

# Self-esteem, need for achievement, risk-taking propensity and consequent entrepreneurial intentions



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**Background:** Entrepreneurship is an important economic driver, and universities are increasingly trying to create an entrepreneurial mindset among their students. This involves nurturing certain personality traits congruent with entrepreneurial intentions, such as *inter alia* self-esteem, a need for achievement and a risk-taking propensity.

**Aim:** This study aimed to determine the influence of self-esteem and need for achievement on students' risk-taking propensity and, consequent, entrepreneurial intentions.

**Setting:** This study was conducted on students from two South African universities.

**Methods:** Data were collected using a self-administered questionnaire distributed via the online platforms of two universities to a sample of 502 students. Data analysis included confirmatory factor analysis and path analysis.

**Results:** Confirmatory factor analysis suggests that the influence of self-esteem and the need for achievement on students' risk-taking propensity and, consequent, entrepreneurial intentions is a four-factor model that is valid and reliable. The path analysis estimates indicate that self-esteem and the need for achievement explain 26% of the variance of students' risk-taking propensity, which, together with its predictors, explains 24% of the variance in their entrepreneurial intentions.

**Conclusion:** The findings highlight the importance of a high risk-taking propensity in forging students' entrepreneurial intentions, and the salience of nurturing students' self-esteem and need for achievement in encouraging them to embrace calculated risks.

**Contribution:** This study confirms that a high risk-taking propensity is a determinant of students' entrepreneurial intentions and highlights the importance of developing tactics to nurture students' self-esteem and need for achievement in order to enable them to embrace calculated risks.

**Keywords:** self-esteem; need for achievement; risk-taking propensity; entrepreneurial intentions; student entrepreneurs.

## Introduction

Entrepreneurship has been hailed as the engine that drives the economy of a nation and is imperative for job creation, economic competitiveness, innovation and the advancement of societal interest (Davey et al. 2011:335; Geldhof et al. 2014:431; Kim-Soon, Ahmad & Ibrahim 2014:1001; Sa & Holt 2019:122; Semrau, Ambos & Kraus 2016:5). Despite this, the potential of entrepreneurship has not been fully realised in many developing countries, including South Africa. According to South Africa's Global Entrepreneurship Monitor (GEM) report, the country is characterised by low entrepreneurial activity and low job-creating new and established businesses ownership rates (Bowmaker-Falconer & Meyer 2022:15; Kerrin, Mamabolo & Kele 2017:1). Data pertaining to South Africa's entrepreneurial patterns reveal that one of the core problems is individuals' lack of confidence and skills to identify opportunities and take the risk to start new businesses (Herrington, Kew & Mwangi 2016/2017:58).

Early research into the link between personality and entrepreneurial intentions generally focused on personality traits such as locus of control, risk-taking propensity, the tolerance of ambiguity and the need for achievement. However, these studies were criticised for delivering inconsistent findings and often having poor methodological designs (Baum, Frese & Baron 2014:41; Drennan, Kennedy & Renfrow 2005:232). Consequently, in the 1970s and 1980s, the personality approach to studying entrepreneurial behaviour was discredited. Nonetheless, this approach gained new impetus in the 1990s, with credit given to the unifying five-factor model of personality, which

constitutes extraversion, neuroticism, openness to experience, agreeableness and conscientiousness (Brandstätter 2011:222; Liu 2021:267). While Leutner et al. (2014:59) indicated that there is still much debate concerning the significance of personality as a predictor of entrepreneurial behaviour, Brandstätter (2011:229) and Liu (2021:267) stated that personality traits should not be disregarded as they contribute to an entrepreneurs' way of thinking, doing, goal setting and achievements. Leutner et al. (2014:59) opined that narrow traits such as the need for achievement, self-confidence, innovativeness, stress tolerance, the need for autonomy and a proactive personality produce higher correlations with venture creation and success compared to the broad unmatched traits of the five-factor model of personality. Abbassi and Sta (2019:235) and Olszewska (2015:601) concurred highlighting that strengthening traits such as the need for achievement, risk-taking propensity, self-esteem and set values positively influences entrepreneurial intentions.

In South Africa, there are two particularly salient socioeconomic challenges, namely, high unemployment and high inequality (Herrington & Kew 2015/2016:23; Moche et al. 2023). The National Development Plan, developed and published in November 2011, represents a blueprint of essential capabilities needed to transform the economy and society and aspires to eradicate poverty and lessen inequality in South Africa by 2030. Central to this plan is increasing employment levels through productivity growth and increasing the income of working individuals (NPC 2011). In addition, South Africa needs to create a more inclusive and diversified economy by enhancing levels of investment, expanding skills and human capital formation, as well as increasing net exports (Meyer, Muzindutsi & Chipeta 2017:35).

Entrepreneurial activity has been proven to advance the investment climate and support a country's overall economic development. Therefore, it is crucial to develop an enthusiasm for entrepreneurship among the younger generation (Meyer & Meyer 2017:430; Olszewska 2015:597). Student entrepreneurship is an essential component of entrepreneurship research because it is during these formative years that an entrepreneurial conscience and attitude towards an entrepreneurial livelihood are shaped (Shirokova, Osiyevskyy & Bogatyreva 2016:387). The stimulation of student entrepreneurship by tertiary institutions is critical, because conventional education will no longer be sufficient to respond and adapt to the dire local and global economic environments (Malatjie 2020:113). As such, students will require entrepreneurial skills and assistance in developing certain personality traits for effective functioning in a complex economic environment (Malatjie 2020:114). Moreover, corporations are increasingly seeking, nurturing and rewarding young entrepreneurs with an entrepreneurial mindset and re-examining the degree to which their corporate culture allows for entrepreneurial thought and action (Davis, Hall & Mayer 2016:2).

In terms of this entrepreneurial mindset, self-esteem is a psychological characteristic that relates to people's confidence in their abilities, where higher self-esteem affords individuals with the feeling that they will succeed in their endeavours. Abbassi and Sta (2019:236) and Herdjiono et al. (2017:7) stated that a higher level of self-esteem leads to entrepreneurial behaviour, optimism about the future and the courage to experience failure. Risk-taking is correlated with self-esteem, as the higher the individuals' belief in their ability, the greater their self-efficacy or belief in their perceived control over the success of their decisions and actions (Markman, Baron & Balkin 2005:5) and the greater their readiness to try what others perceive as being too risky (Herdjiono et al. 2017:7). The need for achievement personality trait relates to the desire to excel, where individuals with a high need for achievement are driven to succeed (Anra, Ayun & Romios 2020:31). This success not only relates to accomplishment but also to surpassing relevant other (Murray 1938:164), suggesting that achieving recognition from referents is important. Excelling at anything typically necessitates accepting a degree of risk, meaning that risk propensity is associated with the need for achievement (McClelland 1987). The willingness to take risks is considered one of the main characteristics of entrepreneurship. Entrepreneurs are not afraid to take risks but do so by first evaluating the size of the risk and the risk-reward balance, that is, they take calculated risks (Agustina & Fauzia 2021:97). Therefore, individuals who are risk-averse are unlikely to be motivated to start a new business venture.

The concept of the entrepreneurial mindset is growing within tertiary education institutions as these institutions recognise the importance of instilling their students with a skill set that will adequately prepare them for the workplace of the 21st century. The 21st century's workplace is complex, requiring creative solutions for coping and succeeding in the ever-changing environment (Weilerstein & Monroe-White 2017). Entrepreneurial mindset factors, including the need for achievement, self-esteem and a risk-taking propensity, are important precursors to developing students' entrepreneurial intentions (Abbassi & Sta 2019:235). Given the high unemployment rate yet simultaneous low entrepreneurial activity rate in South Africa, more research is needed in the area of entrepreneurial mindset factors. Most studies focus on individual personality traits and their direct linkage to entrepreneurial intention. However, this study asserts that risk-taking propensity is central to the entrepreneurial mindset concept. As such, this study set out to determine whether higher levels of self-esteem and a need for achievement increase university students' risk-taking propensity and whether that risk-taking propensity influences their entrepreneurial intentions. The results of this study will contribute to the overall entrepreneurship literature by increasing the understanding of the relationship between personality traits and the entrepreneurial intentions of university students. It will also guide tertiary education institutions' actions undertaken to promote entrepreneurship among university students and instil them with an entrepreneurial mindset.

## Literature review

While there is no single definition and no one profile of what constitutes an entrepreneur (Baum et al. 2014:3; Diandra & Azmy 2020; Kuratko & Hodgetts 2007:32), the literature offers several definitions of entrepreneurship that can practically be grouped into three main dimensions. Firstly, *behaviours* highlight the particular individual's role and the specific behaviour that sets him or her apart from others. Secondly, *processes* linked to developing new business or innovation strategies and the planning processes, such as writing a business plan. Lastly, *outcomes* refer to creating value for society, new product or service development, innovation and new venture creation (Stokes, Wilson & Crotty 2010:7). From the aforementioned, it is clear that one cannot represent entrepreneurship by a single unit of thought (Alvarez & Barney 2020:302; Peneder 2009:90). However, what is evident is that the three dimensions overlap and that each dimension is deemed important. In summary, entrepreneurship can be understood in terms of the combination of behaviours, processes and outcomes.

The theory of planned behaviour, conceptualised by Ajzen (1988), has become one of the most utilised theoretical frameworks for clarifying and envisioning intentions and behaviours in various disciplines and suggests that the strength of intention is a predictor of behaviour (Kautonen, Van Gelderen & Fink 2015:655; Lortie & Castogiovanni 2015:935). The theory posits that behaviour is preceded by the intention to perform that behaviour and perceived control over the behaviour, where intentions are determined by attitudes towards the behaviour, subjective norms and perceived control over the behaviour (Lortie & Castogiovanni 2015:935).

Intentions can be described as the degree of willingness and effort an individual makes to perform a certain behaviour. The stronger the intention to perform a behaviour, the more likely it will lead to the planned behaviour (Lortie & Castogiovanni 2015:937). Intentions have three antecedents, namely, attitude, which can be described as the degree to which a person has a favourable or unfavourable disposition towards the behaviour in question; subjective norms, which refers to the perceived importance of relevant referents opinion concerning the behaviour; and perceived behavioural control or self-efficacy, which refers to the control individuals perceive they have over the behaviour (Kautonen et al. 2015:657). The theory hypothesises that when attitude towards behaviour and subjective norms are favourable, and a strong perceived behavioural control exists, the intention to perform the particular behaviour would be greater (Aliedan et al. 2022; Díaz-García & Jiménez-Moreno 2010:264).

## Theoretical framework and hypotheses development

The theory of planned behaviour has been used extensively in predicting entrepreneurial intentions (Lortie & Castogiovanni 2015; Piperopoulos 2012:466; Romero-Colmenares & Reyes-

Rodríguez 2022) and served as the underpinning of this study, whereby entrepreneurship is viewed as a planned process in which individuals cognitively decide to execute the activities of opportunity recognition, business creation and business development (Lortie & Castogiovanni 2015:936). In this study, behavioural intention is operationalised as entrepreneurial intentions. Given the inherent risk of entrepreneurial endeavours, attitude is operationalised as attitude towards risk. As entrepreneurs need to believe that they can succeed the uncertainty that accompanies starting a new venture, perceived behaviour control or self-efficacy is operationalised as self-esteem. Seeing that entrepreneurs like to obtain feedback from others on how they are functioning to assess or if required to improve their performance, subjective norms are operationalised as the need for achievement.

### Need for achievement and risk-taking propensity

McClelland (1961:39, 46, 49, 50) hypothesised the need for achievement as the drive to achieve success and social approval, where individuals with a high need for achievement actively seek out situations where they can get achievement satisfaction. He added that this motive is often associated with the development of early self-reliance and a continual drive for perfection and is linked to economic development and an entrepreneurial spirit. Studies comparing entrepreneurs with non-entrepreneurs report the need for achievement as being the most important psychological factor affecting entrepreneurial success (De Beer et al. 2008; Gurol & Atsan 2006). Vodă and Florea (2019), using a sample of 270 Romanian university students, found the need for achievement to be an important psychological predictor of intentions of starting a business in the future. Similarly, Anra et al. (2020) reported a significant positive relationship between the need for achievement and entrepreneurial intentions.

The qualities associated with individuals displaying a higher need for achievement include individuals who set challenging yet achievable goals and show a great deal of persistence and determination in pursuing their goals with behaviours characterised by a high degree of self-assertion, self-confidence and flexibility (Aulia & Evanita 2020:603; De Beer et al. 2008:4). Spinelli and Adams (2012:35) and Damayanti (2023:515) asserted that individuals with a high need for achievement like to obtain feedback from others on how they are functioning to assess or, if required, improve their performance. As such, entrepreneurs who obtain positive feedback are further inspired and determined to accomplish their goals. Furthermore, Murray (1938) indicated that a high need for achievement relates not only to accomplishment but also to surpassing relevant other, suggesting that the recognition of being a success among relevant referents is important. According to the literature, further characteristics relevant to the need for achievement are that these individuals perform better when given considerable independence. They prefer working alone, and money is not considered the main motivator (Venter,

Urban & Rwigema 2008:55). Pizarro (2014:154) described the need for achievement as a way of life rather than a modest drive to attain success. Therefore, it is important to instil an achievement motivation conditioning into individuals to create more effective entrepreneurs (De Beer et al. 2008:5; Soomro & Shah 2022:111). Encouraging early self-reliance, creating a climate of excellence, providing constructive feedback and encouraging independent thought and work among university students are thus all-important elements in fostering a high need for achievement and, consequently, an entrepreneurial spirit or mindset.

Chen, Su and Wu (2012) highlight that a strong desire to pursue and exploit challenging opportunities in the face of uncertainty is a manifestation of a strong need for achievement and a central characteristic of successful entrepreneurs. Individuals with a high need for achievement would have reasonable tendencies to take on the risks required to achieve success (McClelland 1987). As high need for achievement typically involves pursuing challenging goals that are difficult to accomplish because of uncertainty, individuals with high need for achievement orientation need to be able to embrace risks (Chen et al. 2012:1313). The findings of Karabulut (2016) support the assumption that the need for achievement, in conjunction with risk tolerance, predicts entrepreneurial intentions. Based on the literature reviewed, the first hypothesis was formulated as:

**H1:** University students' need for achievement has a significant positive influence on their entrepreneurial intentions via its influence on their risk-taking propensity.

### Self-esteem and risk-taking propensity

The perceived behaviour control dimension of the theory of planned behaviour aligns closely with the self-efficacy construct in Bandura's (1977) social learning theory in that both refer to individuals' belief that a behaviour is under their control and their confidence of being able to carry out that behaviour regardless of the circumstances (Chen et al. 1998). Rosenberg et al. (1995) distinguished between two types of self-esteem, namely, global self-esteem, which relates to overall psychological well-being, and specific self-esteem, which is more cognitive and tends to be strongly related towards behavioural outcomes. Rosenberg et al. (1995) further indicated that specific self-esteem is synonymous with self-efficacy in that both refer to individuals' belief in their ability to succeed in a specific situation or task. Therefore, while self-esteem and self-efficacy differ in that self-esteem relates to the general feeling of self-worth and self-efficacy relates to the judgement of specific capabilities, they are connected (Redmond 2016), with some researchers positing that they are the same construct (Brockner 1988:13–15; Eden & Kinnar 1991:771; Stanley & Murphy 1997:95; Zaman et al. 2021:4).

According to Stokes et al. (2010:172) and Jadmiko, Azliyanti and Putri (2019:8), self-esteem is a valuable attribute for

entrepreneurs, as they require a personal conviction and belief in their ability to implement their ideas. Obschonka et al. (2016) using a sample of 523 high school pupils in Finland reported a significant positive relationship between self-esteem and entrepreneurial intentions. Similarly, Simanjuntak et al. (2016) using a sample of 456 Indonesian undergraduate students found that self-esteem positively influences entrepreneurial potential.

Akhtar et al. (2020:116) opined that the need for achievement that drives an individual to start up a new venture also accentuates self-esteem as it bolsters an individual's belief in his or her ability to achieve success in the face of uncertainty and its associated risk. Individuals with higher self-esteem levels have confidence in their capabilities, allowing them to recognise opportunities and use them regardless of the associated risk (Al Issa 2021:3). Encouraging the higher levels of self-esteem and the confidence that are congruent with developing an entrepreneurial mindset among university students thus requires identifying their individual competencies and developing them, providing positive affirmations (Laguna 2013:260) and developing educational content that is focused on discovery, innovation and risk (Abbassi & Sta 2019:236).

As self-esteem is related to levels of perceived personal competence, which, in turn, is linked to the perception of control and the possibility of coping with processes that assume a certain risk, individuals with high self-esteem will be more inclined to assume the risk associated with starting a new business venture (Martínez-González et al. 2019:7). Bandura (1977) asserted that high levels of self-efficacy and self-esteem are needed to persist in the face of obstacles, uncertainty and risk. Indeed, Abbassi and Sta (2019) indicated that self-esteem is a prerequisite for success as it is associated with tenacity and innovative problem-solving and allows for risk-taking behaviour. In this regard, several studies report a positive relationship between high levels of self-esteem and a willingness to embrace risk (Densberger 2014:459; Li, Lu & Feng 2023; Yu & Chen 2016:687; Zhao et al. 2005:1268). Based on the literature reviewed, the second hypothesis was formulated as:

**H2:** University students' self-esteem has a significant positive influence on their entrepreneurial intentions via its influence on their risk-taking propensity.

### Risk-taking propensity and entrepreneurial intentions

Risk-taking propensity describes a person's inclination towards taking risks or avoiding them when challenged with uncertain conditions (Gurol & Atsan 2006:30). Risk can simplistically be defined as the variability surrounding the potential outcome of an action. This manifests as the counterbalance between potential reward in a business context and potentially lower profits, unexpected competition, low sales, higher costs or losses (Krüger & Meyer 2021:3; Venter et al. 2008:67). In the literature on entrepreneurship, entrepreneurs are mostly categorised as having a greater

propensity to take risks compared to other groups (Gurol & Atsan 2006:30). For example, it was found that entrepreneurs are more risk-prone than managers because they face unstructured situations more frequently. Also, entrepreneurs are more often faced with uncertainty about the outcomes of their decisions (Brandstätter 2011:226).

The literature on risk-taking propensity is two-sided. On the one hand, it suggests that entrepreneurs assess and calculate risk carefully and, therefore, are moderate to high risk-takers (Krueger 2015:15; Pizarro 2014:154). On the other hand, it is postulated that risk propensity is a key element of entrepreneurial activity (Krueger 2015:15; Pizarro 2014:154). Stokes et al. (2010:161) indicated that while entrepreneurs were initially thought to be high risk takers, current research indicates (Commarmond 2017) that they are more calculated risk takers. This conceptualisation of successful entrepreneurs as calculated risk takers is supported by the findings of Almeda et al. (2020) and those of Rashad (2018). According to Commarmond (2017:20), a person with an entrepreneurial mindset is willing to take risks rationally to achieve the desired outcome. Kuratko and Hodgetts (2007:120) asserted that entrepreneurs often view what the average person would consider as a high-risk decision, as being a moderate risk. In the study of Herdjiono et al. (2017), which tested the factors affecting entrepreneurship intention among 382 college graduates in Indonesia, self-concept and risk-taking propensity were found to have a significant and positive effect on entrepreneurship intention. Other studies have also shown that individuals who tend to take risks have a stronger incentive to engage in entrepreneurship (Agustina & Fauzia 2021:97). Asmara, Djatmika and Indrawati (2016) in a similar vein show a positive and significant correlation between risk taking and the intentions of entrepreneurship on their sample of 230 students.

Risk is an inescapable reality of starting an entrepreneurial venture (Venter et al. 2008:67). This suggests that equipping university students with an entrepreneurial mindset necessary for persevering and embracing the inherent uncertainty of becoming an entrepreneur requires that they learn the skill of being able to weigh up the benefits and costs of decisions objectively in order to be able to take calculated risks and focus on developing their problem-solving skills through innovative, creative, dynamic, flexible and critical thinking (Abbassi & Sta 2019; Agustina & Fauzia 2021). Based on the literature reviewed, the third hypothesis was formulated as:

**H3:** Risk-taking propensity has a significant positive influence on university students' entrepreneurial intentions.

## Research methods and design

The study applied a descriptive research design, gathering the required data using a single cross-sectional approach.

### Sampling and data collection

The target population for the study was defined as university students aged 18 years and older registered at South African

public universities. The sampling frame comprised a list of the 26 public universities. Owing to time and cost constraints, this sampling frame was narrowed down to include two universities using judgement sampling. The criterion applied was that the sample should include respondents from South Africa's two main types of universities, namely, a traditional university and a university of technology. Of the universities contacted, one traditional university and one university of technology agreed to consider providing access to their students. The questionnaire and cover letter were sent to these universities, and following their ethical clearance processes, permission was gained to post a link on their online platforms outlining the purpose of the study and inviting students to complete the questionnaire using Google Forms.

All ethical standards of academic research were adhered to throughout the study. The study was conducted ethically by ensuring that no harm befalls the respondents and that they were allowed to participate freely in the study based on informed consent. The respondents were assured of their right to privacy and that their identity would remain anonymous. The necessary ethical clearances and approvals were obtained from the relevant universities' ethics committees and the different universities' gatekeepers prior to the commencement of the data collection phase. The research instrument did not include questions that required any sensitive information from the respondents.

### Research instrument

A self-administered questionnaire was used to collect the required data electronically. The questionnaire included a cover letter, a section requesting demographic information and a section comprising scaled-response items. The cover letter outlined the purpose of the study, indicated the approximate time needed to complete the questionnaire, provided an assurance of the respondents' anonymity and the anonymity of the university at which they were registered, and provided the contact details of the researcher. Demographic information requested included gender, age, province of origin, institution and year of study. The scaled-response items used were from previously validated scales. The need for achievement was measured using five items from a scale developed by Netemeyer et al. (1995). Self-esteem was measured using eight items from the scale developed by Rosenberg (1965). Risk-taking propensity was measured using eight items from a scale developed by Zhang et al. (2019). Entrepreneurial intentions were measured using six items from a scale developed by Linan and Chen (2009). These items are provided in Table 2. The scaled-response item responses were recorded on a six-point Likert scale.

### Data analysis

The International Business Machines Corp's (IBM) Statistical Package for Social Sciences (SPSS) and Analysis of Moment Structures (AMOS), Versions 28, were used for data analysis.

The data analysis methods applied comprised frequencies and percentages for sample description purposes, as well as exploratory principle components analysis, confirmatory factor analysis (CFA), including internal consistency and composite reliability (CR) analysis, nomological, convergent and discriminant validity analysis, and path analysis.

Exploratory principal components analysis using varimax rotation was carried out to assess the factor structure of the proposed model and check for any items loading on the incorrect factor or cross-loading. The sampling adequacy of the data set was assessed by computing the Kaiser–Meyer–Olkin (KMO) and the Bartlett’s Test of Sphericity measures, where a KMO value above 0.6 and a significant Bartlett’s Test of Sphericity value are recommended (Pallant 2010). A computed KMO of 0.937 and a significant Bartlett’s Test of Sphericity value ( $\chi^2 = 11910.556$ , degrees of freedom [ $df$ ] = 351,  $p \leq 0.01$ ) indicated the sampling adequacy of the data set.

Structural equation modelling, which included confirmatory factor analysis and path analysis, was carried out using the maximum likelihood method. A four-factor measurement model was specified for confirmatory factor analysis purposes, whereby the first loading on each of the four latent factors was fixed at 1.0. This resulted in 378 distinct sample moments and 60 distinct parameters to be estimated, which equates to 318  $df$  based on an over-identified model and a Chi-square value of 1078.188, with a probability level equal to 0.000. The statistically significant Chi-square, indicative of poor model fit, was likely because of the large sample size (Byrne 2016). As such, other indices were computed to assess model fit. The model fit indices applied were the normed-fit index (NFI), the Tucker–Lewis index (TLI), the comparative-fit index (CFI) and the root mean square error of approximation (RMSEA), where NFI, TLI and CFI values above 0.90, together with RMSEA values below 0.08 suggest acceptable model fit (Malhotra, Nunan & Birks 2020).

Reliability measures included computing each latent factor’s CR and internal-consistency reliability, where CR values and Cronbach’s alphas ( $\alpha$ ) of 0.7 and above indicate acceptable reliability. Convergent validity was assessed by checking that all latent factor standardised loading estimates exceeded 0.50 and that the average variance extracted (AVE) values for each latent factor exceeded 0.50. Discriminant validity was assessed by checking that each latent factor’s square root of the AVE ( $\sqrt{AVE}$ ) value of the latent factor exceeds the correlation estimates between the relevant latent factors (Hair et al. 2018; Malhotra et al. 2020). Nomological validity requires statistically significant relationships between the pairs of factors that are in the direction theoretically predicted (Malhotra 2020).

In accordance with the validated measurement model, a structural model was then specified to test the hypothesised paths that university students’ risk-taking propensity mediates the influence of their need for achievement and level of self-confidence on their entrepreneurial intentions. The statistical significance level was set at  $p \leq 0.01$  throughout.

## Ethical considerations

Ethical clearance to conduct this study was obtained from the North-West University’s Economic and Management Science Research Ethics Committee (EMS-REC). (No. NWU-00557-20-A4).

## Results

Data collection yielded 507 completed usable questionnaires. Of these completed questionnaires, five were discarded as they were completed by university students under the age of 18 years. As such, the sample comprised 502 respondents. A description of the respondents in the sample is provided in Table 1.

The principle components analysis resulted in extracting four factors, which explained 72.373% of the total variance. These extracted factors were in accordance with the related literature. The rotated factors and their eigenvalues are presented in Table 2.

As is evident from the results in Table 2, each item loaded on their anticipated factor, and there were no cross-loadings. Furthermore, each loading was greater than 0.50, indicating their statistical and practical significance given the sample size of 502 (Hair et al. 2018).

Given the factor structure integrity, confirmatory factor analysis was conducted on the four-factor measurement model and reliability and construct validity measures. The standardised loading estimates,  $R^2$  values,  $\alpha$ , CR, AVE and  $\sqrt{AVE}$  values are presented in Table 3.

The results in Table 3 indicate that the  $\alpha$  and CR values for each latent factor exceed 0.70, thereby suggesting both internal consistency and CR. There is evidence of convergent validity with standardised loading estimates and AVE values exceeding 0.50. Discriminant validity is also evident in Table 3, given that the square root of the AVE values for each of the four latent factors exceeds their respective correlation coefficients. The correlation coefficients computed between each of the pairs of latent factors were all statistically significant and in the correct direction, signifying nomological validity. The measurement model fit indices confirmed acceptable model fit, with an NFI of 0.911, a TLI of 0.929, a CFI of 0.936 and an RMSEA of 0.069.

Following the confirmatory factor analysis, the structural model was specified to test the hypothesised paths that university students’ risk-taking propensity mediates the influence of their need for achievement and level of self-confidence on their entrepreneurial intentions. The results of the path analysis are depicted in Figure 1.

As shown in Figure 1, each of the paths is statistically significant. Both self-esteem ( $\beta = 0.44$ ,  $p < 0.01$ ) and, to a lesser extent, the need for achievement ( $\beta = 0.15$ ,  $p < 0.01$ ) have a positive influence on university students’ risk-taking propensity. With a squared multiple correlation coefficient

**TABLE 1:** Sample description.

Categories	%
<b>Gender</b>	
Male	43.8
Female	55.6
Non-binary	0.6
<b>Institution</b>	
Traditional university	83.1
University of Technology	16.9
<b>Year of study</b>	
1st year	23.7
2nd year	18.5
3rd year	12.5
4th year	3.6
Postgraduate	40.2
<b>Province of origin</b>	
Eastern Cape	4.4
Free State	9.2
Gauteng	33.5
KwaZulu-Natal	2.6
Limpopo	13.1
Mpumalanga	5.8
North-West	22.5
Northern Cape	1.6
Western Cape	2.8
Other	4.0
<b>Age (year)</b>	
18	5.2
19	9.8
20	10.6
21	12.0
22	7.2
23	11.8
24	9.6
25	3.4
Older than 25	30.7

(SMC) of 0.256, these factors explain 26% of the variance in university students' risk-taking propensity. University students' risk-taking propensity ( $\beta = 0.49, p < 0.01$ ), in turn, has a direct positive influence on their entrepreneurial intention and, together with its predictors, explains 24% of the variance in their entrepreneurial intentions. The structural model also exhibited an acceptable model fit with an NFI of 0.908, a TLI of 0.926, a CFI of 0.932 and a RMSEA of 0.071. As such, there is sufficient evidence in the sample to conclude H1, H2 and H3.

## Discussion

The results of this study reinforce those of other research studies that found high-risk propensity to be an important predictor of entrepreneurial intentions for aspiring entrepreneurs (Abbassi & Sta 2019; Agustina & Fauzia 2021; Herdjiono et al. 2017; Martínez-González et al. 2019). Given that success in the business environment necessitates embracing calculated risks rather than risk for the sake of itself, these findings suggest that university students need to be equipped with the skill of being able to weigh up the benefits and costs of decisions objectively and be given projects aimed at developing their need for achievement and self-esteem.

**TABLE 2:** Rotated factors.

Items	Factor loadings			
	1	2	3	4
<b>Need for achievement</b>				
Professional achievements are an obsession to me.	-	-	-	0.733
I want others to look up to me for my accomplishments.	-	-	-	0.768
I am more concerned with professional success than most people I know.	-	-	-	0.765
Achieving greater success than my peers is important to me.	-	-	-	0.817
I want my achievements to be recognised by others.	-	-	-	0.802
<b>Self-esteem</b>				
I feel that I am a person of worth, at least on an equal plane with others.	-	0.624	-	-
I feel that I have a number of good qualities.	-	0.777	-	-
All in all, I feel that I am a success.	-	0.806	-	-
I am able to do things as well as most other people.	-	0.787	-	-
I feel that I have much to be proud of.	-	0.810	-	-
I have a positive attitude towards myself.	-	0.777	-	-
On the whole, I am satisfied with myself.	-	0.796	-	-
I have a great deal of respect for myself.	-	0.775	-	-
<b>Risk-taking propensity</b>				
Taking risks makes life more fun.	0.745	-	-	-
My friends would say that I'm a risk-taker.	0.829	-	-	-
I enjoy taking risks in most aspects of my life.	0.852	-	-	-
I would take a risk even if it meant I might get hurt.	0.852	-	-	-
Taking risks is an important part of my life.	0.851	-	-	-
I regularly make risky decisions.	0.822	-	-	-
I am a believer of taking chances.	0.759	-	-	-
I am attracted, rather than scared, by risk.	0.842	-	-	-
<b>Entrepreneurial intentions</b>				
I am ready to do anything to become an entrepreneur.	-	-	0.848	-
My professional goal is to become an entrepreneur.	-	-	0.841	-
I will make every effort to start and run my own business in the future.	-	-	0.911	-
I am determined to create a business in the future.	-	-	0.926	-
I have thought very seriously about starting a business in the future.	-	-	0.879	-
I intend to start a business someday.	-	-	0.897	-
Eigenvalues.	10.87	3.150	2.960	2.550

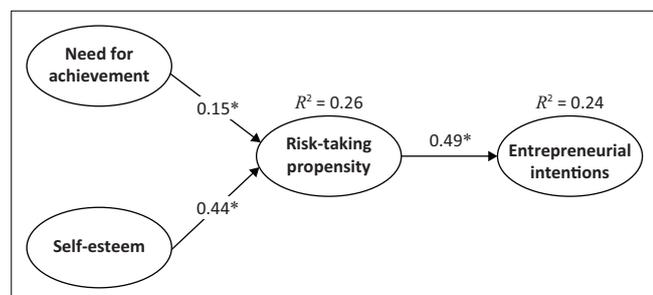
In line with the results of Chen et al. (2012), the need for achievement was a significant positive predictor of university students' risk propensity in this study. This supports McClelland's (1987) assertion that individuals with a high need for achievement have a natural appetite to embrace the risks required to achieve success and his earlier assertion (1961) that this achievement need relates to the creation of an entrepreneurial spirit. Nurturing this need for achievement necessitates assisting students to develop a vision and set challenging yet achievable goals with clear milestones. Constructive feedback on their progress from mentors is required for students to assess how they are functioning to adapt or improve if required.

This study also found self-esteem to be an important predictor of university students' attitude towards risk and, hence, entrepreneurial intentions. This supports Bandura's (1977) contention that high levels of self-efficacy and self-esteem are needed to persist in the face of obstacles, uncertainty and risk. These results echo those of Yu and Chen (2016), Densberger (2014) and Zhao et al. (2005), who all concluded that there is a positive relationship between self-esteem and risk propensity.

**TABLE 3:** Confirmatory factor analysis results.

Latent factors	Standardised loading estimates	R <sup>2</sup> estimates	$\alpha$	CR	AVE	√AVE
Need for achievement	0.692	0.478	0.849	0.851	0.533	0.730
F1	0.757	0.573	-	-	-	-
	0.743	0.552	-	-	-	-
	0.723	0.523	-	-	-	-
	0.735	0.541	-	-	-	-
Self-esteem	0.586	0.344	0.919	0.922	0.599	0.773
F2	0.781	0.610	-	-	-	-
	0.829	0.688	-	-	-	-
	0.793	0.630	-	-	-	-
	0.768	0.590	-	-	-	-
	0.828	0.686	-	-	-	-
	0.775	0.601	-	-	-	-
	0.805	0.648	-	-	-	-
Risk-taking propensity	0.762	0.581	0.949	0.950	0.703	0.838
F3	0.844	0.713	-	-	-	-
	0.897	0.805	-	-	-	-
	0.823	0.678	-	-	-	-
	0.868	0.754	-	-	-	-
	0.836	0.698	-	-	-	-
	0.792	0.627	-	-	-	-
	0.875	0.766	-	-	-	-
Entrepreneurial intentions	0.872	0.760	0.967	0.968	0.833	0.913
F4	0.860	0.740	-	-	-	-
	0.955	0.913	-	-	-	-
	0.969	0.939	-	-	-	-
	0.896	0.804	-	-	-	-
	0.919	0.844	-	-	-	-
Correlations	F1↔F2:0.340	F1↔F4:0.315	F2↔F4:0.437	-	-	-
	F1↔F3:0.291	F2↔F3:0.481	F3↔F4:0.480	-	-	-

AVE, average variance extracted; CR, composite reliability; √AVE, square root of the average variance extracted; F, factor.



\*Significant at  $p \leq 0.01$ .

**FIGURE 1:** Structural model.

Encouraging the higher levels of self-esteem and the confidence that are congruent with developing an entrepreneurial mindset among university students thus requires identifying their individual competencies and developing them, providing positive affirmations (Laguna 2013) and developing educational content that is focused on discovery, innovation and risk (Abbassi & Sta 2019).

Universities play a significant role in developing the growth of entrepreneurship through education and improving students' entrepreneurial skills (Garaika, Margahana & Negara 2019:9; Jadmiko et al. 2019:3). Entrepreneurship education increases the level of students' entrepreneurial self-efficacy and hence self-esteem (Maczulskij & Viinikainen

2023:7). Students who are confident in their ability to start a business will be willing to take the risk in becoming an entrepreneur (Jadmiko et al. 2019:3). Confidence in students can be shaped and developed through the education process by providing knowledge on starting a business and practical experiences. Universities should create platforms and initiatives where students can be exposed to entrepreneurship training through experiential learning, such as market days, business competitions and business simulation games. The encouragement or discouragement concerning an individual's performance or ability to perform also determines the level of self-esteem (Redmond 2016). As such, constructive feedback is required to enhance their self-esteem.

University students are privileged to have various resources in the form of expert professors, incubators, technology transfer offices, business competitions, industry experts and mentors. Besides the entrepreneurial education being offered at universities, various co-curricular programmes afford students the opportunity to gain entrepreneurial experience, thereby increasing their entrepreneurial abilities, which, in turn, affects their self-belief towards achieving venture creation. Universities, furthermore, allow students the chance to experiment, make mistakes and fail in a safe environment, without serious consequences (Morris, Shirokova & Tsukanova 2017:69). This permits students to gain confidence in their ability and the inclination to take risk towards self-employment (Morris et al. 2017:69; Soomro & Shah 2022:118).

## Conclusion and theoretical and practical implications

This study aimed at determining the influence of self-esteem and the need for achievement on university students' risk-taking propensity and, consequent, entrepreneurial intentions. The findings indicate that both self-esteem and the need for achievement have a positive influence on university students' risk-taking propensity, which, in turn, has a positive influence on their entrepreneurial intentions.

Understanding which personality traits could potentially impact entrepreneurial intention is valuable, especially in the education sector. Entrepreneurship education can influence personality traits such as the need for achievement and self-esteem, which, in turn, may increase risk tolerance levels. Given that risk tolerance, particularly the appetite to take calculated risks, is an important precursor to entrepreneurial intentions, nurturing these personality traits may help prepare university students for a career in entrepreneurship.

Based on the empirical findings presented, this study makes the following recommendations to foster a strong need for achievement, bolster self-confidence, and promote calculated risk taking among student entrepreneurs. Tertiary institutions need to provide a comprehensive entrepreneurship education model that blends business fundamentals with personal growth, offering practical experiences through projects and

internships. Connections between students and mentors or role models must be facilitated where students can obtain construction feedback and guidance on their ideas and business plans. Creating networking opportunities and acknowledging small successes can boost confidence while embracing failures as valuable learning experiences encourages a willingness to take risks. Additionally, institutions should provide psychological support, financial assistance and communication skills training to support student development. Cross-disciplinary collaboration, industry immersion, business incubation involvement and alumni engagement can also contribute to a holistic entrepreneurial education. By adopting these strategies, tertiary institutions can nurture well-rounded and confident student entrepreneurs prepared to navigate the challenges of innovation and business growth.

### Limitations and future research

The results of this study indicate that self-esteem and the need for achievement explain 26% of the variance of university students' risk-taking propensity. This suggests that other factors may play a role in determining university students' risk tolerance. Future research geared at uncovering which additional factors help to make students more risk tolerant would be valuable. Furthermore, risk-taking propensity explained 24% of the variance in university students' entrepreneurial intentions, meaning that 76% of that variance is unexplained. Additional research into the other factors that contribute to entrepreneurial intentions is advised. Comparative studies among different cultures and nations would furthermore be of value to the subject field.

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### Authors' contributions

A.S. was responsible for the methodology, formal analysis, investigation, writing of the original draft, data curation and funding acquisition. N.M. was responsible for the conceptualisation, visualisation, project administration, resources, writing, review and editing, and supervision. A.B. was responsible for the conceptualisation, methodology, formal analysis, visualisation, software, validation, writing, review and editing, and supervision.

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### Data availability

Data sharing is not applicable to this article as no new data were created or analysed in this study.

## Disclaimer

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## References

- Abbassi, R. & Sta, N., 2019, 'The effect of self-esteem, entrepreneurship education, and entrepreneurial tradition of the family on the entrepreneurial intention among students', *Journal of Business and Management Research* 12, 235–245.
- Agustina, T.S. & Fauzia, D.S., 2021, 'The need for achievement, risk-taking propensity, and entrepreneurial intention of the generation Z', *Risenologi* 6(1), 96–106. <https://doi.org/10.47028/j.risenologi.2021.61.161>
- Ajzen, I., 1988, *Attitudes, personality, and behavior*, Dorsey Press, Washington, DC.
- Akhtar, S., Hongyuan, T., Iqbal, S. & Ankomah, F.Y.N., 2020, 'Impact of need for achievement on entrepreneurial intentions; mediating role of self-efficacy', *Journal of Asian Business Strategy* 10(1), 114–121. <https://doi.org/10.18488/journal.1006.2020.101.114.121>
- Aliedan, M.M., Elshaer, I.A., Alyahya, M.A. & Sobaih, A.E.E., 2022, 'Influences of university education support on entrepreneurship orientation and entrepreneurship intention: Application of theory of planned behaviour', *Sustainability* 14(20), 13097. <https://doi.org/10.3390/su142013097>
- Al Issa, H.-E., 2021, 'Psychological capital for success: The mediating role of entrepreneurial persistence and risk-taking', *Journal of Entrepreneurship in Emerging Economies* 14(4), 525–548. <https://doi.org/10.1108/JEEE-09-2020-0337>
- Almeda, A., Balisi, L.M., Concepcion, R.A., Lofamia, J.C., Tapeç, J.-A. & Padayao, P.M.T., 2020, 'Calculated risk-taking': The success factors of entrepreneurial accountants', *New Trends in Qualitative Research* 1, 8–29. <https://doi.org/10.36367/ntqr.1.2020.8-29>
- Alvarez, S. & Barney, J.B., 2020, 'Has the concept of opportunities been fruitful in the field of entrepreneurship?', *Academy of Management Perspectives* 34(3), 300–310. <https://doi.org/10.5465/amp.2018.0014>
- Anra, Y., Ayun, Q. & Romios, S., 2020, 'Analyzing the effect of need for achievement and locus of control on student entrepreneurial intentions', *Indonesian Research Journal in Education* 4(1), 28–42. <https://doi.org/10.22437/irje.v4i1.8815>
- Asmara, H.W., Djatmika, E.T. & Indrawati, A., 2016, 'The effect of need for achievement and risk taking propensity on entrepreneurial intention through entrepreneurial attitude', *IOSR Journal of Business and Management* 18(6), 117–126.
- Aulia, M. & Evanita, S., 2020, 'The influence of locus of control, need for achievement and campus environment on students' entrepreneurship interest of Universitas Negeri Padang', in. 4th Padang international conference on education, economics, business and accounting (PICEEBA-2 2019), pp. 599–607, Atlantis Press, Dordrecht.
- Bandura, A., 1977, *Social learning theory*, Prentice Hall, Englewood Cliffs, NJ.
- Baum, J.R., Frese, M. & Baron, R.A. (eds.), 2014, 'Born to be an entrepreneur? Revisiting the personality approach to entrepreneurship', in *The psychology of entrepreneurship*, pp. 73–98, Psychology Press, New York.
- Bowmaker-Falconer, A. & Meyer, N., 2022, *Global entrepreneurship monitor South Africa: Fostering entrepreneurial ecosystem vitality*, Stellenbosch Business School, Stellenbosch.
- Brandstätter, H., 2011, 'Personality aspects of entrepreneurship: A look at five meta-analyses', *Personality and Individual Differences* 51(3), 222–230. <https://doi.org/10.1016/j.paid.2010.07.007>
- Brockner, J., 1988, *Self-esteem at work: Research, theory, and practice*, Lexington Books/DC Heath and Com, Lexington, MA.
- Byrne, B.M., 2016, *Structural equation modelling with AMOS: Basic concepts, applications, and programming*, 3rd edn., Routledge, New York.
- Chen, C.C., Greene, P.G. & Crick, A., 1998, 'Does entrepreneurial self-efficacy distinguish entrepreneurs from managers?', *Journal of Business Venturing* 13, 295–316.
- Chen, S., Su, X. & Wu, S., 2012, 'Need for achievement, education, and entrepreneurial risk-taking behaviour', *Social Behaviour and Personality: An International Journal* 40(8), 1311–1318. <https://doi.org/10.2224/sbp.2012.40.8.1311>
- Commarmond, I., 2017, *In pursuit of a better understanding of and measure for entrepreneurial mindset*, pp. 1–30, Allan Gray Orbis Foundation, Cape Town.
- Damayanti, S., 2023, 'The influence of need for achievement and self efficacy on student entrepreneurship intention', *International Journal of Research and Review* 10(1), 513–519. <https://doi.org/10.52403/ijrr.20230159>
- Davey, T., Nabi, G., Plewa, C. & Struwig, M., 2011, 'Entrepreneurship perceptions and career intentions of international students', *Education + Training* 53(5), 335–352. <https://doi.org/10.1108/00400911111147677>
- Davis, M., Hall, J. & Mayer, P., 2016, *Measuring the entrepreneurial mindset: The development of the entrepreneurial mindset profile*, pp. 1–22, Leadership Development Institute, Washington, DC.

- De Beer, A., Zeelie, J., Groenewald, D., Watson, H., Rossouw, D. & Jacobs, H., 2008, *Entrepreneurial skills*, 2nd edn., Juta, Cape Town.
- Densberger, K., 2014, 'The self-efficacy and risk-propensity of entrepreneurs', *Journal of Enterprising Culture* 22(04), 437–462. <https://doi.org/10.1142/S0218495814500186>
- Diandra, D. & Azmy, A., 2020, 'Understanding definition of entrepreneurship', *International Journal of Management, Accounting and Economics* 7(5), 235–241.
- Díaz-García, M.C. & Jiménez-Moreno, J., 2010, 'Entrepreneurial intention: The role of gender', *International Entrepreneurship and Management Journal* 6(3), 261–283. <https://doi.org/10.1007/s11365-008-0103-2>
- Drennan, J., Kennedy, J. & Renfrow, P., 2005, 'Impact of childhood experiences on the development of entrepreneurial intentions', *Entrepreneurship and Innovation* 6(4), 231–238. <https://doi.org/10.5367/000000005775179801>
- Eden, D. & Kinnar, J., 1991, 'Modeling galatea: Boosting self-efficacy to increase volunteering', *Journal of Applied Psychology* 76(6), 770–780. <https://doi.org/10.1037/0021-9010.76.6.770>
- Garaika, G., Margahana, H.M. & Negara, S.T., 2019, 'Self efficacy, self personality and self confidence on entrepreneurial intention: Study on young enterprises', *Journal of Entrepreneurship Education* 22(1), 1–12.
- Geldhof, G.J., Porter, T., Weiner, M.B., Malin, H., Bronk, K.C., Agans, J.P. et al., 2014, 'Fostering youth entrepreneurship: Preliminary findings from the young entrepreneurs study', *Journal of Research on Adolescence* 24(3), 431–446. <https://doi.org/10.1111/jora.12086>
- Guroi, Y. & Atsan, N., 2006, 'Entrepreneurial characteristics among university students', *Emerald* 48(1), 25–38. <https://doi.org/10.1108/00400910610645716>
- Hair, J., Black, W., Babin, B. & Anderson, R., 2018, *Multivariate data analysis: A global perspective*, 8th edn., Cengage, London.
- Herdjiono, I., Puspa, Y.H., Maulany, G. & Aldy, B.E., 2017, 'The factors affecting entrepreneurship intention', *International Journal of Entrepreneurial Knowledge* 5(2), 5–15. <https://doi.org/10.1515/ijek-2017-0007>
- Herrington, M. & Kew, P., 2015/2016, *Global entrepreneurship monitor: South African report*, University of Cape Town, Cape Town.
- Herrington, M., Kew, P. & Mwanga, A., 2016/2017, *Global entrepreneurship monitor: South African report*, University of Cape Town Centre for Innovation and Entrepreneurship, Cape Town.
- Jadmiko, P., Azliyanti, E. & Putri, T.D., 2019, 'Linking perceived educational support to entrepreneur intention: The mediating effect of self-confidence', *AMAR (Andalas Management Review* 3(1), 1–17. <https://doi.org/10.25077/amar.3.1.1-17.2019>
- Karabulut, A.T., 2016, 'Personality traits on entrepreneurial intention', *Procedia-Social and Behavioural Sciences* 229, 12–21. <https://doi.org/10.1016/j.sbspro.2016.07.109>
- Kautonen, T., Van Gelderen, M. & Fink, M., 2015, 'Robustness of the theory of planned behaviour in predicting entrepreneurial intentions and actions', *Entrepreneurship Theory and Practice* 39(3), 655–674. <https://doi.org/10.1111/etap.12056>
- Kerrin, M., Mamabolo, M.A. & Kele, T., 2017, 'Entrepreneurship management skills requirements in an emerging economy: A South African outlook', *The Southern African Journal of Entrepreneurship and Small Business Management* 9(1), 1–10. <https://doi.org/10.4102/sajesbm.v9i1.111>
- Kim-Soon, N., Ahmad, A.R. & Ibrahim, N.N., 2014, 'Entrepreneurial motivation and entrepreneurship career intention: Case at a Malaysian Public University', Paper presented at the Crafting Global competitive Economics: 2020 Vision Strategic: Planning and Smart Implementation, Milan, Italy, 6–7 November, 2014.
- Krueger, N., 2015, *Entrepreneurial Education in Practice. Part 1: The Entrepreneurial Mindset, Entrepreneurship360 Thematic Paper*, OECD, Paris, viewed 14 January 2019, from <http://www.oecd.org/cfe/leed/Entrepreneurial-Education>.
- Krüger, N.A. & Meyer, N., 2021, 'The development of a small and medium-sized business risk management intervention tool', *Journal of Risk and Financial Management* 14(7), 310. <https://doi.org/10.3390/jrfm14070310>
- Kuratko, D.F. & Hodgetts, R.M., 2007, *Entrepreneurship theory, process, practice*, 7th edn., Thomson, Mason, OH.
- Laguna, M., 2013, 'Self-efficacy, self-esteem, and entrepreneurship among the unemployed', *Journal of Applied Social Psychology* 43(2), 253–262. <https://doi.org/10.1111/j.1559-1816.2012.00994.x>
- Leutner, F., Ahmetoglu, G., Akhtar, R. & Chamorro-Premuzic, T., 2014, 'The relationship between the entrepreneurial personality and the Big Five personality traits', *Personality and Individual Differences* 63, 58–63. <https://doi.org/10.1016/j.paid.2014.01.042>
- Li, Z., Lu, F. & Feng, X., 2023, 'Why women's entrepreneurial activities are low in China? The psychological perspective of self-esteem', *Economic Research-Ekonomska Istraživanja* 36(1), 1906–1932. <https://doi.org/10.1080/1331677X.2022.2094439>
- Linan, F. & Chen, Y.W., 2009, 'Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions', *Entrepreneurship Theory and Practice* 33(3), 593–617.
- Liu, G., 2021, 'Exploring the information needs of student entrepreneurs: A meta-narrative synthesis', *Journal of Business & Finance Librarianship* 26(3–4), 254–290. <https://doi.org/10.1080/08963568.2021.1955184>
- Lortie, J. & Castogiovanni, G., 2015, 'The theory of planned behaviour in entrepreneurship research: What we know and future directions', *International Entrepreneurship and Management Journal* 11(4), 935–957. <https://doi.org/10.1007/s11365-015-0358-3>
- Maczulskij, T. & Viinikainen, J., 2023, 'Self-confidence predicts entrepreneurship and entrepreneurial success', *Journal of Business Venturing Insights* 19, e00382. <https://doi.org/10.1016/j.jbvi.2023.e00382>
- Malatjie, I., 2020, 'The role of South Africa's Universities and higher education in entrepreneurship development', in *International Conference on Public Administration and Development*, KwaZulu Natal, Durban, 1–3 July, 2020, pp. 110–117.
- Malhotra, N.K., Nunan, D. & Birks, D.F., 2020, *Marketing research*, Pearson UK, London.
- Malhotra, N.K., 2020, *Marketing research: An applied orientation*, 7th edn., Pearson Education, Harlow, UK.
- Markman, G.D., Baron, R.A. & Balkin, D.B., 2005, 'Are perseverance and self-efficacy costless? Assessing entrepreneurs' regretful thinking', *Journal of Organizational Behaviour: The International Journal of Industrial, Occupational and Organizational Psychology and Behaviour* 26(1), 1–19. <https://doi.org/10.1002/job.305>
- Martínez-González, J.A., Kobylinska, U., García-Rodríguez, F.J. & Nazarko, L., 2019, 'Antecedents of entrepreneurial intention among young people: Model and regional evidence', *Sustainability* 11(24), 6993. <https://doi.org/10.3390/su11246993>
- McClelland, D.C., 1961, *Achieving society*, The Free Press, New York, NY.
- McClelland, D.C., 1987, *Human Motivation*, Cambridge University Press, New York, NY.
- Meyer, D.F., Muzindutsi, P.-F. & Chipeta, C., 2017, 'The effect of exchange rate movements and economic growth on job creation', *Studia Universitatis Babeş-Bolyai Oeconomica* 62(2), 20–41. <https://doi.org/10.1515/subboec-2017-0007>
- Meyer, N. & Meyer, D.F., 2017, 'An economic analysis of entrepreneurial activity, economic growth and employment: The case of the BRICS countries', *International Journal of Economic Perspectives* 11(2), 429–441. <https://doi.org/10.1515/subboec-2017-0007>
- Moche, H., Erlandsson, A., Dickert, S. & Västfjäll, D., 2023, 'The potential and pitfalls of unit asking in reducing scope insensitivity', *Judgement and Decision Making* 18, e28. <https://doi.org/10.1017/jdm.2023.27>
- Morris, M.H., Shirokova, G. & Tsukanova, T., 2017, 'Student entrepreneurship and the university ecosystem: A multi-country empirical exploration', *European Journal of International Management* 11(1), 65–85. <https://doi.org/10.1504/EJIM.2017.081251>
- Murray, H., 1938, *Exploration in personaty*, Oxford University Press, New York, NY.
- Netemeyer, R.G., Burton, S. & Lichtenstein, D.R., 1995, 'Trait aspects of vanity: measurement and relevance to consumer behaviour', *Journal of Consumer Research* 21(4), 612–626. <https://doi.org/10.1086/209422>
- NPC, 2011, *National Development Plan 2030: Our future – make it work*, viewed 10 June 2018, from [https://www.gov.za/sites/default/files/gcis\\_document/201409/ndp-2030-our-future-make-it-workr.pdf](https://www.gov.za/sites/default/files/gcis_document/201409/ndp-2030-our-future-make-it-workr.pdf).
- Obschonka, M., Hakkarainen, K., Lonka, K. & Salmela-Aro, K., 2016, 'Entrepreneurship as a twenty-first century skill: Entrepreneurial alertness and intention in the transition to adulthood', *Small Business Economics* 48(3), 487–501. <https://doi.org/10.1007/s11187-016-9798-6>
- Olszewska, A., 2015, 'Students perceptions and attitudes towards entrepreneurship, a cross-program and cross-cultural comparison', *Journal of Social Sciences* 4(1), 597–610. <https://doi.org/10.25255/jss.2015.4.1.597.610>
- Pallant, J., 2010, *SPSS survival manual: A step by step guide to data analysis using IBM SPSS*, 4th edn., McGraw Hill, Berkshire.
- Peneder, M., 2009, 'The meaning of entrepreneurship: A modular concept', *Journal of Industry, Competition and Trade* 9(2), 77–99. <https://doi.org/10.1007/s10842-009-0052-7>
- Piperopoulos, P., 2012, 'Could higher education programmes, culture and structure stifle the entrepreneurial intentions of students?', *Journal of small Business Management and Enterprise Development* 19(3), 461–483. <https://doi.org/10.1108/14626001211250162>
- Pizarro, N., 2014, 'An institutional and pedagogical model that fosters entrepreneurial mindset among college students', *Journal of Entrepreneurship Education* 17, 143–162.
- Rashad, N.M., 2018, 'The impact of entrepreneurial marketing dimensions on the organizational performance within Saudi SMEs', *Eurasian Journal of Business and Management* 6(3), 61–71. <https://doi.org/10.15604/ejbm.2018.06.03.007>
- Redmond, B.F., 2016, *Self-efficacy and social cognitive theories*, viewed 07 April 2020, from <https://wikispaces.psu.edu/display/PSYCH484/7.+Self-Efficacy+and+Social+Cognitive+Theories>.
- Romero-Colmenares, L.M. & Reyes-Rodríguez, J.F., 2022, 'Sustainable entrepreneurial intentions: Exploration of a model based on the theory of planned behaviour among university students in north-east Colombia', *The International Journal of Management Education* 20(2), 100627. <https://doi.org/10.1016/j.ijme.2022.100627>
- Rosenberg, M., 1965, *Society and the adolescent self-image*, Princeton University Press, NJ.
- Rosenberg, M., Schooler, C., Schoenbach, C. & Rosenberg, F., 1995, 'Global self-esteem and specific self-esteem: Different concepts, different outcomes', *American sociological review* 60(1), 141–156.
- Sa, C. & Holt, C., 2019, 'Profiles of entrepreneurship students: Implications for policy and practice', *Education and Training* 61(2), 122–135. <https://doi.org/10.1108/ET-06-2018-0139>
- Semrau, T., Ambos, T. & Kraus, S., 2016, 'Entrepreneurial orientation and SME performance across societal cultures: An international study', *Journal of Business Research* 69(5), 1928–1932. <https://doi.org/10.1016/j.jbusres.2015.10.082>
- Shirokova, G., Osiyevskyy, O. & Bogatyreva, K., 2016, 'Exploring the intention-behaviour link in student entrepreneurship: Moderating effects of individual and environmental characteristics', *European Management Journal* 34(4), 386–399. <https://doi.org/10.1016/j.emj.2015.12.007>

- Simanjuntak, M., Awwaliyah, I., Hayati, H. & Artanto, R.J., 2016, 'The entrepreneurial potential among undergraduate students', *Jurnal Bisnis dan Manajemen* 17(2), 75–84. <https://doi.org/10.24198/jbm.v17i2.29>
- Soomro, B.A. & Shah, N., 2022, 'Entrepreneurship education, entrepreneurial self-efficacy, need for achievement and entrepreneurial intention among commerce students in Pakistan', *Education+ Training* 64(1), 107–125. <https://doi.org/10.1108/ET-01-2021-0023>
- Spinelli, S. & Adams, R., 2012, *New venture creation: Entrepreneurship in the 21st century*, 9th edn., McGraw-Hill, Singapore.
- Stanley, K.D. & Murphy, M.R., 1997, 'A comparison of general self-efficacy with self-esteem', *Genetic, Social, and General Psychology Monographs* 123(1), 81–99.
- Stokes, C., Wilson, P. & Crotty, R., 2010, *Entrepreneurship*, Cengage Learning, London.
- Venter, R., Urban, B. & Rwigema, H., 2008, *Entrepreneurship: Theory in practice*, 2nd edn., Oxford University Press, Cape Town.
- Vodă, A. & Florea, N., 2019, 'Impact of personality traits and entrepreneurship education on entrepreneurial intentions of business and engineering students', *Sustainability* 11(4). <https://doi.org/10.3390/su11041192>
- Weilerstein, P. & Monroe-White, T., 2017, *Determining the what, why and how of the entrepreneurial mindset*, viewed 15 April, from <https://venturewell.org/determining-entrepreneurial-mindset>.
- Yu, J. & Chen, S., 2016, 'Gender moderates firms' innovation performance and entrepreneurs' self-efficacy and risk propensity', *Social Behaviour and Personality: An International Journal* 44(4), 679–691. <https://doi.org/10.2224/sbp.2016.44.4.679>
- Zaman, U., Florez-Perez, L., Fariás, P., Abbasi, S., Khwaja, M.G. & Wijaksana, T.I., 2021, 'Shadow of your former self: Exploring project leaders' post-failure behaviours (resilience, self-esteem and self-efficacy) in high-tech startup projects', *Sustainability* 13(22), 12868. <https://doi.org/10.3390/su132212868>
- Zhang, D.C., Highhouse, S. & Nye, C.D., 2019, 'Development and validation of the General Risk Propensity Scale (GRiPS)', *Journal of Behavioral Decision Making* 32(2), 152–167.
- Zhao, H., Seibert, S.E. & Hills, G.E., 2005, 'The mediating role of self-efficacy in the development of entrepreneurial intentions', *Journal of Applied Psychology* 90(6), 1265–1272. <https://doi.org/10.1037/0021-9010.90.6.1265>