

# How attitude, need for achievement and self control personality shape entrepreneurial intention in students



## Authors:

Obey Dzomonda<sup>1</sup>   
Brownhilder N. Neneh<sup>1</sup> 

## Affiliations:

<sup>1</sup>Department of Business Management, Faculty of Economic and Management Sciences, University of the Free State, Bloemfontein, South Africa

## Corresponding author:

Obey Dzomonda,  
dzomondao@gmail.com

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**Background:** Entrepreneurial intention (EI) is necessary for developing entrepreneurship as it is a good predictor of engaging in actual entrepreneurial activities. On this account, it is necessary to understand the determinants of EI. Nevertheless, a study incorporating mechanisms and boundary conditions on the relationship between need for achievement (nAch) and EI, from a developing country's perspective, has been lacking.

**Aim:** Firstly, in the current study the aim is to assess the relationship between nAch and EI. Secondly, the aim is to establish whether entrepreneurial attitudes (EA) positively mediate the relationship between nAch and EI. Thirdly, the study examined whether SCP moderates the indirect nAch– EA– EI relationship.

**Setting:** The study was conducted among students from all faculties at a South African university.

**Method:** The authors adopted a quantitative research method, and data were collected using a questionnaire distributed to 723 students at a South African university. The analysis was performed using the Partial Least Squares Structural Equation Modeling PLS-SEM statistical software.

**Results:** The findings showed a positive and significant relationship between nAch and EI. Furthermore, it was shown that EAs positively mediate the link between nAch and EI. The indirect nAch – EA – EI relationship was also positively and significantly moderated by SCP.

**Conclusion:** In conclusion, this study shed light on the nuanced understanding of the nAch – EA – EI association by proposing and validating the moderating role of SCP, an approach that has been lacking in existing studies.

**Contribution:** The study contributes to the body of knowledge, through new empirical findings generated from the moderated mediation analysis in the context of a developing country.

**Keywords:** entrepreneurial intention; entrepreneurial attitudes; need for achievement; self-control personality, personality traits.

## Introduction

Policymakers worldwide agree that entrepreneurship is the primary driver of job creation, innovation, technological progress, economic growth and development (Berman, Cano-Kollman & Mudambi 2022; Foellnhofer & Kraus 2015; Fellnhofer & Kraus 2015; Pejic Bach, Aleksic & Merkač-Skok 2018). Entrepreneurship starts from the generation of entrepreneurial intention (EI) (Kong, Zhao & Tsai 2020; Vodá & Florea 2019). Intention plays a vital role in a person's decision to start an entrepreneurial activity (Barba-Sánchez & Atienza-Sahuquillo 2018; Liguori et al. 2020; Liñán & Chen 2009). Entrepreneurial intention refers to 'a self-acknowledged conviction by a person that they intend to set up a new business venture and consciously plan to do so at some point in the future' (Thompson 2009:676). Entrepreneurial intention is necessary for developing entrepreneurship and a good predictor of planned behaviour (Farrukh et al. 2018; Kong et al. 2020; Uysal et al. 2021). Extant research investigated the factors that lead people to develop entrepreneurial intention (EI) (Liguori et al. 2020; Wiklund, Wright & Zahra 2019). Amongst the various factors, individual traits have been recognised as having different roles in forming EI (Liguori et al. 2018).

An essential individual trait in the literature about entrepreneurship is the need for achievement (nAch) which refers to an individual's ambition for significant accomplishment, the mastering of skills, and attaining of challenging goals (McClelland 1961:45). Need for achievement helps

individuals to be critical problem solvers which is one of the key characteristics needed to develop EI (Kerr, Kerr & Xu 2018; Kristiansen, Roberts & Abrahamsen 2008; Uysal et al. 2021). Individuals with a high nAch are more likely to demonstrate their creative skills and abilities when starting a new venture, as success in a new venture is for these individuals seen as an indicator of being a top performer in a difficult and unpredictable endeavour (Akhtar et al. 2020). Essentially, nAch has been associated with the likelihood of engaging in entrepreneurial activity (Akhtar et al. 2020; Biswas & Verma 2021; Stewart & Roth 2007; Vodã & Florea 2019). Numerous conceptual and empirical studies support this notion, stating that a high nAch is positively related to having a strong intention towards entrepreneurial behaviour (Çolakoğlu & Gözükarar 2016; Kerr et al. 2018; Nasip et al. 2017). Nevertheless, there are concerns that nAch may not always directly predict EI (Kerr et al. 2018; Tewal & Sholihah 2020), suggesting the need to explore different mechanisms through which nAch may predict EI (Bignotti & Le Roux 2016; Uysal et al. 2021).

Existing studies suggest that entrepreneurial attitudes (EAs) are a crucial mechanism that may translate the positive effect of nAch on EI (Anwar et al. 2021; Asmara, Tri Djatmika & Indrawati 2016; Maharani, Indrawati & Saraswati 2020). Attitude is a frame of mind, that has an impact on the mindset and behaviour of individuals in order to display their EIs (Ajzen 1991; Fauzia & Agustina 2021). Attitude toward a behaviour refers to 'the degree to which a person has a favourable or unfavourable evaluation or appraisal of the behaviour in question' (Ajzen 1991:188). Regardless of the crucial role of EAs on the nAch–EI relationship, mixed findings abound in the existing literature. Other studies (Anwar et al. 2021; Maharani et al. 2020) reported that EA positively mediates the nAch–EI; yet, another study by Fauzia and Agustina (2021) reported contradictory findings. This indicates that the EA–EI association does not always hold under certain circumstances (Fazio & Williams 2015; Vodã & Florea 2019), suggesting that boundary conditions could explain this association. As a result, a nuanced understanding of this association is essential.

In this regard, the current study introduces the self-control personality (SCP) as a possible moderator of these associations. The self-control personality (SCP) is defined as the way individuals monitor, evaluate and align their behaviour towards attaining a certain goal (Gu et al. 2018). A self-control personality helps individuals to overcome fear and doubt surrounding the pursuit of their entrepreneurial goals (Van Gelderen, Kautonen & Fink 2015). We argue that SCP is a necessary boundary condition that may strengthen the indirect nAch–AT–EI relationship by regulating attitudes. This is because self-control is reported to give individuals a strong volitional power over their behavioural intentions (Gu et al. 2018; Molino et al. 2018).

In light of the aforementioned discussion, the study puts forth two important contributions. Firstly, it uses a different

context to corroborate the nAch–EI and nAch – EA– EI nexus; thus, extending the universality of these relations in the entrepreneurship literature. Secondly, it sheds light on the nuanced understanding of the nAch – EA– EI association by proposing and validating the moderating role of SCP. The moderated mediation model explored in this paper enhanced our understanding of the determinants of EI, an approach that has been lacking in the existing literature.

## Theoretical framework

In this study the theory of planned behaviour (TPB), the nAch theory, and the self-regulation theory were adopted to understand the formation of EIs. The TPB postulates that entrepreneurship is regarded as a planned behaviour resulting from EI. Hence, EI is believed to precede and account for significant variance in actual start-up behaviour (Ajzen 1991). The theory further explains that EI is a function of attitudes, subjective norms and perceived behavioural control. According to Ajzen (1991), attitudes refer to the beliefs and perceptions of a particular behaviour and the evaluation of whether it is desirable. Subjective norms describe one's perception of the role played by significant others in influencing one's behaviour. On the other hand, behavioural control explains one's perception regarding how difficult or easy it is to perform the behaviour. Existing scholars regard the TPB as a robust theory for explaining the formation of intentions; thus, it has been adopted widely in entrepreneurial studies (Ahmed, Khattak & Anwar 2020; Jena 2020; Otache, Edopkolor & Kadiri 2022). From this understanding, the TPB was adopted in this study to help us understand the determinants of EIs. Consistent with the TPB, the authors argue that the nAch predicts EI through EA, as shown in Figure 1.

In this study the nAch theory and the self-regulation theories are adopted to explain the associations proposed in the conceptual model in Figure 1. The nAch theory (Collins, Hanges & Locke 2004; McClelland 1961) is one theory that provides a framework for studying such processes. Thus, it will help to provide alternative explanations regarding the key variables. Based on this theory, people are motivated to take part in or withdraw from a situation based on the strength of the two opposing forces. Individuals will engage in an activity if their intrinsic motivation to participate outweighs their fear of failing. However, they will avoid or

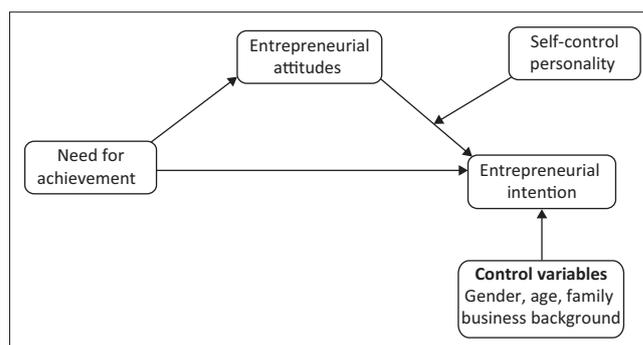


FIGURE 1: Conceptual model.

withdraw from the activity if their fear of failing outweighs their intrinsic motivation to participate (Collins et al. 2004; McClelland 1961). Need for achievement is a key construct in the nAch theory. Need for achievement is further described as the motivational factor behind entrepreneurial behaviour (Akhtar et al. 2020; Staniewski & Awruk 2019). In this case, some scholars argue that nAch is the main factor that distinguishes entrepreneurs from non-entrepreneurs (Akhtar et al. 2020; Pihie & Bagheri 2010; Stewart & Roth 2007).

On the other hand, the self-regulatory theory postulates that 'self-regulatory processes are goal-directed processes that are essential in an individual's effortful engagement and in his or her overcoming challenges over time' (Syed et al. 2020:2). Bandura (1991) further described self-regulation as a process of monitoring one's behaviour, judging such behaviour towards set goals, and affective self-reaction. Self-control is an essential construct of self-regulation (Baron, Mueller & Wolfe 2016). 'Self-control encompasses the cognitive processes through which individuals monitor, direct, evaluate, and adjust their behaviour in order to attain progress toward important goals' (Baron et al. 2016:56). It is understood to be a factor that helps an individual overcome setbacks by resisting external pressure (Gu et al. 2018). Thus, we argue that the indirect effect of nAch on EI, through EA, will be moderated by SCP.

## Hypothesis development

### Relationship between need for achievement and entrepreneurial intention

According to McClelland (1961), nAch is an internal psychological factor which motivates an individual to pursue a certain future goal. Since an entrepreneurial career is associated with goal setting and risk taking, individuals with a high nAch tend to choose this career over others as it matches their personality characteristics (Holland 1985; McClelland 1961; Stewart & Roth 2007). Essentially, achievement-oriented individuals are characterised by goal-setting ability, taking responsibility, and seeking feedback on their performance to attain that goal (Collins et al. 2004; McClelland 1961). Ideally, nAch drives individuals to take moderate risks to attain desired future goals. In this case, such individuals are restless until such a goal is achieved (McClelland 1961; Staniewski & Awruk 2019; Vodă & Florea 2019). In essence, individuals with a high nAch tend to be persistent in attaining a future goal which is a salient condition for developing EIs (Ida 2019; Popescu et al. 2016; Vodă & Florea 2019). This is supported by existing studies (Collins et al. 2004; McClelland 1961; Phuong & Hieu 2015) in which it is suggested that achievement-oriented individuals tend to be more inclined toward an entrepreneurial career. The authors of several studies agree that nAch is a crucial determinant of EIs (Akhtar et al. 2020; Çolakoğlu & Gözükar 2016; Nasip et al. 2017; Sharaf, El-Gharbawy & Ragheb 2018). Consistent with these studies, we argue that entrepreneurship is an achievement-oriented process that suggests that highly achievement-oriented

individuals develop high EI levels. Based on this argument, the hypothesis is stated as:

**Ha1:** nAch will positively predict EI.

### Relationship between need for achievement and entrepreneurial attitudes

Need for achievement is defined as 'the tendency to act towards a specific goal attainment that makes it possible to gain personal fulfilment even if it is necessary to surmount some obstacles' (Rutkowska & Gierczuk 2020:14). To attain the desired future goal, individuals with a high nAch trait, tend to align their ambitions with their belief systems, thought processes, behaviour, feelings, and emotions (EAs) (Asmara et al. 2016). This means that when an individual is motivated to attain a goal in the future, they tend to develop positive feelings, moods, emotions, and congruent behaviour that help them pursue such a path (Akhtar et al. 2020; Sun, Ni, Teh & Lo 2020). Thus, Rutkowska and Gierczuk (2020) argue that a high nAch should be matched with a corresponding attitude, making it feasible to attain the set goal. High achievers are reported to possess a positive attitude toward a particular goal (Stewart & Roth 2007). Need for achievement predicts several behavioural outcomes, such as EAs (Pihie & Bagheri 2010). The authors argue that nAch is a cognitive factor that may positively influence one's perception of the entrepreneurial career. On this background, it is hypothesised that:

**Ha2:** nAch will positively predict EA.

### Relationship between entrepreneurial attitudes and entrepreneurial intention

Entrepreneurial attitudes are individuals' beliefs about and perceptions of an entrepreneurial career (Liñán & Chen 2009). Existing studies (Jena 2020; Vamvaka et al. 2020) explain that EA is a function of the cognitive (beliefs, thoughts, knowledge), the affective (emotions, feelings) and the behavioural process (i.e. behaviour and overt willingness). In this study all the components to understand EAs are considered. A positive EA mentally prepares an individual to take risks and deal with challenges associated with starting a new business at a future date (Barrera-Verdugo & Villarroel-Villarroel 2022). Thus, EA is regarded as a proximal factor that is more crucial in predicting EI than any other factor (Ajzen 1991; Do & Dadvari 2017; Vodă & Florea 2019). A positive EA triggers a person's interest in establishing a business in the future (Dahalan, Jaafar & Rosdi 2015; Wu & Tian 2021). This means individuals who positively evaluate the entrepreneurship career, based on their beliefs, will likely develop a solid EI (Anjum et al. 2022). Likewise, Vodă and Florea (2019) reckoned that individuals with positive EAs are likely to invest in the identified goal and opportunity in future to realise their vision. In existing studies, it is agreed that EAs positively predict EIs (Ajzen 1991; Anwar et al. 2021; Maharani et al. 2020; Vamvaka et al. 2020). The authors, therefore, hypothesise that:

**Ha3:** EA will positively predict EI.

### The mediating role of entrepreneurial attitudes

Since entrepreneurship is considered a risky career associated with high levels of uncertainty (Baron et al. 2016; Koudstaal, Sloof & Van Praag 2014), before choosing this career, individuals always evaluate the rewards associated with such a goal, based on their beliefs, thought processes and emotions (Ajzen 1991). Thus, the motivation for a future goal embedded in the person's desire to succeed (McClelland 1961) can positively influence their attitudes towards establishing a business in future (Anjum et al. 2022; Asmara et al. 2016; Farrukh et al. 2018; Karimi et al. 2017; Sun et al. 2022). Thus, to start a business in the future, individuals need to leverage their positive EA to mentally prepare themselves to take risks and deal with the challenges of starting a new business (Barrera-Verdugo & Villarroel-Villarroel 2022). Consistent with Rutkowska and Gierczuk's (2020) study, the authors argue that individuals motivated to attain a future goal will positively align their attitudes to suit the demands of an entrepreneurial career. In this case, Karimi et al. (2017) argued that EAs act as proximal factors through which researchers can understand the link between EIs and distal factors such as nAch. This view is empirically supported by existing studies (Anjum, Ramani Bai & Nazar 2020; Maharani et al. 2020) in which it is found that EAs mediate the link between the nAch and EI. Based on this argument, we hypothesise that:

**Ha4:** EA will positively mediate the link between nAch and EI.

### The moderating role of the self-control personality

The SCP is defined as how individuals monitor, evaluate, and align their behaviour towards attaining a specific goal (Gu et al. 2018). The SCP comprises of promotion and prevention focus factors that are believed to predict EI (Gu et al. 2018; Tumasjan & Braun 2012). In this case, the promotion aspect of self-control helps individuals identify opportunities, set goals, and stay motivated, which are salient conditions for forming EI (Piperopoulos & Dimov 2015; Van Gelderen et al. 2015). On the other hand, the prevention aspect helps a person to self-regulate and remain committed to the set goals; thereby actively fighting fear and doubt that weakens EIs (Gu et al. 2018; Molino et al. 2018). A SCP helps individuals to overcome the fear and doubt surrounding the pursuit of their future plans (Van Gelderen et al. 2015). It is reported to give individuals a strong volitional power over their behavioural intentions (Gu et al. 2018). Existing studies support the view that SCP plays a crucial role in the entrepreneurial process (Baron et al. 2016; Gu et al. 2018; Molino et al. 2018). For instance, Tewal and Sholihah (2020) found that high levels of SCP predict EI. This suggests that individuals with good self-control may tend to develop a strong intention to start a business because of their ability to overcome distractions such as fear and doubt (Van Gelderen et al. 2015). A SCP is known to mentally condition individuals so they can overcome procrastination through self-regulation behaviours (Baron et al. 2016). From this understanding, Molino et al. (2018) reported that entrepreneurs score higher in SCP than non-entrepreneurs. Thus, having self-control

may help individuals align their actions to future goals that are more meaningful to them, resulting in commitment toward such goals (Duckworth & Gross 2014; Gu et al. 2018). Self-control is a salient moderating variable between the nAch and entrepreneurial behaviour (Baron et al. 2016; Duckworth & Gross 2014; Gu et al. 2018). We also believe that self-control may help university students to remain focused and committed to their EI goals. Based on this foundation, the hypothesis is stated as:

**Ha5:** Self-control personality will moderate the indirect link in the nAch-EA-EI relationship

Even though individuals with a high nAch and positive EAs are likely to develop an intention to start a business in the future, the positive effect may vary among individuals. This variation in EI may be contingent on factors that moderate the link between EA and EI. This condition is noted in existing studies, in which it is argued that the effect of EA on EI is not always significant as it may require some favourable conditions (Fazio & Williams 2015; Vodă & Florea 2019). Furthermore, Vodă and Florea (2019:8) argued that 'the development of positive attitudes towards entrepreneurship is a necessary, yet insufficient, element to form EIs and manifest entrepreneurial behaviour'. This means once the high nAch fosters the positive development of EA, translating such positive EAs into strong EIs may require favourable boundary conditions (Wardana et al. 2020). One of the favourable boundary conditions may be SCP which is a function of the promotion and prevention focus (Gu et al. 2018; Tumasjan & Braun 2012).

The authors argue that there are two reasons why the EA-EI will be moderated by self-control; thus, positively influencing the indirect nAch-EA-EI relationship. Firstly, it is reported that the entrepreneurship as a career is associated with high levels of risk and uncertainty (Hsu, Wiklund & Cotton 2017; Koudstaal et al. 2014), which may discourage individuals from translating their positive EAs into strong EIs (Baron et al. 2016). Thus, the prevention aspect of self-control can help individuals self-regulate and remain committed to the set goals, overcoming fear and doubt, which are known to weaken an individual's EIs (Gu et al. 2018; Molino et al. 2018).

Secondly, while it is reported that individuals with a high nAch may foster their EA, translating such EA into EIs may require goal discipline and motivation as students are confronted with a dilemma between choosing employment and an entrepreneurial career. In this case, some individuals may have high EAs, but opt to pursue employment (Wardana et al. 2020). Thus, for positive EAs to translate into EI, the individual must be committed to that goal, which is explained by self-control (Baron et al. 2016). The promotion aspect of self-control may help an individual identify opportunities and set goals, while staying motivated which are salient conditions for forming EI (Piperopoulos & Dimov 2015; Van Gelderen et al. 2015). Additionally, self-control may

help individuals align their actions to future goals more meaningful to them, resulting in commitment to such goals (Duckworth & Gross 2014; Gu et al. 2018).

Thus, we argue that EI will be high when both EA and SCP are favourable. The understanding is that when individuals have low self-control, they are likely to be distracted from pursuing their entrepreneurial goal due to fear, doubt, and procrastination since entrepreneurship is considered a risky career. Thus, once an individual with a high nAch, develops a positive attitude towards entrepreneurship, translating such positive EA into EIs is contingent on self-control. It is known to help individuals overcome fear and doubt surrounding the pursuit of their plans. On this account, the hypothesis is stated as:

**Ha6:** The effect of EA on EI will be moderated by SCP such that EI will be highest when both EA and SCP are favourable (i.e. high) and lowest when both factors are unfavourable (i.e. low).

## Methodology

The current study was grounded on the foundations of the research philosophy of positivism. In this philosophy it is argued that a research phenomenon can be understood by collecting and analysing quantitative data to derive verifiable findings (Saunders et al. 2019). Essentially, the positivism philosophy made it possible to attain objectivity and generalisability in the findings (Bell, Bryman & Harley 2022; Saunders et al. 2019). The quantitative research method was deemed suitable for this study since the researchers intended to collect and analyse numerical data to understand the research phenomenon (Bell et al. 2022). A causal research design was adopted since the intention is to examine the interplay of nAch, EAs, and SCP on the EI of university students. The population was students at a South African university. The population size is estimated to be 41 169. The university students sample was considered because of the growing interest among researchers to explore entrepreneurial activities among this group (Neneh 2019; Shirokova, Osiyevskyy & Bogatyreva 2016).

### Sample design and data collection

Data for this study were collected through a questionnaire distributed to students at a South African university. A non-probability sampling method was adopted, in which convenience-sampling technique was used to recruit participants from all the university faculties such as Economics and Management Sciences, Education, Humanities, and Natural and Agricultural Sciences. A sample size of 850 students was deemed sufficient for the purpose of the study. The sample size was calculated using an online Raosoft sample size calculator. The convenience-sampling technique was used because the participants were readily available and willing to participate in the survey. To be included in the survey, the participant should have registered for the 2022 academic year. Any student who was already running a business was excluded from participating in the survey since the study aimed to understand the formation of EI. Ideally,

the current generation Z group of students is entrepreneurial and characterised by a high nAch (Dodgson & Gann 2020; Sharma & Gokhale 2022), which gave the researchers the assurance to obtain quality responses from the participants. Out of 850 questionnaires distributed, 723 were correctly completed resulting in a 85% response rate.

## Measurement of variables

### Entrepreneurial intention

In this study EI was measured using six items anchored on a 5-point Likert scale, ranging from (1) strongly disagree to (5) strongly agree. These were adopted from other similar studies in which the scale exhibited high levels of reliability and validity (Liñán & Chen 2009; Zhao, Seibert & Hills 2005). Sample questions included: 'My professional goal is to become an entrepreneur' and 'I have a strong intention to start a business someday', among others.

### Entrepreneurial attitudes

Entrepreneurial attitudes were measured using six items adapted from past studies (Azjen 1991; Liñán & Chen 2009). Some of the sample items included: 'A career as an entrepreneur is attractive for me' and 'Being an entrepreneur would entail great satisfaction for me', among others. These items were anchored on a 5-point Likert scale ranging from (1) strongly disagree to (5) strongly agree.

### Need for achievement

Need for achievement was measured using four items. These were adapted from past studies, such as Uysal et al. (2021). One of the items was: 'I need to prove that I can succeed'. These items were anchored on a 5-point Likert scale, ranging from (1) strongly disagree to (5) strongly agree.

### Self-control personality

Self-control was measured using eight items. These were adopted from previous studies in which the scale exhibited high levels of reliability and validity (Baron et al. 2016; Gu et al. 2018; Molino et al. 2018; Tangney et al. 2004; Van Gelderen et al. 2015). Some of the sample items included: 'People think I have iron self-discipline', and 'I can work effectively to reach long-term objectives'. These items were anchored on a 5-point Likert scale, ranging from (1) strongly disagree to (5) strongly agree.

### Control variables

It is crucial to also control for other variables that may influence the dependent variable being tested (Meoli et al. 2020; Otache, Edopkolor & Okolie 2021). Factors such as gender, age, experience, and family business background were considered control variables in previous EI studies (Neneh 2020; Otache et al. 2021). Specifically, Shirokova et al. (2016) reported that experience and family business background predict EI. Consistent with these studies (Meoli et al. 2020; Otache et al. 2021), gender, age, and family business background were incorporated as control variables in the current study. A dummy variable was used to measure

control variables such as gender and family business background. The coding was as follows (male = 1; female = 0) and family business experience (Yes = 1; No = 0). This approach was consistent with previous studies (Meoli et al. 2020; Uysal et al. 2021).

## Ethical considerations

The authors adhered to all ethical considerations stipulated by the University of the Free State ethical protocols. The authors applied and obtained Ethical Clearance number: UFS-HSD2021/0770/21) before commencing the data collection process. Furthermore, informed consent was obtained from the participants who volunteered to participate in the study.

## Data analysis

Before conducting inferential statistics, the data were assessed for missing values and outliers in SPSS. All the problems were resolved at this stage. The SMART-PLS version 3.0 was utilised to analyse the data. According to Hair et al. (2019), PLS-SEM enables researchers to test complex models, incorporating mediation and moderation mechanisms in one model which may be difficult to evaluate using other statistical tools, such as regression. Since our study intended to test a moderated mediation model, the PLS-SEM enabled us to execute the procedure correctly. Another critical advantage of using PLS-SEM is that it enables researchers to test theoretical relationships which was the case with our paper. The PLS-SEM was also adopted because it has mechanisms to evaluate the measurement model and the structural model which ensures that issues of reliability and validity, model fit and the predictive power of the model are addressed to generate quality findings (Hair et al. 2019, 2021; Sarstedt, Hair & Ringle 2022).

## Results

### Demographic characteristics of the participants

Table 1 presents findings on participants' background information. The findings show that males (55%) were the majority. The dominant age group among the participants was those between 21 and 25 years (76%) and mainly black people (46%). Most of the participants (54%) were from the faculty of Natural and Agricultural Sciences.

### Descriptive statistics

Table 2 presents descriptive statistics and correlations among key variables. The findings showed that most of the students exhibited favourable levels of nAch (mean, 4.22; SD, 0.934), EA (mean, 4.43; SD, 0.603), EI (mean, 4.57; SD, 0.495), and SCP (mean, 4.73; SD, 0.856). The findings further showed that EI and EA were correlated ( $r = 0.333$ ;  $p = 0.01$ ). Moreover, the findings showed a positive correlation between nAch and EI ( $r = 0.288$ ;  $p = 0.01$ ) and nAch and EA ( $r = 0.473$ ;  $p = 0.01$ ).

## Evaluation of the measurement model

Since the researchers adapted the measures of the constructs from existing literature, it is imperative to report on issues of the reliability and validity of the adapted constructs (Hair et al. 2019). All the factors loaded perfectly as indicated by the values in Table 3, ranging from 0.729 to 0.975. The reliability of the scales was acceptable as the Cronbach's alpha (CA) values ranging from 0.858 to 0.983 were all above the threshold value of 0.70 as recommended by Hair et al. (2019). Composite reliability (CR) values ranged from 0.812 to 0.986 are acceptable as they are above the recommended threshold value of 0.7 (Hair et al. 2019; Henseler, Ringle & Sinkovics 2009). Considering both the CA and CR values, the internal consistency of the data-collection tool was satisfactory.

**TABLE 1:** Demographic characteristics of the participants.

Variables	Category	%
Gender	Male	55
	Female	45
Age	20 years and below	2
	21–25 years	76
	26–30 years	22
Race	Black people	46
	White people	41
	Coloured people	13
Faculty	Economic and Management Sciences	25
	Education	12
	Humanities	9
	Natural and Agricultural Sciences	54

**TABLE 2:** Mean, standard deviation, correlations.

Scale	Mean	SD	1	2	3	4
1. Entrepreneurial intention	4.57	0.495	1	-	-	-
2. Entrepreneurial attitudes	4.43	0.603	0.333**	1	-	-
3. Need for achievement	4.22	0.934	0.288**	0.473**	1	-
4. Self-control personality	4.73	0.856	0.183**	0.555**	0.514**	1

Note: Litewise  $N = 723$ .

SD, standard deviation.

\*\*, Correlation is significant at the 0.01 level (2-tailed); \*, correlation is significant at the 0.05 level (2-tailed).

**TABLE 3:** Evaluation of the measurement model.

Constructs	Items	Loadings	CA	CR	AVE
EA	EA1	0.975	0.983	0.986	0.921
	EA2	0.974	-	-	-
	EA3	0.970	-	-	-
	EA4	0.953	-	-	-
	EA5	0.912	-	-	-
	EA6	0.971	-	-	-
EI	EI1	0.942	0.917	0.937	0.750
	EI2	0.923	-	-	-
	EI3	0.812	-	-	-
	EI4	0.776	-	-	-
	EI5	0.867	-	-	-
nAch	nAch1	0.956	0.920	0.949	0.862
	nAch2	0.904	-	-	-
	nAch3	0.925	-	-	-
SCP	SCP1	0.975	0.858	0.812	0.530
	SCP2	0.729	-	-	-
	SCP3	0.746	-	-	-
	SCP4	0.797	-	-	-

AVE, average variance extracted; EA, entrepreneurial attitudes; EI, entrepreneurial intention; nAch, need for achievement; SCP, self-control personality.

Convergent and discriminant validity were tested and reported on to evaluate validity issues. The average variance extracted (AVE) was used to ascertain convergent validity. Based on the rule of thumb, AVE values equal to or above 0.50 are acceptable (Bagozzi & Yi 1988; Hair et al. 2019). As indicated in Table 3, AVE values ranged from 0.530 to 0.921, showing satisfactory levels of convergent validity.

### Discriminant validity

Discriminant validity was assessed using the Fornell and Larcker (1981) criterion. According to Fornell and Larcker (1981:46), 'discriminant validity is attained when the square root of AVE values is greater than the relative inter-construct correlation values'. As indicated in Table 4, the AVE square root of each construct as shown by the bold diagonal values is greater than the correlation coefficients of the constructs. This suggests that discriminant validity was attained as Fornell and Larcker (1981) recommended.

### Structural model assessment

The structural model (Figure 2) was tested with the SmartPLS software using the bootstrapping method with 5000 sub-samples. The researchers adopted the steps recommended by Hair et al. (2019) to evaluate the structural

model. The first step is to assess the possible presence or absence of collinearity. In this case, Hair et al. (2019) submit that there is no collinearity if the VIF values are < 3. The VIF for nAch, EA, SCP and EI were 2.73, 3.3, 1.36 and 2.85, respectively, indicating no collinearity issues. In this study the R<sup>2</sup> values were 0.677 on the nAch–EA relationship and 0.791 on the nAch–EA–EI relationship. The R<sup>2</sup> values were moderate and substantial, respectively, as Hair et al. (2019) indicated. Table 5 presents findings on the direct hypothesised relationships. The nAch–EI relationship was positive and significant ( $\beta = 0.233$ ;  $t = 3.175$ ;  $p = 0.000$ ), supporting hypothesis 1. Moreover, the link between nAch and EA was positive and significant ( $\beta = 0.823$ ;  $t = 31.564$ ;  $p = 0.000$ ), which supported hypothesis 2. Also, the connection between EA and EI ( $\beta = 0.561$ ;  $t = 8.125$ ;  $p = 0.002$ ) was positive and significant, which supported hypothesis 3. The structural model is depicted in Figure 2.

### Mediation analysis

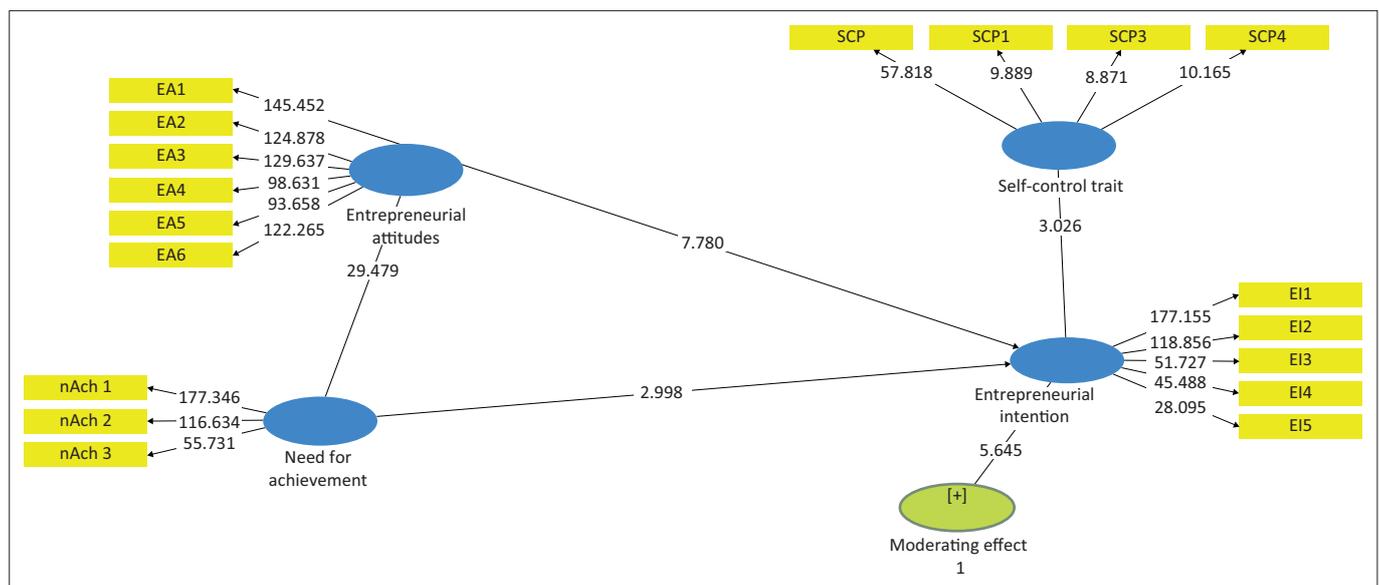
Consistent with existing studies (Baron & Kenny 1986; Li, Makhdoom & Asim 2020), mediation is said to have occurred if the direct relationship between the independent and dependent variables is positive. In addition, the link between the independent variable and the mediator variable should be positive. Likewise, the mediator variable should also positively predict the dependent variable (Baron & Kenny 1986; Li et al. 2020). Interestingly, these conditions were all met as a positive and significant association was established between the nAch–EI, nAch–EA and the EA–EI. The bootstrapping technique with 5000 samples was employed to test the possibility of mediation. The indirect effect of nAch on EI through EA was found to be positive and significant ( $\beta = 0.462$ ;  $t = 7.313$ ;  $p = 0.000$ ). This shows that EA significantly mediates the nAch – EI relationship, which supported hypothesis 4. Nevertheless, the indirect effect was partial mediation. The mediation findings are summarised in Table 6.

TABLE 4: Discriminant validity.

Constructs	EA	EI	nAch	SCP
EA	<b>0.960</b>	-	-	-
EI	0.821	<b>0.866</b>	-	-
nAch	0.823	0.700	<b>0.928</b>	-
SCP	0.658	0.545	0.824	<b>0.728</b>

Note: The bold diagonal values show the square root of AVEs for each construct. These diagonal values need to be shown in bold to show the reader that discriminant validity was established when the bold values are greater than the correlation coefficients of the Constructs.

EA, entrepreneurial attitudes; EI, entrepreneurial intention; nAch, need for achievement; SCP, self-control personality.



EA, entrepreneurial attitudes; EI, entrepreneurial intention; nAch, need for achievement; SCP, self-control personality.

FIGURE 2: Structural equation model.

## Moderation analysis

Finally, the moderated mediation analysis was performed with the SmartPLS to assess whether the observed indirect effects of nAch on EI, through EA, will be moderated by SCP. The moderation effect of SCP on the indirect nAch–EA–EA relationship was tested, based on hypothesis 5. The results showed that SCP positively and significantly moderates the indirect nAch–EA–EI relationship ( $\beta = 0.251$ ;  $t = 5.703$ ;  $p = 0.000$ ). The EA – EI relationship was further tested against different levels of SCP as shown in Figure 3. As shown in Figure 3, SCP strengthens the indirect nAch–EA–EI relationship. This confirmed hypothesis 6.

## Discussion

Entrepreneurship plays a crucial role in enhancing economic growth and development (Molino et al. 2018). The entrepreneurship process is a function of EI (Uysal et al. 2021). Thus, EI is a salient precursor to new business gestation processes. This has inspired researchers' interest in identifying its determinants (Farrukh et al. 2018; Uysal et al. 2021). In the current study the effect of nAch on EI is tested directly and indirectly through EA. The findings supported the hypothesis that nAch positively predicts EI. This is supported by other existing findings (Ida 2019; Popescu et al.

2016; Vodă & Florea 2019). Need for achievement is also a factor that motivates an individual to engage in innovative behaviours, favourable for EI development (Akhtar et al. 2020; Biswas & Verma 2021; Vodă & Florea 2019). The current study further tested the indirect effect of nAch on EI through EA to address the shortcomings of previous studies (Göksel & Aydintan 2011; Nabil 2020; Nieuwenhuizen 2016), which only tested a direct relationship between nAch and EI. The results indicated that EA significantly mediates the nAch–EI relationship. These findings agree with previous studies conducted in other contexts (Anjum et al. 2022; Asmara et al. 2016; Farrukh et al. 2018; Sun et al. 2022). In essence, EAs act as proximal factors that connect distal factors such as nAch to EIs (Karimi et al. 2017). The current study further tested whether SCP moderates the indirect nAch–EA–EI relationship. The results showed that self-control positively moderates the EA–EI link, strengthening the indirect nAch–EA–EI relationship. This was based on the argument that even though individuals with a high nAch and positive EAs are likely to develop an intention to start a business, the positive effect is not consistent among individuals. This variation in EI may be contingent on factors that moderate the link between EA and EI. This condition was noted in previous studies, in which it is argued that the effect of EA on EI is not always significant. The relationship between EA and EI may require favourable conditions to be substantial (Fazio & Williams 2015; Vodă & Florea 2019). A SCP can provide such conditions as it helps individuals self-regulate and remain committed to the set goals, overcoming fear and doubt, which weaken individuals' EIs (Gu et al. 2018; Molino et al. 2018).

TABLE 5: Direct effects.

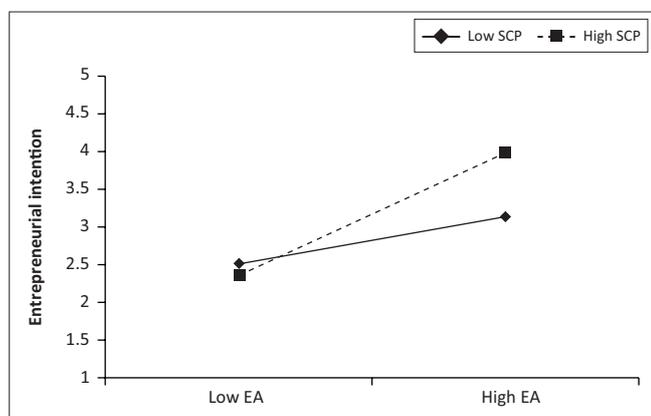
Variables	Path	Beta	T	P	Decision
<b>Hypothesis</b>					
H1	nAch -> EI	0.233	3.175	0.000	Supported
H2	nAch -> EA	0.823	31.564	0.000	Supported
H3	EA -> EI	0.561	8.125	0.002	Supported
<b>Control variables</b>					
1	Gender -> EI	0.001	0.047	0.962	-
2	Age -> EI	0.004	0.239	0.811	-
3	Family BH -> EI	-0.019	1.131	0.258	-

EA, entrepreneurial attitudes; EI, entrepreneurial intention; nAch, need for achievement; BH, business history.

TABLE 6: Mediation effects.

Hypothesis	Path	Beta	T	P	Decision
H4	nAch ->EA ->EI	0.462	7.313	0.000	Supported

EA, entrepreneurial attitudes; EI, entrepreneurial intention; nAch, need for achievement.



EA, entrepreneurial attitudes; SCP, self-control personality.

FIGURE 3: Probing the need for achievement-entrepreneurial attitudes, the entrepreneurial intention indirectly links at different levels of the self-control personality.

## Theoretical implications

The current study has several theoretical implications. Firstly, the present study contributed theoretically by merging the TPB with the nAch theory and the self-regulation theory to understand EI determinants. A framework of this nature has been lacking in previous studies. This is supported by other studies that have expanded the TPB using theoretical variables (Farrukh et al. 2018; Shepherd & Wiklund 2020). Shepherd and Wiklund (2020) recommended such an approach by arguing that researchers should go beyond just adopting an existing theory, but make meaningful improvements. The current study further improved our understanding of the determinants of EI by developing and testing a moderated mediation model on the nAch–EI and the nAch–EA–EI relationships. This has been lacking in previous studies as other scholars predominantly tested the direct relationship between nAch and EI (Göksel & Aydintan 2011; Nabil 2020; Nieuwenhuizen 2016) without taking into consideration the context, mechanisms and boundary conditions which better explain this relationship. The nAch is culturally dependent and may vary among cultures and countries. Thus, establishing that nAch positively and significantly predicts EI, through EA, from a developing country context, added value to our theoretical understanding of the development of EIs, which resolved the mixed findings on the indirect nAch–EA–EI

relationship. Another critical contribution is that in this study the moderating role of SCP on the indirect nAch–EA–EI relationship was further tested. This is a significant theoretical contribution as it strengthened the model's predictive power.

### Practical implications

The current study has several practical implications which are beneficial to different stakeholders such as policymakers in government who are mandated to boost youth entrepreneurship, practitioners, university students and institutions of higher learning. Essentially, the present study coincides with the moment when the government and other policy makers consider entrepreneurship as a sustainable way to create jobs in South Africa (Meyer & Meyer 2022). Thus, the moderated mediation model, developed in this study to understand the key determinants of EI may help policymakers customise their entrepreneurial support programmes to suit the personality traits of the targeted beneficiaries for impact. Interestingly, there is evidence that current university students, i.e. generation Z (born between 1996 and 2010), are characterised by high nAch and high EIs (Dodgson & Gann 2020; Popaitoon 2022). This means the government may harness such and develop meaningful and stable EIs from this group. University students may also practically benefit from the current study's findings. It may help them develop their nAch by setting smart goals that can be achieved by learning. In addition, the findings may also help students self-regulate their attitudes toward specific goals that are more meaningful to them. In essence, university students may learn these traits to accomplish their goals. Ideally, nAch can help students to remain practically motivated in the pursuit of their goals (Akhtar et al. 2020; McClelland 1961), while SCP may grant the graduates volitional power in the formation and further development of their EIs (Gu et al. 2018). Moreover, self-control may help university students practically in overcoming the temptation of settling for employment, which may offer instant gratification, but rather choose new venture creation as a goal (Baron et al. 2016; Duckworth & Gross 2014). It is documented that factors such as nAch and self-control, as well as behaviours related to EAs, can be influenced by entrepreneurial education. Hence, the moderated mediation model developed and tested in this study may help practitioners and educators to design their learning and course materials to further develop these traits among students. The training materials should consist of practical activities that inspire traits such as nAch and self-control, which are salient determinants of EI.

### Limitations and direction for future research

Even though the current study achieved its objectives, it has some limitations. For instance, it only considered students at one university in South Africa. This may pose a limitation in terms of the lack of generalisability of the findings. Future studies may test the current model at other universities in South Africa. Since intentions are not stable, future studies

may also consider linking these variables to entrepreneurial behaviour in a two-wave study.

## Conclusion

A study incorporating mechanisms and boundary conditions into the relationship between nAch and EI has been lacking from the perspective of a developing country. Thus, by proposing and testing the moderated mediation model, our study nuanced our understanding of the determinants of EI by demonstrating that nAch significantly predicts EI directly, as well as indirectly through EA. The results confirmed that EA significantly and positively mediates the nAch–EI relationship, thus resolving the mixed findings debate in the existing literature. Moreover, our study proved that SCP moderates the indirect nAch–EA–EI relationship such that EI will be highest when both EA and SCP are favourable (i.e. high).

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The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

### Authors' contributions

O.D and B.N.N, contributed equally in the conceptualisation, write up and editing of the article.

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### Data availability

Data will be made available upon request from authors; O.D and B.N.N.

### Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

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