfeld, 2005:411). This regulatory system of behaviour is founded upon the ideas of goals, information gathering, hierarchical organisation of behavioural goals, and the cybernetic cycle of behaviour (Kruglanski, Orehek, Higgins, Pierro & Shalev, 2010:375). The component parts of self-regulation are thus the setting of a standard or benchmark, followed by the monitoring of actual performance against such standard, and lastly having the necessary resources available in the form of willpower (grit) or self-regulatory strength to see a project through to the end (Frese, 2012:153; O'Shea, Buckley & Halbesleben, 2017:251-252).

The self-regulation of behaviour has its genesis in the concepts of goals and feedback loops of control. The guiding function of goals and feedback loops make use of information in a cybernetic cycle of monitoring the discrepancy to be reduced between the stated goal and the progress in fulfilling it (Baumeister & Vohs, 2007:3). A unifying framework of the cybernetic process is set out in Figure 2. Regulation of behaviour is thus purposive behaviour in pursuance of goal-directed change.

Figure 2: The cybernetic process model of self-control



Source: Magen and Gross (2010:356)

Note: Inner circle portrays the stages of the cybernetic process. The outer circle (boxes) is the type of intervention that a person would employ at that cybernetic stage.

A person selects the goals that guide behaviour within Locke and Latham's expectancy-value framework of goal setting (Carver & Scheier, 2000:78). The goals differ in their level of abstraction and form a top-down hierarchy of goals from the highest level of abstract aspirational goals (become goals) that have implications for the self, to the next level in the hierarchy of goals of a specific action to be undertaken (task goals). At the lowest level of the goal hierarchy, the motor sequence of action to be undertaken (subtask goals) can be found. The outcome from each level of the goal hierarchy then loops back as data feedback input to the next level on the progress with attaining the specific goal (Locke & Baum, 2012:94). The hierarchy of goals are thus organised into two broad systems, of which the

first is the system of generating future aspirational goals, and the second system is the day-to-day striving of achieving the aspirational "become" goals (Smit, 2016:500).

Regulatory foci or regulatory modes are the two approaches that a person can follow to attain a goal. A person can either have a promotion focus or a prevention focus, according to the regulatory focus theory of Higgins, when striving for goal achievement. Higgins formulated the regulatory focus theory in 1996 when he found that the goals being pursued by people are influenced by their desire or motivation to seek pleasure or avoid pain (Brockner, Higgins & Low, 2004:208). He argued that the regulatory focus is on promotion (the idea generation phase of the entrepreneur process) if the pursuit of a goal or goal-attainment strategy is achievement-related or "ideal" goals. If the goal pursuit is however characterised by vigilance or prevention goals (the due diligence phase in entrepreneurship), then the prevention focus is present. The focus of the goal being worked towards is informed by the person's motivation strategy to achieve such a goal (Parker *et al.*, 2010:830). A promotion (gaining rewards) motivation or focus will link to an "ideal" goal structure and affect such behaviour. A prevention (safety first) motivation or focus will link an "ought" goal structure with avoidance behaviour or vigilantly pursuing goals. The regulatory foci in play at any time can either be the result of a characteristic trait of the person or induced as a psychological state by the context in which the person is (Higgins, 2000:1219; Shah & Kruglanski, 2000:102). See Table 2 below for the outcomes of the regulatory foci in the context of opportunity recognition.

Table 2: Regulatory focus in the context of opportunity recognition

Opportunity/Entrepreneur	Promotion focus	Prevention focus
Opportunity	Exists	Does not exist
Entrepreneur identifies opportunity	Attain	Avoid
Entrepreneur does not identify opportunity	Avoid	Attain

Source: Wustrow (2018:52)

The regulation mode of locomotion is the energy component of doing and the mode of assessment is the evaluation component of appraising whether the person is doing the right thing in goal pursuit (Amato, Baron, Barbieri, Bélanger & Pierro, 2017:33; Scholer & Higgins, 2010:292; Tang *et al.*, 2012:78). Some people prefer being active and getting things done, according to the regulatory mode theory, or moving on (called locomotors: leap before they look) as they have a regulatory focus of promotion (goal progress), while other people prefer to carefully evaluate whatever is the most feasible way forward (called evaluators: look before they leap) due to their regulatory focus of prevention (correct choice) (Kruglanski, Thompson, Higgins, Atash, Pierro, Shah & Spiegel, 2000:812). Locomotion is the active search and scanning part of the opportunity recognition process; and assessment is the evaluation aspect required in subsequent phases of the entrepreneur process (Higgins *et al.*, 2003:301). It is, therefore, the assessment mode of self-regulation that provides feedback for the locomotion mode to be effective (Amato *et al.*, 2017:38; Tang *et al.*, 2012:79). These modes of self-regulation can operate independently, but they are normally, within the entrepreneurial context, required to be simultaneously active for self-regulatory success (Pierro, Pica, Mauro, Kruglanski & Higgins, 2012:248).

The regulation of behaviour is done over different phases and areas for regulation. The Rubicon-model of action phases describes a process that is time-ordered and occurs dynamically from the goal setting for a task (phase one), the metacognitive monitoring of self, task and context (phase two), the implementation function in the goal striving phase of controlling those behaviours (phase three), and finally feedback or reflection on self, task and context (phase four) (Amato *et al.*, 2017:38; Higgins *et al.*, 2003:298). It was found that action would only result if a person actually goes through with all the phases of action in the Rubicon-model (i.e., expectation of an outcome, setting of a goal and goal implementation) (Brandstätter, Heimbeck, Malzacher & Frese, 2003:39; Pintrich, 2000:455; Pintrich, 2004:389).

The regulatory fit is the last concept that needs to be highlighted, as it refers to whether the person feels "right" about the way a goal is being pursued when the goal is in alignment with the person's normal orientation (promotion or prevention) (Brandstätter *et al.*, 2003:53).

2.7 THE PSYCHOLOGICAL FACTORS OF ENTREPRENEUR BEHAVIOUR

Behaviour is the way humans act and interact. It is central to the psychological perspective of life as an individual difference phenomenon (Acs & Audretsch, 2010:13). The focus on behaviour defines psychology, but within the discipline, there are different approaches to behaviour.

The social psychology school defines behaviour, based on research by Lewin (1951), as a function of the person and the environment in that: "Behaviour = $f(\text{person} \times \text{environment})$ ". The focus is therefore on the interpersonal behaviour or acts of the person (role and associated responsibilities), within an environment context (government and institutional policy as well as social networks) and it is observable by other people (Acs & Audretsch, 2010:13; Shaver, 2010:331-332; Tornau & Frese, 2013:51; Williams-Middleton, 2010:27).

Business psychology focuses only on the performance or goal-directed behaviour of people in their work environment. This interest of business psychology is even stronger in extreme environments of high uncertainty and complexity, such as can be found in the entrepreneurship domain (Frese & Gielnik, 2014:431; Santos *et al.*, 2013:664). Therefore, wherever the task demands on the individual are high, dynamic and iterative, the approach of business psychology can greatly contribute to clarifying the person requirements for such conditions of performance as can be found in the entrepreneurial work environment (Frese & Gielnik, 2014:432). The entrepreneurial task of bringing new value to the customer can thus be better understood by using a business psychological perspective, and this perspective is even more relevant if entrepreneurship is viewed as a process made up of different phases, where each phase makes a unique call on the endowment of ability or within-person differences of the entrepreneur in order to achieve the required outcomes.

Frese and Gielnik (2014:429) argue that it is the actions of the person that lies at the core of this psychological view. These actions are also the nearest, on a continuum, to entrepreneurial performance (Frese & Gielnik, 2014:430). In addition, the more action-orientated the individuals' psychological make-up is, the more effective will they be in executing the different task demands of the entrepreneurial process (Frese & Gielnik,

2014:428-430). The essence of this psychological view of the entrepreneur is that it thus focuses on the question of how some entrepreneurs, and not others, are more active in identifying and exploiting opportunities and founding a firm (Baron, 2012:10-11; Mitchell & Shepherd, 2010:138; Shane & Venkataraman, 2000:219).

It is through purposeful action, as the most proximal conceptualisation of entrepreneur behaviour, that entrepreneurs can be agile in taking a different course of action and getting feedback on their progress (Savickas, 2012:17). The conceptualisation of entrepreneur behaviour as purposeful action is thus helpful for the vocational guidance and education in entrepreneurship, as uncertain times demand agility to change course at the drop of a hat.

The question can be asked as to why the adjective “entrepreneur” is used in this study when referring to behaviour rather than “entrepreneurial behaviour”. The use of “entrepreneur behaviour” is in fact deliberate. The reasoning behind it is that “entrepreneurial” can only be used when it has been shown in further research that entrepreneur behaviour has a positive outcome of improving firm performance. It is only then that the adjective “entrepreneurial” will suffice.

Entrepreneur behaviour is inescapable, from a psychological perspective, a latent psychological construct. It can only be inferred from the observations of the psychological factors that sustain, energise and enact it. Entrepreneur behaviour is a complex and multidimensional construct of the psychological factors of conscious and goal-directed behaviour displayed by an entrepreneur in finding an opportunity and creating a firm to exploit it (Misra & Kumar, 2000:149). It is a unifying construct for all the psychological concepts of being enterprising.

The activities of entrepreneur behaviour are found in the searching for an opportunity, gathering the resources necessary to exploit a valuable opportunity and organising the emergence of a firm to ensure its survival and growth (Bird & Schjoedt, 2009:327). The psychological study of the behaviour of entrepreneurs focuses its theoretical lens on how some entrepreneurs are more active than others in the discovery or creation of a business opportunity, making judgements, under conditions of uncertainty, on whether an opportunity is feasible, gathering the resources necessary, and establishing a venture or firm in order to

pursue the opportunity as the outcome of such behaviour (Bird *et al.*, 2012:890; Gartner *et al.*, 2010:99; McMullen & Shepherd, 2006:134). Personal entrepreneur behaviour is thus conceptually defined as an individual phenomenon and a multidimensional psychological construct reflected in the factors of personality, motivation and action characteristics, that manifest as behaviour on the person-level in the undertaking of the activities in the entrepreneurial process of discovery-creation, evaluation and exploitation of a business opportunity (Bird *et al.*, 2012:890; Nandram & Samsom, 2007:3-4; Patterson *et al.*, 2009:28; Walter & Heinrichs, 2015:225).

This research posits, in terms of the action-characteristic model of entrepreneurship, that the following psychological characteristics are dimensions of entrepreneur behaviour; Personality, motivation in the form of self-efficacy, and action characteristics. The psychological action characteristics involved in the human behaviour of being enterprising are action control traits such as searching for information, networking and getting feedback on results (Frese & Gielnik, 2014:428-430). Personal entrepreneur behaviour is therefore conceptualised, in the theoretical model thereof, as comprising the psychological factors of personality, motivation and action characteristics. These factors are further inter-dependent in relation to each other as if they are embedded in an ecosystem (Williams-Middleton, 2010:33). The factors of personality and motivation also have a lesser impact on behaviour than more specific action characteristics that are closer to the task at hand of opportunity identification and the creation of a firm to exploit it (Davidsson, Wiklund & Delmar, 2006:111).

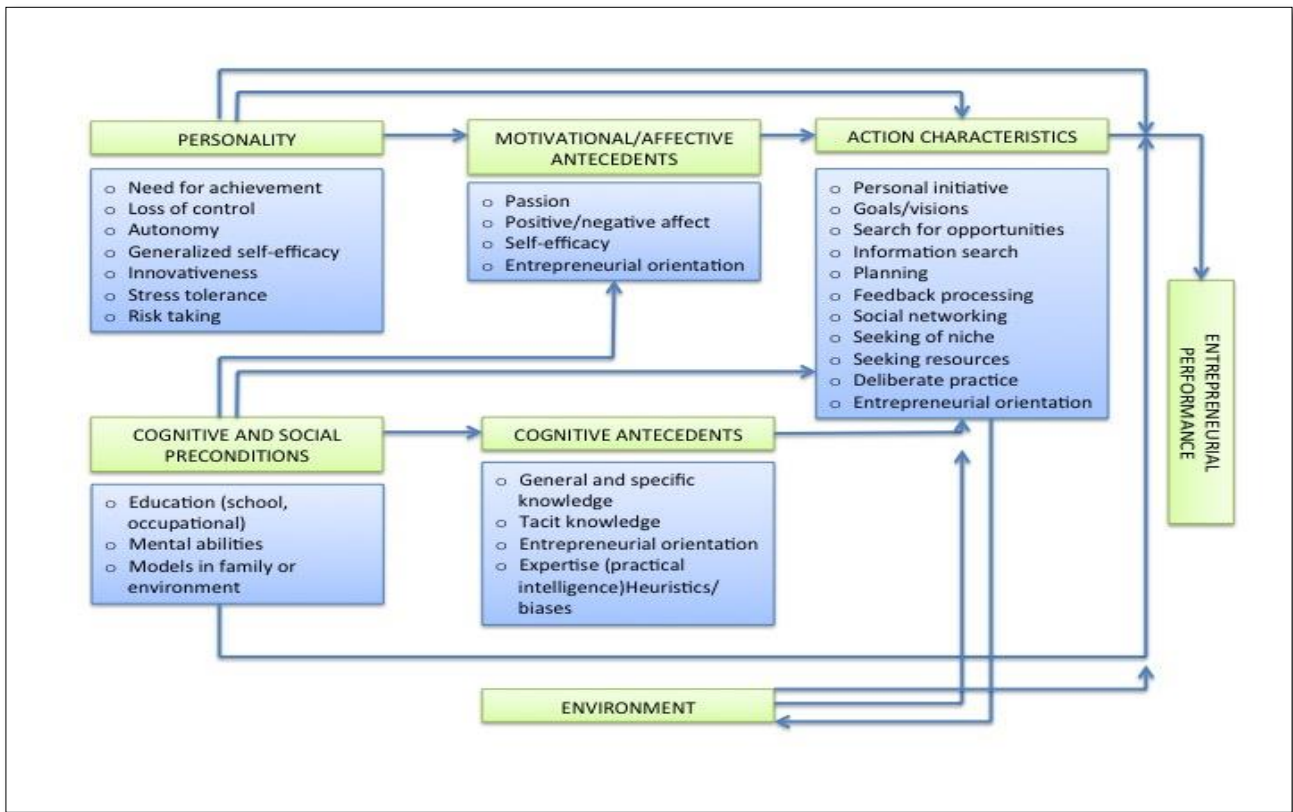
The action model of entrepreneur behaviour combines the components of a personality trait (i.e. personal initiative) with the more state-like or variable components of the action characteristics in the conceptualisation of the theoretical model of entrepreneur behaviour. The personality trait is therefore seen as a more enduring and stable component of an individual's personality, whereas the action characteristics are more variable or fluctuating components of an individual's behaviour. Thus, the state-like action characteristics can be invoked by the entrepreneur to achieve a specific purpose during the entrepreneurial event (Geiser, Götz, Preckel & Freund, 2017:219).

This action theory research is therefore based on the theoretical action-characteristic framework or model of entrepreneurship, founded on the original Giessen-Amsterdam

model of entrepreneurial success (Foss & Klein, 2012:30; Gielnik & Frese, 2014:396; Lau, Shaffer, Chan & Man, 2012:694-695). It is espoused by (Rauch & Frese, 2000:5) and their model displays, in Figure 3, the relationship between personality, human capital, affect and motivation factors as well as cognition and the action behaviour characteristics. Such behaviour then has the consequences or entrepreneurial performance outcomes of firm start-up, growth, employment and wealth creation Frese and Gielnik (2014:429).

The Frese-Gielnik model neatly synthesises the previously fragmented literature around the person in entrepreneurship and considers the psychological aspects that are essential to explaining entrepreneur behaviour. The entrepreneurship or psychology constructs of action-characteristics, according to the model, are among other "information search", "social networking", and "deliberate practice" (OECD, 2016:13). The specific regulation strategies that entrepreneurs can employ to be effective in their task of being enterprising (e.g. positive self-talk) fall outside the scope of this research (Frese & Gielnik, 2014:420-429). The action characteristics are also affected by psychological factors that are more distal, on a continuum from general to specific traits, and the relationship between these distal intra-person constructs and behaviour is furthermore subject to moderation or mediation by self-regulation and volition processes (Pintrich, 2004:395). These more distal psychological factors are "personality", "motivational" and "affective" factors (Covin & Lumpkin, 2011:430; Frese & Gielnik, 2014:430). The model, therefore, refines the various psychological dimensions of entrepreneur behaviour. The model integrates and shows the path from the distal personality concept to the proximal action characteristics that self-regulate and direct the individual's behaviour to cope with the demands of the entrepreneurial task environment (Frese & Gielnik, 2014:422). Thus, the relationships in complex phenomenon such as entrepreneur behaviour can best be understood within the organising framework of a multivariate configuration structure.

Figure 3: Frese & Gielnik action-characteristic model of entrepreneurship



Source: Frese and Gielnik (2014:429)

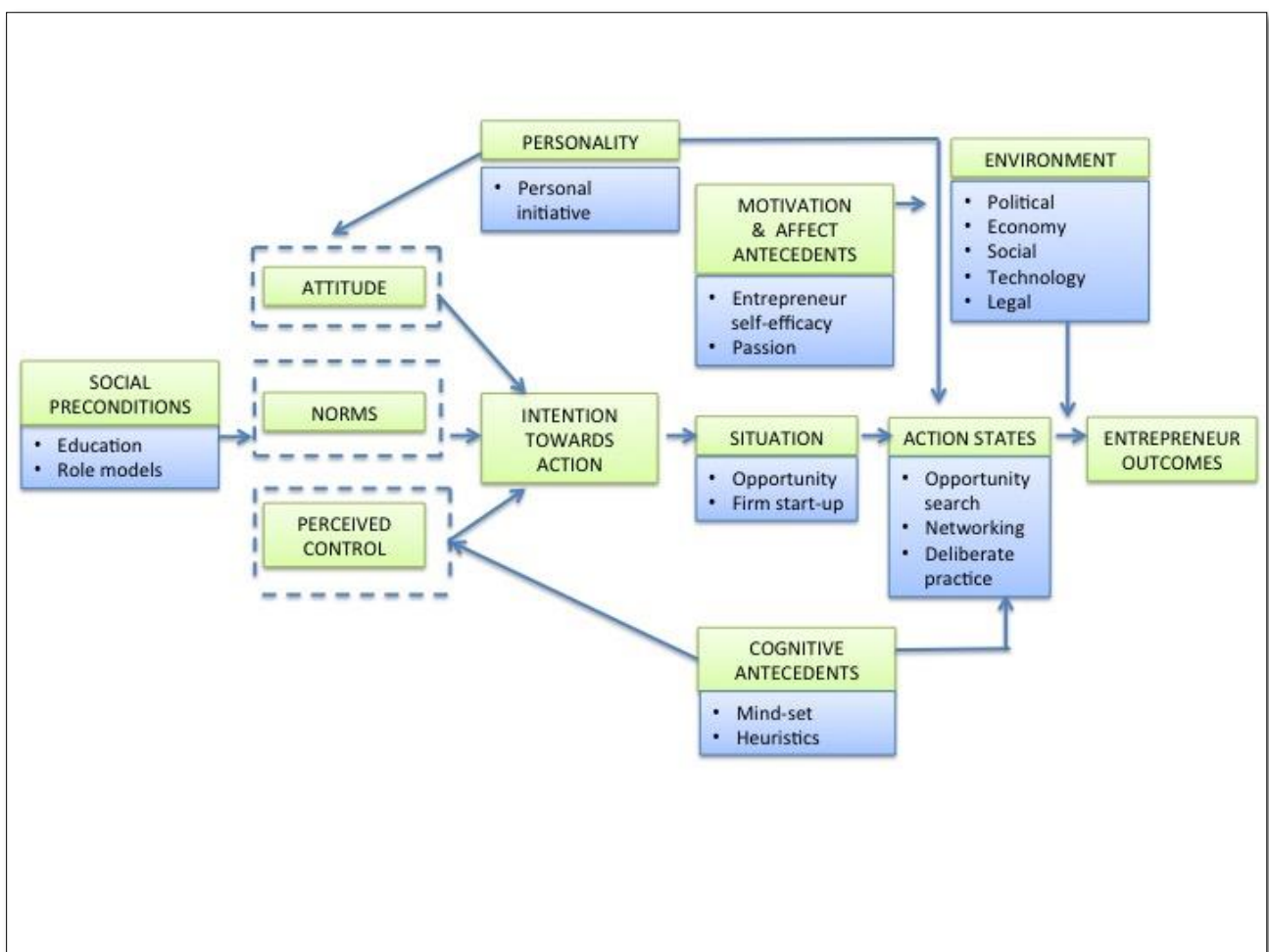
Note: Adapted by the author.

The psychological research stream in entrepreneurship was given impetus with the work of Frese and Gielnik (2014:422). The theory of planned behaviour charted the formation of an intention to be entrepreneurial, which lead to the desired behaviour (Ajzen, 1991:181). It was however found that intentions did not always translate into behaviour, as people may not always behave as they intended (Kautonen, Gelderen & Fink, 2015:655; Lortie & Castogiovanni, 2015:1). Frese and Gielnik drew on the fact that intentions did not always translate into behaviour in advancing the action control theory of goal-directed behaviour as an alternative approach. This theory specifically addresses the question of how an intention is turned into a commitment to implement the goal, and as a result, individuals will control their behaviour to ensure that they behave in accordance with the stated goal (i.e. to be entrepreneurial) (Kautonen *et al.*, 2015:656; Lortie & Castogiovanni, 2015:4).

Although the constructs of intention and entrepreneur potential, as being relevant during the pre-emergence stage of the entrepreneur process (Frese & Gielnik, 2014:428-430), fall

outside the scope of this research, the two approaches (the planned behaviour intention stream and the action regulation stream) are nevertheless combined in an integrated intentional entrepreneur action model below, so as to clarify the stance of this research within the broader psychological perspective of entrepreneurship. It thus shows that this research is more concerned with how the action is activated rather than the formation of the intention to be entrepreneurial. The model shows how and in what way psychological factors determine the actions of entrepreneurs, which is the area of interest for this research. See Figure 4.

Figure 4: An integrated psychological model of entrepreneurship



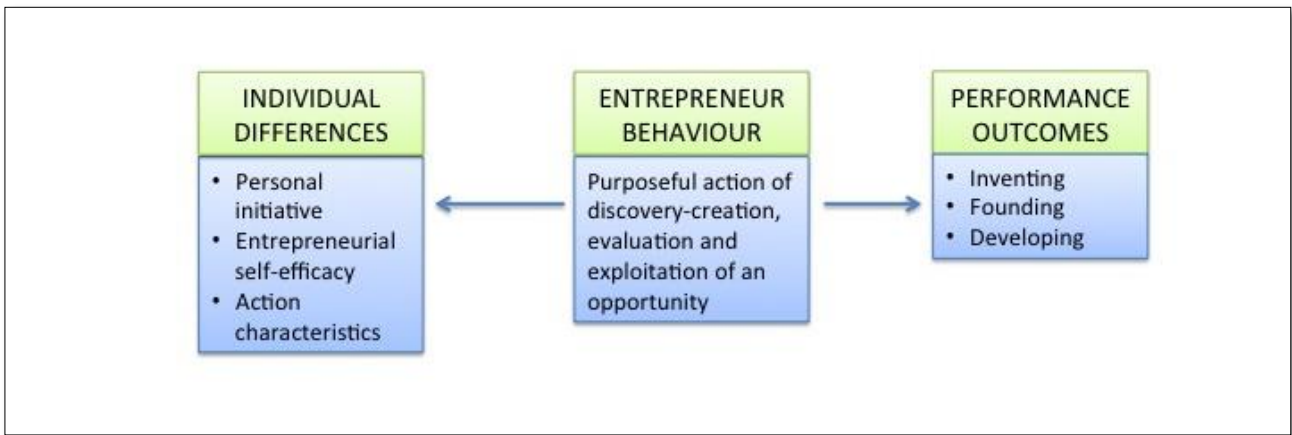
Source: Adapted from Cox, Lortie and Castrogiovanni (2018:8)

Note: The dotted boxes and arrows from the dotted boxes as well as to them represent relationships as theorised by Ajzen's theory of planned behaviour. The other arrows from the concepts of personality, motivation and affect show the hypothesised relationships of this research.

The approach followed in this study is thus neither a trait nor an overt behaviour approach, but a comprehensive approach of combining all the psychological factors of entrepreneur behaviour in terms of the action control theory of behaviour. This is so whether these factors are within-person traits or states or between-person factors such as social networking or the action characteristic of how an entrepreneur goes about executing the action of gathering information or seeking feedback from customers (Higgins, 2006:448). This approach does not, therefore, equate entrepreneur behaviour with only the observable but also takes within-person phenomena into account. Although the action characteristics in the model are not specific behavioural activities per se, the concepts do describe how actions are controlled to ensure implementation (Santos *et al.*, 2013:680; Williams-Middleton, 2010:1-2). Therefore, the entrepreneur acts because of free will in a flexible self-regulation way in responding to the situational demands of the entrepreneurial task at hand (Frese & Gielnik, 2014:429). The drivers of behaviour that are non-deliberate and unintended sub-conscious impulses are not taken into account and fall outside the scope of this research (Brandstätter, 2011:229).

The Frese-Gielnik action characteristic framework is thus fit for purpose to use in the conceptualisation of the dimensions of the theoretical entrepreneur behaviour model. It is, however, more tapered down for purposes of this research. The psychological dimensions of entrepreneur behaviour are composed, in terms of this theoretical model, of a narrow personality trait (i.e. personal initiative), being motivated, and activation of the state-like action characteristics. It is represented schematically in Figure 5. Thus, entrepreneurs that are more likely to engage in entrepreneur behaviour will be seen as being more active in setting goals, searching for information on opportunities in a discovery or creation way, being pro-active, doing networking and engaging in deliberate practice.

Figure 5: Psychological dimensions of entrepreneur behaviour



Source: Compiled by the author

Each of these factors of entrepreneur behaviour will be discussed in the following section, with the view to use such concepts in the theoretical model of personal entrepreneur behaviour.

2.7.1 An active personality

Personality factors are broad individual characteristics or traits of a person. These traits are however weak predictors of specific behaviour such as that of work (Rauch & Frese, 2000:11-12).

In an overview of several studies, Rauch and Frese (2000:36) found empirical evidence or support for a small positive relationship between the psychological variables of a "need for achievement" and "locus of control" and the start-up of firms or the emergence of entrepreneurship. A need for achievement refers to the desire of people for significant accomplishment and research has found that a high need for achievement predicts entry into entrepreneurship and having higher performing businesses (Kerr *et al.*, 2018:300). According to the conceptualisation of Rotter, locus of control refers to the psychological concept of whether people believe themselves to be in control of events (i.e. internal locus of control), or being controlled by external events (i.e. external locus of control). A higher internal locus of control has been found to be associated with firm growth (Kerr *et al.*, 2018:298-299). These relationships are small due to it being moderated by other processes, closer in the time sequence to the actual entrepreneurial event (Rauch & Frese, 2000:18).

It is thus more conducive to move away from the broad personality factors and rather consider the narrower active personality traits. Personal initiative is one such narrower trait that is more closely related to the task of seeking out an opportunity of value (Acs & Audretsch, 2010:12). Personal initiative is part of a larger proactivity construct of a person engaging in the active performance of being self-starting, making change happen as opposed to waiting for orders or to follow the lead from others, and being future-orientated (Frese, Hass & Friedrich, 2016b:28; Tornau & Frese, 2013:44-46). Personal initiative is also characterised as being persistent in the face of hurdles or barriers that the entrepreneur needs to overcome to succeed or reach one's goal (Frese *et al.*, 2016b:28). Personal initiative thus captures the principles of personal self-management (Fay & Sonnentag, 2010:10). Such agility is therefore a highly valued personality trait in our age of technology disruption (Frese, 2009b:444).

2.7.2 Motivational resources

Locke and Baum (2012:93) capture the essence of entrepreneur motivation when asserting that: "Motivation energises, directs, and sustains action".

The literature on motivation has highlighted that it is primarily concerned with the activation of a goal or plan in enhancing performance, by answering the question of "why" the action should be undertaken (the desires, wants, needs or interest that elicit action), and then making the achievement thereof possible through perseverance with the "how" of purposive action (Kanfer, Frese & Johnson, 2017:349). Motivational theories (such as expectancy theory, equity theory, and goal-directed theory) tell a compelling story of the importance of motivational processes in affecting performance behaviour by either activating pull factors or push factors towards the required behaviour (Carsrud & Brännback, 2011:11). A person is therefore not merely a weathervane, spinning in every direction of the wind.

In the work of Bandura (1991:248-249) on social cognitive theory, the concept of self-efficacy has been identified as a motivational resource enabling humans to act as they choose (Baum & Locke, 2004:590). People need a sense of self-efficacy to execute a task successfully, which cannot be done if they are filled with self-doubt (Bandura & Locke, 2003:87; Baum & Locke, 2004:590). Entrepreneurs are energised by a self-efficacy belief in

that they are convinced that they will be able to complete the entrepreneurial task successfully (Bandura & Locke, 2003:97). A person sets and strives for a goal due to the “can do” aspect of self-efficacy (i.e. I believe, therefore I achieve), and set even more difficult goals for themselves (Baron, Mueller & Wolfe, 2016:55; Drnovšek, Wincent & Cardon, 2010:330; Santos *et al.*, 2013:666). Efficacy beliefs therefore contribute to performance accomplishments (Baron *et al.*, 2016:66; Hmieleski & Baron, 2008:60; Parker *et al.*, 2010:848). The sources for the efficacy expectations are based on experiences of personal mastery in a task, social modelling, and biofeedback from own physical and emotional states (Santos *et al.*, 2013:665).

Entrepreneurial self-efficacy developed as a more applied concept from the broader self-efficacy construct (Bandura, 2012:13). It is conceptualised as a multi-dimensional task specific measure to give greater insight into the self-efficacy beliefs necessary for successfully launching a new firm (Newman, Obschonka, Schwarz, Cohen & Nielsen, 2019:3). Entrepreneurial self-efficacy has been positively linked to the planning and opportunity recognition aspects of entrepreneur behaviour, as well as firm performance, although such outperformance by the firm has been found to be short-lived (McGee & Peterson, 2017:3; McGee *et al.*, 2009a:965). It was further found that inventors with high self-efficacy were more likely to start their own businesses (McGee & Peterson, 2017:2; Miao, Qian & Ma, 2017:98; Newman *et al.*, 2019:9).

2.7.3 Action-oriented characteristics

The overt behaviour of the entrepreneur is the observable entrepreneurial task or act of identifying and exploiting opportunities to create value in the form of future goods and services (Hmieleski & Baron, 2009:473). This is determined by the proximity of action-oriented characteristics, which are ways of controlling behaviour to be able to act on opportunities (Audretsch, 2012:761-762). The behaviour of entrepreneurs has thus been conceived in various ways (Frese & Gielnik, 2014:429), and the action-characteristics perspective of Gielnik and Frese is listed alongside overt behaviour perspectives in Table 3.

Table 3: Entrepreneur behaviour inventory

Behaviour	Foss & Klein (2012)	Lau & others (2012)	Gielnik & Frese (2014)
Action planning			x
Bricolage			x
Creativity	x		
Deliberate practice			x
Effectuation			x
Financial bootstrapping			x
Innovation	x	x	
Judgment	x		
Leadership	x		
Opportunism		x	
Personal initiative			x
Risk taking		x	

Source: Foss and Klein (2012:30); Gielnik and Frese (2014:396); Lau et al. (2012:694-695)

This study will only focus on the following elements of the action characteristic construct, namely gathering information in the form of opportunity recognition and opportunity creation, networking and deliberate practice. Each element will now be discussed in more depth below.

The action characteristic of gathering information in the process of turning entrepreneurial intentions into implementation activities is important as it informs all the other aspects of implementation behaviour such as planning and collecting feedback on the activity. Entrepreneurs rely on either opportunity recognition or opportunity creation to gather information before deciding whether an opportunity does offer a viable option of bringing new value to the market. They may also engage in both opportunity discovery and opportunity creation at the same time (George, Parida, Lahti & Wincent, 2016:339; Hansen *et al.*, 2016:247; Neill, Metcalf & York, 2017:310).

The action characteristic of social networking is required by entrepreneurs to enable them to engage with other people to unlock valuable resources that they require for their businesses. The personal networks of an entrepreneur are thus embedded with resources that form the social capital of the new firm (Stam, Arzlanian & Elfring, 2014:152). The social capital of entrepreneurs is particularly valuable in the context of a small firm with a limited

number of employees (Stam *et al.*, 2014:167). The network-broadening activities undertaken by entrepreneurs entail reaching out to new people and increasing their interpersonal knowledge about them (Vissa, 2012:493-494). This is also done to affect resource flow to the new firm. It was found that these network-broadening actions resulted in these entrepreneurs relying less on referrals when searching for new exchange partners in the future (Vissa, 2012:507). Such “calculative” networking could further be complimented with an effectual networking behaviour in the form of altruism, co-creation or serendipity (Engel, Kaandorp & Elfring, 2017:48).

Entrepreneurs require the action characteristic of deliberate practice to up-skill themselves by seeking out feedback that they require to make their businesses more efficient and effective. Deliberate practice is a process of learning that originated in the expertise or mastery research on concert pianists, chess players and sports champions. It has the explicit goal of improving one’s current performance in a self-regulated and effortful way (Unger, Keith, Hilling, Gielnik & Frese, 2009:21). It is a practice that goes beyond the current skill level of the entrepreneur, has a specific focus area for improvement of a current weakness, and it does not entail the mere repetition of routinised techniques (Keith, Unger, Rauch & Frese, 2016:519). Deliberate practice in the work context comprises a wide range of activities such as seeking feedback from clients, professional reading or attending workshops with other industry experts (Unger *et al.*, 2009:24). It has also been shown to have a strong direct effect on entrepreneurial knowledge (Unger *et al.*, 2009:35), and on the success of the entrepreneurs who engage in it (Keith *et al.*, 2016:515-516).

2.8 AN INTEGRATED THEORETICAL MODEL OF PERSONAL ENTREPRENEUR BEHAVIOUR

The theoretical model of entrepreneur behaviour gives direction to this research and sets its boundaries. The research will test the personal entrepreneur behaviour model and evaluate psychometrically its measurement scale. The model will thus be tested for the relationships among individuals within and between individual difference constructs and the underlying latent psychological phenomena of entrepreneur behaviour (Lerner *et al.*, 2018:53). Entrepreneur behaviour, in the theoretical or structural model, is thus the ultimate latent

exogenous variable, with all the psychological factors as the observed endogenous variables (see Figure 6).

The theoretical model posits that entrepreneur behaviour is reflected in the factors of personal initiative, motivation and action-oriented characteristics during the entrepreneurial process of opportunity identification, gathering of resources and developing a firm. The following features of the theoretical model must also be borne in mind when considering it:

- Action characteristics are a key concept of the entrepreneur behaviour construct model (Frese & Gielnik, 2014:428; Tornau & Frese, 2013:73).
- The personality concept has a direct effect on action characteristics and indirectly through motivation (Frese & Gielnik, 2014:429).
- No assumption is made in the model that all entrepreneurs are in some respects alike.
- The situational or context factors that constrain or facilitate behaviours such as the situation in which entrepreneurs find themselves or the institutional framework are not considered in this model.

Figure 6: Theoretical model of entrepreneur behaviour

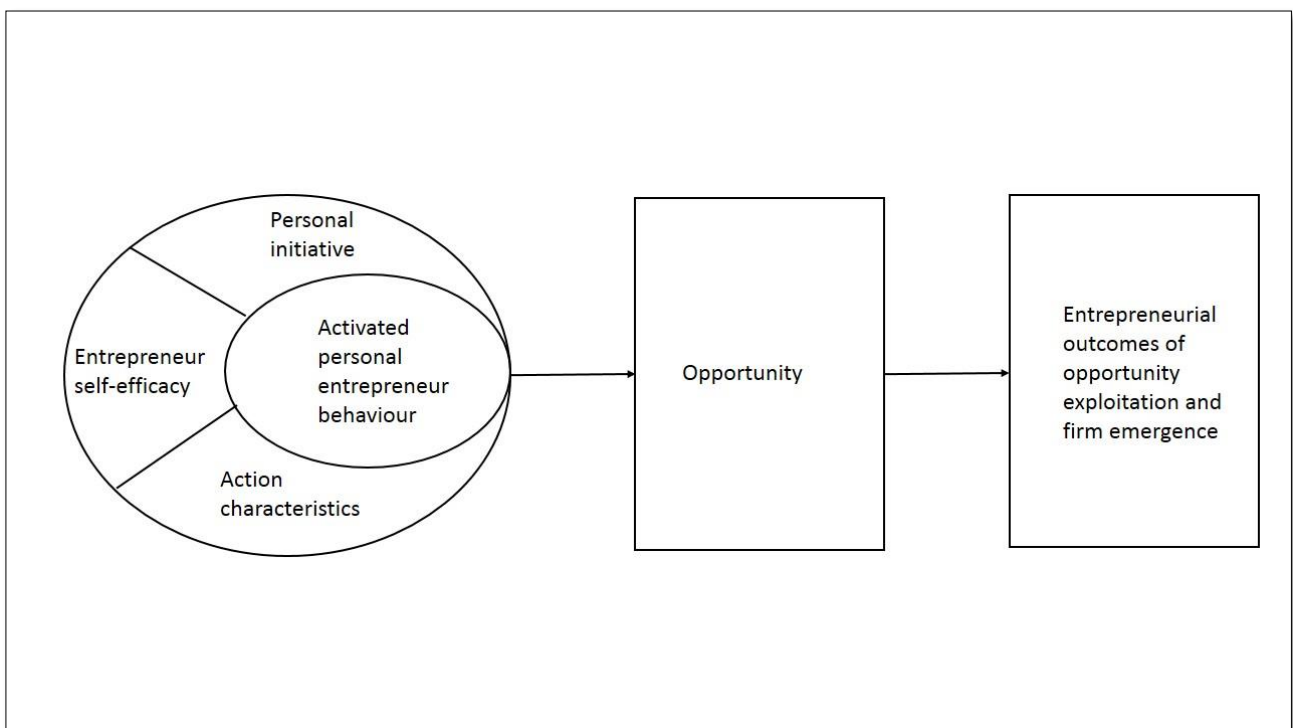


Source: Compiled by the author

In summary, the theoretical model maps the dimensions of entrepreneur behaviour and the path from a personality trait of personal initiative, through motivation to action-characteristics. It boils down, in essence, to a free agent view of the entrepreneur who adopts a mindset of being agentic in being pro-active (a narrow personality trait from the entrepreneurial orientation field), having entrepreneurial self-efficacy beliefs (motivation) and displaying action characteristics in order to turn the intention of starting a business into

the reality of being in business. However, entrepreneur behaviour occurs only in the context of an individual being confronted with a specific business opportunity of value. The multidimensional personal entrepreneur behaviour is only activated in the context of a viable business opportunity. The activated states of personal initiative, entrepreneurial self-efficacy and action characteristics will then combine to ensure that the opportunity is realised by controlling the required enterprising behaviour. See diagram of the personal entrepreneur behaviour – opportunity nexus in Figure 7.

Figure 7: Personal entrepreneur behaviour - opportunity nexus



Source: Compiled by the author

2.9 CONCLUSION

The psychological perspective of entrepreneurship has a good story to tell in this chapter. Action regulation theory is drawn upon to develop a theoretical model of entrepreneur behaviour with its multi-dimensions, within the context of the nascent or early start-up phase of entrepreneurship. It has been shown that human action occurs in a certain sequence and is regulated by the individual to achieve a specific task objective. What is further important is that the action characteristics are psychological states, which are learnable and can be

invoked in a situation that demands such action. Mastering these action characteristics can only assist entrepreneurs in taking action and being successful with their striving to achieve their business goals. It makes them adept at moving beyond the saying of "look before you leap" to being able to leap and look.

The methodology of the research is described in the next chapter. It sets out how the research question can be operationalised to gather scientific data on why some entrepreneurs are more active than others.

CHAPTER 3 METHODOLOGY

3.1 INTRODUCTION

The research question was premised on how some entrepreneurs are more active than others with inventing and founding. This chapter sets out the research design, method, and statistical analysis employed to answer it.

3.2 RESEARCH DESIGN

The research design was informed by the research question in order to ensure that all aspects of the design were in alignment with it and to enable the gathering of credible evidence that would be scientifically defensible. This ensured that a logical structure was in place to answer the research question as plainly as possible (de Vaus, 2001:9). The research question is about the subjective psychological dimensions of personal entrepreneur behaviour and the measurement thereof at the simplest possible unit of analysis, namely the individual. As the phenomenon in question is the psychology dimensions of personal entrepreneur behaviour, which are by their very nature not directly observable, a research design was called for of using a statistical method on quantitative data gathered with a self-report questionnaire (de Vaus, 2001:24; Rahman, 2017:102).

The design type was a cross-sectional survey research design to examine the cross-sectional relationships, at one point in time, between the constructs of interest to the study (Covin & Lumpkin, 2011:857; Covin & Miller, 2014:16). All the relationships were investigated, at the same time, between the psychological constructs of personal entrepreneur behaviour. These variables were personality, motivation and action characteristics. They were hypothesised to be dimensions or factors of the personal entrepreneur behaviour construct. Such an approach made the most empirical sense as the effect of time or change over time on these relationships were not a consideration in the research question and a longitudinal design was therefore not necessary or appropriate (de Vaus, 2001:24).

The basic elements of the cross-sectional design are that the data is collected at one point in time or in a single time frame (a snapshot of the phenomenon) and the individual differences are existing variations between people and therefore there is no requirement to induce any variation in the independent variables as it would be for an experimental design (de Vaus, 2001:50; Fox & Jennings, 2014:144).

Some advantages of cross-sectional studies are that research participants are more willing to cooperate in a survey for one time, a larger group of people can be reached and the data is less expensive and time consuming to gather. A disadvantage is that the changes in the psychological concepts cannot be assessed over time (Liu, 2011:171; Rahman, 2017:102).

The design type and method of this research design are thus a positivist approach in answering the research question. Although such a statistically design is the best suited for the task at hand, this design approach is however not without its critics. The main concern about such an empiricist epistemology is that it is too limiting in improving our knowledge of a complex world, by relying only on observation alone to understand it (Moses & Knutsen, 2007:149).

3.3 RESEARCH PARTICIPANTS

The target population was a founder or managing member of a small firm in South Africa. These individuals were preferred as they were mainly responsible for any action undertaken in their small firms, which was the phenomenon being investigated (Cooper & Schindler, 2006:141). Most countries use size to define a small business as a business with 50 or less employees (Casson, 2010:260; Rauch & Frese, 2000:2-4). It is this definition of a small business that was used for this study.

A combined purposive and convenience non-probability sample was drawn from the above population. This type of sampling was used as the characteristics of the entrepreneurs of small firms in South Africa, as a sampling frame, is not fully known (Lundström & Stevenson, 2001:22). The sample was recruited in November 2017 and March 2018 from the client base of a specialist risk finance company for small and medium enterprises ("SMEs") ($N = 214$ of

completed questionnaires), social media ($N = 31$ of completed questionnaires), smaller scale business clients of a large financial services group ($N = 140$ of completed questionnaires), and members in small independent practice of an accountancy regulatory body ($N = 31$ of completed questionnaires).

The required size of the sample was determined on the basis of a subject-to-item ratio. Researchers normally use a subject-to-item ratio that varies from 1.2 to 10 participants per scale item (Cooper & Schindler, 2006:423-425). For this study, the ratio was set a priori at 5, and given that the personal entrepreneur behaviour scale had 62 items, it suggested a minimum required sample size for the study of 310 participants.

The characteristics of the participants are summarised in Table 4. The final sample was made up of 429 independent business owners, founders and entrepreneurs, of which 77,4 per cent were male, 43,4 per cent spoke English as first language and 25,6 per cent was between the ages of 45 and 54 years. Educationally 18,6 per cent had finished secondary school and 49,9 per cent had a degree. The firms of the entrepreneurs in the sample belonged 19,1 per cent to the "other services activities" (e.g. personal services) in terms of the standard industrial classification of economic activities, followed by "financial and insurance activities" at 11,2 per cent. For the age of the firms in the sample, 45,4 per cent had been in operation for more than seven years. Finally, all the firms were small businesses as 72,7 per cent were micro businesses with fewer than 10 employees.

Table 4: Background information of the participants ($N = 429$)

Demographic characteristic	Frequency	Percentage of sample
Gender		
Female	94	21,9
Male	332	77,4
Missing values	3	0,7
Total	429	100,0
Age		
18 - 24	13	3,1
25 - 34	65	15,2
35 - 44	83	19,3

Demographic characteristic	Frequency	Percentage of sample
45 - 54	110	25,6
55 - 64	103	24,0
Above 65	52	12,1
Missing values	3	0,7
Total	429	100,0
First language		
Afrikaans	116	27,0
English	186	43,4
Nguni (IsiXhosa, IsiZulu, SiSwati, IsiNdebele)	49	11,5
Sotho-Tswana (Sepedi, Sesotho, Setswana)	55	12,8
Tshivenda and Xitsonga	12	2,8
Other languages	8	1,9
Missing values	3	0,7
Total	429	100,0
Level of education		
Primary education	4	1,0
Secondary education	80	18,6
Diploma or higher certificate	128	29,8
Degree or advanced diploma	214	49,9
Missing values	3	0,7
Total	429	100,0
Head of the business		
Entrepreneur	28	6,5
Founder	273	63,6
Manager	32	7,5
Owner	76	17,7
Self-employed	17	4,0
Missing values	3	0,7
Total	429	100,0
Number of employees in business		
≤10	312	72,7
11 - 50	69	16,1
Above 50	29	6,8
Missing values	19	4,4
Total	429	100,0

Demographic characteristic	Frequency	Percentage of sample
Longevity of business		
Not operational	51	11,9
Operational for up to 3 years	108	25,2
4 - 7 years	72	16,8
More than 7 years	194	45,2
Missing values	4	0,9
Total	429	100,0
Economic sector of the businesses		
Accommodation and food service activities	15	3,5
Administrative and support service activities	18	4,2
Agriculture, forestry and fishing	20	4,7
Arts, entertainment and recreation	9	2,1
Construction	14	3,3
Education	14	3,3
Electricity, gas, steam and air conditioning supply	2	0,5
Financial and insurance activities	48	11,2
Human health and social work activities	13	3,0
Information and communication	24	5,6
Manufacturing	46	10,7
Mining and quarrying	4	0,9
Other service activities	82	19,1
Professional, scientific and technical activities	41	9,6
Real estate activities	15	3,5
Transportation and storage	10	2,3
Water supply; sewerage, waste management and remediation activities	6	1,4
Wholesale and retail trade; repair of motor vehicles and motorcycles	45	10,5
Missing values	3	0,6
Total	429	100,0
South African province in which business is located		
Eastern Cape	29	6,8
Free State	13	3,0
Gauteng	204	47,6
KwaZulu-Natal	30	7,0
Limpopo	13	3,0

Demographic characteristic	Frequency	Percentage of sample
Mpumalanga	7	1,6
North West	14	3,3
Northern Cape	4	0,9
Western Cape	109	25,4
Missing values	6	1,4
Total	429	100,0

3.4 INSTRUMENTATION

All constructs were measured using multiple items and a seven-point Likert-type scale response anchor. Participants answered the scale items on a seven-point scale ranging from strongly disagree (1) to strongly agree (7). The granularity in the number of response categories of the seven-point scale was preferred over a five-point scale so as to be more sensitive to the answers from participants (Anthoine, Moret, Regnault, Sébille & Hardouin, 2014:1).

The final scale was pre-tested in September 2017 with 14 investment officers of a specialist risk finance company for small and medium enterprises. They were all familiar with the task environment and language use of entrepreneurs. They were requested to assess the items of the questionnaire for comprehensibility as well as whether it reflected aspects of the entrepreneur's work environment (i.e. face validity). The results of the pre-test were positive with only a few grammatical corrections to be made to the questionnaire.

The measurement scale used in this study was based on items from existing and published scales. The measurement concepts (with the construct to which it relates in brackets) and validation information on the items used, are provided below.

3.4.1 Personal initiative concept (personality construct)

The concept of personal initiative was measured with a scale of seven items (Cronbach's alpha = .84) (Frese *et al.*, 1997:149). A sample item is as follows: "I take initiative

immediately even when others don't". The Cronbach's alpha for this scale in the present sample was .86 (Mean = 6,05, SD = 0,70).

3.4.2 Entrepreneurial self-efficacy concept (motivational construct)

The entrepreneurial self-efficacy concept was measured on three dimensions, namely "searching" (three scale items and Cronbach's alpha = .84), "planning" (four scale items and Cronbach's = .84) and "marshalling" (three scale items and Cronbach's alpha = .80) (McGee *et al.*, 2009a:978).

Each of the items began with the stem: "How much confidence do you have in your ability to...?". A sample item of the "searching" dimension was: "Identify the need for a new product or service." The "searching" dimension had for the sample of this study a Cronbach's alpha of .82 (Mean = 4,70, SD = 1,03), the second dimension of "planning" had a Cronbach's alpha of 0,76 (Mean = 4,19, SD = 1,02), and the third dimension of "marshalling" had a Cronbach's alpha of 0,73 (Mean = 4,50, SD = 1,01).

3.4.3 Opportunity recognition concept (action characteristic construct)

Opportunity recognition was measured with a scale of five items and a Cronbach's alpha of .87 (Kuckertz, Kollmann, Krell & Stöckmann, 2017:85). An item of the scale was as follows: "I search systematically for business opportunities". The Cronbach's alpha was .88 (Mean = 5,64, SD = 0,94) in the present sample.

3.4.4 Opportunity creation concept (action characteristic construct)

Opportunity creation was measured by using six scale items (Composite reliability = .78) and it included the following item: "I create the future that I seek." (Neill *et al.*, 2017:303-304). The Cronbach's alpha for the scale was .87 (Mean = 5,81, SD = 0,79) for the present sample.

3.4.5 Networking concept (action characteristic construct)

The networking style of the entrepreneurs, which they use when initiating the creation of new economic value, was measured with the dimensions of "reaching out" (three scale items

and Cronbach's alpha = .67), and "establishing interpersonal knowledge" (three scale items and Cronbach's alpha = .77) (Vissa, 2012:503). An example of a scale item for "reaching out" was: "I consciously set aside time for meeting new people". The sample for this study found a Cronbach's alpha = .84 (Mean = 5,38, SD = 1,15) for "reaching out", and "establishing interpersonal knowledge" had a Cronbach's alpha of .77 (Mean = 5,19, SD = 1,16).

3.4.6 Deliberate practice concept (action characteristic construct)

A cluster of 10 deliberate practice activities were identified in the literature of activities carried out with the aim of improving oneself (Unger *et al.*, 2009:44). The examples of these activities were adapted to a self-report scale for this study (Sonnentag & Kleine, 2000:95). Each item began with the stem: "In order to improve my skills,..." and then gave a specific deliberate practice example such as: "I will try out new products or services." The Cronbach's alpha was .70 (Mean = 3,76, SD = 1,06) for the scale in the present sample.

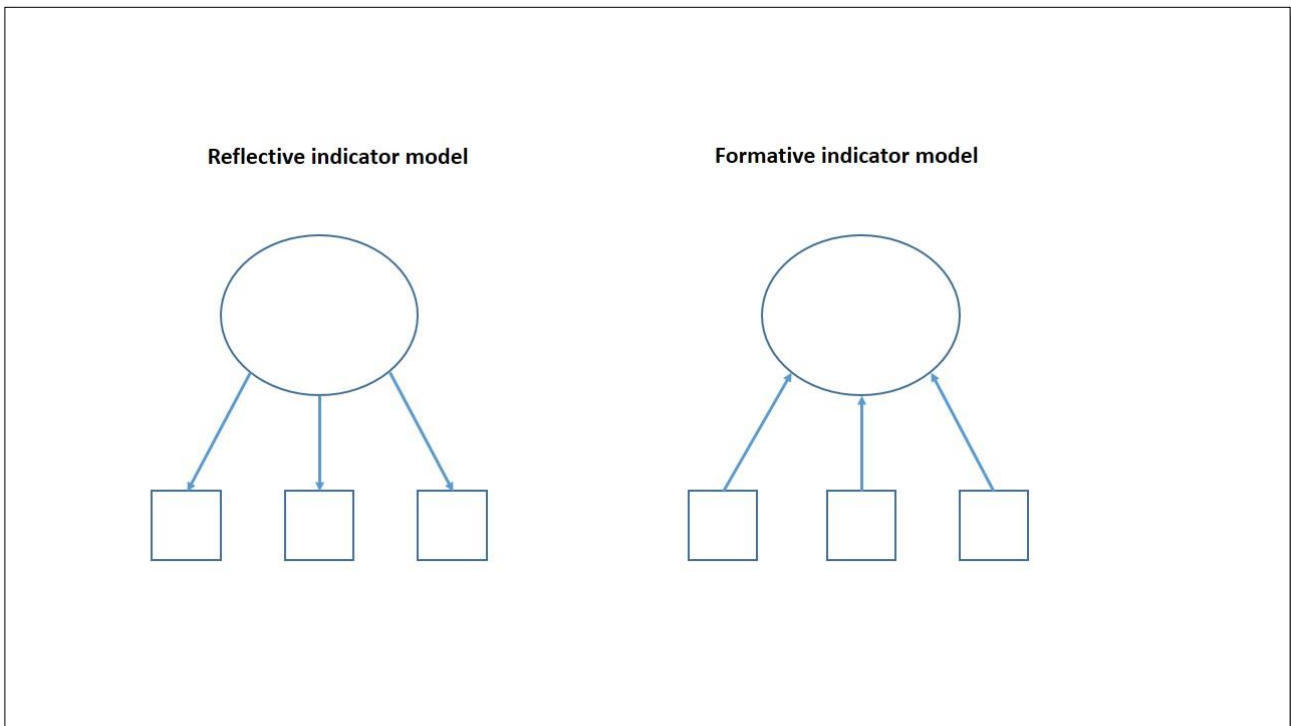
3.5 PROCEDURE FOR DATA COLLECTION

The data was collected with a survey from the combined purposive and convenient sample of the target population, with a self-administered questionnaire on personal entrepreneur behaviour. The scale on personal entrepreneur behaviour has been put together with the use of the theoretical definitions of the constructs and sourced from previous developed and validated scale items as set out under the instrumentation section. The participants were informed of the questionnaire by email and if they wanted to take part in the survey, it contained a link for them to click-on and be directed to the online or web-based questionnaire. The survey was securely hosted on the Qualtrics.com software platform.

3.6 A FORMATIVE OR REFLECTIVE MEASUREMENT APPROACH?

A measurement issue that needs to be considered are whether a formative or reflective measurement approach is applicable for the measurement of a psychological construct such as personal entrepreneur behaviour. See Figure 8.

Figure 8: Reflective and formative measures



Source: Coltman, Devinney, Midgley and Venaik (2008:1253)

Personal entrepreneur behaviour is conceptualised, in this research, as a multidimensional construct that can only be understood by the richness of its dimensions and where the relationships between the construct and dimensions are specified (McShane & Von Glinow, 2012:37). It is defined as a latent or unobserved construct. The dimensions are different ways in which the construct is realised (Covin & Wales, 2012:684). All the constructs are theoretical in nature and can therefore not be observed or directly measured. It is only the indicators, as representatives of the constructs, which can be measured

The latent construct of personal entrepreneur behaviour is at a higher-level than its dimensions (Covin & Wales, 2012:677; Moberg *et al.*, 2014:11). As the dimensions are latent constructs in themselves, they will form first-order factors, with personal entrepreneur behaviour being the second-order factor behind the dimensions (Covin & Wales, 2012:683). The measurement model of personal entrepreneur behaviour can thus be described as a second-order factor model with the lower-order factors being the different foci of personality, motivation and action characteristics. It further follows that all covariance of these dimensions are therefore the only true variances of the second-order personal entrepreneur

behaviour construct. All other variances can only be ascribed to error variances of the latent model of entrepreneur behaviour.

The literature review made clear the relationships between constructs and concepts that can be postulated and under what conditions it will occur. The direction of the relationships is also reflective if it is from the latent construct of personal entrepreneur behaviour to its dimension measures as opposed to the formative approach of the direction being from the dimensions to the construct (Edwards, 2011:370). Personal entrepreneur behaviour is thus a reflective measure due to the following characteristics being present (Covin & Wales, 2012:682):

- A latent construct exists;
- It is assumed that effect flows from the construct to the indicators;
- The indicators share commonality; and
- The indicators are intercorrelated.

The reflective measurement approach has been confirmed above and thus making it possible to specify the measurement model for personal entrepreneur behaviour.

The unit of analysis of the entrepreneur behaviour construct must further be clearly identified to be either at the level of the firm or the individual (Coltman *et al.*, 2008:1251-1253). This research has placed it firmly at the individual level.

In summary, the measurement of personal entrepreneur behaviour is at the individual level and the relationships between this latent construct and its dimensions are that of a second-order reflective measurement model.

3.7 DATA PROCESSING AND STATISTICAL ANALYSIS

The statistical software programme SPSS (IBM SPSS Statistics 25, 2017) and MPlus (version 8.2, 2018) were used to analyse the data gathered with the administration of the measurement scale.

Any scientific scale must be both valid and reliable to provide measurements that can be trusted by researchers as well as practitioners. The personal entrepreneur behaviour scale is no exception. It was therefore subjected to the rigorous testing of its validity and reliability in terms of the standard protocols for scale development (Furr, 2011:6).

The data was at first examined with the use of descriptive statistics in order to calculate the mean score of the items (average response from the respondents in the sample). The kurtosis and skewness of the data were then inspected to assess whether the data met the assumptions necessary to make use of a parametric (inferential) test of fitting a model to the data (Field, 2013:165). As high skewness may indicate random responding by participants, while kurtosis may indicate a clustered responding pattern by participants.

It was then critical for the purpose of this study to establish the number of factors or scale dimensionality before any other psychometric properties of the scale could be considered in terms of the best practice guidelines of scale development. See Table 5 below for the phases and activities of the generic scale development process.

Table 5: The scale development process

Phase	Activity
New measure phase	Form or identify an idea
Substantive validity phase	Conduct a thorough literature review to establish the theoretical importance and existence of constructs
	Define the selected target constructs
	Select or develop measurement items and scales as well as the response format for the measurement items
	Conduct pilot-testing
	Administer the questionnaire or scale and collect data from respondents
Internal structural validity phase of statistical analysis to evaluate the psychometric properties of the measurement scales	Psychometric evaluation of the dimensionality of the constructs
	Psychometric evaluation of the validity and reliability of the constructs

Phase	Activity
	Consideration of the threats to the quality of the measurement
External validity phase	Conduct replication studies to evaluate convergent, discriminant and criterion-related validity
	Finalise the measurement scale
	Write scale manual and/or publish reports of scale development
<i>Source: Carpenter (2018:26); Furr (2011:12-14); Hinkin, Tracey and Enz (1997:4); Simms (2008:417); Slavec and Drnovsek (2012:43)</i>	

The methodological approach for this study thus followed the above scale development guidelines as well as the procedures used by other researchers in recent business settings to develop and validate a measurement scale (Popa, Soto-Acosta & Martinez-Conesa, 2017:134; Zhang & Cain, 2017:793).

The first phase, after having an idea for a new scale, was the substantive validity phase which required a thorough literature review to clarify the theoretical importance and existence of the personal entrepreneur behaviour construct. All the psychological dimensions or factors of the personal entrepreneur behaviour construct were then operationalized for measurement by selecting measurement items on the basis of the literature review of prior developed scales (Popa *et al.*, 2017:137). The type of response format for the questions was also selected. The measurement scale was then put through an initial test session to iron out any difficulties before the measurement scale was formally administered. After the pilot testing, the measurement scale was made available online, and participants were invited to take part in the collection of the data on personal entrepreneur behaviour.

The internal structural validation phase followed the administration of the measurement scale in order to statistically analyse and evaluate the psychometric properties of the new personal entrepreneur behaviour scale. The evaluation of the factor structure of the scale, the validity thereof and reliability analysis are discussed below in more detail.

Dimensionality of a scale is the number of meaningful scores that a scale produces for a participant (Furr, 2011:7). The dimensionality or underlying factor structure of the personal

entrepreneur behaviour scale was investigated with the use of the multivariate technique of exploratory factor analysis (“EFA”). It determines the uni-dimensionality of the entrepreneur behaviour subscales. This analysis determined whether the factors are indeed associated with each other in order to explore, map and confirm the outline of the construct of personal entrepreneurial behaviour (Field, 2013:665-719; Hair, Black, Babin & Anderson, 2014:89-150). Factor analysis is firmly rooted in the notion that a latent or unobserved construct such as personal entrepreneur behaviour can be inferred through the associations that exist among the observed measurement items (Curran, Cole, Bauer, Hussong & Gottfredson, 2016:828). The modelling approach followed was thus that of factor analysis instead of relying on the other dominant modelling approach, namely item response theory.

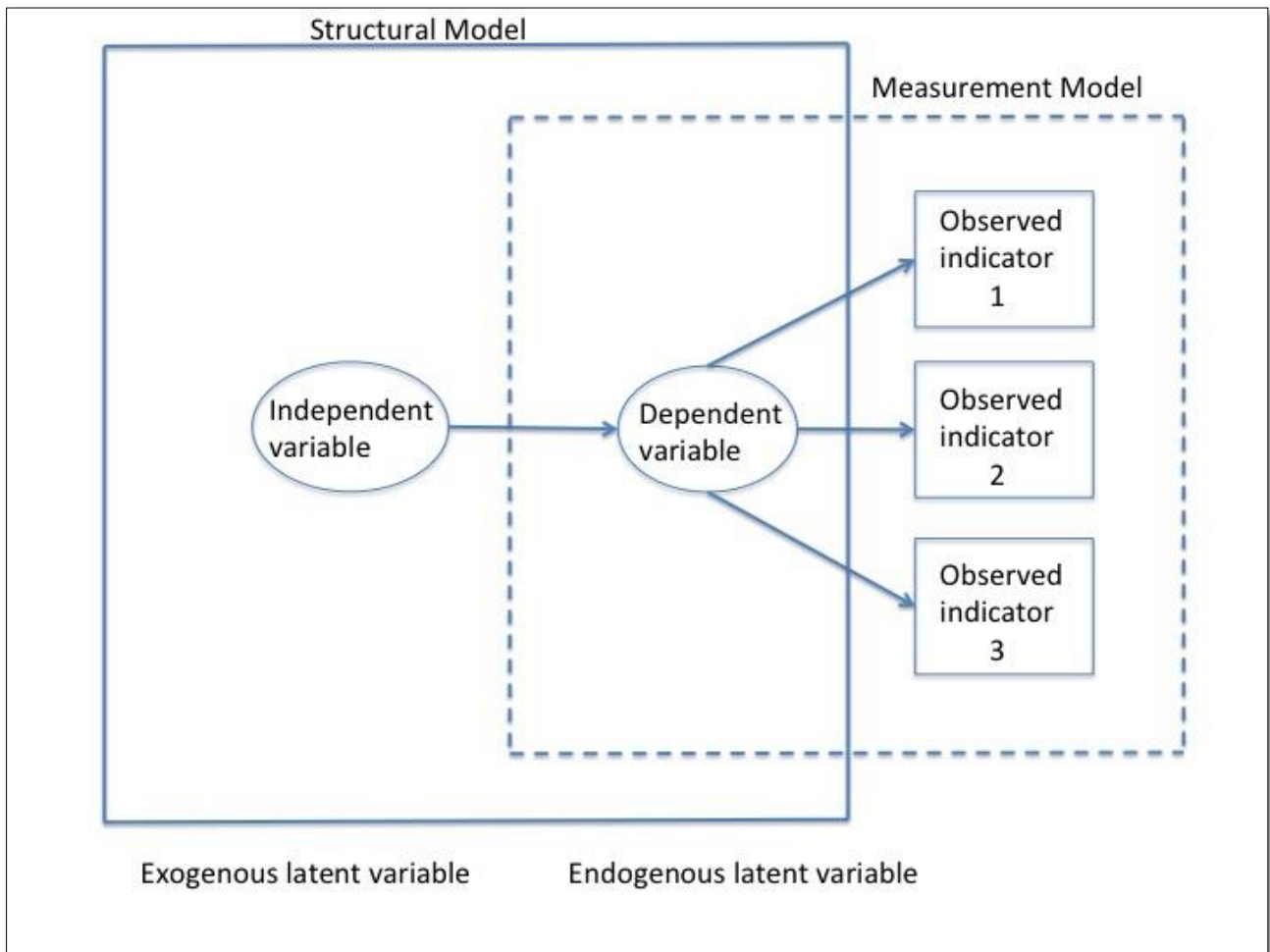
Structural equation modelling (“SEM”) is used to establish whether an underlying latent structure exists for a set of observed indicators (Boomsma, Hoyle & Panter, 2012:342; Kline, 2011:7-10). The benefit of SEM is that it can thus guide exploratory and confirmatory research with a single statistical method (Bagozzi & Yi, 2012:10).

A SEM model yields two sub-models, namely a measurement and structural model. See Figure 9.

The measurement model specifies the relationships between the latent variables and their observed indicators. The structural model specifies the relationships between the latent independent variable and the dependent latent variables (Wong, 2013:1).

An overall measurement model of the construct of entrepreneur behaviour was thus specified and tested to establish whether there are a higher order factor (i.e. entrepreneur behaviour) that would account for the commonality among first order factors that were found to covary (Hoyle, 2000:470).

Figure 9: The two sub-models in a structural equation model



Source: Wong (2013:2)

The evidence of construct validity is called for to overcome the problem of using indirect measures for a latent construct. Construct validity provides therefore the assurance of knowing the proportion of the scale score variance that is attributable to the construct variable in question (Cronbach & Meehl, 1955:282). It therefore answers the question of validity for what? The construct validity properties of the personal entrepreneurial scale was thus evaluated with the use of the multivariate techniques of confirmatory factor analysis (“CFA/SEM”) and exploratory structural equation modelling (“ESEM”) (Walker & Maddan, 2009:341).

The multivariate techniques of confirmatory factor analysis (“CFA/SEM”) and exploratory structural equation modelling (“ESEM”) were used to corroborate the first order factor structure of the indicators of the concepts of the construct of personal entrepreneurial

behaviour as found with the EFA (Dugard, Todman & Staines, 2010:177-205; Everitt & Hothorn, 2011:201-224; Hair *et al.*, 2014:599-638; Marsh, Morin, Parker & Kaur, 2014:87-89). The CFA/SEM models the concepts of the entrepreneur behaviour construct to confirm a smaller number of underlying factors that share a certain amount of commonality with each other (Hoyle, 2000:466). The ESEM approach was also used in addition to the CFA/SEM as it can freely explore the data to come up with a factor solution, which CFA/SEM is incapable of doing. ESEM can however only be so used if a strong theoretical basis underpins the expected factor structure, as it was the case for this study (Guay, Morin, Litalien, Valois & Vallerand, 2015:53).

After the construct validity was confirmed, a reliability analysis was conducted. It was followed by the assessment of the convergent and discriminant validity of the personal entrepreneur behaviour scale in order to establish the internal validity of the measurement scale.

The structural SEM model was lastly tested for the hypothetical multiple relationships and path effects among the measured variables of the latent construct of personal entrepreneur behaviour (Dugard *et al.*, 2010:159-176; Hair *et al.*, 2014:639-664; Tabachnick & Fidell, 2014:731-836).

3.8 ETHICAL CONSIDERATIONS

The ethical clearance for the research project was received from the Committee for Research Ethics in the Faculty of Economic and Management Sciences of the University of Pretoria. The written consent was also sought and received from all the organisations where the data would be collected. The host organisations were informed telephonically and via electronic mail about the purpose of the research, methods to be used, and the importance of the study as well as how the data will be protected and kept confidential.

The participant instructions made specific provision for obtaining the informed consent of the participants. If the participants did not want to provide their consent, then the online session would be terminated, after thanking them for their willingness to consider taking part in the research. The first part of the online questionnaire assured the participants that all

responses would remain anonymous and confidential. They were also informed that the data would be aggregated or combined and that no individual or institution will be identifiable when the results are published. It was added that participation in the study was voluntary and that they could withdraw at any time. They were further informed that there was similarly no payment for responding to the questionnaire, and disadvantage, or any known risk in taking the survey. All participants in this study gave their informed consent to participate in the study on a voluntary basis.

3.9 CONCLUSION

The chapter described the method followed in putting this study together by discussing the research design, sample and various statistical techniques employed so as to answer the research question. The following chapter will discuss what was found by the research.

CHAPTER 4 RESULTS AND DISCUSSION

4.1 INTRODUCTION

The chapter will present the research results of the measurement scale's dimensionality structure, viability, reliability, fit of the measurement model to the data and the relationships between the variables of personal entrepreneur behaviour construct. The data gathered during the field study was used to validate the psychometric properties of the personal entrepreneur behaviour scale. The psychometric evaluation of the personal entrepreneur behaviour scale was done by carrying out the various statistical tests to determine the dimensionality, validity and reliability of the scale. Thereafter the data was modelled, using structural equation modelling, in order to establish the fit of the factor structure of the model to the data as well as the relationships between the concepts and the personal entrepreneur behaviour construct.

4.2 MISSING VALUES

Missing values are the result of participants not responding to some of the questions in completing the questionnaire. As the subsequent application of SEM will be impacted by missing data found during data preparation, it is necessary to specifically investigate whether there were any missing data (Hoyle & Isherwood, 2013:15). Although this problem has been overcome by being able to estimate such values in SEM, there were in fact no missing values found in the final data-set of 429 participants of this study (Tabachnick & Fidell, 2014:738). This could be due to a feature of the online questionnaire that prompted the participants to answer all the questions overlooked, before the next page or section of the questionnaire was loaded.

4.3 EVALUATION OF MULTIVARIATE NORMALITY

Descriptive statistics were used to summarise the data. The distribution characteristics of the data (shape) was investigated at first with the tests of the data curve in skewness (symmetry) and kurtosis ("peakedness" or "flatness") to establish whether the data distribution was within the acceptable range for normality (Hinkin *et al.*, 1997:5). These tests are important to do at the start of the data analysis, as parametric or inferential statistics can only be used on the data if it conforms to the assumption of normality (Cooper & Schindler, 2006:467-468). The skewness values for all variables ranged in general from -1,539 to 0,121, and for kurtosis from -0,738 to 1,719. None of these univariate values therefore breached the reference of no normality in that no skewness values were higher than two, and the values for kurtosis were not above seven (Cooper & Schindler, 2006:502; Curran, West & Finch, 1996:26). The only exception was for the variable ACT1_pi1 with a skewness value of -2,124 and a kurtosis of 7,997.

The mean scores of the measurement items fell, in addition, within the three to six range as measured on a seven-point Likert scale and were therefore indicative that no problem was experienced with any ceiling or floor effects in the responses of the participants. Standard deviations were also relatively consistent across the items (Hoyle, Stephenson, Palmgreen, Lorch & Donohew, 2002:405).

The variables of the study were therefore found to be approximately normally distributed or being in the acceptable range of univariate normality. It was thus found that the data conformed to the assumption of normality. The data could therefore be used in further inferential analysis, as no violation occurred of the normal distribution assumption for the research variables.

4.4 DIMENSIONALITY ASSESSMENT

The dimensionality of a scale is investigated to assess the underlying factor structure of the measurement scale. The dimensionality of the scale was thus assessed in this study with both an exploratory and a confirmatory structural equation modelling approach to evaluate

if the hypothesized factor structure fits the data or not (Slavec & Drnovsek, 2012:60). The results of these measurements are discussed below.

4.5 EXPLORATORY FACTOR ANALYSIS OF DIMENSIONS

Scale dimensionality must firstly be established by conducting an exploratory factor analysis ("EFA") to assess, in an investigative manner, the number of factors assessed by the scale. An exploratory perspective is used in the factor analysis to search for and reveal groups of structure among the variables. Variables that are highly correlated are then grouped together as factors. Such factors represent the multi-dimensions of the personal entrepreneur behaviour construct (Hair *et al.*, 2014:92). Factor analysis plays a pivotal role in making an empirical assessment of the dimensionality of a set of measurement items by determining the number of factors and the loadings of each item on a factor (Hair *et al.*, 2014:123). The underlying factor structure of the scale was therefore examined with exploratory factor analysis to determine the dimensionality of the measures (Cohen, 1992:157; Steyn, 2002:12).

A principle axis factoring extraction method with an Oblimin (Kaiser normalisation) rotation method was conducted on all the items of the measurement scale (Schjoedt, Renko & Shaver, 2014:117). The number of factors extracted was dependent upon the factors with large eigenvalues (eigenvalues > 1) and the underlying common variance accounted by them (Field, 2013:674; Hair *et al.*, 2014:109; Walker & Maddan, 2009:332).

Table 6 to Table 8 show the factors and loadings, after performing the EFA (N=429), that have been extracted for the constructs of entrepreneurial self-efficacy motivation, networking, and action characteristics. Stevens recommends in Field (2013:677) that only factor loadings be used with an absolute value greater than .40, which explain around 16% of the variance in the variable. The overall factor loadings were satisfactory (from .42 to .91) as factor loadings above .40 are considered reasonably strong, and loadings above .70 are considered very strong (Furr, 2011:32).

The proportion of common variance present in a variable (known as the communality), after extraction, are also presented in

Table 6 to Table 8. It details the amount of variance in each variable that can be explained by the retained factors. All of the variables share a moderate to good proportion of variance with the extracted factors (Field, 2013:675).

Table 6: Factor loading of motivation items

Item	Rotated factor loadings			Communality after extraction
	Searching factor (ESE_SEA)	Planning factor (ESE_pl)	Marshalling factor (ESE_mar)	
How much confidence do you have in your ability to brainstorm (come up with) a new idea for a product or service? (ESE1_sea1)	.70	-.01	.07	.54
How much confidence do you have in your ability to identify the need for a new product or service? (ESE2_sea2)	.82	-.03	.04	.68
How much confidence do you have in your ability to design a product or service that will satisfy customer needs and wants? (ESE3_sea3)	.75	.08	-.04	.61
How much confidence do you have in your ability to estimate customer demand for a new product or service? (ESE4_pl1)	.37	.42	.03	.54
How much confidence do you have in your ability to determine a competitive price for a new product or service? (ESE5_pl2)	.08	.70	-.06	.51
How much confidence do you have in your ability to estimate the amount of start-up funds and working capital necessary to start my business? (ESE6_pl3)	-.05	.57	.17	.43
How much confidence do you have in your ability to design an effective marketing/advertising campaign for a new product or service? (ESE7_pl4)	.08	.35	.34	.46
How much confidence do you have in your ability to get others to identify with and believe in your vision and plans for a new business? (ESE8_mar1)	.16	-.07	.68	.55
How much confidence do you have in your ability to network – i.e. contact and	-.04	.01	.73	.52

Item	Rotated factor loadings			Communality after extraction
	Searching factor (ESE_SEA)	Planning factor (ESE_pl)	Marshalling factor (ESE_mar)	
exchange information with others? (ESE9_mar2)				
How much confidence do you have in your ability to clearly and concisely explain verbally or in writing your business idea in everyday terms? (ESE10_mar3)	-0.00	.08	.59	.41
Eigenvalues	4.59	1.18	.91	
% of variance	45.97	11.79	9.18	
Cronbach's alpha	.82	.76	.73	
<i>Note: The factor loadings over .40 are in bold.</i>				

Table 7: Factor loading of networking items

Item	Rotated factor loadings		Communality after extraction
	Reaching out factor (NET_rea)	Interpersonal knowledge factor (NET_ik)	
When I attend industry forums & other business related networking events, I build connections with people I did not know before. (NET1_rea1)	.88	-.00	.79
When I attend social events (e.g. rotary club, hobby associations etc.), I build connections with people I did not know before. (NET2_rea2)	.77	.06	.73
I consciously set aside time for meeting new people. (NET3_rea3)	.48	.26	.55
When I meet a new person, I find out if he or she is connected to people I already know. (NET4_ik1)	-.00	.62	.44
I make an effort to find out as much as possible about a new person that I meet. (NET5_ik2)	-.00	.78	.64
When meeting a new person, I find out how he or she will benefit from our (potential) relationship. (NET6_ik3)	.11	.70	.56
Eigenvalues	.86	4.68	

Item	Rotated factor loadings		Communality after extraction
	Reaching out factor (NET_rea)	Interpersonal knowledge factor (NET_ik)	
% of variance	7.22	39.07	
Cronbach's alpha	.84	.77	
<i>Note: The factor loadings over .40 are in bold.</i>			

Table 8: Factor loading of action characteristic items

Item	Rotated factor loadings				Communality after extraction
	Personal initiative factor (pi)	Opportunity recognition factor (or)	Opportunity creation factor (oc)	Deliberate practice factor (db)	
I actively attack problems (ACT1_pi1).	-.55	.01	-.01	-.00	.35
Whenever something goes wrong, I search for a solution immediately (ACT2_pi2).	-.77	-.04	.06	.04	.56
Whenever there is a chance to get actively involved, I take it (ACT3_pi3).	-.79	.12	.04	-.03	.64
I take initiative immediately even when others don't (ACT4_pi4).	-.81	.06	.01	-.00	.67
I use opportunities quickly in order to attain my goals (ACT5_pi5).	-.60	.16	-.14	.00	.63
Usually I do more than I am asked to do (ACT6_pi6).	-.50	-.12	-.07	.14	.32
I am particularly good at realising ideas (ACT7_pi7).	-.45	.06	-.17	.04	.42
I am always alert to business opportunities (ACT10_or1)	-.15	.56	-.11	.00	.47
I research potential markets to identify business opportunities (ACT11_or2)	-.01	.80	.02	.05	.70
I search systematically for business opportunities (ACT12_or3)	.04	.84	.01	-.01	.74

Item	Rotated factor loadings				Communality after extraction
	Personal initiative factor (pi)	Opportunity recognition factor (or)	Opportunity creation factor (oc)	Deliberate practice factor (db)	
I look for information about new ideas on products or services. (ACT13_or4)	-.04	.62	-.05	.05	.52
I regularly scan the environment for business opportunities. (ACT14_or5)	.01	.74	-.06	.13	.73
I create the future that I seek (ACT27_oc1)	-.20	.15	-.35	.04	.44
Opportunities emerge as the results of my actions. (ACT28_oc2)	-.16	.08	-.62	.07	.66
Opportunities are the outcome of my efforts and actions. (ACT29_oc3)	-.06	-.00	-.75	.05	.65
I believe that opportunities are created, rather than discovered. (ACT30_oc4)	.04	.05	-.63	-.00	.39
Opportunities are created by my actions and reactions. (ACT31_oc5)	.01	-.07	-.91	.01	.75
I am an integral part of opportunity emergence as I invent what I believe to be viable. (ACT32_oc6)	.05	.05	-.71	-.07	.57
In order to improve my skills, I ask advice from other owners or leaders. (ACT19_dp3)	-.00	.03	-.02	.57	.33
In order to improve my skills, I approach clients to get feedback. (ACT20_dp4)	-.02	.04	.03	.52	.37
In order to improve my skills, I brainstorm with employees to see where improvements are necessary. (ACT21_dp5)	.00	-.04	-.02	.60	.42
In order to improve my skills, I talk to friends and family members about business to	-.00	.11	.00	.51	.29

Item	Rotated factor loadings				Communality after extraction
	Personal initiative factor (pi)	Opportunity recognition factor (or)	Opportunity creation factor (oc)	Deliberate practice factor (db)	
pick up new ideas. (ACT22_dp6)					
In order to improve my skills, I check my business data in order to plan for the future (ACT26_dp10)	-0.06	-0.05	-0.07	.33	
Eigenvalues	2.04	9.06	1.90	1.43	
% of variance	7.55	33.55	7.05	5.32	
Cronbach's alpha	.86	.88	.87	.70	
<i>Note: The factor loadings over .40 are in bold.</i>					

The exploratory factor analyses of the measurement scales therefore suggest a multi-dimensional structure of nine factors, which are identified and labelled in Table 9 below. It should be noted that personal initiative has been taken out of the action cluster, as it would be treated as a separate personality construct, further on in this study, rather than as part of the action construct (Tornau & Frese, 2013:52).

Table 9: Identification and labelling of target factors

Factor	Definition	Number of items	Citation
Personal initiative	Being self-starting, making change happen and being concerned with future state-of-affairs	Seven	Frese, Hass & Friedrich, 2016. Tornau & Frese, 2013.
Entrepreneurial self-efficacy motivation: Searching	Development of a unique idea and/or identification of a special opportunity	Three	McGee, Peterson, Mueller & Sequeira, 2009.
Entrepreneurial self-efficacy motivation: Planning	Activities undertaken to convert the idea into a	Four	McGee, Peterson, Mueller & Sequeira, 2009

Factor	Definition	Number of items	Citation
	viable and feasible business plan		
Entrepreneurial self-efficacy motivation: Marshalling	Activities to bring resources together to establish the start-up firm	Three	McGee, Peterson, Mueller & Sequeira, 2009
Network broadening actions: Reaching out	The extent to which entrepreneurs take steps to meet new people to promote their firms	Three	Vissa, 2010
Network broadening actions: Interpersonal knowledge	The extent to which entrepreneurs gain interpersonal knowledge by finding out more about the new people they meet	Three	Vissa, 2010
Opportunity recognition	Being alert to potential business opportunities, actively searching for them, and gathering information about new ideas on products or services	Five	Kuckertz, Kollmann, Krell & Stockmann, 2017
Opportunity creation	Being able to connect the dots and displaying associational thinking as well as engaging in experimentation	Six	Neill, Metcalf & York, 2017
Deliberate practice	Engaging in effortful activities to improve one's current level of performance as a business owner	Five	Unger, Keith, Hilling, Gielnik & Frese, 2009

The exploratory factor analysis thus identified a multi-dimensional structure for personal entrepreneur behaviour as envisaged in the theoretical model of personal entrepreneur

behaviour. These results of the exploratory factor analysis were then used, in the next section, as input for the confirmatory factor analysis SEM and the exploratory SEM.

4.6 CONFIRMATION OF INTERNAL VALIDATION WITH CFA/SEM AND ESEM

The psychometric properties of the measurement model (the relationship between the measurement scale items and their respective factors) were assessed by using confirmatory factor analysis in structural equation modelling (CFA/SEM) for the one dimensional scale and exploratory structural equation modelling (ESEM) for the multiple-dimensional scales (Fornell & Larcker, 1981:39; Hair *et al.*, 2014:618; Khedhaouria, Gurău & Torrès, 2015:494). Such an approach was followed so as to rigorously evaluate the factor structure as found with the EFA (previous section).

The measurement items were modelled with CFA/SEM and ESEM to provide evidence of the factor structure of the personal entrepreneur behaviour construct as well as give insight into its dimensional structure. The reason being that the construct validity must firstly be established before the testing of the structural model of personal entrepreneur behaviour can be done (Fornell & Larcker, 1981:45). The validity of a scale is namely the most important aspect of the quality with which it is considered (Field, 2013:681-682). It was therefore necessary to established whether the scales in actual fact measure what they are intended for, namely personal entrepreneur behaviour (Danner, Blasius, Breyer, Eifler, Menold, Paulhus, Rammstedt, Roberts, Schmitt & Ziegler, 2016:175). The EFA (previous section), CFA/SEM and ESEM are employed as techniques to provide evidence on the validity of the measurement scales (Hair *et al.*, 2014:641).

The minimum sample size required for CFA/SEM and ESEM is dependent upon the number of indicators, number of factors and loadings of indicators on factors. Given these permutations and considering the measurement model of this research, it would suggest that a required sample size should be between 100 and 150 participants (Garver & Mentzer, 1999:33; Milfont & Duckitt, 2004:289; Ullman, 2006:35). The study sample of 429 participants surpasses this hurdle comfortably and these multivariate techniques can thus be deployed to analyse the data.

CFA/SEM and ESEM analysis of the measurement models involved the following steps, namely to specify the models, analyse the covariance matrix of the different models and lastly evaluate the model fit to the data (Law, Wong & Mobley, 1998:745). The goodness-of-fit of a model was evaluated with four indices, as each fit statistic considers a different aspect of fit. The fit statistics used, were the chi-square statistic, the ratio of chi-square to degree of freedom (χ^2/df), the root mean square error of approximation (RMSEA), the standardized root mean square residual (SRMR) and the comparative fit index (CFI) (Myburgh, Watson & Foxcroft, 2015:9-10). Many goodness-of-fit indices are used as “each (is) imperfect in one way or another” (Hoyle, 2000:482). The rules of thumb to assess the fit cut-off values are set out in Table 10 for the Chi-square (χ^2) statistic, the CFI (an incremental fit index), and RMSEA (an absolute fit index).

Table 10: Rules of thumb guidelines for different fit indices

Fit indices	Guideline for cut-off values
χ^2	Insignificant or non-significant p-values
$\chi^2 : df$	2 or 3: 1 or less
CFI or TLI	.95 or better
SRMR	.08 or less
RMSEA	Values < .07

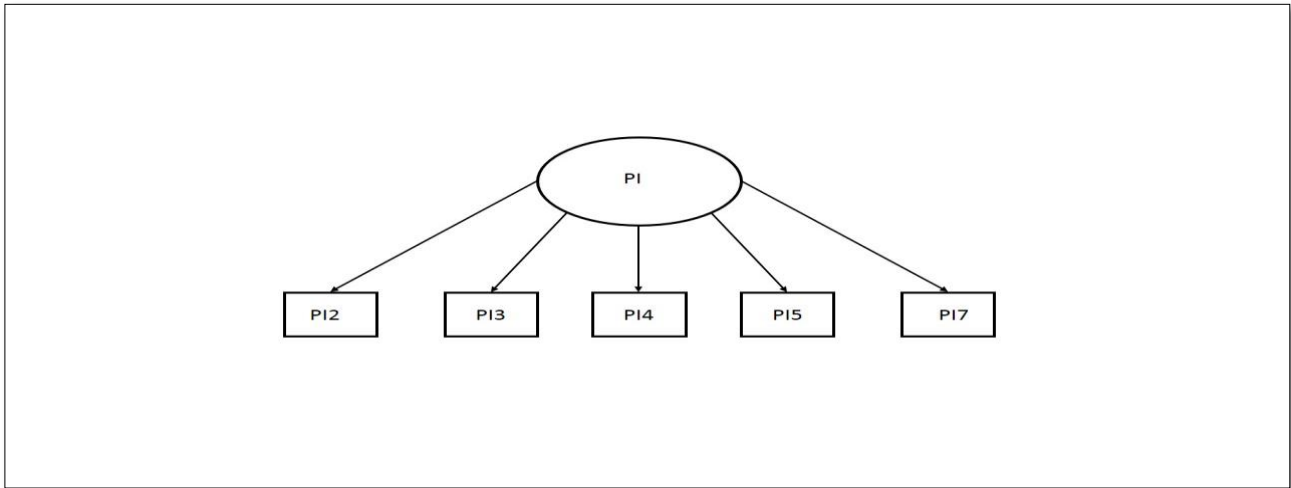
Source: Hair et al. (2014:579-584); Schreiber, Nora, Stage, Barlow and King (2006:330); Tabachnick and Fidell (2014:772-775)

4.6.1 Evaluation of the one-factor personal initiative model

A visual diagram depicting the one-factor personal initiative (“PI”) measurement model is shown in Figure 10.

The standardized coefficients of factor loadings for the one-factor PI model are reported in Table 11. All the coefficients are positive, and the factor loadings were large, ranging in magnitude from 0.66 to 0.84. These standardized factor loadings were also far in excess of the conventional cutoff point of 0.30 for the size of the loading (Joshnloo, 2018:164). The Personal initiative factor was therefore loaded by its respective target items. They are also all statistically significant at $p < 0.001$.

Figure 10: The one-factor PI model



Note: PI = Personal initiative; Confirmatory factor analysis: reflective model

Table 11: Standardized coefficients for the one-factor PI model

Observed variable	Latent construct	β (Est.)	S.E.	C.R. (Est./SE)
ACT2Pi2	Personal initiative	0.67	0.04	16.79
ACT3Pi3	Personal initiative	0.84	0.02	31.79
ACT4Pi4	Personal initiative	0.83	0.02	31.60
ACT5Pi5	Personal initiative	0.76	0.03	22.36
ACT7Pi7	Personal initiative	0.66	0.04	15.15

Note: $p < 0.001$; β = Standardized coefficients; S.E. = Standard errors; C.R. = Critical ratio

A correlation table of the one-factor PI model is shown in Table 12. The inter-item correlations of the tested measurement model were all positive and ranged from 0.38 to 0.71. It provided further evidence that the target measurement items of the factor were indeed interrelated and thus part of a one-factor solution for the data. The one-factor model is therefore sufficient to explain the sample correlations.

Table 12: Correlations for the one-factor PI model

Observed variable	1	2	3	4	5
ACT2Pi2	1				
ACT3Pi3	0.60	1			
ACT4Pi4	0.51	0.71	1		
ACT5Pi5	0.53	0.60	0.66	1	
ACT7Pi7	0.43	0.38	0.53	0.53	1

The results of the fit statistics for the one-factor PI model are presented in Table 13. The estimation of the single-factor model produced the following values for the indexes of fit, namely $\chi^2(4, n = 429) = 9.135$, CFI = 0.99, RMSEA = 0.055 (90% confidence interval = 0.000 – 0.102).

Table 13: Overall fit statistics for the PI model

Goodness-of-fit Index	PI Model
Absolute Fit measures	
χ^2	9.135
Degrees of freedom	4
$\chi^2 : df$ (Chi-square/Degrees of Freedom)	2.2
Probability	0.0578
RMSEA	0.055
Confidence interval of RMSEA	.000 - .102
Incremental Fit measures	
SRMR	.019
CFI	.99
TLI	.97

Note: N = 429; CFA/SEM: Maximum likelihood method

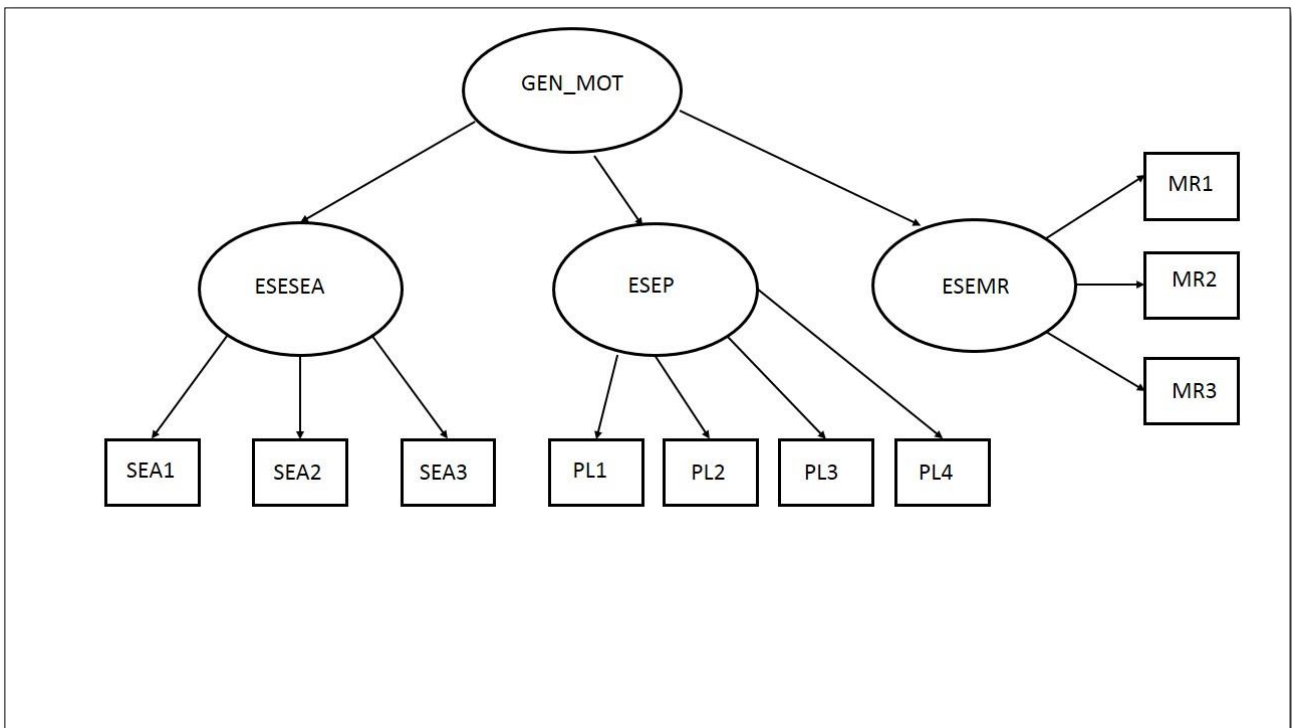
The PI-model has a chi-square statistic of 9.135 with 4 degrees of freedom. The p-value associated with the result is .0578. The p-value is not significant using a type I error rate of .05. The normed χ^2 absolute fit statistic ($\chi^2:df$) was 2.2 which is acceptable. A number smaller than 2 is considered very good, and a number between 2 and 5 is acceptable (Hair *et al.*, 2014:630). The value for RMSEA, an absolute fit index, is 0.055. The value is below the guideline of .08. The true value of RMSEA is between 0.000 - 0.102 using the 90%

confidence interval. The upper bound value of RMSEA is however higher than the guideline. The CFI incremental fit index has a value of 0.99, which exceeds the minimum cut-off guideline of .95. The overall results suggest that the PI-model provides a good fit to the data.

4.6.2 Evaluation of the four-factor motivation model

A visual diagram depicting the four-factor measurement model of entrepreneurial self-efficacy motivation (“ESE”) is shown in Figure 11.

Figure 11: The four-factor motivation model



Note: GEN_MOT = General motivation factor; ESESEA = Entrepreneurial self-efficacy: Searching; ESEP = Entrepreneurial self-efficacy: Planning; ESEMR = Entrepreneurial self-efficacy: Marshalling; ESEM = Exploratory structural equation modelling: reflective model

The standardized coefficients of factor loadings for the four-factor motivation model are reported in Table 14. All the coefficients are positive, and the factor loadings were large, ranging in magnitude from 0.42 to 0.72. The four-factors of motivation were therefore loaded by their respective target items. They were all statistically significant at $p < 0.001$.

Table 14: Standardized coefficients for the four-factor motivation model

Observed variable	Latent construct	β (Est.)	S.E.	C.R. (Est./SE)
ESE1SEA1	ESESEA	0.65	0.06	10.72
ESE2SEA2	ESESEA	0.72	0.03	18.69
ESE3SEA3	ESESEA	0.68	0.06	11.06
ESE4PL1	ESEP	0.45	0.06	6.89
ESE5PL2	ESEP	0.66	0.05	11.98
ESE6PL3	ESEP	0.57	0.09	6.34
ESE7PL4	ESEP	0.42	0.07	5.57
ESE8MR1	ESEMR	0.62	0.06	9.08
ESE9MR2	ESEMR	0.68	0.04	15.42
ESE10MR3	ESEMR	0.54	0.06	8.46
ESESEA	GEN_MOT	0.70	Fixed value	Fixed value
ESEP	GEN_MOT	0.60	0.12	4.99
ESEMR	GEN_MOT	0.51	0.10	4.97

Note: $p < 0.001$; β = Standardized coefficients; S.E. = Standard errors; C.R. = Critical ratio. GEN_MOT is a general variable with a computed plausible value as provided by an Bayesian analysis (Marsh et al., 2014:103-104).

A correlation table of the four-factor motivation model is shown in

Table 15. The inter-factor correlations of the tested measurement model were all positive and ranged from 0.28 to 0.72. It provided further evidence that the factors were indeed interrelated and thus part of a four-factor solution for the data. The four-factor model is therefore sufficient to explain the sample correlations.

Table 15: Correlations for the four-factor motivation model

Latent variable	ESESEA	ESEP	ESEMR	GEN_MOT
ESESEA	1			
ESEP	0.37	1		
ESEMR	0.28	0.39	1	
GEN_MOT	0.52	0.72	0.54	1

The results of the fit statistics for the four-factor motivation model are presented in Table 16. The estimation of the four-factor model produced the following values for the indexes of fit, namely $\chi^2(18, n = 429) = 29.383$, CFI = 0.99, RMSEA = 0.038 (90% confidence interval = 0.006 – 0.063).

Table 16: Overall fit statistics for the four-factor motivation model

Goodness-of-fit Index	Motivation Model
Absolute Fit measures	
χ^2	29.383
Degrees of freedom	18
$\chi^2 : df$ (Chi-square/Degrees of Freedom)	1.6
Probability	0.0439
RMSEA	0.038
Confidence interval of RMSEA	.006 - .063
Incremental Fit measures	
SRMR	.017
CFI	.99
TLI	.97

Note: N = 429; Exploratory structural equation modelling: Maximum likelihood method

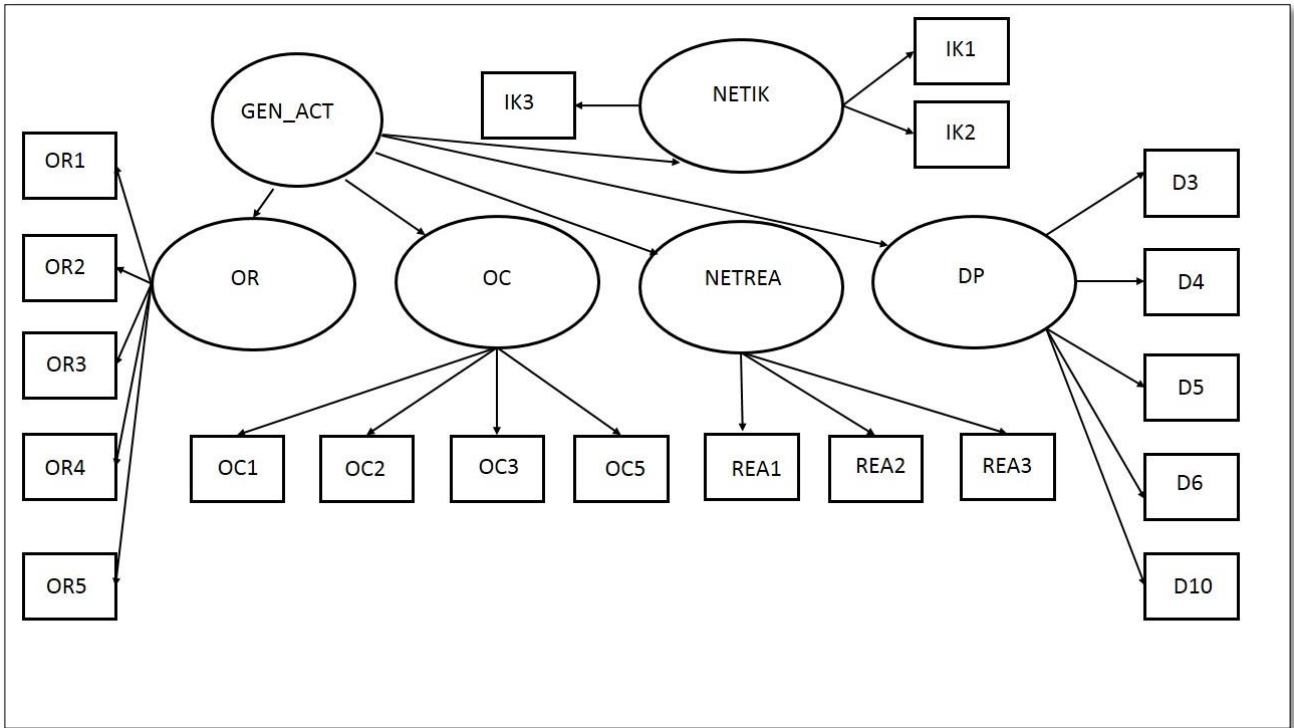
The motivation model has a chi-square statistic of 29.383 with 18 degrees of freedom. The p-value associated with the result is .043. The p-value is significant using a type I error rate of .05. As the chi-square statistic suffers from limitations, the other fit statistics need to be examined as well in order to arrive at a full assessment of the fit of the model (Fornell & Larcker, 1981:44). The normed χ^2 absolute fit statistic ($\chi^2:df$) was 1.6, which is acceptable. The value for RMSEA, an absolute fit index, is 0.038. The value is below the guideline of .08. The true value of RMSEA is between 0.006 - 0.063 using the 90% confidence interval. The upper bound value of RMSEA is within the guideline. The CFI incremental fit index has a value of 0.99, which exceeds the guideline of .95. The overall results suggest that the motivation model provides an adequate fit to the data.

4.6.3 Evaluation of the six-factor action characteristics model

A visual diagram depicting the six-factor measurement model of action characteristics is shown in

Figure 12.

Figure 12: The six-factor action characteristics model



Note: GEN_ACT = General action factor; OR = Opportunity recognition; OC = Opportunity creation; NETREA = Networking: Reaching out; NETIK = Networking: Interpersonal knowledge; DP = Deliberate practice; Exploratory structural equation modelling: reflective model

The standardized coefficients of factor loadings for the six-factor action characteristics model are reported in Table 17. All the coefficients are positive, and the factor loadings were large, ranging in magnitude from 0.50 to 0.92. The six-factors of action characteristics were therefore loaded by their respective target items. They are all statistically significant at $p < 0.001$.

Table 17: Standardized coefficients for the six-factor action characteristics model

Observed variable	Latent construct	β (Est.)	S.E.	C.R. (Est./SE)
ACT19D3	ACT_D	0.55	0.04	13.71
ACT20D4	ACT_D	0.62	0.04	15.75
ACT21D5	ACT_D	0.61	0.04	14.66
ACT22D6	ACT_D	0.52	0.04	11.02

Observed variable	Latent construct	β (Est.)	S.E.	C.R. (Est./SE)
ACT26D10	ACT_D	0.50	0.04	11.19
ACT27OC1	ACT_OC	0.66	0.05	12.84
ACT28OC2	ACT_OC	0.92	0.01	61.90
ACT29OC3	ACT_OC	0.85	0.02	39.75
ACT31OC5	ACT_OC	0.66	0.04	15.43
ACT10OR1	ACT_OR	0.66	0.04	16.43
ACT11OR2	ACT_OR	0.83	0.02	34.70
ACT12OR3	ACT_OR	0.83	0.02	30.55
ACT13OR4	ACT_OR	0.74	0.03	24.12
ACT14OR5	ACT_OR	0.85	0.01	44.63
NET1REA1	NETREA	0.88	0.05	16.72
NET2REA2	NETREA	0.75	0.07	10.54
NET3REA3	NETREA	0.51	0.05	9.87
NET4IK1	NETIK	0.55	0.05	10.06
NET5IK2	NETIK	0.72	0.04	17.14
NET6IK3	NETIK	0.67	0.04	14.70
ACT_D	GEN_ACT	0.70	0.04	15.88
ACT_OC	GEN_ACT	0.67	0.04	15.16
ACT_OR	GEN_ACT	0.80	0.03	24.68
NETIK	GEN_ACT	0.69	0.05	14.11
NETREA	GEN_ACT	0.56	0.06	9.16

Note: $p < 0.001$; β = Standardized coefficients; S.E. = Standard errors; C.R. = Critical ratio. GEN_ACT is a general variable with a computed plausible value as provided by an Bayesian analysis (Marsh et al., 2014:103-104).

A correlation table of the six-factor action characteristics model is shown in Table 18. The inter-factor correlations of the tested measurement model were all positive and ranged from 0.38 to 0.70. It provided further evidence that the factors were indeed interrelated and thus part of a six-factor solution for the data. The six-factor model is therefore sufficient to explain the sample correlations.

Table 18: Correlations for the six-factor action characteristics model

Latent variable	ACT_D	ACT_OC	ACT_OR	NETREA	NETIK	GEN_ACT
ACT_D	1					
ACT_OC	0.47	1				

Latent variable	ACT_D	ACT_OC	ACT_OR	NETREA	NETIK	GEN_ACT
ACT_OR	0.56	0.54	1			
NETREA	0.39	0.38	0.45	1		
NETIK	0.49	0.47	0.56	0.39	1	
GEN_ACT	0.70	0.67	0.80	0.56	0.69	1

The results of the fit statistics for the six-factor action characteristics model are presented in Table 19. The estimation of the six-factor model produced the following values for the indexes of fit, namely $\chi^2(161, n = 429) = 249.684$, CFI = 0.95, RMSEA = 0.036 (90% confidence interval = 0.027 – 0.044).

Table 19: Overall fit statistics for the six-factor action model

Goodness-of-fit Index	Action Model
Absolute Fit measures	
χ^2	249.684
Degrees of freedom	161
$\chi^2 : df$ (Chi-square/Degrees of Freedom)	1.5
Probability	0.000
RMSEA	0.036
Confidence interval of RMSEA	.027 - .044
Incremental Fit measures	
SRMR	.049
CFI	.95
TLI	.94

Note: N = 429; Exploratory structural equation modelling: maximum likelihood method

The action characteristics model has a chi-square statistic of 249.684 with 161 degrees of freedom. The p-value associated with the result is .000. The p-value is significant using a type I error rate of .05. The following fit statistics are therefore also considered. The normed χ^2 absolute fit statistic ($\chi^2:df$) was 1.5, which is good. The value for RMSEA, an absolute fit index, is 0.036. The value is below the guideline of .08. The true value of RMSEA is between 0.027 - 0.044 using the 90% confidence interval. The upper bound value of RMSEA is within the guideline. The CFI incremental fit index has a value of 0.95, which is equal to the

guideline of .95. The overall results suggest that the action characteristics model provides an adequate fit to the data.

4.6.4 Psychometric evaluation of the personal entrepreneur behaviour model

The factor structure for the general personal entrepreneur behaviour model was evaluated with the use of plausible values obtained for a general motivation factor as well as a general action characteristic factor (Marsh *et al.*, 2014:103-104; Muthén & Muthén, 2017:444). These imputed or plausible values for the general motivation and action factors were thus used, together with the personal initiative factor, to estimate the overall personal entrepreneur behaviour factor model. The process of imputation followed for the general factors of motivation and action was that the missing data for these general factors were replaced with substituted estimated values, which were then used in the model analysis as if the imputed values or plausible values were in fact observed values (Monseur & Adams, 2009:6).

The standardized coefficients of the factor loadings onto the personal entrepreneur behaviour construct are reported in Table 20. All the coefficients are positive, and the factor loadings were large, ranging in magnitude from 0.51 to 0.82. The personal entrepreneur behavior construct was therefore loaded by its respective target constructs. They are also all statistically significant at $p < 0.001$.

Table 20: Standardized coefficients for the personal entrepreneur behaviour construct

Latent construct	Latent construct	β (Est.)	S.E.	C.R. (Est./SE)
PI	GEN_ENT	0.75	0.04	16.20
GEN_MOT	GEN_ENT	0.82	0.04	17.31
GEN_ACT	GEN_ENT	0.51	0.04	11.76

Note: $p < 0.001$; PI = personal initiative; GEN_MOT = general motivation factor; GEN_ACT = general action factor; β = Standardized coefficients; S.E. = Standard errors; C.R. = Critical ratio

A correlation table of the personal entrepreneur behavior factor model is shown in Table 21. The inter-factor correlations of the tested measurement model were all positive and ranged from 0.38 to 0.62. It provided further evidence that the factors were indeed interrelated and

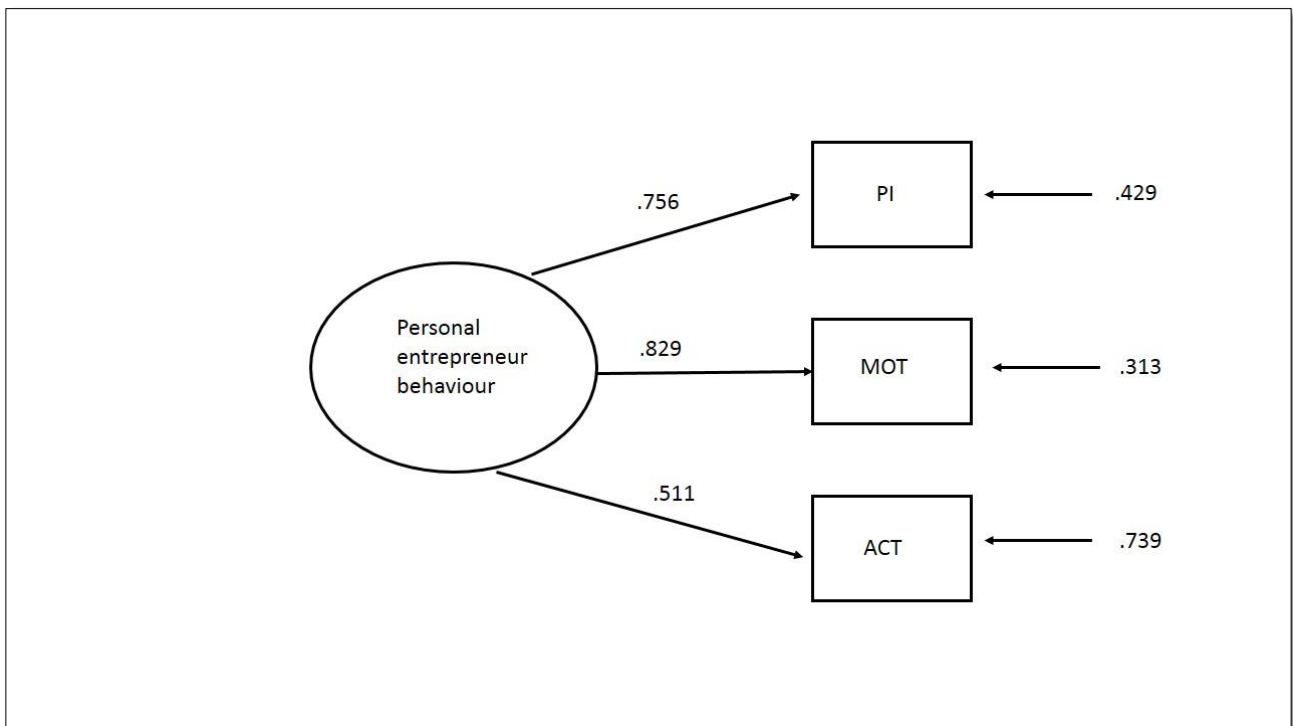
thus part of the personal entrepreneur behavior general factor solution for the data. The personal entrepreneur behavior factor model is therefore sufficient to explain the sample correlations.

Table 21: Correlations for the personal entrepreneur behaviour factor model

Latent variable	PI	GEN-MOT	GEN_ACT
PI	1		
GEN_MOT	0.62	1	
GEN_ACT	0.38	0.42	1

A visual diagram depicting the overall factor model for personal entrepreneur behavior is shown in Figure 13.

Figure 13: Personal entrepreneur behaviour model



Note: PI = Personal initiative; MOT = Motivation; ACT = Action; Exploratory structural equation modelling: reflective model

The general personal entrepreneur behaviour factor model is a saturated model and has a perfect fit as the chi-square and RMSEA goodness-of-fit values attained their minimal possible value of zero (Raykov, Lee, Marcoulides & Chang, 2013:1057).

The correlation coefficients of the personal entrepreneur behaviour model suggest that personal entrepreneur behaviour is captured by a three-factor model. Personal entrepreneur behaviour is consequently reflected in a motivation factor by being strongly positively associated with motivation ($r = .82$), followed by personal initiative ($r = .75$) and then action ($r = .51$). All the coefficients are statistically significant ($p < 0.001$). Thus personal entrepreneur behaviour is strongly associated with motivation and personal initiative as well as having a moderate association with action characteristics (Ferguson, 2009:533).

The coefficient of determination, R-square (R^2), is $R^2 = .57$ for the personal initiative latent variable, $R^2 = .68$ for the motivation variable and $R^2 = .26$ for the acting variable. This means that the personal entrepreneur behaviour construct moderately explain 68,7% of the variance in the motivation variable and 57,1% in the personal initiative variable. It is weak in explaining only 26,1% of the variance in the action variable, as the balance in the variance is contributed to an error in measurement (Wong, 2013:18). The personal entrepreneur behaviour construct however explains 50,6% of all the variance together in the variables of personal initiative, motivation and action. This is a moderately good proportion of the variance, and it implies that none of the factors of personal initiative, motivation and action can be left out, without hurting the explanation power in variance by the overall personal entrepreneur behaviour construct.

4.6.5 Summary of the overall fit assessment

The evaluation of fit of the factor models showed that there was no need to modify or re-specify the interpreted models to produce more plausible models with better acceptable values of fit statistics (Hoyle, 2011:54). The results of the CFA/SEM and ESEM suggest that the measurement models have an adequate fit with the data. This finding provides the necessary reassurance that further inferences about the validity and reliability of the measurement scale can be drawn from the data.

4.7 FURTHER ASSESSMENT OF INTERNAL VALIDITY

The general factors (as discussed above) were further analysed in order to determine the other aspects of internal validity of the personal entrepreneur behaviour model (namely convergent and discriminant validity).

4.7.1 Convergent and Discriminant validity

The assessment of convergent and discriminant validity, as part of internal validity, tested whether the constructs are related or unrelated (Hair *et al.*, 2014:619).

A construct that is distinctive in its own right, is considered to have discriminant validity. If the dimensions of a construct also share some underlying association, it demonstrates convergent validity in that they converge on a common point, namely the latent construct (Hair *et al.*, 2014:618). For an ideal convergent validity to be achieved, a correlation higher than 0.30 (medium effect and higher) should be extracted. The standardized factor loading values of the three-factor personal entrepreneur behaviour model were in the .51-.82 range, and all were also statistically significant, which suggests convergent validity (Kline, 2011:272).

The estimated factor correlations ranged from .38 to .62 for the personal entrepreneur behaviour model. These intercorrelations are not more than .85 that would indicate multicollinearity (namely a strong association between variables that renders them essentially redundant) and thus that the variables are too similar to be considered distinct (Weston & Gore Jr, 2006:734-735). Therefore the moderate factor intercorrelations between the variables of the personal entrepreneur model suggest discriminant validity (Kline, 2011:272).

The tests of average variance extracted (AVE) and construct reliabilities (CR) were also computed by hand to further assess convergent and discriminant validity. The average variance extracted (AVE) can be calculated as

$$AVE = \frac{\sum_{i=1}^n L_i^2}{n},$$

where L_i is the standardized factor loading, and n is the number of items (Hair *et al.*, 2014:619).

The construct reliability (CR) can be calculated as

$$CR = \frac{(\sum_{i=1}^n L_i)^2}{(\sum_{i=1}^n L_i)^2 + (\sum_{i=1}^n e_i)^2}$$

where L_i is the standardized factor loading, n is the number of items and e_i the error variance (Hair *et al.*, 2014:619).

The calculated values of AVE and CR for the latent constructs of the personal entrepreneur behaviour model are shown in Table 22 below.

Table 22: Average variance extracted and construct reliability

Construct	Average variance extracted (AVE)	Construct reliability (CR)
Personal initiative	0.577	0.871
General motivation	0.374	0.638
General action characteristics	0.482	0.821

The AVE estimates display that an adequate amount of variance is captured by these constructs and therefore adequate convergence is present, as the AVEs reached the value of .50 or were just below it (Kuckertz *et al.*, 2017:84). The discriminant validity of the constructs in the personal entrepreneur behaviour model is further supported by the fact that the AVE of each construct from Table 22 is greater than the squared interconstruct correlations associated with that construct (Hair *et al.*, 2014:633).

Taken together, the evidence supports the convergent and discriminant validity of the personal entrepreneur behaviour model. It thus has excellent construct validity

4.8 THREATS TO THE QUALITY OF MEASUREMENT

Steps must also be taken, in addition to the above validation procedures of the measurement scale, to test for sources of potential biases as a potential threat to internal validity. As only self-reported measures were used, errors of judgement or biases by the respondents could occur due to common method biases or participants desire to respond in a socially desirable manner (Furr, 2011:67; Tornau & Frese, 2013:54). As it may inflate the scores of the scale, the following remedies (Cooper & Schindler, 2006:423-425) were employed in the study to control for common method bias and/or social desirability:

- The anonymity of respondents was protected;
- Negatively worded or reverse-coded items were included in the measurement scale to reduce pattern responding and control for source of method bias; and
- Scale items for social desirability were included to detect such a bias. Thus social desirability items from the Eysenck personality questionnaire (Cronbach's alpha = .64) were included to observe if such a bias occurred (Danner *et al.*, 2016:176; Frese *et al.*, 2016b:33; Furr, 2011:69; Podsakoff, MacKenzie, Lee & Podsakoff, 2003:879; Tornau & Frese, 2013:53). Participants indicated on this scale whether they agreed or disagreed with a statement such as: "Have you ever cheated at a game". The answer was in the form of a dichotomous "Yes" or "No" (Podsakoff *et al.*, 2003:884-889). If the participants answered all the items of the scale in the negative then it could be concluded that they wanted to be viewed favourably by others and that such a bias did occur (Francis, Brown & Philipchalk, 1992:449; van de Mortel, 2008:41). The analysis of the data, which should be treated with caution due to the low reliable score for the scale items, showed that 69 per cent of the respondents answered in the negative to the items. This would suggest that social desirability was certainly present to a degree in the findings.

4.9 RELIABILITY ASSESSMENT

Reliability is the degree to which an instrument consistently measures a construct. Cronbach's alpha is the most common measure of internal consistence used by researchers in psychology. A general rule of thumb is that a Cronbach's alpha of .70 and higher is considered to show good internal consistency (Furr, 2011:38). The Cronbach's alphas of the variables are reported in Table 23, and they are all higher than the cut-off value of .70.

Table 23: Means, standards deviations, and reliabilities of variables (N = 429)

Variables	Mean	SD	Cronbach's alpha
Personal initiative	6.05	0.70	.86
Motivation	4.46	1.01	.77
Action	5.12	1.02	.82

It was thus found, in summary, that the measurement scale was accurate in that the constructs were found to be internally consistent. The analysis will now consider, in the next section, the relationships between the constructs.

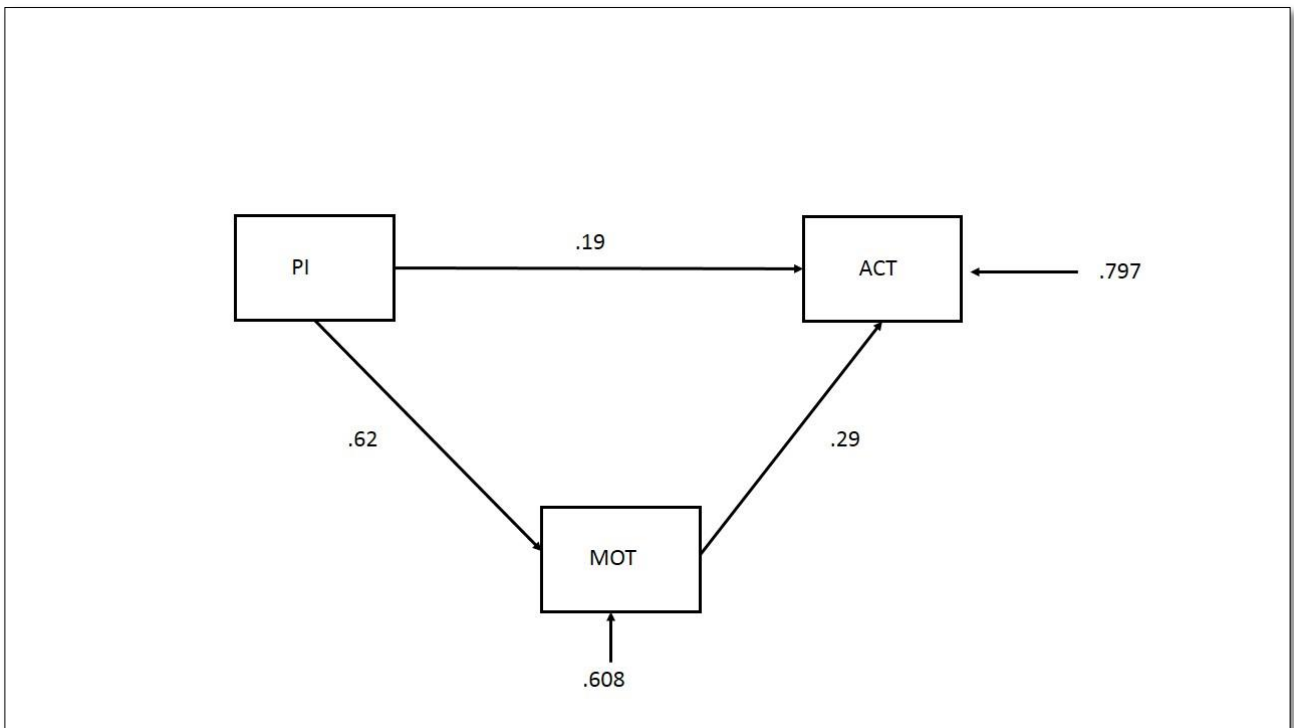
4.10 THE STRUCTURAL RELATIONS MODEL OF PERSONAL ENTREPRENEUR BEHAVIOUR

SEM is employed as a multivariate data analysis method that test theoretically supported models. All relationships involving the various constructs, as suggested by the hypotheses of this research, can simultaneously be tested in a structural model of SEM (Milfont & Duckitt, 2004:291). The structural model shows the relationship between the exogenous (independent) variable of personal initiative and that of the endogenous (dependent) variables of motivation and action (Hair *et al.*, 2014:646). The relationship between the latent variable of personal initiative is, according to the extant theory, reflected in the observed dependent variables of motivation and action. The structural model therefore tests the theory of personal entrepreneur behaviour by examining the effect of the exogenous construct of

personal initiative (independent variable) in the dependence relationship on the endogenous constructs (dependent variables) of motivation and action characteristics.

The path model of personal entrepreneur behaviour is a saturated model and has a perfect fit as the chi-square and RMSEA goodness-of-fit values attained their minimal possible value of zero (Raykov *et al.*, 2013:1057). As shown in Figure 14, all estimated path relationships were significant ($p < 0.001$). It was found that the relationship between personal initiative and action was direct ($\beta = .19$), as well as for personal initiative and motivation ($\beta = .62$) and that motivation had a direct effect on action ($\beta = .29$).

Figure 14: The personal entrepreneur behaviour path model



Note: $p < 0.001$; PI = Personal initiative; MOT = Motivation; ACT = Action

The coefficient of determination, R-square (R^2), is $R^2 = .203$ ($p < .01$) for the action endogenous latent variable. This means that personal initiative is weak in explaining only 20,3% of the variance in action on its own, but stronger, with a $R^2 = .392$ ($p < .01$) for explaining 39,2% of the variance in motivation (Wong, 2013:18).

Additionally, a specific analysis of the mediating effect of motivation in the relationship between personal initiative and action was explored. See

Table 24 for a summary of the effects.

Table 24: Summary of effect of personal initiative on action

Relationship	β	SE
Direct effect		
Personal initiative → General action	0.19	0.06
Personal initiative → General motivation	0.62	0.03
General motivation → General action	0.29	0.05
Indirect (moderation) effect		
General motivation * Personal initiative → General action	0.18	-
Total effect		
Personal initiative → General action	0.38	-

Note: $p < 0.001$

Personal initiative has a weak direct effect on action ($\beta = .19$) that is made stronger through the mediating of motivation, in that the total effect is $\beta = .38$. Thus the weak direct effect of personal initiative on action (slightly lower than the recommended minimum effect size of .20 (Ferguson, 2009:533)) is made stronger through the mediating of motivation in then being a total effect on action. Motivation thus partially mediates the relationship between these two constructs.

4.11 DISCUSSION

A psychological perspective was employed, in this research, so as to conceptualise personal entrepreneur behaviour by drawing on the psychological action theory perspective and literature. A measurement scale of personal entrepreneur behaviour was developed, based on this conceptualisation and then empirically assessed for its reliability and internal validity. Finally the interrelationships were tested among the constructs of personal entrepreneur behaviour.

Hypotheses were formulated for each of the research goals above. The results of the evidence gathered in order to test the study's hypotheses will now be discussed in terms of these stated hypotheses. A summary of the test results of the hypotheses is set out in Table 25.

Table 25: Test results of hypotheses

Hypotheses		Results
H1	Personal entrepreneur behaviour is a multi-dimensional construct consisting of the psychological dimensions of personality, motivation and action characteristics.	Accepted
H2	The psychological dimensions of the personal entrepreneur behaviour construct show internal validity (i.e. construct, convergent and discriminant validity).	Accepted
H3	Personal initiative is not positively correlated with entrepreneurial self-efficacy.	Rejected
H4	Personal initiative is not positively correlated with action characteristics.	Rejected
H5	Entrepreneurial self-efficacy motivation does not mediate the relationship between personal initiative and action characteristics.	Partially accepted

Hypothesis one: A multi-dimensional conceptualisation of personal entrepreneur behaviour

The hypothesis refers to the psychological dimensions of the personal entrepreneur behaviour construct as to comprise of personal initiative (a personality factor), entrepreneurial self-efficacy (a motivation factor) and action characteristics. The hypothesis was accepted that personal entrepreneur behaviour is a multi-dimensional construct of personal initiative, motivation and action characteristics. Thus, higher levels of personal entrepreneur behaviour are associated with higher personal initiative and motivation together with moderate levels of action characteristics. Each of these dimensions makes a unique contribution to the overall construct of personal entrepreneur behaviour, and the construct would as a result be weakened if any one of the dimensions is left out.

The finding of the multivariate configuration structure of the personal entrepreneur behaviour construct is consistent with previous research, namely:

- The framework put forward by Frese and Gielnik (2014:428-430) in which they identified the psychological factors of personal initiative, motivation and action characteristics as being factors that play a role in making some entrepreneurs to be more active than others in pursuing business opportunities; and
- The definition put forward in this study after a review of the literature. Personal entrepreneur behaviour is thus an individual phenomenon and a multidimensional psychological construct reflected in the factors of personality, motivation and action characteristics, that manifest as behaviour on the person-level in the undertaking of the activities in the entrepreneurial process of discovery-creation, evaluation and exploitation of a business opportunity (Bird *et al.*, 2012:890; McAdam & Cunningham, 2019:2; Nandram & Samsom, 2007:3-4; Patterson *et al.*, 2009:28; Walter & Heinrichs, 2015:225).

Personal initiative is a factor of personality in the personal entrepreneur behaviour model. It was specifically conceptualised and measured, in this study, as an individual differences narrow trait of personality and not as a behavioural outcome. Personal initiative is a self-starting concept that fits naturally with entrepreneur behaviour in that such individuals will not wait for others to start an initiative, but will act themselves, if they become aware of a viable business opportunity (Frese *et al.*, 2016b:28). Previous empirical studies have shown that personal initiative relates to the active performance of an entrepreneur or small business

owner as personal initiative plays a role in them being proactive and self-starting in creating something new (Frese & Gielnik, 2014:426; Sackett, Lievens, Van Iddekinge & Kuncel, 2017:261). The results of meta-analytic studies in entrepreneurship are further consistent with the inclusion of this factor in the personal entrepreneur behaviour model as they have found that more specific task-matched personality traits, such as personal initiative, correlated more highly with business success and other outcomes such as job performance (Brandstätter, 2011:225; Frese & Gielnik, 2014:416; Sackett *et al.*, 2017:261). It is now 30 years since Gartner's seminal article on the personality traits of entrepreneurs, in which he implored researchers to move away from personality traits and to focus rather on the doing task of the entrepreneur (Gartner, 1988:11). This research does just that by confirming for this sample of entrepreneurs that a narrow task-focused personality trait of personal initiative is indeed a psychological dimension of personal entrepreneur behaviour.

Entrepreneurial self-efficacy motivation is the second factor identified in the personal entrepreneur behaviour model. Bandura identified self-efficacy as an essential factor in order to ignite and sustain any performance (Bandura & Locke, 2003:97). This research made use of a specific task relevant self-efficacy concept of entrepreneurial self-efficacy whereby the belief of individuals were measured as to whether they can successfully start a business venture (Bandura, 2012:13; McGee & Peterson, 2017:3; Newman *et al.*, 2019:3). It is thus a specific self-efficacy that reflects the entrepreneur's belief in being able to perform on a particular entrepreneurial task (Sackett *et al.*, 2017:262). The entrepreneurial self-efficacy variable function as a state variable, as opposed to the more enduring or stable variable in the form of a personality trait, in that it can fluctuate or change depended upon the person invoking it in a given situation (Geiser *et al.*, 2017:219; Gorgievski & Stephan, 2016:448; Krauss *et al.*, 2005:317). The inclusion of entrepreneurial self-efficacy motivation in the model is further supported by meta-analytic findings that it is highly correlated with the activity of business creation (Frese & Gielnik, 2014:416; McGee & Peterson, 2017:14).

Action characteristics are the third factor identified in the personal entrepreneur behaviour model and it encapsulates the agentic aspect of the model in that entrepreneurs and small business owners are self-organising, self-reflective and self-regulating in their striving to achieve their entrepreneurial goals (Bandura, 2006:164; Frese *et al.*, 2016a:197). Action characteristics are at the core of the cybernetic cycle of action regulation in order to ensure

that the entrepreneurial idea or goal is realised by entrepreneurs (Kruglanski *et al.*, 2010:375). The most important part of active performance is therefore to adopt an implementation mindset of undertaking information searches, doing planning, networking and seeking feedback in order to exploit an identified opportunity (Frese, 2009b:481-482; Frese *et al.*, 2016a:197; Glaub, Frese, Fischer & Hoppe, 2014:357; Heckhausen & Heckhausen, 2010:279). This is further supported by Frese and Gielnik (2014:429) who refer to several empirical studies that found action characteristics to be central to any entrepreneurial endeavour. The observation of Reynolds is also consistent with this in that he identified that the more an entrepreneur is active early in the start-up process, the sooner will the venture reach profitability (Reynolds, 2018:86).

The inclusion of the psychological factor of action characteristics is essential for the factor model of personal entrepreneur behaviour. It is when entrepreneurs and small business owners do not activate these action states that many ventures flounder and they are unable to turn good intentions into viable businesses. It is only through the activation of these action states or characteristics by setting goals, searching for information, planning a way forward, and controlling behaviour, that a business opportunity can be explored, exploited, resources acquired, and a firm emerge from the haze of all these activities (Frese & Gielnik, 2014:429-430; Geiser *et al.*, 2017:219; Randolph-Seng *et al.*, 2015:274-275). This iterative process of activation is described, in a most vivid way, with the following excerpt (Neill *et al.*, 2017:298): *“The viability of newly formed ideas is likely to be uncertain, so the entrepreneur initiates transformative and sensemaking processes to create opportunity. The entrepreneur experiments and changes direction on the basis of new information and through interactions with people in their networks. In this way, entrepreneurs engage in iterative learning and form opportunities that could not have existed without their actions.”*

The three-factor model of personal entrepreneur behaviour represents, in summary, the very notion of being enterprising and explain why some entrepreneurs are more active than others in identifying an opportunity, exploiting it and starting a firm

Hypothesis two: The accuracy of measurement

The accuracy of measurement was considered with this hypothesis.

Hypothesis two was accepted. The accuracy of the measurement scale was thus established, which is a good methodological practice, in that the measurement scale has internal validity (i.e. construct, convergent and discriminant validity) and reliability (Slavec & Drnovsek, 2012:39). The findings of this study can thus be relied upon as being true. The community of entrepreneurship researchers and practitioners have, in the past, not been served very well in this regard. However, this new validated multi-item measurement scale for personal entrepreneur behaviour will be helpful for researchers as well as practitioners in the future (Kuckertz, 2017:56).

This study made use of previously validated measurement scales to operationalize the various constructs of personal entrepreneur behaviour. The scales were therefore only included if validity and reliability evidence were available, with the exception of the deliberate practice sub-scale in the action cluster. The latter scale was reshaped, as a self-report scale, for this study (Frese *et al.*, 1997:149; Kuckertz *et al.*, 2017:85; McGee *et al.*, 2009a:978-979; Neill *et al.*, 2017:302-304; Unger *et al.*, 2009:30-31; Vissa, 2012:503). The construct validity found in the factor structure of the measurement scale for personal entrepreneur behaviour was therefore good and in line with those reported for the existing scales. However, two of the sub-scales still had validity concerns, which will be discussed in more detail below.

Some validity issues were found in the planning and marshalling sub-scales of the entrepreneurial self-efficacy motivation scale, which had AVEs below the threshold of .50 and subsequently had less than adequate convergence validity. The same outcome was found with the networking sub-scale in the action cluster. Caution should therefore be exercised in future with the use of these measurement scales. These scales would have gained in their performance if some of the poor performing items had been removed prior to further modelling. The adverse finding on the convergent validity of the domain-specific measurement of entrepreneurial self-efficacy motivation is however corroborated by a similar finding in other research, and it thus points to a larger problem with the measurement of this construct (Kerr *et al.*, 2018:19). This study therefore relied upon, and made use of a general motivation and action construct for the final factor measurement model of personal entrepreneur behaviour. These general factors had composite scores that were calculated

with the use of a computed plausible value as provided by an Bayesian analysis on the basis of the underlying observed variables (Marsh et al., 2014:103-104).

When the results of the overall fit of the measurement models and those for internal validity and reliability are taken into consideration, it can thus be concluded that the observations or measurement of the research construct of personal entrepreneur behaviour were systematically made and the findings in terms of the results for personal initiative, motivation and action characteristics can be relied upon with a fair degree of confidence. The findings on the accuracy of measurement also support the fact that the new scale for personal entrepreneur behaviour will be a reliable and valid measurement instrument for use by researchers, independent business owners and funders of new firms, and thus the lack of a valid measurement scale of personal entrepreneur behaviour is also addressed with this new scale (Brown & Hanlon, 2016:401; Kerr *et al.*, 2018:330; Kuckertz, 2017:56).

Hypotheses three to four: The relationship between personal initiative, motivation and action characteristics

The hypotheses dealt with the interrelationships between the latent construct of personal initiative and the latent constructs of motivation and action characteristics.

The hypotheses were all rejected as personal initiative was found to have a positive and significant directional relationship with motivation and action characteristics. The magnitude of the effect sizes of personal initiative on motivation and action characteristics is more than average, when compared to those obtained in similar research. (Fodor & Pintea, 2017:1; Kerr *et al.*, 2018:306; Rauch & Frese, 2007:353; Unger *et al.*, 2009:34).

The weak effect that personal initiative, as a personality trait, has on action, and its stronger effect on motivation is explained by the Frese and Gielnik action-characteristic model of entrepreneurship in which they posit that a personality trait will be less predictive of success, and that motivation will be more predictive of success (Frese & Gielnik, 2014:430). The strong effect that personal initiative has on motivation, is consistent with the findings of the effect of a proactive personality on self-efficacy (Parker *et al.*, 2010:840; Parker, Williams & Turner, 2006:646). The moderate effect of motivation on action is supported by previous

findings in this regard (Frese *et al.*, 2016a:199; Neill *et al.*, 2017:299; Newman *et al.*, 2019:410). In addition, it has further been found in previous research that motivation also has a positive effect on action (McGee & Peterson, 2017:3; McGee *et al.*, 2009a:965). The findings of this study will however add to the limited empirical evidence in the literature of the effect of personal initiative on motivation and action (Kerr *et al.*, 2018:19).

Hypothesis five: The mediation relationship between personal initiative and action characteristics

The hypothesis considers the mediation effect of entrepreneurial self-efficacy motivation on the relationship between personal initiative and action characteristics.

The hypothesis was partially accepted. The findings of the direct and indirect effect of personal initiative (a narrow personality trait) on action are in line with the current theoretical thinking in the psychology of entrepreneurship. This approach holds that a narrow personality trait will have a weak effect on action characteristics, but this weak effect will however be amplified by the introduction of a mediation variable in the form of motivation (Frese & Gielnik, 2014:428; Rauch & Frese, 2000:36). The total effect of personal initiative on action characteristics was thus of a moderate positive effect due to the mediation of the motivation variable. This finding indicates therefore that motivation plays a mediating role as the spark between entrepreneurs being self-starting and then controlling their behaviour through the use of action characteristics to ensure that a goal is achieved or implemented.

4.12 CONCLUSION

The chapter presented the results of what occurred when the measurement scale was administered to a specific sample of entrepreneurs and discussed the findings thereof.

The next chapter will consider all the findings together to arrive at a conclusion and make recommendations for future research.

CHAPTER 5 CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The chapter outlines the conclusion, contribution and limitations of this study. Recommendations are then made as to research that could be undertaken in the future.

5.2 CONCLUSION

Entrepreneur behaviour is a key construct in entrepreneurship. A review of the extant literature revealed the lack of a coherent conceptualisation of personal entrepreneur behaviour and of a validated measurement scale for it. The thesis statement of the research was then formulated to state that some entrepreneurs are more active than others in their entrepreneur behaviour of pursuing their goals, in accordance with the psychological action theory perspective, as they have a narrow personality trait of personal initiative, are motivated by entrepreneurial self-efficacy and have activated action characteristics. These psychological dimensions of personal entrepreneur behaviour and the relationships between them constitute a model of such behaviour, which is further on an individual level, measurable.

This research has found that the construct of personal entrepreneur behaviour is captured in a three-factor model. This parsimonious model shows that personal entrepreneur behaviour is reflected in the psychological dimensions of personal initiative, motivation and action characteristics. Personal entrepreneur behaviour was thus found to be strongly positively associated with personal initiative and motivation. It was further moderately positively associated with action characteristics. The psychological dimensions of personal entrepreneur behaviour can, in addition, be validly and reliably measured.

5.3 SUMMARY OF CONTRIBUTIONS

The research advances the study of the psychology of entrepreneurship. Firstly, an agentic theoretical model of personal entrepreneur behaviour is conceptualized, grounded in the psychology of entrepreneurship, where entrepreneurship is defined as a process of generative learning in that entrepreneurs activate a “doing” mindset that influences both self-regulatory processes and goal achievement. This mindset therefore informs entrepreneur enterprising behaviour by bringing to the fore personal initiative (being self-starting), having self-efficacy motivation and displaying action characteristics. These dimensions are then shown in a structural equation model to reflect personal entrepreneur behaviour and that self-efficacy motivation furthermore partially mediates the relationship between personal initiative and action characteristics. Secondly, a new measurement scale for personal entrepreneur behaviour is developed and validated in the emerging economy of South Africa. Thus, a reliable and valid measurement instrument is made available to researchers so that they can study the role that personal entrepreneur behaviour plays in identifying, starting and growing a firm. The development of personal entrepreneur behaviour of solo entrepreneurs and small business owners can also, with the use of this scale, improve the rate of starting, survival and growth of their businesses and thereby reducing unemployment.

The originality of the study and its usefulness for theory and practice will be discussed below in terms of the Corley and Gioia (2011:26) criteria for the evaluation thereof.

5.3.1 Originality of contribution

The criterion for originality requires that a judgement be made whether this study is of an incremental or revelatory nature. When the following arguments are taken into account, then this study can be considered to be a revelatory contribution to the field of entrepreneurship in that:

- Personal entrepreneur behaviour is an important explanatory variable in entrepreneurship research;

- This study found that personal entrepreneur behaviour is captured by a three-factor model of personal initiative, motivation and action characteristics; and the three factors are furthermore agentic in nature;
- The call in entrepreneurship research to undertake more research on the actions of entrepreneurs is answered (Shepherd, 2015:489); and
- The research was conducted in a South African context of a developing economy.

5.3.2 Scientific usefulness

The contribution of this research is in the conceptualisation of personal entrepreneur behaviour and validation of a personal entrepreneur behaviour measure that are based on personal initiative, motivation and action characteristics required to identify and exploit a valuable business opportunity. This has implications for the advancement of entrepreneur behaviour theory with the availability now of a three-factor model of personal entrepreneur behaviour and a measurement scale to undertake rigorous empirical studies. This theoretical contribution advances our understanding of the entrepreneur behaviour phenomenon through the lens of action theory to explain how some entrepreneurs are more active than others in pursuing viable business opportunities. The offering of a valid measurement scale of personal entrepreneur behaviour for the South African context will further contribute towards both theory advancement and generating new research to assist in the development of entrepreneurship science. The use of a valid measurement scale for the advancement of empirical research cannot be overemphasised, as it improves the methodology being used in entrepreneurship research. It will thus contribute to the gathering of robust empirical evidence in entrepreneurship by being a validated measurement basis of the entrepreneur. The measurement scale will thus be able to be used with confidence in empirical research to discharge the burden of proof in the relationships between variables or in the prediction thereof. This study therefore contributes to the body of knowledge in entrepreneur studies by establishing a model of personal entrepreneur behaviour and validating a personal entrepreneur behaviour measurement scale.

5.3.3 Practical usefulness

For **entrepreneurship education** purposes, the use of a personal entrepreneur behaviour measurement scale may help trainers to determine the suitability of trainees to undergo

entrepreneurial training. A particular training intervention can then be tailored or customised to meet the specific individual needs of nascent entrepreneurs. The time spent on training could therefore also be shortened. All of the dimensions of personal entrepreneur behaviour are also relatively malleable and thus learn-able, and should therefore be incorporated in the training material of entrepreneurs.

For **practitioners** in the field, nascent entrepreneurs can be assessed with the personal entrepreneur behaviour scale, and if they are a good fit, they can be assisted and encouraged to become an entrepreneur in their own right. The supply of nascent entrepreneurs will be increased in doing so and it will foster entrepreneurship. As starting a new business is complex and expensive, the use of the personal entrepreneur behaviour scale will also make it possible for practitioners to assess upfront whether potential entrepreneurs will be successful, prior to embarking on a costly start-up venture, and in so doing, hopefully avoiding potential failures. It validates therefore a person's readiness for undertaking an entrepreneurial venture. Assessment results and profile analyses can also be useful in putting an entrepreneurial team together of people with complementarity entrepreneurial styles or for individuals to profile themselves and therefore be able to discover, reflect and gain insight into their own personal entrepreneur behaviour or assess their readiness to embark on a costly start-up venture.

For **funders**, the results of an entrepreneur behaviour assessment or screening can increase the likelihood to fund entrepreneurs, in that the entrepreneurs are able to signal to them, with their validated assessment results, that they possess the necessary resources in the form of human capital to be successful with a business venture. The funders will thus have a lower risk of doing business with such a person, who so fits the entrepreneurial role. In addition, the funders will be able to rely less on collateral to decide whether the entrepreneur qualify for their financial backing.

5.4 LIMITATIONS

The scope of this study is limited by the nature of the research design, sample and validation of the measurement scale.

As a cross-sectional research design was employed in this study, no inferences can be drawn about the causal directionality of the relationships. The reliance on a non-probability convenience sample also limited the generalization of the research results as no further inferences can be made except for that which relates to this specific sample of the research. The research procedure required also that the questionnaires be distributed online and accessed via the internet. The instructions of how to complete the questions and that the respondent should provide only their first reaction to a question could have been lost in the process. This is a likely limitation if the online procedure is compared to the controlled environment of say a lecture hall with a paper-and-pencil test procedure.

Self-report questionnaires were used in this research, as they are inexpensive and effective in capturing an individual's propensity for entrepreneur behaviour. However, as South Africa are a multi-lingual population, the comprehension of the respondents of all the measurement items which were in English only, could have suffered and possibly influenced some of the responses on the measurement items due to how they were interpreted. This is due to the high demands on respondents to understand the question, recall relevant behaviour, make an inference, and then map their answer onto the response format (Schwarz & Oyserman, 2001:129). A further limitation in the use of only self-reported measures is that common method bias by the respondents and a desire to respond in a socially desirable manner could have inflated construct validity findings.

Additional analytics were also not used in the early stages of the research in order to identify low performing measurement items. The Rasch modelling approach could have been used to assist in such identification. This technique from the theory of item response could also have assisted in identifying method bias among the measurement items. If low performing measurement items and method bias were identified early-on and the items omitted, then the validity of the measurement scale would have been further enhanced. In addition, a formal test of normality of the data was not conducted to satisfy the assumption of multivariate normality in SEM.

5.5 RECOMMENDATIONS FOR FURTHER RESEARCH

Recommendations are made below for further research after taking into account the limitations of the present study, scientific and practice implications of the findings as well as the lack in the extant literature of a validated personal entrepreneur behaviour scale. It is therefore recommended:

- That a cross-sectional research design be replaced with a longitudinal research design due to the limitations of a cross-sectional design and so that inferences can then be drawn about the causal directionality of the relationships between variables. Although a combined purposive and convenience non-probability sample was drawn that limits the generalization of the research results, no recommendation will be made to change the sampling method in further research. The reason for such a stance can be found in the nature of the SMEs, where most firms do not survive for more than three years, and as a result, it would be difficult to have a permanent and stable sampling frame.
- That the validated research measurement scale for personal entrepreneur behaviour be utilised in further research to investigate its criterion-related validity in the relationship between entrepreneur behaviour as an independent variable and firm performance as a dependent variable. Such research will then also serve to establish the predictive validity of the personal entrepreneur behaviour scale as part of the external validity phase of scale development. Research will also be advanced that examines the antecedents and consequences of personal entrepreneur behaviour.
- That if only self-report measures are used in further research, specific remedies should be employed to control for common method bias. Multiple methods should rather be used to overcome this problem (Bagozzi & Yi, 2012:18).
- That the personal entrepreneur behaviour scale be used at the dimensional level as opposed to using a total or composite measure of personal entrepreneur behaviour. This is so as the total or composite measure of personal entrepreneur behaviour would fail to provide the necessary insight into what specific area or domain of personal entrepreneur behaviour is the most influential in contributing to the outcomes of entrepreneurship. As researchers will now be able to draw upon a validated personal entrepreneur scale for the South African context, they will be able

to improve the scientific understanding of goal-driven personal entrepreneur behaviour. Working at the dimensional level rather than the latent entrepreneur behaviour level (i.e. calculating entrepreneur behaviour as being the sum of the dimension scores) does sacrifice parsimony. It is however a compromise that researchers do not need to make, as the dimension level measures allow one to tap into the richness of the information among the dimensions. The research results from such a dimensional investigation will be more granular and that may assist researchers in their understanding of the full complexity of entrepreneur behaviour among aspirant or seasoned entrepreneurs.

- That the scale be replicated in different situations and with different subjects to determine measurement invariance, which tests whether the psychometric findings of a study are still valid when the scale is applied to other participants and circumstances.
- That the number of measurement items be reduced, at an early stage of the research project, with the use of the Rasch-based scale analysis modelling approach. This will eliminate at an early stage low performing measurement items, guard against method bias, and improve validity of the measurement scale in the long run.

5.6 AFTERWORD

More work remains. The development of a model and valid measurement scale for personal entrepreneur behaviour is but only the first step in a journey to fully understand this complex human behaviour and thus being able to develop the knowledge, skills and abilities of small business owners and entrepreneurs. The reader would hopefully have gained, in the meantime, new insights or seen new mountains to climb.

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ANNEXURE

PERSONAL ENTREPRENEUR BEHAVIOUR SCALE

Personal initiative

Whenever something goes wrong, I search for a solution immediately (ACT2_pi2).

Whenever there is a chance to get actively involved, I take it (ACT3_pi3).

I take initiative immediately even when others don't (ACT4_pi4).

I use opportunities quickly in order to attain my goals (ACT5_pi5).

I am particularly good at realising ideas (ACT7_pi7).

Entrepreneur self-efficacy: Searching

How much confidence do you have in your ability to brainstorm (come up with) a new idea for a product or service? (ESE1_sea1)

How much confidence do you have in your ability to identify the need for a new product or service? (ESE2_sea2)

How much confidence do you have in your ability to design a product or service that will satisfy customer needs and wants? (ESE3_sea3)

Entrepreneur self-efficacy: Planning

How much confidence do you have in your ability to estimate customer demand for a new product or service? (ESE4_pl1)

How much confidence do you have in your ability to determine a competitive price for a new product or service? (ESE5_pl2)

How much confidence do you have in your ability to estimate the amount of start-up funds and working capital necessary to start my business? (ESE6_pl3)

How much confidence do you have in your ability to design an effective marketing/advertising campaign for a new product or service? (ESE7_pl4)

PERSONAL ENTREPRENEUR BEHAVIOUR SCALE

Entrepreneur self-efficacy: Marshalling

How much confidence do you have in your ability to get others to identify with and believe in your vision and plans for a new business? (ESE8_mar1)

How much confidence do you have in your ability to network – i.e. contact and exchange information with others? (ESE9_mar2)

How much confidence do you have in your ability to clearly and concisely explain verbally or in writing your business idea in everyday terms? (ESE10_mar3)

Networking: Reaching out

When I attend industry forums & other business related networking events, I build connections with people I did not know before. (NET1_rea1)

When I attend social events (e.g. rotary club, hobby associations etc.), I build connections with people I did not know before. (NET2_rea2)

I consciously set aside time for meeting new people. (NET3_rea3)

Networking: Interpersonal knowledge

When I meet a new person, I find out if he or she is connected to people I already know. (NET4_ik1)

I make an effort to find out as much as possible about a new person that I meet. (NET5_ik2)

When meeting a new person, I find out how he or she will benefit from our (potential) relationship. (NET6_ik3)

Opportunity recognition

I am always alert to business opportunities (ACT10_or1)

I research potential markets to identify business opportunities. (ACT11_or2)

I search systematically for business opportunities (ACT12_or3)

I look for information about new ideas on products or services. (ACT13_or4)

I regularly scan the environment for business opportunities. (ACT14_or5)

PERSONAL ENTREPRENEUR BEHAVIOUR SCALE

Opportunity creation

I create the future that I seek. (ACT27_oc1)

Opportunities emerge as the results of my actions. (ACT28_oc2)

Opportunities are the outcome of my efforts and actions. (ACT29_oc3)

Opportunities are created by my actions and reactions. (ACT31_oc5)

Deliberate practice

In order to improve my skills, I ask advice from other owners or leaders. (ACT19_dp3)

In order to improve my skills, I approach clients to get feedback. (ACT20_dp4)

In order to improve my skills, I brainstorm with employees to see where improvements are necessary.
(ACT21_dp5)

In order to improve my skills, I talk to friends and family members about business to pick up new ideas.
(ACT22_dp6)

In order to improve my skills, I check my business data in order to plan for the future. (ACT26_dp10)