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# Entrepreneurs' Optimism, Cognitive Style and Persistence

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## Abstract

**Purpose:** The present study examines the moderating effects of cognitive style on the relationship between entrepreneurs' optimism and persistence

**Design/methodology/approach:** This theoretically derived research model is empirically validated using survey data from 198 small and medium-sized enterprises in Ghana.

**Findings:** The study's empirical findings are that the relationship between entrepreneurs' optimism and entrepreneurial persistence is enhanced at higher levels of cognitive planning and creating styles. Somewhat interestingly, cognitive knowing style negatively moderates the relationship between optimism and entrepreneurial persistence.

**Research limitations/implications:** The cross-sectional design of the study does not permit causal inferences to be made regarding the variables examined. Future studies may use longitudinal design to examine the causal links of the variables.

**Practical implications:** The results of this paper can assist entrepreneurs and policy-makers in understanding the dynamics and processes involved in entrepreneurial decision-making. The understanding of this issue can promote the development and maintenance of entrepreneurial ventures.

**Originality/value:** The paper has a strong theoretical value as it relies on cognitive explanations of human behaviour, and seeks to advance the theoretical field by demonstrating the value of cognitive style within the domain of entrepreneurship.

**Keywords:** Entrepreneurial persistence, entrepreneurs' optimism, cognitive style, developing economy, Ghana

**Paper type-**Research paper

## **Introduction**

Persistence is a crucial element in entrepreneurship because the process of founding and growing a venture is full of uncertainties (Burke and Miller, 1999), and entrepreneurs encounter several constraints along the way (Cardon and Kirk, 2015; Holland and Shepherd, 2013; Markman, et al., 2005; Shane, et al., 2003; Wu, et al., 2007). Prior research suggests that these obstacles create self-doubt and cognitive constraints, or a difficulty in perceiving, processing and selecting the information needed to make the decisions that facilitates the achievement of an entrepreneur's goals (e.g., Busenitz, 1999; Gatewood, et al., 2002; Gimeno, et al., 1997; Haines and Townsend, 2013). As such persistence is particularly important in entrepreneurship (Shane et al., 2003), and entrepreneurs who are tenacious in pursuit of their goals have a greater chance of success (Timmons and Spinelli, 2009). Therefore, understanding the factors that drive tenacious goal pursuit is critical.

Recent scholarly work has made substantial effort in highlighting the factors that encourage entrepreneurs to persist (e.g., Cardon and Kirk, 2015; DeTienne et al., 2008; Gimeno et al., 1997; Holland and Shepherd, 2013) and perhaps one of the most researched is optimism (e.g., Brown and Marshall, 2001; Shane and Venkataraman, 2000). This study focuses on dispositional optimism, defined as generalized expectancies for experiencing positive outcomes (Scheier et al., 2001).

Individuals' optimism is increasingly becoming incorporated into mainstream entrepreneurship studies (e.g., Alvarez and Parker, 2009; Busenitz and Barney, 1997; Cassar, 2010; Cassar and Craig, 2009; Crane and Crane, 2007; Cooper, Woo and Dunkelberg, 1988; Hmieleski and Baron, 2009; Simon et al., 2000; Storey, 2011; Ucbasaran et al., 2010). For example, Storey (2011) combined optimism and chance (OC theory) to explain why high growth firms either stop growing or decline. According to Storey (2011) "key empirical regularities among new and small firms are explained more insightfully by elevating the role of chance and combining it with the optimism of the business owner" (p.317). Moreover, existing scholarly enquiry suggests that entrepreneurs are high in optimism (e.g., De Meza and Southey, 1996; Hmieleski and Baron, 2009). A major rationale is that individuals starting new businesses have little evidence on which to base beliefs about likely success, making those with unrealistic expectations to disproportionately get attracted into entrepreneurship (De Meza and Southey, 1996). This is consistent with scholarly thought indicating that highly optimistic individuals are confident of achieving successful outcomes (e.g., Scheier, et al., 2001; Hmieleski and Baron, 2009). As such optimism is an important part of entrepreneurial process (e.g., Busenitz and Barney, 1997; Cassar, 2010; Cooper, et al., 1988; Crane and Crane, 2007; Ucbasaran et al., 2010). Moreover, earlier research suggests that optimism drives persistence (Brown and Marshall, 2001). However, it remains unclear the cognitive framework under which optimism is more or less pronounced in the decision to persist. This study, therefore, introduces cognitive style as a moderator of the relationship between optimism and the tendency to persist.

One may ask why cognitive style must be considered as an important moderating variable of this relationship. Within entrepreneurial cognition research, the cognitive style perspective has been identified as promising in explaining entrepreneurial behavior (Carland et al., 2002; Mitchell et al., 2000). For example, scholars have used cognitive styles to distinguish between entrepreneurs and non-entrepreneurs (e.g., Allinson et al., 2000; Buttner and Gyskiewicz,

1993) and other researchers have applied cognitive styles to understand why some people discover and exploit particular entrepreneurial opportunities, while others do not (Dimov, 2007; Hmieleski and Corbett, 2006). Therefore, to understand the conditions in which optimism can affect judgment and decision to persist (Åstebro, et al., 2007; Aspinwall et al., 2005), researchers need to consider a variable that has a direct influence on an individual's approach towards information and how he or she makes decisions (Dutta and Thornhill, 2008). Accordingly, there is a pressing need to clearly delineate the boundary conditions of optimism; that is, to identify when it is least and most effective personality characteristic in individuals decision to persist (e.g., Fraser and Greene, 2006; Lowe and Ziedonis, 2006) and to determine the extent to which its effectiveness is conditioned by **the** cognitive style (Riding and Rayner, 1998).

Additionally, empirical tests of the potential persistence outcomes of optimism are heavily biased to data originating in developed nation settings, meaning that the benefits or costs associated with optimism in less developed country settings are unknown. A major question arising from this gap is: **how does *entrepreneurs'* cognitive style influence the relationship between optimism and persistence in a developing economy?** To answer this question, this study uses data collected from 198 SMEs in Ghana to introduce cognitive style as moderating variable on the optimism-persistence relationship. By answering this critical question, and by highlighting the importance of how entrepreneurs can exploit their optimism and cognitive style to boost persistence, this study offers two major contributions.

First, this study investigates a critical set of contingencies that might influence the contribution of entrepreneurs' optimism to persist, namely, the way people perceive stimuli and how they use this information to guide their behaviour (i.e., thinking, feeling, actions) or cognitive styles. This study focuses on such cognitive style in line with extant research that advances the notion

of the missing link between personality and cognition (Grigorenko and Sternberg, 1995; Riding and Rayner, 1998). This study considers the roles of cognitive knowing, planning and creating styles (Cools and Van den Broeck, 2007), and particularly focuses on the impact of these three cognitive styles on leveraging entrepreneurs' optimism to persist. Prior scholarly studies suggest that entrepreneurs have the tendency to endure in the face of adversity (Markman, Baron, and Balkin, 2005) and that optimism drives individuals to persist in order to discover and exploit opportunities successfully (Shane and Venkataraman, 2000). Yet, scholarly effort in understanding the conditions under which optimism is more or less pronounced in entrepreneurs' decision to persist is limited. Therefore, there is much to gain from investigating when optimistic entrepreneurs are likely to persist in the face of obstacles and aversive experiences (Bandura, 1997).

Second, despite broad endorsement of persistence in entrepreneurship research (e.g., Cardon and Kirk, 2013; Shane, et al, 2003; Markman, et al., 2005, Timmons and Spinelli, 2009; Wu, et al., 2007), it remains an unanswered question regarding the drivers of persistence in developing economies. Most economies in sub-Saharan Africa have been noted with several constraints to entrepreneurship (Robson and Obeng, 2008; World Bank, 2014). In these economies, persistence may be an important behavior for achieving success in goal pursuit. Yet research on this issue with a sub-Saharan African economy as a study setting is scant.

According to Welter (2011) context is crucial in investigating when, how, and why entrepreneurship happens and who becomes involved. Most studies have focused on the advanced countries (Baum and Locke, 2004; Shane, et al, 2003; Markman, et al., 2005). What is notable is that entrepreneurs in developed countries may possess conflicting goal pursuit tendencies vis-à-vis the exhibition of tenacious behaviors (Baum and Locke, 2004) which raises important questions as to the generalizability of entrepreneurship theories in developing country settings. Therefore, this study contributes to the entrepreneurial optimism and

persistence literature by providing fresh evidence regarding how optimism relates to persistence in a developing economy (Ghana).

In the section that follows next, the theoretical background and research hypotheses, as displayed in Fig.1, are presented. This is then followed by the study's analytical approach relating to measures and an assessment of the hypotheses. The results and discussion of the study's contribution are then presented. The study concludes with a discussion of its contributions to the entrepreneurship and small business literature, the practical implications and remarks relating to future research trajectory.

### **Theory and Hypotheses**

Existing scholarly studies have used meta-analyses of studies about personality traits and entrepreneurship to show the need to examine more proximal moderators rather than direct effects of individual characteristics on entrepreneurial outcomes (e.g., Zhao and Seibert (2006; Rauch and Frese, 2007). Understanding the relationship between the entrepreneur and more proximal outcomes such as cognition and decision making provides a richer and more complete picture of the entrepreneurial process (Shane et al., 2003).

This study follows previous scholarly studies that view persistence as a complex decision that is a function of both the person and the environment (e.g., DeTienne, et al., 2008; Gimeno, et al., 1997; Holland and Shepherd, 2013). Thus, entrepreneurial persistence occurs when the entrepreneur chooses to continue with an entrepreneurial opportunity regardless of counterinfluences or enticing alternatives (Holland and Shepherd, 2013). Persistence involves the continuation of effortful action despite failures, impediments, or threats, either real or

imagined (Gimeno, et al., 1997). Persistence thus generally implies not only multiple attempts oriented toward a particular course of action but repeated efforts in the face of adversity, challenge, or difficulties (Markman et al., 2005; Wu et al., 2007). As such, recent scholarly studies have conceived of entrepreneurial persistence as entailing two distinct components: (1) the decision to continue to pursue a previously selected entrepreneurial opportunity, and (2) doing so in the face of opposing motivational forces (Holland and Shepherd, 2013).

Starting and growing a new venture requires huge investment of time, effort and money, and persistence throughout this process is a critical aspect of entrepreneurship. However, entrepreneurs who escalate their commitment to a failing course of action persist in the same strategies with an increase in invested resources and end up throwing good money after bad (DeTienne et al., 2008; Garland, 1990; Staw, 1981). Persistence can result in either positive or negative consequences. The outcomes of choosing to persist are extremely important and have been the subject of significant streams of research. For example, resilience and escalation of commitment both require persistent behavior under adverse circumstances. Entrepreneurs who are resilient adapt to the feedback from the environment and emerge from the adversity strengthened and more resourceful (Holland and Shepherd, 2013; Sutcliffe and Vogus, 2003; Youssef and Luthans, 2007). Conversely, entrepreneurs who escalate their commitment to a failing course of action persist in the same strategies with an increase in invested resources and end up investing in wasteful projects (DeTienne et al., 2008; Garland, 1990). Persistence may ultimately result in the achievement and success sought by the entrepreneur, but it may also be costly to the individual and to the economy if the result is the allocation of resources to an unfruitful opportunity when the resources could have been more efficiently applied elsewhere (McGrath, 1999). Therefore, **it is necessary to better understand “how and why entrepreneurs persist”**. A major concern of entrepreneurship scholars is to understand and predict how and why entrepreneurs persist despite difficult and numerous obstacles occur along the way



(Markman et al., 2005; Wu et al., 2007). This study specifically focuses on its antecedents by examining the role of cognitive style dimensions in boosting the effect of optimism on persistence. Following existing scholarly development (e.g., Hayes and Allinson, 1998; Cools, Van den Broeck and Bouckennooghe, 2009), this study defined a cognitive style as the way people perceive stimuli and how they use this information to guide their behaviour (i.e., thinking, feeling, actions).

Scholars have extensively studied cognitive styles in organizational behaviour and management literature over the last decades (Grigorenko and Sternberg, 1995; Hodgkinson and Sadler-Smith, 2003; Riding and Rayner, 1998). Researchers have identified a large variety of cognitive style dimensions (Kozhevnikov, 2007). However, results of empirical research on the relationship between different cognitive style measures suggested that cognitive style is a complex variable with multiple dimensions (e.g., Beyler and Schmeck, 1992; Leonard, Scholl, and Kowalski, 1999).

With specific regard to entrepreneurship, cognitive style has been widely applied to understand emergent nature of entrepreneurship (e.g., Baron, 2004; Corbett, 2007; Dutta and Thornhill, 2008; Keh et al., 2002; Knockaert et al., 2015; Krueger et al., 2000; Mitchell et al., 2000). The cognitive style perspective has been suggested as crucial in explaining entrepreneurial behaviors (Allinson et al., 2000; Carland et al., 2002; Mitchell et al., 2000).

**Thus**, cognitive styles are preferences or habitual strategies determining how individuals perceive, remember, think, solve problems, and relate to others (Witkin et al., 1977).

For example, Cools and Van den Broeck (2007) validated a three-dimensional cognitive style instrument-the Cognitive Style Indicator (CoSI). Cools and Van den Broeck (2007) argued that it was important to differentiate between three different cognitive styles (a knowing style, a planning style, a creating style) without further situating them conceptually on a single

dimension. Individuals with a knowing style are characterized by a preference for facts and details while a planning style reflects a preference for structure and order (Cools and Van den Broeck, 2007). With regards to individuals with a creating style, they tend to see problems as opportunities and challenges. This study used this multidimensional cognitive style model to examine the effects of these cognitive dimensions on the optimism-persistence relationship. Following **this** view, this study explores the potentially moderating effects of cognitive style dimensions with respect to dispositional optimism.

### **INSERT FIGURE 1 AROUND HERE**

Figure 1 illustrates the study's model of the decision to persist. The persistence decision is influenced by the entrepreneurs' optimism. That is, the present study argues that entrepreneurs' optimism will be positively related to entrepreneurs' decision to persist. Additionally, the present study contends that the level of cognitive style (creating, planning and knowing style) boosts the effect of entrepreneurs' optimism on persistence. The next section explains and develops hypotheses for each of these relationships.

#### ***Entrepreneurs' optimism and persistence***

Entrepreneurial persistence generally reflects multiple attempts oriented toward a particular course of action and repeated efforts in the face of adversity, challenge, or difficulties (Markman et al., 2005; Wu et al., 2007). Entrepreneurship activities such as discovering an idea, financing the business, purchasing the assets required, establishing an office, recruiting personnel, promoting the company and products, and more, require a substantial amount of time to get a new business off the ground (Carter, et al., 1996).

A vast stream of research has argued within the context of entrepreneurship that optimists, as opposed to pessimists, often enjoy experiencing various forms of adversity, challenge, or difficulties (Markman et al., 2005; Wu et al., 2007). While pessimists tend to easily give up in

the face of adversity, optimists typically rise to the challenge presented to them, persisting and remaining engaged in the pursuit of their goals (Carver and Scheier, 2003). In a less developed market context, entrepreneurs experience numerous constraints (Robson and Obeng, 2008; Yasuda, 2005). Previous scholarly endeavour suggests that optimism stimulates persistence in goal pursuit in challenging environments (e.g., Brown and Marshall, 2001; McColl-Kennedy and Anderson, 2005; Shane and Venkataraman, 2000). Based on the forgoing argument, this paper proposes that:

**H<sub>1</sub>:** *Entrepreneurs'* optimism will be positively related to persistence.

### **Moderating effects cognitive style dimensions**

Hypothesis 1 anticipates that entrepreneurs' optimism will enhance entrepreneurs' persistence (Brown and Marshall, 2001). This study further argued that pessimists tend to easily give up in the face of constraints, while optimists persist in the pursuit of their goals (Carver and Scheier, 2003). Indeed, entrepreneurship research has increasingly been concerned with developing a deeper understanding about how entrepreneurs think and make decisions (Mitchell et al., 2004; Sabin, Matthews, and Grace, 2007). The organizational psychology literature argues that cognitive style is a determinant of individual behavior at work (Allinson, et al., 2000; Armstrong, et al., 2012). As such, several mechanisms have been proposed to explain cognitive style influences on entrepreneurial behavior, including entrepreneurial drive (e.g., Armstrong and Hird, 2009), risk preferences (Barbosa et al., 2007), decision making (e.g., Dutta and Thornhill, 2008) and entrepreneurial intentions (e.g., Knockaert et al., 2015). A major concern of cognitive psychology scholars is to understand and predict how people think and learn. Knowledge of a person's cognitive style is argued to be important because cognitive styles affect the way people learn, with some learning approaches being easier for some styles (Riding

and Mathias, 1991). The literature shows that different of types of cognitive style may provide a better understanding of individual differences in perceiving and processing information (Cools and Van den Broeck, 2007). Therefore, resting on the debate about the multi-dimensionality of cognitive style models, Cools and Van den Broeck (2007) refined an analytic intuitive cognitive style dimension; arguing a three-dimensional cognitive style model and instrument-the Cognitive Style Indicator (CoSI) is warranted and crucial to differentiate between three different cognitive styles (a knowing style, a planning style, a creating style).

Cognitive knowing style refers to individuals who prefer a logical, rational, and impersonal way of information processing. Research suggests that individuals with a cognitive knowing style look for facts and data and are inclined to know exactly the way things are and tend to retain many facts and details (Cools and Van den Broeck, 2007). These individuals tend to like sophisticated problems and attempt to find rationale and logical solutions to such problems. Moreover, individuals with a knowing style tend to spend time on a problem by analysing the problem thoroughly. Inadequate information or data on problems creates doubt in their minds and they prefer to postpone decision making until further information is collected. As such they do not like tasks that are undefined and ambiguous (Knockaert, et al., 2015). This study argues that individuals with a high cognitive knowing style are likely to show high optimism by looking for facts and data and are inclined to know exactly the way things are and tend to retain many facts and details (Cools and Van den Broeck, 2007). The reason is that the process of entrepreneurship is characterised by challenges, unforeseeable risks and high level of uncertainty (Knockaert, et al., 2015; Nelson and Winter, 1982). Overall, this study concludes that **the need for** entrepreneurs to look for facts and figures in decision making process will facilitate the successful conversion of optimism into improved persistence. Therefore, we state that:

**H<sub>2</sub>:** *Entrepreneurs' cognitive knowing style will moderate the relation between optimism and persistence. Persistence will increase with entrepreneurs' optimism but at a faster rate for those with higher cognitive knowing style.*

Cognitive planning style denotes the individual's ability to plan, organize and control (Cools and Van den Broeck, 2007; Cools et al., 2009). They favour an objective, structured, conventional, and efficient problem-solving approach. Planning to organize and control tends to leverage entrepreneurs goal pursuit (Hmieleski and Baron, 2009; Shank and Abelson, 1977). Consistent with the cognitive theory perspective (Baron, 2004; Corbett, 2007; Wofford and Goodwin, 1990), this study argues that, the more pronounced the entrepreneurs' cognitive planning style, the more likely it is to leverage their optimism into enhanced persistent effort because planning activities they engage in make them more optimistic about feasibility of an outcome (Cools and Van den Broeck, 2007). Overall, expect that entrepreneurs' cognitive planning ability will enhance the successful translation of optimism into improved persistence outcomes. Therefore, the present study argues that:

**H<sub>3</sub>:** *Entrepreneurs' cognitive planning style will moderate the relation between optimism and persistence. Persistence will increase with entrepreneurs' optimism but at a faster rate for those with higher cognitive planning style.*

Cognitive creating style reflects individual's preference for a creative, unconventional, and flexible way of decision making (Cools et al., 2009). Entrepreneurial creativity reflects the generation and implementation of novel, appropriate ideas exhibited both in established organizations and in start-up firms (Amabile, 1997). Individuals with cognitive creating style tend to see problems as opportunities and challenges, possess high risk preferences, and they tend to have likeness for uncertainty and freedom (Barbosa et al., 2007). Cognitive creating style can support these activities as individuals who are more intuitive tend to like higher risks

and see problems as opportunities and challenges (Armstrong and Hird, 2009; Kickul et al., 2009; Knockaert, et al., 2015). The ability to engage in such activities in inherently uncertain environments is a major condition for converting any degree of optimism into improved persistent outcomes. This study concludes that entrepreneurs' ability to see problems as opportunities and challenges and the proclivity for high risk preferences should amplify optimism into enhanced persistence outcomes. This study summarizes this argument as follows:

**H<sub>4</sub>:** *Entrepreneurs' cognitive creating style will moderate the relation between optimism and persistence. Persistence will increase with entrepreneurs' optimism but at a faster rate for those with higher cognitive creating style.*

## **Method**

### **Study setting**

The study's hypotheses were tested with a sample of entrepreneurs from SMEs operating in Ghana, a developing sub-Saharan African country. A recent conceptual development suggests that context is important for understanding when, how, and why entrepreneurship happens and who becomes involved (e.g., Welter, 2011). Indeed, context can be an asset and a liability for the nature and extent of entrepreneurship. For example, recent studies in Ghana suggest that entrepreneurs experience several constraints (Robson and Obeng, 2008; World Bank, 2013). This challenging environment makes the process of founding and growing a business difficult. Therefore, in such a context, persistence becomes a central component of entrepreneurial motivation and success (Baum and Locke, 2004).

Existing studies argued that persistence is a complex decision that is a function of both the person and the environment (e.g., DeTienne, et al., 2008; Gimeno, et al., 1997). A major conclusion is that perceptions of the external environment play a role in the decision to persist.

Despite the view that persistence is particularly important in entrepreneurship (Shane, et al., 2003) and critical for venture creation and growth in challenging environments (Barclays Bank, 2012), surprisingly persistence in entrepreneurship in developing economies remains under-researched. Ghana is, therefore, a useful case example to show drivers of persistence of entrepreneurs.

### **Sample and data**

The purpose of this study is to explain the drivers of entrepreneurs' decision to persist in a developing economy. As such, the sample frame for this study was developed from multiple business listings including Ghana's company register database (available at Registrar General's Department, Ghana), Ghana Export Promotion Council, the Association of Ghana Industries and the Ghana Business Directory. The sample includes firms that were privately-owned, employ fewer than 250 employees and with annual revenue below US\$20 million. The definitional criteria for a SME in Ghana stems from the 1998 national survey of Ghanaian businesses conducted by the Ghana Statistical Services and also consistent with previous scholarly studies (Cardon and Kirk, 2015; Taylor and Banks, 1992).

In this study, 1269 firms listed in Ghana company register database (i.e. 358 from a total of 11,456), Ghana Export Promotion Council (i.e. 207 firms from a total of 787), the Association of Ghana Industries (i.e. 367 firms from a total of 1,245) and the Ghana Business Directory (i.e. 337 firms from a total of 2,341) were contacted via telephone to elicit information. Subsequently, questionnaires were administered to 598 firms and received 198 responses yielding 33.11% response rate. Respondents were entrepreneurs (i.e. founders or owners who have participated in the start-up process for their firms). The participating ventures were relatively young: on average they had been in business for 10 years. The average number of full-time employees was 75 and the average annual turnover was US\$650,170. The firms were

growth oriented as indicated by their high average percentage annual sales growth of 13.34%. On the average the founders were aged 38 years. Table 1 presents descriptive characteristics of the 198 firms studied.

### **INSERT TABLE 1 AROUND HERE**

#### **Measure of Constructs**

The current study relies on previous research for items to measure key constructs examined. Table 2 displays specific items used to measure the constructs and their respective factor loadings and t-values.

**Entrepreneurial persistence.** Following George's (1992) view of entrepreneurial persistence as a behaviour resulting from an interaction of trait and situation, entrepreneurial persistence is measured using three items adapted from Baum and Locke (2004). "Persistence" was not an observed variable, but it tapped whether an individual has a personal/psychological tendency to persist (Baum and Locke, 2004). The entrepreneurs who responded to the survey were asked to register their responses to each of three items using a seven-point Likert-like scale ranging from: 1= strongly disagree; to 7= strongly agree.

**Entrepreneurs' optimism.** Entrepreneurs' optimism was measured using Scheier et al.'s (1994) six-item Life Orientation Test-Revised (LOT-R). Entrepreneurs who responded to the survey registered their responses to each of the six items using a seven-point Likert-like scale ranging from: 1=strongly disagree, 7=strongly agree. Responses were summed up into an overall score; high scores indicated a generalized feeling of optimism about the future, and low scores indicated a more pessimistic outlook (Hmieleski and Baron, 2009).

**Cognitive style.** The cognitive style measures were adapted from items developed by Cools and Van den Broeck (2007). This scale has been used in previous scholarly work (e.g., Cools,



et al., 2009). Following these studies, **respondents** were asked rate a series of items on a scale that measures knowing, planning and creating styles (1 = strongly disagree to 7 = strongly agree).

**Control Variables.** In line with existing literature (e.g., Kanfer and Ackerman, 2004; Zhao et al., 2005), a number of control non-hypothesised variables were tested. This is because previous studies indicate that these variables have the potential to influence entrepreneurial persistence. The firm level control variables adopted in this study include firm size and firm age. Moreover, this study controlled for individual level variables including age of entrepreneur, gender, level of education and working experience of the entrepreneur. These control variables were included in the model in order to control for potential liabilities of newness or inertia associated with firm age or size, which might impact persistence. Founder age was included to control for potential decreases in cognitive resources affecting persistence that may be associated with age (Cardon and Kirk, 2013; Kanfer and Ackerman, 2004). This study controlled for working experience as factors related to previous working conditions affects perception on the ability to implement entrepreneurial behaviours (Fini et al., 2012). Additionally, this study controlled for gender given that venture size differs between male and female entrepreneurs, with women generally involved in lower growth and small scale ventures (Cassar, 2006).

### **Validity and Reliability Assessment**

This study addressed concerns relating to validity of the responses by ensuring that all the respondents who completed the questionnaires were entrepreneurs or owner-managers. In order to help mitigate the potential effects of common method bias, both procedural and statistical remedies were employed (Podsakoff, et al., 2003). This study included only well-established item sets and reduced the impact of contextual cues in our questionnaire by using

controls and unrelated questions as separators between questions for dependent and independent variables (Fulmer et al., 2008).

### **INSERT TABLE 2 AROUND HERE**

This study tested for a potential non-response bias by dividing the answers for the study's constructs (optimism, planning style, knowing style, creating style and persistence) into groups of early and late respondents and then testing the means of early and late respondents, following Armstrong and Overton (1977). Moreover, to investigate the potential for non-response bias, t test comparisons of responding versus non-responding firms on age, total employees, sales turnover and total capital were conducted (Anderson and Eshima, 2013). Since no significant statistical difference was found, it was concluded that non-response bias is not a concern in this study.

Following purification, several items were removed from the model. Table 2 displays the final list of items, their sources, their respective standardized factor loadings and t-values, and results of reliability and validity tests. The positive and significant loadings confirm convergent validity and composite reliability of the study's measures (Boso et al., 2013).

Following previous scholarly developments (e.g., Boso et al., 2013; Cadogan et al., 2006) confirmatory factor analyses (CFAs) were conducted using LISREL 8.7 (Jöreskog and Sörbom, 2004) with maximum likelihood technique. All the scales were analysed in subsets (Cadogan et al., 2006). Scales that are conceptually related were analysed together (Baker and Sinkula, 1999). Table 3 displays the results of a 'full measurement model' (measurement model set 3) in which all the items were entered simultaneously in a CFA model with a predicted measurement model imposed (Boso et al., 2013). The results showed that all the loadings were positive and significant with good fit indices (Bagozzi and Yi, 2012). Item loadings were

hypothesized and were significant ( $\chi^2=1464.69$ ,  $df=1107$ ,  $p<0.00$ , root mean square error of approximation (RMSEA) =0.04; standardized root mean square residual (SRMR)= 0.05; non-normed fit index (NNFI)=0.97; and comparative fit index (CFI)=0.93).

### **INSERT TABLE 3 AROUND HERE**

With the exception of normed chi-square value ( $\chi^2/df=1464.69/1107=1.32$ ) which was significant, all the other fit indices were within acceptable cut-off points. The chi-squared test shows the difference between observed and expected covariance matrices and a value closer to 0 demonstrates a better fit (Bagozzi and Yi, 2012; Fornell and Larcker, 1981). For each latent variable, the average variance extracted (AVE) by the latent variable's measures was larger than the latent variable's shared variance with any other latent variable (Fornell and Larcker, 1981). Thus, discriminant validity was believed to be achieved. Table 3 presents the results of the Fit indices for the measurement models. Additionally, estimation of discriminant validity of the constructs was carried out by calculating the square roots of AVE for all multi-item constructs (Table 4). AVE refers to the amount of variance captured by the latent variable in relation to the amount of variance due to its measurement error (Fornell and Larker, 1981). The results show that, for all constructs, each correlation of one construct with another is smaller than the square roots of its AVE, indicating discriminant validity for out measures (Fornell and Larcker, 1981), so our measured concepts differ significantly from each other (Bagozzi and Philips, 1982).

**INSERT TABLE 4 AROUND HERE**

## Statistical procedures

Hierarchical linear regression analysis was used to estimate the research model. Hierarchical regression is well established as a model estimator in entrepreneurship research (Rauch et al., 2009). Following previous scholarly studies, interaction variables were created (e.g., Boso et al., 2013; Cadogan et al., 2006). As a result of the inclusion of these interaction terms in the regression estimate, multicollinearity becomes apparent. Previous scholarly studies have contended that failure to orthogonalize the exogenous and endogenous variables can lead to structural coefficient bias (e.g., Cadogan et al., 2006). All the variables involved in the creation of the interaction terms were residually centered and a low variance inflation factor (VIF) was obtained, way below the recommended cut off of 10.00 (Aiken and West, 1991; Baum, 2006).

## Results

Table 4 provides the means, standard deviations, and bivariate correlations for the study variables. Table 5 presents the results of the hierarchical regression models for persistence. Model 1 included the control variables, Model 2 added cognitive knowing, planning and creating styles as main effect variables, Model 3 also added entrepreneurs' optimism, and Model 4 included the three interactions of entrepreneurs' optimism with each cognitive style. From Model 1 the study finds a negative relationship between firm size and persistence. Additionally, founders' age was found to be negatively related to persistence. However, working experience was positively related to persistence. Further, firm age, gender and education had no direct effects on entrepreneurial persistence.

The results are described in relation to the individual hypotheses. The interactions are graphed in Figures 2 to 4. Although not directly hypothesized, Model 2 indicated that some of the cognitive style dimensions directly contributed to increased persistence, as reflected in the positive coefficients for cognitive planning style ( $\beta=.16$   $p<.01$ ) and cognitive creating style ( $\beta=.12$ ,  $p<.05$ ). However, cognitive knowing style has no influence on persistence (see Table

5). Hypothesis 1 proposed that entrepreneurs' optimism will be positively related to persistence. As shown in Model 4 of Table 5, the entrepreneurs' optimism positively related to persistence ( $\beta=.19, p<.01$ ). Therefore, hypothesis 1 receives support. The positive relationship between entrepreneurs' optimism and persistence has been conceptually shown in prior research (Brown and Marshall, 2001; Shane and Venkataraman, 2000).

#### **INSERT TABLE 5 AROUND HERE**

A major theoretical contribution results from the present study's investigation of the interplay between entrepreneurs' optimism and cognitive style, and particularly the contingent nature of entrepreneurs' optimism-persistent relationship. According to hypotheses 2-4, the relationship between optimism and persistence should be stronger at high levels of each cognitive style (i.e. planning, knowing and creating style). In support of hypotheses 3 and 4, the contribution of optimism to entrepreneurial persistence grew stronger at high levels of cognitive planning style ( $\beta=.26, p<.01$ ) and cognitive creating style ( $\beta=.30, p<.01$ ). However, contrary to hypothesis 2, this study found a negative interaction between entrepreneurs' optimism and cognitive knowing style ( $\beta=-.23, p<.01$ ), suggesting that the relative usefulness of entrepreneurs' optimism for enhancing persistence was actually higher in conditions of low cognitive knowing style.

To illustrate the nature of these three significant interactions, the effects of entrepreneurs' optimism on entrepreneurial persistence at high and low levels of the corresponding cognitive style dimensions are plotted in Figures 2 to 4 following procedures suggested by Dawson and Richter (2006). The plots suggest that, whilst cognitive planning and creating styles invigorate the positive relationship between entrepreneurs' optimism and persistence, cognitive knowing style weakens the effect of entrepreneurs' optimism on persistence. In particular, high levels of cognitive knowing style reduce the strength of the effect of optimism on persistence.

## **Discussion**

Prior research suggests that entrepreneurs who are tenacious in pursuit of their goals have a greater chance of success (Foo et al., 2006; Timmons and Spinelli, 2009). A major insight is to argue that even if entrepreneurs who are tenacious in pursuit of their goals have a greater chance of success, an equally crucial issue is the circumstances under which such tenacious behavior is more or less pronounced in entrepreneurs' persistence. Therefore, the purpose of our study was to examine the moderating effects of entrepreneurs' cognitive styles on the relationship between entrepreneurs' optimism and persistence. Thus, this paper extends knowledge on conditions in which entrepreneurs' optimism is more or less prevalent in enhancing persistence. The study's contribution to the optimism literature is the empirical validation of the theoretical argument that entrepreneurs' optimism-persistence relationship is differentially moderated by cognitive styles. Therefore, a better understanding of the conditions in which optimism strongly relates to persistence will be useful for both practitioners and researchers. The study helps to answer how cognitive style translates optimism in the decision to persist. This study uniquely contributes to the literature by explaining the drivers of persistence.

This study's findings regarding these moderating effects are mixed. First, cognitive creating style and cognitive planning style both enhance the relationship between entrepreneurs' optimism and persistence. As hypothesised, entrepreneurs scoring high on optimism are more likely to exhibit tenacious behaviour at high levels of cognitive creating and cognitive planning style dimensions. A key contribution this paper makes to the literature is to illustrate and empirically support the notion that cognitive creating and cognitive planning styles enhance the relationship between entrepreneurs' optimism and persistence. The implications of this finding relate both to SME management practice and SME research. The implication for

management practice is that optimism may be important element necessary in entrepreneurs' decision to persist, but cognitive creating and planning style may be important moderating factors that can effectively translate optimism into higher persistence to occur.

**INSERT FIGURE 2 AROUND HERE**

Second, knowing style negatively moderates the relationship between entrepreneurs' optimism and persistence. This may be caused by the fact that other factors related to cognitive knowing style may affect the optimism-persistence linkage. For example, while aiming to persist may seem attractive to optimistic entrepreneurs, the motivation to persist may be mitigated by the continuous search for new opportunities. Moreover, high cognitive knowing style people like to make decisions based upon facts, information and details, and may find it difficult to cope with entrepreneurial ventures.

Overall, these findings extend previous theoretical arguments regarding the role of individuals' optimism in exhibiting tenacious behavior (Brown and Marshall, 2001) by explicating how the presence of these cognitive styles differentially moderate the link between entrepreneurs' optimism and persistence.

**INSERT FIGURE 3 AROUND HERE**

The unexpected finding for cognitive knowing style, Figure 2, indicates that when entrepreneurs take their time to make decisions, postpone decisions until data is collected for more information (cognitive knowing style), the relative usefulness of entrepreneurs' optimism for stimulating persistence gets subdued. Thus, cognitive knowing style impedes the conversion of entrepreneurs' optimism into persistence. A major reason may be that entrepreneurs scoring high on cognitive knowing style do not like tasks that are undefined,



ambiguous, and lack supporting facts and figures (Knockaert, et al., 2015). This is because the entrepreneurial process is a process fraught with difficulties, unforeseeable hazards and high levels of uncertainty (Aldrich, 1979; Nelson and Winter, 1982), and often characterized by decisions that cannot be fully supported by data or facts and figures.

#### **INSERT FIGURE 4 AROUND HERE**

This study has theoretical implications for the cognitive style literature by providing support for the benefits of multidimensional models. The study's findings suggest that a cognitive planning and cognitive creating style enhance the optimism-persistence relationship whilst a cognitive knowing cognitive style works against this relationship. These findings underscore the benefits of integrating the underlying dimensions of what has been previously united under an analytical or adaptive cognitive style (Allinson and Hayes, 1996).

#### **Conclusions**

This study set out to empirically examine the relationship between optimism and persistence and the moderating influence of cognitive style dimensions on this relationship. This theoretically derived research model which links optimism, cognitive style and persistence was empirically validated by means of an empirical study of 198 SMEs in Ghana. The findings from this paper are that optimism positively relates to persistence and that cognitive creating and planning style positively amplify this relationship. Somewhat interestingly, cognitive knowing style works against the translation of optimism into improved persistence. The present study extends our knowledge in the realm of entrepreneurship, suggesting that some cognitive style dimensions (planning and creating styles) can translate optimism into improved persistence outcome whilst cognitive knowing style works against the optimism-persistence linkage.

There are some practical contributions offered by this study. Interpreted from a practitioner's point of view, the article provides entrepreneurs with insights into how they can stimulate persistence in SMEs. To reap benefits from being optimistic, entrepreneurs should assess their cognitive style underlying their behavior. The usefulness of entrepreneurs' optimism for enhancing persistence can be established by stimulating some cognitive styles (planning and creating style) but not cognitive knowing style. A focus on optimism is more likely to increase persistence when entrepreneurs structure, organise and control (planning style) and take high-risk proposals and see problems as opportunities and challenges (creating style).

Moreover, this study revealed that optimism is critical for entrepreneurial persistence. An implication is that persistence can also lead to significant financial and emotional costs for the entrepreneur if the resources used in persisting could have been more efficiently applied elsewhere (McGrath, 1999). Therefore, entrepreneurs may be appreciably aided by an understanding that there may be an inherent bias toward the status quo and the norm of persistence. They may be more willing to seek objective data from other sources that can be used to justify or modify expectancies and valences and ultimately increase the probability of making quality decisions.

This study also has implications for investors in general, including venture capitalists and angel investors. It may be relevant to understand whether the entrepreneur is more likely to pursue their dreams of developing successful ventures despite the great odds against them (Dosi and Lovallo, 1997). For example, venture capitalists have incentives to grandstand (Gompers, 1996), i.e. to take actions signaling their ability to potential investors. As such, they are interested in investing in entrepreneurs who will decide to forge ahead in the face of daunting obstacles in order to create growth companies which can be brought public in an IPO or generate income through trade sales. As a consequence, an assessment of cognitive styles may

complement the assessment of the optimism during the due diligence process, which is currently limited to assessing the entrepreneur's track record and management skills (Shepherd and Zacharakis, 1998; Tyebjee and Bruno, 1984).

This study has implications for developing countries too. These countries present a unique relevant setting for studying the interplay between entrepreneurs' optimism and the persistence they expend in pursuit of their goals. The role of entrepreneurial firms in these economies cannot be underestimated as they play a critical role in functioning as engine of growth and agents of economic development (Adomako and Danso, 2014), yet they confront several constraints (Robson and Obeng, 2008). Thus, for policy makers and other stakeholders (e.g., consultants, educators, institutions) in developing economies, the study's findings reveal different levers they can use to encourage persistence in pursuit of entrepreneurial goals. They could provide training or other resources to assist these entrepreneurs in meeting their entrepreneurial goals. It may inform parties involved in education such as public policy on education and training of current and potential entrepreneurs. An implication is that students in entrepreneurship education need to learn to cope with incomplete and unsecure information. Managers in SMEs should also acknowledge individual differences and to use them constructively, implying careful consideration about when to "match", when to "mismatch", and how to stimulate cognitive versatility (Sadler-Smith, 1999).

The limitations of this study must be noted. First, a limitation of this research is that "persistence" was not observed or measured directly, but it was only used a self-reporting tool that tries to assess whether an individual has a personal/psychological tendency to persist. Therefore, this must be taken in consideration when interpreting the findings of the present study. Second, our study is only limited to entrepreneurs operating SMEs in Ghana. A natural extension could therefore be to compare our results across a number of SMEs in different

countries in sub-Saharan Africa. This is particularly important as it will provide an avenue to examine whether the constructs examined are also driven by varying institutional context. Third, the cross-sectional design requires some caution in terms of causality. Thus, the use of cross-sectional data does not allow us to examine any changes in some of the constructs examined. Although the directions of our hypotheses were strongly grounded in extant theory, further research could use longitudinal data to examine whether the explanatory power of the variables examined could vary with changes over time. Fourth, beyond the cognitive style we examined, which originated from theoretical reflections in previous scholarly work (Cools and Van den Broeck, 2007), further research could consider other moderators of the optimism-persistence relationship. For example, future studies could use firm and environmental levels variables as moderators of this linkage. Future studies could examine these potential moderators by drawing from social cognitive theory (Bandura, 1986) and the multi-level perspective (Hitt et al., 2007). Fifth, this study also used gender as control variable. Future research should especially address gender differences in cognitive style and persistence in SMEs. Sixth, this study used hierarchical regression in testing the hypotheses. Although, hierarchical regression is well established as a model estimator in entrepreneurship research (Anderson and Eshima, 2013), future studies may apply structural equation models. Using such models might offer the opportunity to address any shortcomings of this study's modelling methods. Finally, the present study focused on surviving firms, whilst we have no reason to think that survivorship bias should have systematically biased the study's results since there is a good variation in the study's measurements of both dependent and independent variables. This is a limitation which is inevitable in studying Ghanaian firms.

## **References**

Adomako, S and Danso, A. (2014), "Regulatory environment, environmental dynamism, political ties and performance. Study of entrepreneurial firms in a developing. *Journal of Small Business and Enterprise Development*", Vol. 21 No.2, pp.212-230

- Aldrich, H., 1979. *Organizations and Environments*, Prentice Hall, Englewood Cliffs, NJ.
- Allinson, C., Chell, E., and Hayes, J. (2000), “Intuition and entrepreneurial behavior”. *European Journal of Work and Organizational Psychology*, Vol. 9, pp.31-43.
- Allinson, C., and Hayes, J., (1996). “The cognitive styles index: a measure of intuition-analysis for organisational research”, *Journal of Management Studies*, Vol.33, pp.119-135
- Amabile, T. M. (1997), “Motivating creativity in organizations: On doing what you love and loving what you do”. *California Management Review*, Vol. 40 No. 1, pp.3958.
- Anderson, B. S and Eshima, Y. (2013), “The influence of firm age and intangible resources on the relationship between entrepreneurial orientation and firm growth among Japanese SMEs”. *Journal of Business Venturing*, Vol.28 No.3, pp.413-429
- Alvarez, S.A and Parker, S.C (2009), “Emerging firms and the allocation of control rights: A Bayesian approach”. *Academy of Management Review* Vol. 34(2), pp.209-227.
- Aspinwall, L. G., Sechrist, G. B., and Jones, P. R. (2005), “Expect the best and prepare for the worst: Anticipatory coping and preparations for Y2K”. *Motivation and Emotions*, Vol.29, pp. 357–388.
- Åstebro, T., Jeffrey, S. A., and Adomdza, G. K. (2007), “Inventor perseverance after being told to quit: The role of cognitive biases”. *Journal of Behavioral Decision Making*, Vol. 20, pp.253–272.
- Armstrong, S.J., Cools, E., and Sadler-Smith, E. (2012), “Role of cognitive styles in business and management: Reviewing 40 years of research”. *International Journal of Management Reviews*, Vol.14 No.3, pp. 238–262.
- Armstrong, S. and Hird, A. (2009), “Cognitive style and entrepreneurial drive of new and mature business owner-managers”. *Journal of Business and Psychology*, Vol. 24, pp. 419-430.
- Armstrong, J. S., and Overton, T. S. (1977), “Estimating nonresponse bias in mail surveys”. *Journal of Marketing Research*, Vol. 5, pp.396-402.
- Bagozzi, R.P. and Philips, L.W. (1982), “Representing and testing organisational theories: a holistic construal”. *Administrative Science Quarterly* Vol.27 No3, pp.459-490
- Bagozzi, R.P., and Yi, Y. (2012), “On the evaluation of structural equation models”. *Journal of the Academy of Marketing Science* Vol. 14 No.1, pp. 33-46
- Baker, W.E and Sinkula, J.M (1999), “The complementary effects of market orientation and entrepreneurial orientation on profitability in small businesses” *Journal of small Business Management* Vol.47 No.4, pp.443-464
- Bandura, A (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs. NJ: Prentice Hall
- Bandura, A. (1997). *Self-efficacy: The Exercise of Control*, Freeman, New York, NY.
- Baron, R. (2004), “Opportunity recognition: insights from a cognitive perspective, in: Butler, J. (Ed.), *Research in Entrepreneurship and Management: Opportunity Identification and Entrepreneurial Behaviour*. Information Age Publishing, Greenwich, Vol.4, pp.47-74.
- Barbosa, S., Gerhardt, M. and Kickul, J. (2007), “The role of cognitive style and risk preference on entrepreneurial self-efficacy and entrepreneurial intentions”. *Journal of Leadership and Organisational Studies*, Vol.13, pp.86-104.
- Barclays Bank. (2012), “The Power of Persistence: Mapping attitudes to adversity” *Barclays Wealth Insights*, Vol.16, pp1-47
- Baum, C. F. (2006). *Introduction to Modern Econometrics Using STATA*. Texas; Sata Press

- Baum, J.R and Locke, E.A. (2004), “The relationship of entrepreneurial traits, skill, and motivation to subsequent venture growth”, *Journal of Applied Psychology*, Vol.89 No.4, pp.587–598
- Beyler, J., and Schmeck, R. R. (1992). “Assessment of individual differences in preferences for holistic-analytic strategies: Evaluation of some commonly available instruments”. *Educational and Psychological Measurement*, Vol.52, pp.709-719.
- Boso, N., Story, V.M., and Cadogan, J.W. (2013), “Entrepreneurial orientation, market orientation, network ties, and performance: study of entrepreneurial firms in a developing economy”, *Journal of Business Venturing*, Vol.28, No.6, pp. 708-727.
- Brown J. D. and Marshall M. A. (2001), “Great expectations: optimism and pessimism in achievement settings, in *Optimism and Pessimism: Implications for Theory, Research, and Practice*”, ed Chang E. C., editor. (Washington, DC: American Psychological Association), pp.239–255.
- Burke, L.A. and Miller, M.K. (1999), “Taking the mystery out of intuitive decision making”, *Academy of Management Executive*, Vol.13, pp.91-9.
- Busenitz, L. W. (1999), “Entrepreneurial risk and strategic decision-making: It’s a matter of Perspective”. *The Journal of Applied Behavioral Science*, Vol.35, pp.325-340.
- Busenitz, L.W., and Barney, J.W. (1997), “Differences between entrepreneurs and managers in large organizations: biases and heuristics in strategic decision-making”. *Journal of Business Venturing* Vol.12 No.6, pp.9–30.
- Buttner, H. E., and Gyskiewicz, N. (1993). “Entrepreneurs’ problem-solving styles: An empirical study using the Kirton adaption/innovation theory”. *Journal of Small Business Management*, Vol. 31, No.1, pp.22-31.
- Cadogan, J. W., Cui, C. C. Morgan, R. E. and Story, V. M. (2006), “Factors facilitating and impeding the development of export market-oriented behaviour: A study of Hong Kong manufacturing exporters”. *Industrial Marketing Management*, Vol.35, pp.634–647
- Cardon, M. S. and Kirk, C. P. (2015), “Entrepreneurial Passion as Mediator of the Self-Efficacy to Persistence Relationship”. *Entrepreneurship Theory and Practice*. Vol.39No.5, pp.1029-1050
- Carland J., Carland J., Ensley M., (2002), “Hunting the Heffalump: the theoretical basis and dimensionality of the Carland entrepreneurial index”. *Academy of Entrepreneurship Journal*, Vol.7, pp.51-84.
- Carter, N.M., Gartner, W.B., and Reynolds, P.D. (1996), “Exploring start-up event sequences”. *Journal of Business Venturing*, Vol.11, pp.151–166
- Carver, C. S., and Scheier, M. (2003). *Optimism*. In S. J. Lopez, and Snyder, C. R. (Ed.), *Positive Psychological Assessment: A Handbook of Models and Measures*. Washington D. C.: American Psychological Association.
- Cassar, G (2006), “Entrepreneur opportunity costs and intended venture growth”. *Journal of Business Venturing*, Vol.21, pp.610-632
- Cassar, G. (2010), “Are individuals entering self-employment overly optimistic? an empirical test of plans and projections on nascent entrepreneur expectations”. *Strategic Management Journal*, Vol.31No.8, pp.822-840.
- Cassar, G and Craig, J. (2009), “An investigation of hindsight bias in nascent venture activity”. *Journal of Business Venturing* Vol.24 No.2, pp.149-164.
- Chen, M.H., Chang, Y.Y., and Lo, Y.H (2015). Creativity cognitive style, conflict, and career success for creative entrepreneurs. *Journal of Business Research* Vol.68, pp. 906–910
- Cook, P. (1998), “The creativity advantage –is your organisation the leader of the pack?” *Industrial and Commercial Training*, Vol.30 No.5, pp.179-184.

- Cools, E. and Van den Broeck, H. (2007), "Development and validation of the Cognitive Style Indicator". *The Journal of Psychology*, Vol.141, pp. 359-387.
- Cools, E., Van den Broeck, H., and Bouckenoghe, D. (2009), "Cognitive Styles and Person-environment Fit: Investigating the Consequences of Cognitive (Mis) fit", *European Journal of Work and Organisational Psychology*, Vol.18, pp.167-198.
- Cooper, A. C., Woo, C. Y., and Dunkelberg, W. C. (1988), "Entrepreneurs' perceived chances for success". *Journal of Business Venturing*, Vol.3, pp.97-108.
- Corbett, A. (2007), "Learning asymmetries and the discovery of entrepreneurial opportunities". *Journal of Business Venturing*, Vol.22, pp.97-118
- Crane, F. G., and Crane, E. C. (2007), "Dispositional optimism and entrepreneurial success". *The Psychologist-Manager Journal*, Vol.10 No.1, pp.13-25
- Dawson, J. F., and Richter, A. W. (2006), "Probing three-way interactions in moderated multiple regression: development and application of a slope difference test". *Journal of Applied Psychology*, Vol.91 No.4, pp. 917-926.
- de Meza, D., and Southey, C. (1996), "The borrower's curse: Optimism, finance and entrepreneurship". *Economic Journal*, Vol.106, pp. 375-386.
- DeTienne, D.R., Shepherd, D.A. and De Castro, J.O. (2008), "The fallacy of "only the strong survive": The effects of extrinsic motivation on the persistence decisions for under-performing firms". *Journal of Business Venturing*, Vol.23 No.5, pp.528-546.
- Dimov, D. (2007), "From Opportunity Insight to Opportunity Intention: The Importance of Person-Situation Learning Match". *Entrepreneurship Theory and Practice*, Vol.31, pp.561-583.
- Dosi, G., and Lovallo, D. (1997), "Rational entrepreneurs or optimistic martyrs? Some considerations on technological regimes, corporate entries, and the evolutionary role of decision biases". In R. Garud & P. R. Nayyar (Eds.), *Technological innovation: Oversights and foresights*, pp.41-68. New York: Cambridge University Press.
- Dutta, D. and Thornhill, S., (2008), "The evolution of growth intentions: toward a cognition-based model". *Journal of Business Venturing*, Vol.23, pp.307-332.
- Fini, R., Grimaldi, R Marzocchi, G.L and Sobrero, M. (2012), "The determinants of corporate entrepreneurial intention within small and newly established firms". *Entrepreneurship Theory and Practice*, Vol.24, pp.387-414
- Foo, M. D., Sin, H. P., and Yiong, L. P. (2006), "Effects of team inputs and intrateam processes on perceptions of team viability and member satisfaction in nascent ventures". *Strategic Management Journal*, Vol.27, pp.389-39
- Fornell, C., and Larcker, D. (1981), "Evaluating structural equation models with observable variables and measurement error". *Journal of Marketing Research*, Vol.18, pp. 39-50
- Fraser, S., and Greene, F. J. (2006). "The effects of experience on entrepreneurial optimism and uncertainty". *Economica*, Vol. 73, pp.169-192.
- Fulmer, I., Barry, B and Long, D. (2008). "Lying and smiling: informational and emotional deception in negotiation". *Journal of Business Ethics* Vol.88, pp.691-709.
- Garland, H. (1990), "Throwing good money after bad: The effect of sunk costs on the decision to escalate commitment to an ongoing project". *Journal of Applied Psychology*, Vol.75, No.6, pp.728-731.
- Gatewood, E. J., Shaver, K. G., Powers, J. B., and Gartner, W. B. (2002), "Entrepreneurial expectancy, task effort, and performance". *Entrepreneurship Theory and Practice*, Vol.27, pp.187-206.
- George, J. (1992), "The role of personality in organizational life: Issues and evidence". *Journal of Management*, Vol.18, No.2, pp.185-213.

- Gimeno, J., Folta, T.B., Cooper, A.C., and Woo, C.Y. (1997), “Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms”. *Administrative Science Quarterly*, Vol.42 No.4, pp.750–783.
- Goldstein, K., and Blackman, S., (1978), *Cognitive Style: Five Approaches and Relevant Research*, Wiley, New York
- Grigorenko, E. L., and Sternberg, R. J. (1995). Thinking styles. In D. H. Saklofske & M. Zeidner (Eds.), *International handbook of personality and intelligence* (pp. 205–229). New York: Plenum Press.
- Haines, H. and Townsend, D. (2013), “Self-Doubt and Entrepreneurial Persistence: How Founders of High-Growth Ventures Overcome Cognitive Constraints on Growth and Persist with their Ventures”, in: Corbett, A. C. and Katz, J. A. (Hg.) *Advances in Entrepreneurship, Firm Emergence and Growth*, Vol.15, pp. 95-124.
- Hayes, J., and Allinson, C., (1994), “Cognitive style and its relevance for management practice”. *British Journal of Management*, Vol.5, pp.53-71.
- Hayes, J., and Allinson, C. W. (1998), “Cognitive style and the theory and practice of individual and collective learning in organizations”. *Human Relations*, Vol.51, pp.847–871.
- Hayward, M. L. A., Shepherd, D. A., and Griffin, D. (2006). A hubris theory of entrepreneurship. *Management Science*, Vol.52 No.2, pp.160-172.
- Heye, D. (2006), “Creativity and innovation: Two key characteristics of the 21<sup>st</sup> century information professional”. *Business Information Review*, Vol.23 No.4, pp. 252-257
- Hitt, M. A., Beamish, P. W., Jackson, S. E. and Mathieu, J. E. (2007), “Building theoretical and empirical bridges across levels: Multilevel research in management”. *Academy of Management Journal*, Vol.50, pp.1385-1399.
- Holland, D. and Shepherd, D.A. (2013), “Deciding to persist: Adversity, values, and entrepreneurs’ decision policies”, *Entrepreneurship Theory and Practice*, Vol.37 No.2, pp.331-358.
- Hmieleski, K.M and Baron, R.A. (2009), “Entrepreneurs’ optimism and new venture performance: a social cognitive perspective”. *Academy of Management Journal*, Vol.52 No.3, pp.473-488
- Hmieleski, K. M., and Corbett, A. C. (2006), “Proclivity for improvisation as a predictor of entrepreneurial intentions”. *Journal of Small Business Management*, Vol. 44 No.1, pp.45-63.
- Hodgkinson, G. P., and Sadler-Smith, E. (2003). Complex or unitary? A critique and empirical reassessment of the Allinson-Hayes Cognitive Style Index. *Journal of Occupational and Organizational Psychology*, Vol. 76, pp.243–268.
- Jöreskog, K.G. and Sörbom, D. (2004), *LISREL 8.7 for Windows [Computer Software]*. Lincolnwood, IL: Scientific Software International, Inc
- Kanfer, R. and Ackerman, P.L. (2004), “Aging, adult development, and work motivation”. *Academy of Management Review*, Vol.29 No.3, pp.440–458.
- Keh, H.T., Foo, M.D., and Lim, B.C. (2002), “Opportunity evaluation under risky conditions: the cognitive processes of entrepreneurs”. *Entrepreneurship Theory and Practice*, Vol.27, pp. 125-148.
- Kickul, J., Gundry, L.K., Barbosa, S.D., and Whitcanack, L. (2009), “Intuition Versus Analysis? Testing Differential Models of Cognitive Style on Entrepreneurial Self-Efficacy and the New Venture Creation Process”. *Entrepreneurship Theory and Practice*, Vol.33 No.2, pp.439-453
- Knockaert, M., Foo, M.D and Erikson, T. and Cools, E (2015). “Growth intentions among research scientists: A cognitive style perspective” *Technovation*, Vol.38, pp.64-74
- Kozhevnikov, M., (2007), “Cognitive styles in the context of modern psychology: toward an



- integrated framework of cognitive style”. *Psychological Bulletin*, Vol.133, pp. 464-481.
- Krueger, N., Reilly, M. and Carsrud, A. (2000), “Competing models of entrepreneurial intentions”. *Journal of Business Venturing*, Vol.15, pp.411-432.
- Leonard, N. H., Scholl, R. W., and Kowalski, K. B. (1999). Information processing style and decision making. *Journal of Organizational Behavior*, Vol.20, pp.407–420.
- Lowe, R. A., and Ziedonis, A. A. (2006). “Overoptimism and the performance of entrepreneurial firms”. *Management Science*, Vol.52, pp.173–186.
- Markman, G.D., Baron, R.A. and Balkin, D.B. (2005), “Are perseverance and self-efficacy costless? Assessing entrepreneurs’ regretful thinking”. *Journal of Organisational Behaviour*, Vol.26 No.1, pp.1-19
- McCull-Kennedy, J.R., and Anderson, R.D. (2005), “Subordinate-manager gender combination and perceived leadership style influence on emotions, self-esteem and organizational commitment”, *Journal of Business Research*, Vol.58 No.2, pp.115-125
- McGrath, R.G. (1999), “Fall forward: real options reasoning and entrepreneurial failure”, *Academy of Management Review*, Vol.24 No.1, pp.13-30
- Messick, S. (1976), *Personality Consistency in Cognition and Creativity, Individuality in Learning*, San Francisco, Jossey-Bass.
- Mitchell, R., Smith, B., Seawright, K, and Morse, E., (2000), “Cross-cultural cognitions and the venture creation decision”. *Academy of Management Journal*, Vol.43, pp.974-993
- Nelson, R. R. and Winter, S.G (1982), *An Evolutionary Theory of Economic Change*. Belknap Press/Harvard University Press: Cambridge.
- Podsakoff, P.M., MacKenzie, S.B., Lee, J and Podsakoff, N. (2003), “Common methods biases in behavioural research: a critical review of the literature and recommended remedies”. *Journal of Applied Psychology* Vol.88, pp.879-903
- Rauch, A. and Frese, M. (2007), “Let’s put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners’ personality traits, business creation, and success”. *European Journal of Work and Organizational Psychology*, 16(4), 353–385.
- Riding, R., and Mathias, D. (1991). Cognitive styles and preferred learning mode, reading attainment and cognitive ability in 11 year old children. *Educational Psychology*, Vol.11 No.3, pp.383-394.
- Riding, R., and Rayner, S. (1998). *Cognitive styles and learning strategies: Understanding style differences in learning and behaviour*. London: Fulton.
- Robson, P. J.A., and Obeng, B.A. (2008), “The barriers to growth in Ghana”, *Small Business Economic* Vol.30, pp.385-403.
- Sadler-Smith, E. (1999), “Intuition–analysis cognitive style and learning preferences of business and management students: A UK exploratory study”. *Journal of Managerial Psychology*, Vol.14, pp.26-38.
- Scheier, M. F., Carver, C. S., and Bridges, M. W. (2001), “Optimism, pessimism, and psychological well-being”. In E. C. Chang (Ed.), *Optimism & pessimism: Implications for theory, research, and practice*, pp.189–216. Washington, DC: American Psychological Association.
- Scheier, M. F., Carver, C. S., and Bridges, M. W. (1994), “Distinguishing optimism from

- neuroticism (and trait anxiety, self-mastery, and self-esteem): A re-evaluation of the Life Orientation Test)". *Journal of Personality and Social Psychology*, Vol.67, pp.1063-1078.
- Schwab, K. and Sala-i-Martin, X. (2011). *The global competitiveness report 2011-2012*. Citeseer.
- Shane, S., Locke, E.A., and Collins, C.J. (2003), "Entrepreneurial motivation". *Human Resource Management Review*, Vol.29 No.2, pp.257-279
- Shane, S. and Venkataraman, S. (2000), "The promise of entrepreneurship as a field of research", *Academy of Management Review*, Vol.25, pp. 217-26.
- Shank, R., and Abelson, R. (1977), *Scripts, Plans, Goals and Understanding*, Erlbaum, Hillsdale, NJ.
- Shepherd, D.A., and Zacharakis, A., (1998), "Conjoint analysis: a new methodological approach for researching the decision policies of venture capitalists". *Venture Capital*, Vol.1, pp.197 -217.
- Simon, M., Houghton., S, and Aquino, K. (2000), "Cognitive biases, risk perception and venture formation: How individuals decide to start companies". *Journal of Business Venturing* Vol.15 No.1, pp.113-134.
- Staw, B.M. (1981), "The escalation of commitment to a course of action". *Academy of Management Review*, Vol.6, No.4, pp.577-587
- Storey, D. J. (2011), "Optimism and chance: The elephants in the entrepreneurship room, *International Small Business Journal*, Vol.29 No.4, pp.303-321.
- Sutcliffe, K.M. and Vogus, T.J. (2003). *Organizing for resilience*. In K.S. Cameron, J.E. Dutton, & R.E. Quinn (Eds.), *Positive organizational scholarship* (pp. 94-110). San Francisco: Berrett-Koehler Publishers.
- Taylor, G.S and Banks, M.C. (1992), "Entrepreneurs, small business executives and large business executives: a comparison of he perceived importance of current business issues". *Journal of Small Business Management*, Vol.30, pp.24-40
- Timmons, J.A and Spinelli, S. (2009), *New venture creation: entrepreneurship for the 21 century* (18<sup>th</sup> ed). New York: McGraw-Hill/Irwin
- Townsend, D. M., Busenitz, L. W., and Arthurs, J. (2010), "To start or not to start: Outcome and ability expectations in the decision to start a new venture". *Journal of Business Venturing*, Vol.25 No.2, pp.192-202.
- Tyebjee, T.T., and Bruno, A.V. (1984), "A model of VC investment activity. *Management Science*", Vol.30, pp.1051-1066.
- Ucbasaran, D., Westhead, P., Wright, M., and Flores, M. (2010), "The nature of entrepreneurial experience, business failure and comparative optimism". *Journal of Business Venturing*, Vol.25 No.6, pp.541-555.
- Wan P. W and Hoskisson, E R. (2003), "Home Country Environment, Corporate Diversification Strategies and Firm Performance," *Academy of Management Journal*. Vol.46 No.1, pp.27-45
- Ward, T.B. (2004), "Cognition, creativity and entrepreneurship". *Journal of Business Venturing*, Vol.19, pp.173-188
- Welter, F. (2011), "Contextualizing entrepreneurship-conceptual challenges and ways forward". *Entrepreneurship Theory and Practice*, Vol.35 No.1, pp.165-184.
- Witkin, H.A., Moore, C.A., Goodenough, D.R., and Cox, P.W. (1977), "Field-dependent and field-independent cognitive styles and their educational implications". *Review of Educational Research*, 47(1), 1-64.
- Wofford, J and Goodwin, V. (1990), "Effects of feedback on cognitive processing and choice of decision style". *Journal of Applied Psychology*, Vol.75, pp.603-612
- World Bank. (2014), *Doing Business report*. Available at

- <http://www.doingbusiness.org/~media/giawb/doing%20business/documents/profiles/country/nga.pdf>. (Accessed 23 July, 2013)
- Wu, S., Matthews, L., and Dagher, G.K. (2007), "Need for achievement, business goals and entrepreneurial persistence". *Management Research News*, Vol.30 No.12, pp.928-941
- Yasuda, T. (2005), "Firm growth, size, age and behaviour in Japanese manufacturing". *Small Business Economics*, Vol.24 No.1, pp.1-15
- Youssef, C.M. and Luthans, F. (2007), "Positive organizational behavior in the workplace: The impact of hope, optimism, and resilience". *Journal of Management*, 33(5), 774-800.
- Zhao, H., Hills, G.E and Seibert, S.E. (2005), "The mediating role of self-efficacy in the development of entrepreneurial intentions". *Journal of Applied Psychology*, Vol.90, pp.1265-1272.

Table 1: Descriptive Statistics of the Sample (N=198)

Variable	Minimum	Maximum	Mean	Standard Deviation
Total number of full-time employees	10	250	75	59.65
Total annual Sales (in 000s US\$)	45	89,578	650.17	935.87
Annual sales growth (%)	0	100	13.34	9.30
Founder Age (in years)	25	75	38.89	9.82
Firm age (in years)	5	33	10.34	11.56

Table 2: Constructs, measurement items and reliability and validity tests.

Item description	Loadings (t-values) $\alpha$
<b>Cognitive planning style</b> (Cools and Van den Broeck, 2007): $\alpha=.89$ ; CR=.93; AVE=.72	
- Developing a clear plan is very important to me	.84(fixed)
- I always want to know what should be done when working on project	.89(13.47)
- I like detailed action plans	.83(13.46)
- I prefer clear structures to do my job	.76(12.76)
- I prefer well-prepared meetings with a clear agenda and strict time management	.89(14.4)
- I make definite engagements and I follow up meticulously	.84(14.1)
<b>Cognitive knowing style</b> (Cools and Van den Broeck, 2007): $\alpha=.81$ ; CR=.97; AVE=.74	
- I want to have a full understanding of all problems	.86(fixed)
- I like to analyse problems	.72(13.69)
- I make detailed analyses	.85(14.97)
- I study each problem until I understand the underlying logic	.83(13.67)
<b>Cognitive creating style</b> (Cools and Van den Broeck, 2007): $\alpha=.89$ ; CR=.73; AVE=.71	
- I like to contribute to innovative solutions	.82(fixed)
- I prefer to look for creative solutions	.88(12.98)
- I like much variety in life	.89(11.78)
- New ideas attract me more than existing solutions	.74(11.64)
- I like to extend boundaries	.72(11.75)
- I try to avoid routine	.71(12.76)
<b>Entrepreneurs' optimism</b> (Scheier et al., 1994): $\alpha=.87$ ; CR=.82; AVE=.62	
- In uncertain times, I usually expect the best	.74(10.56)
- If something can go wrong for me, it will <sup>a</sup>	.91(12.30)
- I am always optimistic about my future	.85(12.20)
- I hardly ever expect things to go my way <sup>a</sup>	.78(11.40)
- I rarely count on good things to happen to me <sup>a</sup>	.76(13.34)
- Overall, I expect more good things to happen to me than bad	.78(11.87)
<b>Entrepreneurial persistence</b> (Baum and Locke, 2004): $\alpha=.89$ ; CR=.92; AVE=.72	
- I continue to work on hard projects even when others oppose me	.78(fixed)
- I can think of many times when I persisted with work when others quit	.85(12.2)
- No matter how challenging my work is, I will not give up	.83(13.4)

Note: <sup>a</sup> These items were reverse coded before scoring and analysis.  $\alpha$  Item loadings and t-values reported here are based on the full measurement model reported in Table 4. Composite reliability (CR) = the sum of the square roots of the item-squared multiple correlations squared and divided by the same quantity plus the sum of the error variances (Werts, Linn and Joreskog, 1974). Average Variance Extracted (AVE) =  $\frac{\sum[\lambda_i^2] \text{Var}(X)}{\sum[\lambda_i^2] \text{Var}(X) + \sum[\text{Var}(\epsilon_i)]}$  where  $\lambda_i$  is the loading of  $x_i$  on X, Var denotes variance,  $\epsilon_i$  is the measurement error of  $x_i$ , and  $\Sigma$  denotes a sum (Fornell and Larcker, 1981).

Table 3: Fit indices for the measurement models

CFA Models	$\chi^2$	Df	$\chi^2/df$	p-value	RMSEA	SRMR	NNFI	CFI
Measurement (set 1)	14.49	92	0.157	.13a	.05	.05	.96	.96
Measurement (set 2)	63.4	53	1.19	.01	.02	.03	.98	.98
Full measurement (set 3)	1464.69	1107	1.32	.00	.04	.05	.97	.93

Note:

Measurement (set 1): planning style, knowing style, creating style

Measurement (set 2): optimism and persistence

Measurement (set 3): all items retained in set 1 through to 2 were modelled simultaneously

RMSEA: root mean square error of approximation

NNFI: non-normed fit index

CFI: comparative fit index

SRMR: standardized root mean square residual

a Not significant at  $\alpha=0.05$

**Table 4: Descriptive statistics and correlations<sup>a</sup> (Square root of AVE in diagonal)**

	Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11
1.	Persistence	5.28	.843	<b>.84</b>										
2.	Firm age	10.34	7.56	.05										
3.	Age of Founder	38.89	9.82	-.13*	-.17**									
4.	Working experience	4.79	.840	.28**	.02	.17**								
5.	Firm size	75.00	59.65	-.19**	-.18**	-.08*	-.26**							
6.	Gender	0.20	0.39	.07*	.25**	.11*	.07*	.21**						
7.	Education	2.98	1.18	-.13*	-.38**	-.06*	-.17**	-.15**	-.18**					
8.	Knowing style	4.46	1.16	.09*	.22**	.14*	.12*	.19**	.08*	.14*	<b>(.86)</b>			
9.	Planning style	5.21	.964	.13*	.21**	.15**	.15**	.02	.32**	-.00	.29**	<b>(.84)</b>		
10.	Creating style	5.44	.936	-.01	.28**	.09*	.27**	.11*	.06*	.08*	.10*	.05	<b>(.84)</b>	
11.	Optimism	4.58	1.0	.27**	.16**	.03	.25**	.21**	.08*	.21**	.33**	.16**	.24**	<b>(.78)</b>

<sup>a</sup>n= 198. For gender, male =0; female=1

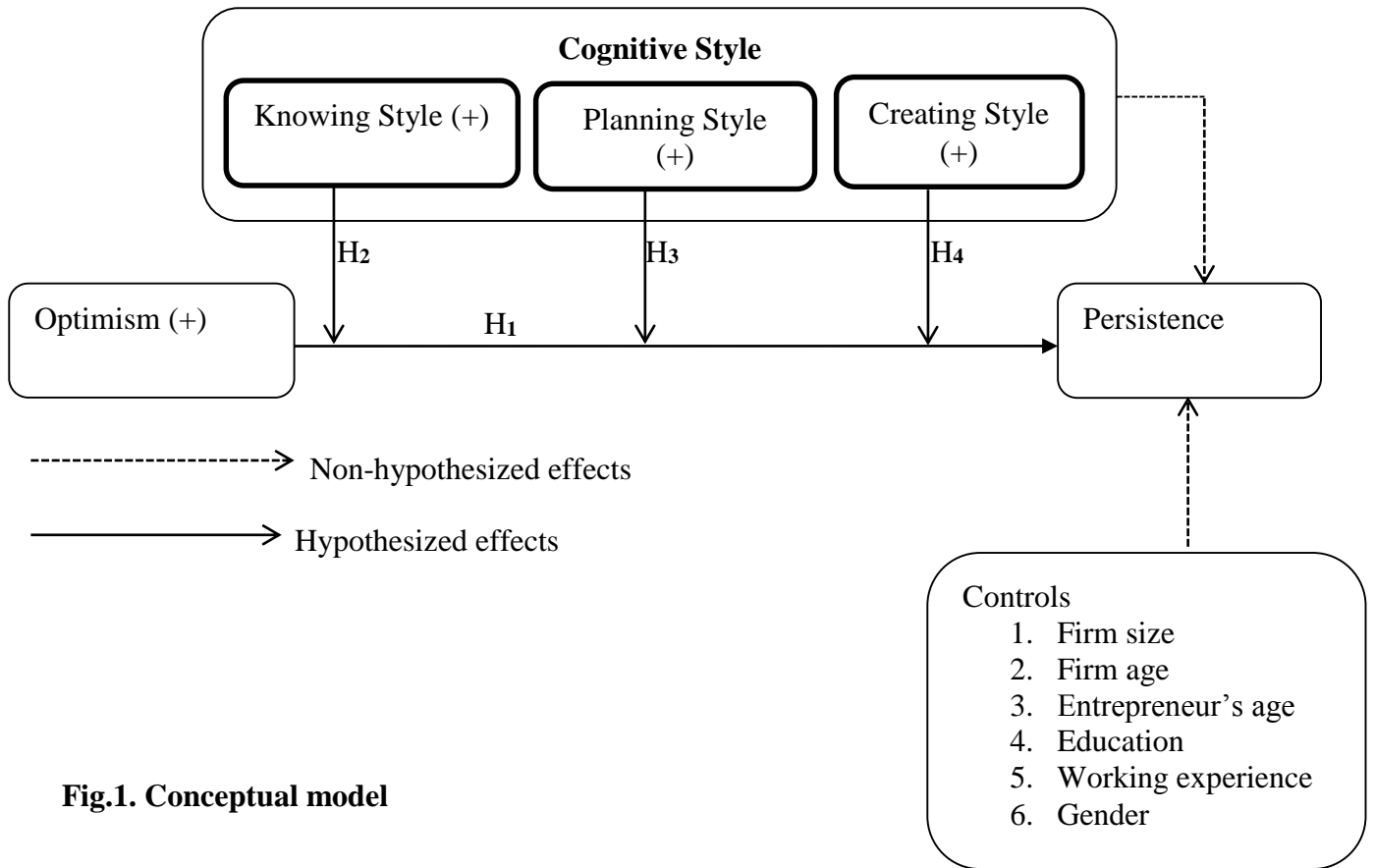
\*p<0.5

\*\*p<

Table 5: Results of Hierarchical Regression Models of Persistence (N=198)

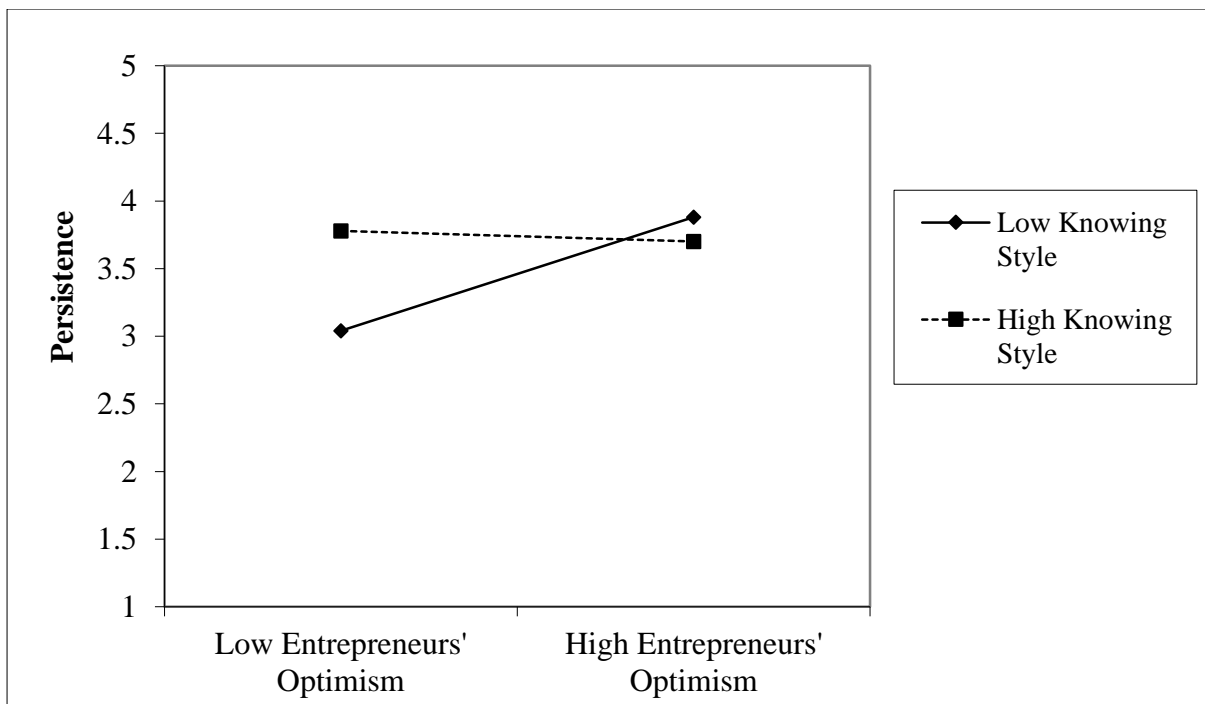
<b>Variables</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
Firm control variables				
Firm size	-.27***	-.24***	-.24***	-.36***
Firm age	.05	.11*	.12*	.17***
Individual control variables				
Age of founder	-.15***	-.17***	-.15***	-.28***
Gender	.03	.11*	.12*	.22***
Education	-.04	-.06*	-.05	-.01
Working experience	.13**	.18***	.11*	.06*
Main effects variables				
Knowing style (KS)		.01	.05	.14**
Planning style (PS)		.16***	.17***	.21***
Creating style (CS)		.12*	.13**	.12*
H <sub>1</sub> : Entrepreneurs' optimism (EO)			.17***	.19***
Two-way interactions				
H <sub>2</sub> : EO x KS				-.23***
H <sub>3</sub> : EO x PS				.26***
H <sub>4</sub> : EO x CS				.30***
Model fit				
R <sup>2</sup>	.180	.213	.233	.369
Adj. R <sup>2</sup>	.145	.167	.184	.317
ΔR <sup>2</sup>		.034	.020	.136
F-value	5.178***	4.585***	4.691***	7.109***
Mean VIF	1.66	1.36	1.88	1.75

\*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.10.



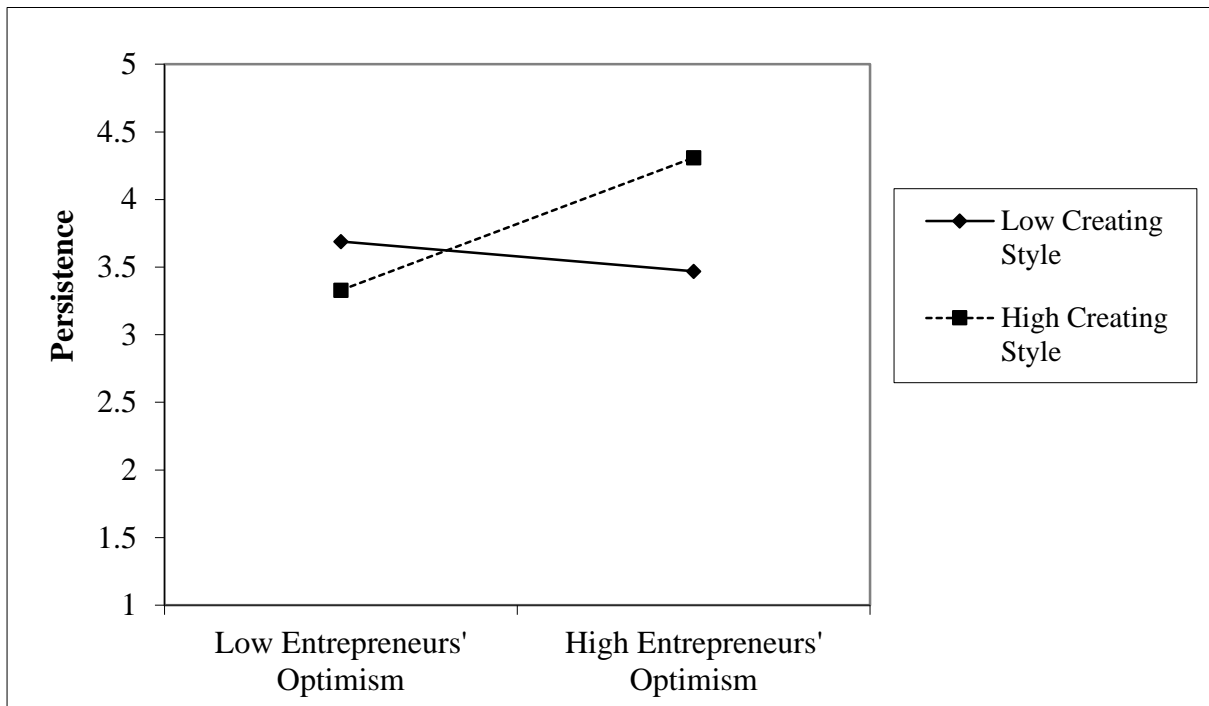
**Fig.1. Conceptual model**

**Figure 2:** Interaction of Effect of entrepreneurs' optimism with knowing style on persistence



**Figure 3:** Interaction of Effect of entrepreneurs' optimism with creating style on persistence





**Figure 4:** Interaction of Effect of entrepreneurs' optimism with planning style on persistence

