Entrepreneurial Intentions of South African University Students: An Application of the Theory of Planned Behaviour

Bianca Brenner

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Supervisor: Jeffrey Bagraim

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Abstract

This study investigated the Entrepreneurial Intentions (EI) of South African students at three universities in the Western Cape, using the Theory of Planned Behaviour (TPB). The research employed a two-phase design, starting with a less dominant qualitative exploration through nine interviews with students. Subsequently, a more prominent quantitative phase was carried out using an online survey questionnaire. The primary objective was to determine whether the TPB model influences EI over and above situational factors (prior entrepreneurial experience and knowledge of entrepreneurial support) and demographic variables. Contextual measures obtained from the qualitative phase, such as load-shedding and the South African economy, were also incorporated into the questionnaire. Usable responses were received from 523 students (N = 523), allowing for rigorous statistical analyses, including Confirmatory Factor Analysis, Exploratory Factor Analysis, and reliability assessments. Hierarchical Regression Analyses indicated that the TPB explained approximately 48.8% of the variance in EI over and above the situational, demographic and contextual factors. Of all the predictors of EI examined in this study, only race and prior entrepreneurial experience were found to significantly add to the predictive power of TPB in explaining EI. The findings suggest that the TPB influences EI among South African students, over and above situational, demographic and contextual factors.

Keywords: entrepreneurship; entrepreneurial intention, theory of planned behaviour, attitudes, subjective norms, perceived behavioural control

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Entrepreneurship, defined as the establishment of new business ventures (Gartner, 1988), holds significant importance in driving economic progress in developed and developing countries as it addresses concerns related to economic growth (Audretsch, 2018; Peprah & Adekoya, 2020; Shobhit, 2023). In South Africa, entrepreneurial activity is a cause for concern as it falls significantly below global standards (Global Entrepreneurship Monitor, 2021). This deficiency may contribute to the country's stagnating economic development and high unemployment rate (Graf, 2023; Statistics South Africa, 2022). Specifically, South Africa grapples with substantial challenges in generating employment opportunities for its youth, as evidenced by a youth unemployment rate of 66.5% (Statistics South Africa, 2022). The high levels of unemployment in South Africa have various negative consequences, including poverty, social unrest and crime, making it a key priority for the government to address (Picardo, 2022; Rogan & Reynolds, 2015).

Establishing new business ventures is often considered an effective strategy to address economic crises. Gree and Thurnik (2003) highlight that entrepreneurship is crucial to the growth of a country's economy as it drives technological advancements, increases job creation and enhances competitiveness. Moreover, such initiatives also tend to alleviate poverty, reduce crime rates, and augment disposable incomes, ultimately elevating the quality of life (Capella-Peris et al., 2019). In light of this, the significance of entrepreneurial activity in South Africa has garnered substantial attention (Mmesi, 2015; Shobhit, 2023).

Exploring various factors that could drive and influence an individual's entrepreneurial behaviour is necessary to increase entrepreneurial activity. Empirical evidence indicates that intentions serve as reliable indicators of behaviour and, as a result, could predict entrepreneurial activity (Krueger et al., 2000). The Theory of Planned Behaviour (TPB), proposed by Icek Ajzen (1988), has been widely adopted as a framework for understanding factors that influence an individual's intention and, consequently, their decision to initiate a specific behaviour, such as starting a venture (Davids, 2017; Gird & Bagraim, 2008; Liñán & Fayolle 2015; Sundelson, 2021). The theory employs three antecedents to elucidate intention: one's attitude toward the behaviour, the subjective norms surrounding the behaviour, and the individual's perception of control over the behaviour (Ajzen, 1991).

With the increasing research focus on promoting entrepreneurial intentions (EI) among young individuals and students (Kautonen et al., 2015; Mahmood et al., 2020; Parker & Igielnik, 2020; Rauch & Hulsink, 2015; Saiyed et al., 2022) and given that South Africa's youth (aged between 15-34 years) represents more than half of the country's population, there is a compelling need to investigate the intentions of the South African youth, specifically

students, to embark on new business ventures. Students are often considered ideal candidates for entrepreneurial research, given their common transition stage from educational institutions into the broader spectrum of economic and potentially entrepreneurial activities (Liñán & Chen, 2009).

Exploring the intentions of these young individuals concerning entrepreneurship can play a pivotal role in understanding their entrepreneurial pursuits and, in turn, help provide them with the necessary resources to engage in entrepreneurial behaviour fully, thus increasing entrepreneurial activity (Nguyen et al., 2019). Especially in light of South Africa's significant youth unemployment, it becomes imperative to examine the intentions of South African students to engage in entrepreneurial behaviour. This scrutiny is essential because a surge in entrepreneurial behaviour has the potential to mitigate unemployment challenges and stimulate economic growth. By cultivating an environment that fosters entrepreneurship and supports the establishment of new businesses, South Africa can unlock the full potential of its workforce and generate new opportunities for economic prosperity (Mmesi, 2015; Oosthuizen & Cassim, 2015).

The purpose of this study is twofold: first, to address the limited theoretical and empirical literature by identifying the factors that influence EI among South African students. Second, the study aims to inform evidence-based decision-making regarding different factors that can be used in interventions to support and provide necessary resources for South African students. This study's contribution could aid in developing targeted initiatives that enable and facilitate the success of future entrepreneurs in South Africa.

Research Question

Does the TPB model influence EI over and above situational and demographic variables amongst South African students?

Literature Review

This section first presents the literature search strategy. EI and the theoretical background of the TPB, as well as the antecedents of the TPB (Attitudes, Subjective Norms (SN) and Perceived Behavioural Control (PBC)), will then be discussed. After that, the relationship between the TPB and EI will be examined in both an international and local context. Additionally, empirical research regarding the influence of situational and demographic variables on EI will be explored. Plausible hypotheses are presented, and the review concludes with a diagrammatic representation of the conceptual framework.

Search Strategy

The literature reviewed results from an extensive search of the available literature from the 13th of March 2023 to the 14th of November 2023. An online search of academic databases such as the University of Cape Town's web-based search engine PRIMO, Google Scholar, PsycINFO, JSTOR and EBSCO Host was conducted. Where possible, the research was restricted to peer-reviewed journals. The following search terms were used to identify published theoretical and empirical literature: Entrepreneurial Intention, The Theory of Planned Behaviour/Behavior, attitudes towards entrepreneurship, subjective norms, perceived behavioural/behavioral control and students. To ensure the retrieval of the most relevant and up-to-date research, a systematic search was consistently performed using different combinations of search terms, and the reference lists of each article were thoroughly reviewed to identify any additional primary studies.

Entrepreneurial Intention

Intentionality, as grounded in socio-psychological theories of behaviour (Bandura, 2001; Ajzen, 1991), signifies individuals' willingness to commit effort toward performing a specific behaviour (Ajzen, 1991). Bird (1988) defines intent as a state of mind that focuses an individual's attention on a clear objective to achieve a particular goal. Intention is considered a predictor in shaping human behaviour across diverse situations (Krueger, 1993; Krueger et al., 2000). According to Bandura (2001, p.6), *intentionality* encompasses "the power to originate actions for given purposes", highlighting the need for a plan or strategy to fulfil those purposes. It involves a proactive commitment to future actions, representing a deliberate commitment to bringing those actions to realisation (Bandura, 2001; Liñán et al., 2013).

Ajzen and Fishbein's (1980) research suggests that intending to perform a specific behaviour is an immediate precursor to the actual performance of that behaviour. It was thus theorised that the stronger the intention to perform a behaviour, the greater the likelihood of the behaviour occurring. Researchers in the realm of psychology have achieved notable success in using intentions to predict behaviour that is infrequent, difficult to observe or that entails uncertain time lags, such as starting a new venture or entrepreneurship (Bird, 1988; Krueger & Carsrud, 1993; Krueger et al., 2000).

Entrepreneurship is defined as the ability of an individual to create and manage an enterprise, which typically involves substantial risk and reward (Hisrich et al., 2005). It is recognised as an intentional process or a form of planned behaviour which necessitates cognitive planning to identify opportunities and develop and create ventures (Lortie & Castogiovanni, 2015; Liu et al., 2011; Katz & Gartner, 1988). This implies that EI translate

entrepreneurial ideas into action (Moriano et al., 2012). The entire entrepreneurial process hinges on an individual's intention to become an entrepreneur (Shane & Venkataraman, 2000). Hence, developing an intention is a necessary first step in initiating a business, underscoring the importance of investigating EI to foster entrepreneurial activity (Krueger et al., 2000; Schlaegel & Koenig, 2014). *Entrepreneurial intention* is thus defined as a "self-acknowledged conviction by a person who intends to set up a new business venture and consciously plans to do so at some point in the future" (Thompson, 2009, p. 676).

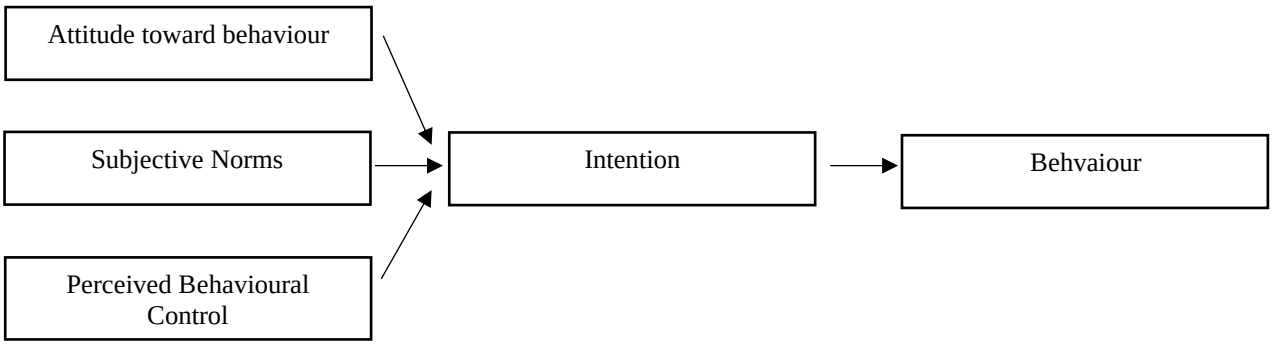
Theory of Planned Behaviour

The TPB has become one of the most prevailing and significant frameworks in EI studies (Davids, 2017; Liñán & Fayolle, 2015; Lortie & Castogiovanni, 2015; Schlaegel & Koenig, 2014; Krueger et al., 2000). The theory was originally published by Ajzen (1991) as an advancement of the Theory of Reasoned Action (TRA). The TRA (Ajzen & Fishbein, 1980) asserts that the strongest predictor of an individual's actual engagement in a specific behaviour is their intention to do so. These intentions, in turn, are shaped by the individual's Attitudes toward the behaviour and the SN surrounding it. In other words, the more favourably someone views a particular behaviour and the more they believe it aligns with the expectations of their close social circle, the stronger they intend to partake in that behaviour (LaCaille, 2020). However, over time, there were many efforts to improve the TRA due to its perceived shortcomings related to individuals' volitional control (Taylor & Todd, 1995). To address these shortcomings, Ajzen (1991) modified the TRA and introduced the TPB, incorporating an additional construct known as PBC.

As a result, the advanced TPB aims to attain a more extensive comprehension of the behavioural process (Ajzen, 1991). Its primary objectives are to forecast an individual’s intention to participate in a specific behaviour and comprehend the motivational elements that impact this intention and the resulting behaviour. According to the theory, the basis for a motivation to perform a behaviour is directly derived from three antecedents: (a) one's Attitude toward the behaviour’s outcomes, (b) Subjective Norms, and (c) Perceived Behavioural Control, see Figure 1.

Figure 1

Theory of Planned Behaviour Diagram



The theory is based on the following assumptions:

- intention is an immediate and direct predictor of actual behaviour
- intention is determined by attitudes towards behaviour, subjective norms and perceived behavioural control
- the determinates are formed by one's set of beliefs related to each element, respectively
- behavioural, normative and control beliefs are established by one's culture, background, experiences and demographic factors (Ajzen, 1991; Ajzen, 2005)

Ajzen (1991) proposed a set of salient beliefs that correspond to each antecedent: behavioural beliefs, which are assumed to influence one's Attitudes toward the behaviour; normative beliefs, which are considered to influence one's SN; and control beliefs, which are supposed to affect the PBC. These beliefs are viewed as the driving forces behind Attitudes, SN, and PBC, forming the foundation for these constructs (Ajzen, 1991). Ajzen (2020) noted that investigating the three TPB antecedents (Attitude, SN, and PBC) is sufficient when predicting intentions and behaviour through the TPB framework. The salient beliefs are causal factors valuable for formulating and implementing behaviour change interventions (Ajzen, 2020).

Components of the Theory Planned Behaviour

The TPB posits three antecedents, which are outlined below. Ajzen (2005) elucidates that each of these components contributes to the prediction of behavioural intention.

Attitude. Attitude towards behaviour is the degree to which performing a particular behaviour is valued as positive or negative (Ajzen, 1991). An individual's attitude toward a

specific behaviour is based on their behavioural belief (Ajzen, 1988). A behavioural belief is the subjective likelihood of a behaviour resulting in a particular outcome. Ajzen (1991) indicates that an individual could have multiple beliefs concerning a behaviour; however, only a few are readily accessible at any moment. Thus, it is presumed that these readily accessible beliefs, coupled with the subjective values of expected outcomes, determine one's attitude towards a specific behaviour, which can be favourable or unfavourable (Ajzen, 1991).

Moreover, the theory suggests that an individual's behavioural intention is directly affected by their Attitude towards a behaviour (Ajzen, 1991). Therefore, when an individual maintains a positive attitude towards a particular behaviour, it produces a heightened intention to engage in it, whereas a negative attitude towards the same behaviour results in a weakened behavioural intention (Ajzen, 1991). For example, if an individual believes that starting a business will lead to financial success or independence, this belief can influence their attitude towards entrepreneurship. This attitude can then shape their behavioural intention to pursue entrepreneurial activities. The individual had a positive attitude towards entrepreneurship due to the perceived benefits; therefore, their behavioural intention to start a business would be stronger. Alternatively, if the individual had negative beliefs about entrepreneurship, such as perceiving it as too risky or complicated, their behavioural intention to start a business would be weaker.

Subjective Norms. Normative beliefs refer to one’s perception of the social norms surrounding a specific behaviour (Ajzen, 1991). In essence, these beliefs reflect what a person thinks individuals in their close social circle, such as family, friends, or co-workers, believe about a particular behaviour. Ajzen (1991) suggests that normative beliefs can impact an individual's SN, which is the perceived social pressure to either engage in or abstain from the behaviour (Ajzen, 1991). Therefore, if an individual believes that those in their close social network regard a particular behaviour as socially acceptable, their intention towards that behaviour will likely be stronger, leading to a greater likelihood of performing the behaviour. Conversely, if an individual perceives that those close to them consider a specific behaviour undesirable, their behavioural intention weakens, making them less inclined to engage in that behaviour (Ajzen, 1991).

For example, suppose an individual believes their family and friends support starting a new business. In that case, they may be more likely to view entrepreneurship positively and have a stronger intention to start a business. Conversely, if one perceives their social network views entrepreneurship as too risky, they might be less likely to start a business.

Perceived Behavioural Control. Control beliefs refer to different factors in the environment that an individual believes might facilitate or inhibit the performance of a specific behaviour (Ajzen, 1991). An individual's perception of their ability to perform a behaviour, their PBC, is influenced by their beliefs about the level of control they have over factors that could either help or hinder the behaviour. This construct resembles Bandura's (1982) notion of perceived self-efficacy, wherein individuals' behaviours are substantially impacted by their confidence in their capability to carry them out (Ajzen, 1991; Krueger et al., 2000).

Ajzen (1991) explains that a positive PBC enables one to believe that one can perform the behaviour and is, therefore, more likely to engage in the behaviour. Meanwhile, a negative PBC prevents one's behaviour performance (Ajzen, 1991). For example, an individual's perception of their ability to start a business could be influenced by factors such as their knowledge of business management, their access to resources or their previous experience in entrepreneurship. Suppose the individual perceives they have the knowledge, resources and experiences to start a successful business. In that case, their control beliefs may be heightened, which could increase their intention to become an entrepreneur. However, if the individual believes they do not have the necessary factors to start a business, this may inhibit their behaviour to create a new venture.

Critiques of the Theory of Planned Behaviour and Responses

Numerous critiques have been directed at the TPB; however, Ajzen (2014) and Ajzen and Fishbein (2004) have addressed these concerns, emphasising the TPB's enduring relevance and significance in understanding intentions and predicting human behaviour within the realms of psychology and behaviour change. A notable exchange occurred between Sniehotta et al. (2014) and Ajzen (2014). Sniehotta et al. (2014) raised several critiques, to which Ajzen (2014) provided insightful responses.

Sniehotta et al. (2014) argued that the TPB lacks dynamism by neglecting feedback loops from behaviour to cognitions. They asserted that the lack of consideration for feedback loops makes the TPB model less reflective of the complexity inherent in human decision-making and behaviour. However, Ajzen (2014) clarified that the TPB model acknowledges these loops, noting that engaging in behaviour can lead to unforeseen outcomes and reactions, altering an individual's beliefs and influencing future intentions and actions.

Sniehotta et al. (2014) also argued that the basic principles of the TPB's model are not open to empirical falsification. They claimed the theory had been discredited despite

acknowledging its consistent prediction of behaviour from intention and perceived behavioural control. Ajzen (2014) identified this criticism as somewhat contradictory since it simultaneously questions the theory's capacity for falsification while acknowledging its predictive capability and asserting that the theory has been falsified. Similarly, Ogden (2003) also critiques the TPB, arguing that it cannot be falsified due to the broadness of its constructs, making them adaptable to a wide range of outcomes and limiting the theory's capacity for precise empirical testing. Ajzen and Fishbein (2004) responded that the adaptability of the constructs is a deliberate feature of the TPB model, allowing for flexibility in predicting various behaviours in different contexts. Ajzen and Fishbein (2004) reiterated that the theory remains falsifiable through empirical evidence, challenging the notion that its adaptability undermines its capacity for rigorous testing.

Ogden (2003) further suggested rejecting the TPB model due to its failure to capture all factors influencing intentions and behaviour, leaving a substantial portion of variance unexplained. Ajzen and Fishbein (2004) countered by citing the TPB's success in meta-analyses, explaining substantial variance in intentions and behaviour. Additionally, Ogden (2003) raised concerns about the similarity in measuring cognitive variables, implying a significant correlation among them. Nevertheless, Ajzen and Fishbein (2004) argued that these measurements underwent validation for convergent and discriminant validity.

Continuing the discourse, Sniehotta et al. (2014) highlighted an additional aspect related to the limited predictive validity of the TPB, mainly in predicting behaviour from intentions. Gärling et al. (1998) also stated this concern. However, Ajzen (2014) countered that the theory is designed to predict intentions from Attitudes, SN, and PBC and acknowledges that predicting behaviour from intentions is inherently challenging due to various factors affecting intentions over time. Sniehotta et al. (2014) also questioned the TPB's effectiveness in behaviour change interventions. Nevertheless, Ajzen (2014) clarified that the effectiveness of behaviour change interventions based on the TPB depends on various factors, including the careful design and execution of the interventions.

Finally, a frequently raised criticism contends that the TPB is overly rational, neglecting emotional and irrational elements impacting human behaviour (Sheeran et al., 2013; Sniehotta et al., 2014). This criticism was dispelled by Fishbein and Ajzen (2010) and Ajzen (2011, 2015), clarifying that the TPB acknowledges the potential influence of non-cognitive or irrational factors in shaping beliefs. The TPB posits that individuals' attitudes, subjective norms, and perceptions of control logically follow from these beliefs, influencing their intentions and subsequent behaviour.

The Theory of Planned Behaviour and Entrepreneurial Intention

Per the TPB, EI predicts entrepreneurial behaviour (Ajzen, 1991). Table 1 contains selected research articles that used the TPB to predict EI. These articles were explicitly chosen for their relevance, mainly due to the inclusion of student samples and to emphasise the widespread application of the TPB in the realm of EI.

Table 1

Summary of Research Articles Using The Theory of Planned Behaviour to Predict Entrepreneurial Intention Among Students

Author and Year	Location	Participants	Variables	Results
Krueger, Reilly and Carsrud (2000)	United States of America	Senior business students, *N* = 97	-EI -Antecedents of TPB -Determinants of EEM	PBC, Attitude, perceived feasibility, perceived desirability and propensity to act were all significant predictors of EI.
Autio, Keeley, Klofsten, Parker and Hay (2001)	Finland, United States of America, United Kingdom	University students, *N* = 3445	-EI -Antecedents of TPB -Gender -Work experience -Age -Employment status	PBC, Attitude toward behaviour, SN, work experience and age were all significant predictors of EI.
Gird and Bagraim (2008)	South Africa	Final-year commerce students, *N* = 247	-EI -Factors of the TPB -Situational Factors -Personality traits -Demographics -Prior exposure to entrepreneurship	The TPB significantly explains 27% of the variance in EI. Prior exposure to entrepreneurship also significantly added to the predictive power of the TPB. Attitude toward entrepreneurship was the strongest predictor, with SN being the weakest predictor of EI.

Author and Year	Location	Participants	Variables	Results
Shook and Bratianu (2010)	Romania	Students, *N* = 324	-EI -Perceived desirability/attitude -Self-efficacy -Subjective norms -Specific desirability -Perceived feasibility/PBC	All the variables positively related to EI except subjective norm, which had a negative relationship to EI.
Moriano, Gorgievski, Languna, Stephan and Zarafshani (2012)	Germany, India, Iran, Poland, Spain, and The Netherlands	Students, *N* =1074	-EI - Antecedents of TPB	Results confirm the universal influence of attitudes and PBC/self-efficacy on EI but show cultural differences in the role of SN.
Davids (2017)	South Africa	Final-year students, *N* = 123	-EI -Antecedents of TPB -Determinants of EEM	The TPB explained 58% of the variance in EI. The EEM was sufficient but only explained 38% of the variance in EI.
Ebewo, Shambare and Rugimbana (2017)	South Africa	Undergraduate students, *N* =150	-EI -Antecedents of TPB	Attitudes towards entrepreneurship and PBC were significant predictors of EI, while SN was not a significant predictor of EI.
Nanere, Plant, Trebilcock, Pattinama and Arwani (2020)	Australia	University students, *N* = 467	-EI -Antecedents of TPB	PBC had the most significant impact on EI, followed by behavioural and normative beliefs.

Author and Year	Location	Participants	Variables	Results
Mahlaole and Malebane (2021)	South Africa	Students, *N* = 301	-EI -Antecedents of TPB. -Entrepreneurial education	TPB antecedents and entrepreneurial education had a statistically significant influence on entrepreneurial intentions. Attitudes had the greatest effect on EI, with SN being the weakest predictor of EI.
Sundelson (2021)	South Africa	Students, *N* = 128	-EI -Antecedents of TPB -Prior exposure to entrepreneurship -Community valuation -Gender -Covid'19	The TPB explained 80% of the variance in EI. Attitudes and COVID-19 were the only significant determinants of EI. SN did not have a statistically significant influence on EI.
(Mfazi & Elliott, 2022)	South Africa	Students, *N* = 361	-EI -Antecedents of TPB -Culture	Attitude had a significant influence on EI. SN had no significant relationship with EI; however, an interaction effect emerged within one of the cultural groups, influencing the relationship between these variables.

Note. TPB = Theory of Planned Behaviour; EEM = Event Entrepreneurial Model; EI = entrepreneurial intentions; SN = subjective norms; PCB = perceived behaviour control.

The Theory of Planned Behaviour and Entrepreneurial Intentions of Students

Table 1 includes previous research indicating that the TPB model is valuable for predicting EI, particularly among students. Krueger et al.'s (2000) earlier findings suggested that the TPB was seen as a better predictor of entrepreneurial intent when compared to Shapero's (1982) Intentions-based model, which was also used to predict entrepreneurial intent. Moreover, a study conducted in South Africa's Western Cape indicated that the TPB significantly explained 27% of the variance in the students' EI and concluded that the TPB was a valuable tool for predicting EI (Gird & Bagraim, 2008). In a more recent study, Davids (2017) compared the TPB and the Entrepreneurial Event Model (Shapero & Soko, 1983) in predicting EI among final-year students in South Africa. It was concluded that the TPB explained significantly more variance in EI than the Entrepreneurial Event Model. Davids (2017) recommended applying the TPB when predicting EI in a South African context. Table 1 shows that both international (Autio et al., 2001; Moriano et al., 2012; Nanerea et al., 2020) and local scholars (Davids, 2017; Ebewo et al., 2017; Gird & Bagraim, 2008; Sundelson, 2021) have applied the TPB within various studies and have concluded that the model is one of best predictors of EI.

Students are often considered ideal candidates for EI investigations for several compelling reasons (Liñán & Chen, 2009). First, students are typically on the cusp of entering the job market, making them a relevant group to study for future entrepreneurial endeavours. Second, they will likely have been exposed to entrepreneurial education or acquired entrepreneurial knowledge through various academic courses. Lastly, the educational environment provides an ideal setting for cultivating EI, making it a logical choice for research involving a student sample (Krueger et al., 2000).

Tkachev and Kolvereid (1999) proposed that universities that incorporate entrepreneurial education and practical entrepreneurial experiences tend to stimulate their students' inclination to pursue entrepreneurial ventures. Additionally, implementing curricular programs that alter students' attitudes and perceptions about entrepreneurship, particularly regarding the feasibility of self-employment, has proven to be a valuable strategy for enhancing EI among student populations (Luthje & Frank, 2003). However, studies have shown inconsistent results concerning the most significant predictor of EI concerning the TPB antecedents. Some authors suggested that Attitudes were the most robust predictor (Basu & Virick, 2008; Moriano et al., 2012), while others have found that PBC was the strongest predictor of EI (Autio et al., 2001; Nanere et al., 2020).

The Theory of Planned Behaviour and Entrepreneurial Intentions of South African Students

Considering the predominant international context within which the TPB and EI, specifically among students, have primarily been employed, it is essential to emphasise research conducted in South Africa. Table 1 highlights notable scholars, including Davids (2017), Ebewo et al. (2017), Gird and Bagraim (2008), Mfazi and Elliott (2022) and Sundelson (2021), who have conducted EI research in South Africa. Their collective contributions have played a significant role in solidifying the TPB as a reliable and influential framework for predicting and understanding EI among students. Nevertheless, there have been some inconsistencies when comparing these findings within South African studies. On the one hand, Davids (2017), Ebewo et al. (2017), Mfazi and Elliott (2022) and Sundelson (2021) indicated that SN was not a significant predictor of the model but indicated that Attitudes towards entrepreneurship was statistically significant and had the most substantial influence on EI. On the other hand, Gird and Bagraim (2008) suggested that while SN had the weakest influence on EI, it was still statistically significant. Additionally, Gird and Bagraim (2008) and Mahlaole and Malebana (2021) indicated that Attitude towards entrepreneurship had the most substantial influence on EI.

While these South African studies have made valuable contributions to the literature on EI using the TPB, their scope remains limited. These studies fall short of thoroughly exploring contemporary contextual issues that could distinctly shape the EI of South African students. Furthermore, the existing studies exhibit some contradictions and often focus on singular contextual factors, such as cultural differences (Mfazi & Elliott, 2022) or the impact of global concerns like COVID-19 (Sundelson, 2021). However, South Africa's unique contextual landscape involves many challenges, including economic disparities, load-shedding, and demographic influences, collectively influencing entrepreneurial perceptions and motivations. While past research has laid a foundation, a notable gap in the literature persists in comprehensively investigating how these contextual factors interact within the TPB framework to shape EI among South African students. Recognising and understanding these nuances are essential for the practical applicability and relevance of entrepreneurial theories in the dynamic and varied context of South Africa. This study aims to address these gaps by delving into these multifaceted issues in subsequent sections.

Predictors of Entrepreneurship Intention

The TPB model is a foundational framework for incorporating additional variables (Ajzen, 1991). The TPB is anticipated to encompass "external factors" that might influence intention

(Ajzen, 2005), including situational circumstances and demographic characteristics. Ajzen (1991) indicated that Attitudes toward entrepreneurship, SN, and PBC would explain the impact of these "external factors" and that if the TPB model can sufficiently account for these external factors, then the model is considered sufficient. However, if any other variables significantly predict intention, over and above the TPB, then the TPB model is not sufficient (Tkachev & Kolvereid, 1999). To ensure the sufficiency of the model in the current study's context, external factors, situational and demographic variables, will be investigated in conjunction with the antecedents of the TPB.

Literature on the relationship between situational variables (prior entrepreneurial experience and knowledge of entrepreneurial support) and demographic variables with entrepreneurial intent are briefly delineated below.

Situational Variables

Past research has integrated situational factors, such as prior entrepreneurial experience and the knowledge of entrepreneurial support, into the TPB framework (Fayolle & Gailly, 2015; Hasmidyani et al., 2022; Krueger et al., 2000; Tkachev & Kolvereid, 1999). Shapero (1982) defined situational factors as alterations in one's life that can potentially guide them towards entrepreneurship. Luthje and Franke (2003) asserted that situational factors shape the connection between one's attitude and behaviours. Furthermore, Arrighetti et al. (2016) suggested that these factors can significantly impact the likelihood of starting a business venture, either positively or negatively, categorising them as external influences attracting or propelling individuals into entrepreneurship. The current study aims to extend the understanding of the complex interplay between situational variables, the TPB and EI, to provide a better framework for understanding EI. South African studies support the need to include situational variables in research where empirical literature is lacking (Davids, 2017; Meyer, 2022).

Prior Entrepreneurial Experience. Understanding the impact of prior entrepreneurial experience on the EI of South African youth can help inform targeted interventions in universities, providing students with the necessary experiences or education to cultivate a robust entrepreneurial mindset. Additionally, this research contributes to addressing the limited research on prior entrepreneurial experience in South African literature, enhancing the understanding of the factors shaping entrepreneurial intent among the youth in the region.

Prior entrepreneurial experience refers to an individual's previous involvement in entrepreneurial activities or exposure to entrepreneurial education (Botha, 2020; Gird &

Bagraim, 2008; Gulzar & Fayaz, 2021; Krueger, 1993; Malebana, 2012; Zapkau et al., 2015). Brockhaus and Horwitz (1986) reported that prior entrepreneurial experience leads to entrepreneurial behaviour. The impact of prior entrepreneurial experiences on EI is contingent upon the nature and outcomes of these experiences (Krueger, 1993; Zapkau et al., 2015). Thus, encountering positive outcomes and achievements when experiencing entrepreneurial activities can positively impact entrepreneurial intent (Ajzen & Sheikh, 2013; Bandura, 1986; Zapkau et al., 2015).

Recent investigations have established a positive correlation between prior entrepreneurial exposure and entrepreneurial intent (Cieslik & Van Stel, 2017; Gulzar & Fayaz, 2021; Rambe & Ndofirepi, 2017), while Aloulou (2016) found a negative relationship between prior entrepreneurial experience and EI. Similarly, in a local context, Malebana and Mahlaole (2023) found a negative but statistically significant relationship between prior entrepreneurship exposure and EI, Attitude, SN and PBC amongst South African students. The observed negative relationship may be elucidated by the nature of participants' prior entrepreneurial encounters, potentially involving adverse outcomes or failures in their previous entrepreneurial pursuits. This negative association aligns with the insights from Ajzen and Sheikh (2013), Bandura (1986), and Zapkau et al. (2017).

Knowledge of Entrepreneurial Support. The development of EI and the subsequent transformation of the intention into an actual business venture relies on a supportive environment (Ajzen, 2005; Malebana, 2014). This supportive context can include support from local governments, communities, universities or entrepreneurial support initiatives (Malebana, 2014). According to Zanakis et al. (2012) and Delanoë (2013), it has been established that the perceived knowledge or opportunity to access information about entrepreneurial support significantly increases the probability of starting a venture. Zanakis et al. (2012) further suggested that individuals aware of the support offered by the local government or community for new ventures are more inclined to progress from planning a venture to actively establishing and operating it. However, Ambad and Damit (2016) indicated that entrepreneurial support had no significant relationship with EI or entrepreneurial activity.

Prior research conducted in South Africa (Malebana, 2017; Meyer, 2022; Mothibi & Malebana, 2019) emphasised and recommended exploring the impact that knowledge of entrepreneurial support can have on EI due to its limited research. Malebana (2017) revealed that South Africans' knowledge of entrepreneurial support is significantly associated with their EI. These findings suggest that entrepreneurial support can serve as a catalyst for

stimulating EI, a precursor to entering self-employment. To enhance efforts to encourage entrepreneurial activity in South Africa, there is a need to raise awareness about entrepreneurial support and improve access to it. Given the significance of establishing and growing ventures in South Africa for job creation and economic stimulation (Malebana, 2014), investigating the knowledge of entrepreneurial support concerning EI in the current study is significant.

Demographic Variables

Previous South African research has included various demographic variables, such as race, gender and nationality, within studies relating to the TPB and EI (Davids, 2017; Gird & Bagraim, 2008; Sundelson, 2021). Ajzen (2005) indicated that much like the other "external factors", demographics are believed to impact intentions indirectly. This was corroborated by research by Kolvereid (1996) and Tkachev and Kolvereid (1999). They suggested that while demographic variables do not add significant predictive validity to the TPB model, they indirectly influence intentions through Attitudes, SN and PBC. However, in a South African study, Gird and Bagraim (2008) revealed that demographic factors, including race and gender, had a statistically significant but relatively weak impact on EI, while age did not exhibit any influence on EI. Furthermore, Rusteberg (2013) examined South African university business school students and found that demographic variables exerted a significant residual effect beyond the antecedent variables in the TPB. This suggests that the TPB alone was not sufficient to capture all the variation within EI.

Recognising the potential influence of demographics on EI, variables related to participants' age, gender, race, and academic faculty, among others, were incorporated into the current study. This inclusion aims to provide a deeper understanding of the study's sample and its findings.

It is thus appropriate to assume that similar findings will emerge within the current study. Inconsistent findings exist internationally and locally regarding which antecedent of the TPB is the most significant predictor of EI. The existing theoretical and empirical literature on situational and demographic variables and their relation to EI also presents mixed findings globally and locally. Given the limited and inconclusive nature of research on these variables among South African students, the imperative need for investigation is evident. Consequently, the following hypotheses are proposed:

Hypotheses

Ha: The TPB explains significant variance in entrepreneurial intent among South African students.

Ha1:Attitudes explain significant variance in entrepreneurial intention among South African students.

Ha2: Perceived behavioural control explains significant variance in entrepreneurial intention among South African students.

Ha3: Subjective norms explain significant variance in entrepreneurial intention among South African students.

Hb: The TPB explains significant variance in entrepreneurial intentions among South African students over and above the demographic and situational variables.

Hb1: The TPB explains significant variance in entrepreneurial intentions among South African students, over and above the demographic variables.

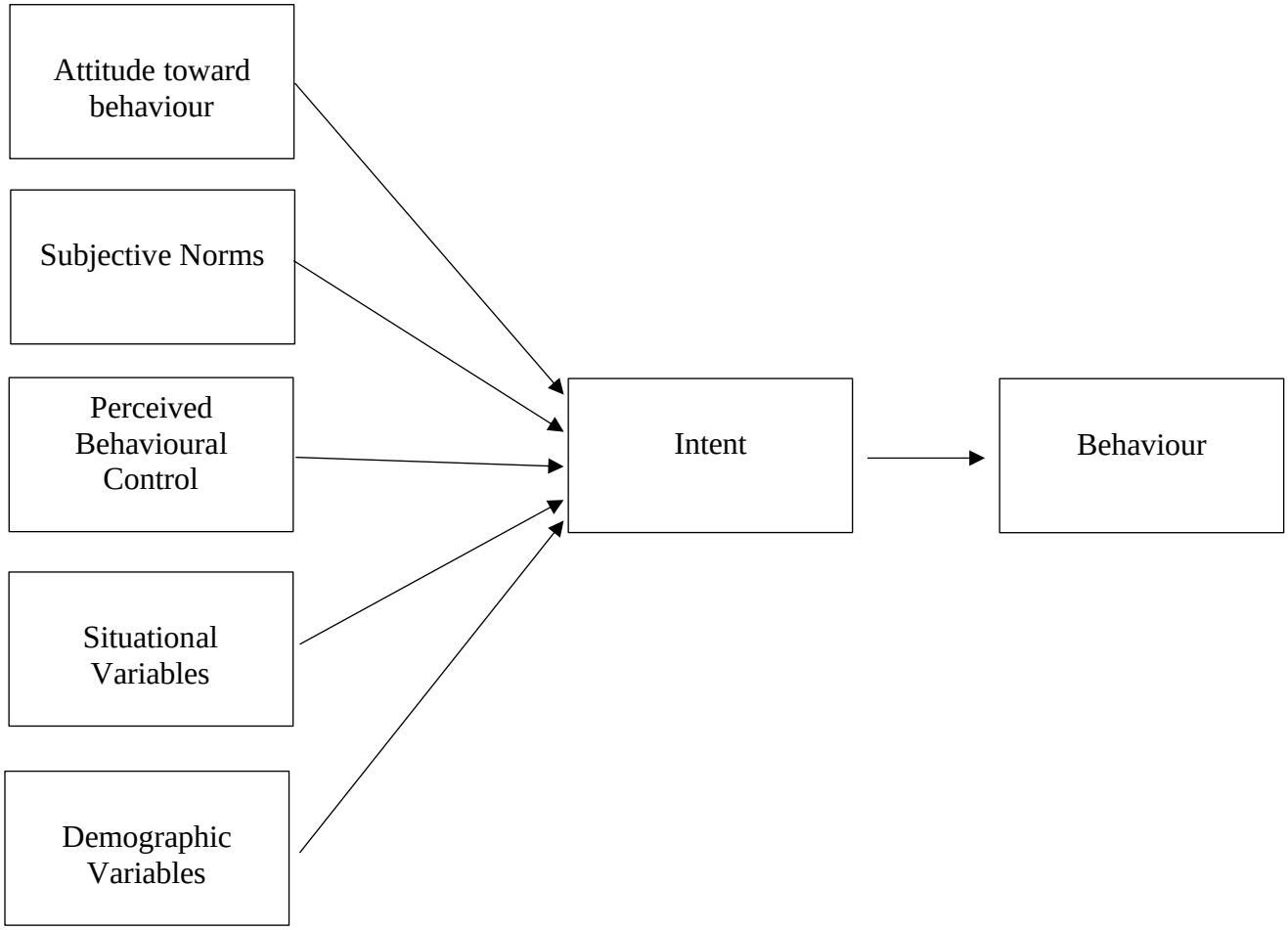
Hb2: The TPB explains significant variance in entrepreneurial intentions among South African students, over and above the situational variables.

Diagrammatic Framework

Figure 2 represents the diagrammatic framework of the current study.

Figure 2

Diagrammatic Framework of the Study



Methods

This section describes the method used when applying the TPB to examine the factors that may explain the entrepreneurial intentions of South African students. First, the research design is outlined. After that, the sampling methods, participants, measures used, and the results for the preliminary interviews are summarised. Following this, the sampling techniques, participants, and measures used in the questionnaire are delineated. Subsequently, the ethical considerations, procedure, and statistical analyses are discussed.

Research Design

The research design follows a sequential exploratory approach, where a dominant quantitative phase is complemented by a less dominant qualitative component (Creswell & Clark, 2007). Ajzen (2020) suggested that the conventional design recommended for TPB implementation is primarily quantitative, while a qualitative research phase is optional but typically reserved for eliciting beliefs when desired. Thus, the primary focus of the current study was on quantitative data collection and analysis. Still, a less dominant qualitative technique was initially employed to extract insights from South African students directly and gain a more comprehensive understanding of entrepreneurship from the students' perspectives.

Phase one employed the less-dominant qualitative research design, involving preliminary in-person elicitation interviews. The qualitative research allowed for insights and perspectives, enriching the understanding of entrepreneurial intentions (Irvine et al., 2012). This phase aimed to delve into the intricacies of students' beliefs, providing a more comprehensive insight into the factors influencing EI. Exploring their experiences and viewpoints aimed to identify novel insights or dimensions that might not have been adequately addressed in previous literature. The focus of these preliminary interviews sought to ensure a thorough exploration of factors that might influence entrepreneurial intentions among South African students.

During the second phase, a dominant quantitative descriptive research design was used. A quantitative analysis using self-administered surveys facilitated data collection from numerous participants, allowing for a substantial sample size and increased generalisability of the results (Terre Blanche et al., 2006). Quantitative designs also enable the aggregation and comparison of data as well as facilitate a robust foundation for statistical analyses (Gravetter & Forzano, 2015). Lastly, to optimise efficiency and stay within the study's resource and time constraints, a cross-sectional design was used in this phase, which involves collecting data at

a single point in time (Terre Blanche et al., 2006). The current study's methods employed in phases one and two are outlined below.

Phase One – Preliminary Elicitation Interviews

Sampling

Non-probability, purposive sampling techniques were used. Students from the University of Cape Town were not randomly selected but were requested to volunteer to participate in the study. This sampling technique provided a cost-effective and expedited method (Rosnow & Rosenthal, 2013; Terre Blanche et al., 2006), which was well-suited to accommodate the study's resource and time limitations. Purposive sampling was appropriate because the study focused specifically on South African students, a sample who are at a pivotal stage in their lives where they can decide whether to enter the workforce or pursue entrepreneurial activities (Autio et al., 2001; Krueger et al., 2000; Varamaki et al., 2013).

Participants

The sample consisted of nine individuals who voluntarily participated in face-to-face interviews. Among the participants, four were female, and five were male. Six students belonged to the commerce faculty, while three belonged to the science faculty. Seven participants indicated they were White, one was Black African, and one was Coloured. Lastly, one student was in the third year of their studies, five in their fourth year and three in their fifth year of university.

As the interviews progressed, recurring factors and themes emerged in the participants' responses, suggesting that saturation, a point where no new insights emerge (Glaser & Strauss, 2017), had been reached. Given data saturation, concluding phase one after nine interviews was deemed appropriate.

Preliminary Interview Elicitation Measure

In line with the standard procedures for eliciting beliefs associated with a behaviour, described by Fishbein and Ajzen (2015), various questions were asked, these included:

1. What are the advantages/disadvantages of starting your own venture within the next five years?
2. Are there any individuals or groups in your life who would approve/disapprove of you starting your own business within the next five years?
3. What factors or circumstances might encourage/make it difficult for you to start your own business within the next five years?

Preliminary Interview Elicitation Belief Results

New insights emerged during the interviews with the students. Two key factors, the South African economy and load-shedding, were noteworthy considerations for the interviewees. Both factors were considered contextual disadvantages and thought to hinder the interviewees' abilities to start a venture.

Bergmann et al. (2018) explained that the process of creating a venture is influenced by the economic environment, underscoring the importance of considering economic conditions to understand EI. Similarly, Welter (2011) asserts that there is a growing acknowledgement in entrepreneurship research of the necessity to understand economic behaviour within its broader temporal, spatial, institutional, and social framework. Ahadi and Kasraie (2020) conducted a study to examine which contextual factors influence EI when starting small to medium businesses. The research revealed that economic conditions, including inflation, elevated interest rates, and price instability, emerged as pivotal elements influencing EI. These factors impacted businesses' perceived feasibility and sustainability, thereby making a nuanced understanding of the economic environment imperative for entrepreneurs.

This significance becomes especially pronounced in South Africa, where economic conditions, notably characterised by low unemployment and inflation rates, can shape the entrepreneurial landscape. A study conducted in South Africa underscored the economy as a significant obstacle to the EI of final-year graduate students, resulting in weak EI among the sample (Fatoki, 2010). Thus, there is an imperative to scrutinise the diverse economic contextual elements within this research's scope (Zahra & Wright, 2011).

Additionally, rolling power cuts or load-shedding was the second noteworthy factor mentioned in the interviews. The repercussions of load-shedding are widespread, impacting both households and businesses. Approximately 71% of businesses in South Africa have felt the adverse effects of these power interruptions (Taruvinga, 2023). For emerging ventures, mitigating the impact of load-shedding is particularly challenging (Masibi, 2015). These interruptions disrupt regular business operations, leading to decreased productivity, financial losses, and a strain on resources (Mbomvu et al., 2021). New ventures often bear the brunt of these challenges, as they may lack the financial resilience and backup infrastructure to cope with prolonged power outages (Masibi, 2015). The persistent threat of load-shedding can pose a serious risk to the sustainability of these ventures and is thus discouraging for entrepreneurs (Masibi, 2015). This unfavourable environment makes it difficult for business owners to contemplate investments in expanding or initiating new ventures, subsequently impacting employment opportunities in the economy.

Interestingly, these two contextual factors took precedence over the significance of COVID-19 on EI, a shift from findings in previous studies that underscored the pandemic's influence on starting a venture (Ruiz-Rosa et al., 2020; Sundelson, 2021). Participants in the present study placed less emphasis on COVID-19 than the significant attention given to load-shedding and the South African economy. This shift may be attributed to the waning effects of COVID-19, diminishing its perceived threat. With various economic elements, such as the COVID-19 pandemic previously highlighted in the literature on EI, the current study brings forth novel insights from participants who spoke consistently about the two contextual elements, thereby addressing a gap in the existing South African literature.

Phase one served as a foundational step, aiding the research to align more closely with the realities of the participants' experiences and contexts, informing the subsequent quantitative phase of the study.

Phase Two – Questionnaire

Sampling

Non-probability, purposive sampling techniques were used to recruit participants for the self-administered questionnaire (Gravetter & Forzano, 2015). Students were not randomly selected from the population; instead, they volunteered to participate based on their willingness. Applying purposive sampling proved appropriate as the study targeted students across three universities in the Western Cape, The University of Cape Town, Stellenbosch University and The University of the Western Cape, spanning various faculties. Including students from other faculties allowed for a more nuanced understanding of the factors influencing EI across different fields of study. For example, commerce students are expected to possess foundational business skills that could impact their entrepreneurial mindset. In contrast, students from other faculties may not have had the same level of exposure to entrepreneurship, providing a comparative group.

Participants

As a result, 758 participants responded to the survey. However, 206 participants failed to complete most of the survey and were removed. Moreover, 28 participants were removed as they indicated they were not South African citizens. Lastly, one further participant was excluded from the study due to indications from Qualtrics suggesting that this participant might have been a potential bot, as seen in Figure A1 Appendix A. Bots, which are defined as computer software designed for performing automated tasks on behalf of users (Nwana, 1996; Eslahi et al., 2012; Teitcher et al., 2015), can be swiftly created or downloaded and set

into action to execute straightforward automated functions or locate surveys that offer incentives (Yarrish et al., 2019; Godinho et al., 2020). The survey included a chance to win a R500 cash prize, so it was considered particularly susceptible to such infiltration.

The final sample, comprising $N = 523$ South African students, reflects a diverse demographic composition. Regarding gender, 38.4% identified as male, 58.9% as female, 1.34% as non-binary, and 1.34% preferred not to disclose this information. The racial distribution was predominantly Black African (44.7%), followed by Coloured (20.5%), White (23.9%), Indian (6.11%), Asian (1.15%), with 1.53% falling into the "other" category, and 2.10% choosing not to specify. The age range of participants spanned from 17-35 years, with 21-year-olds constituting the largest subgroup, at 21.4% of the sample. Regarding faculty, 35.80% of participants reported studying within the commerce faculty, while 64.24% fell into the "other" faculty category. The academic years were varied, with the majority of participants in their third year (35.93%), followed by fourth-year students (21.1%), first-year (13.67%), second-year (11.72%), fifth-year (9.38%), and a small portion in their sixth year or beyond (8.20%). Regarding funding, just over half indicated that their undergraduate studies were not funded by the National Student Financial Aid Scheme (NSFAS) (51.37%), whereas NSFAS funded 44.5%, and 4.12% preferred not to disclose this information. Furthermore, demographic questions about the participants' perceptions of their family's socioeconomic status within South African society revealed that 55.3% indicated they were well off in society. In comparison, 44.6% indicated they were worse off. Table 2 provides a visual representation of the demographic results.

Table 2

Demographic Characteristics of Participants from the Questionnaire

Demographic Characteristic	*%*	*n*
Gender		
Male	38.4	201
Female	58.9	308
Non-binary/other	1.3	7
Prefer not to say	1.3	7
Race		
Black African	44.7	234
Coloured	20.5	107
White	23.9	125
Indian	6.1	32
Asian	1.1	6
Other	1.5	8
Prefer not to say	2.1	11
Faculty		
Commerce	35.8	187
Other	64.25	336
Year of study		
1st year	13.4	70
2nd year	11.5	60
3rd year	35.4	184
4th year	20.7	108
5th year	9.2	48
6th year or more	8.0	42
NSFAS		
Yes	43.4	227
No	50.1	262
Prefer not to say	4.0	21
SA society status		
Well off	55.3	281
Worst off	44.6	227

Measures

Attitude. Based on Fishbein and Ajzen's (2015) questionnaire and item construction recommendations, four items assessed attitudes towards entrepreneurship. These items were measured using four bipolar adjectives on a 5-point semantic differential scale (adjective pairs included 1 (*bad*) to 5 (*good*), 1 (*unpleasant*) to 5 (*pleasant*), 1 (*harmful to others*) to 5 (*beneficial to others*) and 1 (*boring*) to 5 (*interesting*) (Fishbein & Ajzen, 2015). An example of an item included "Starting my own venture in the next one to five years will be…" (rated on a scale from 1 (*bad*) to 5 (*good*). See Appendix B for the full scale.

Subjective Norms. Four items assessed subjective norms based on Fishbein and Ajzen's (2015) questionnaire and item construction recommendations. These items were measured on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). An example of an item was, "My friends would approve of me starting a new venture in the next one to five years". See Appendix B for the full scale.

Perceived Behavioural Control. This measure comprised four items aligned with Fishbein and Ajzen's (2015) questionnaire and item construction guidelines. Items were measured on 5-point Likert scales. An example of one of these items includes, "Starting my own venture in the next one to five years is completely up to me", which was measured on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), see Appendix B for the full scale.

Entrepreneurial Intention. Three items were used in alignment with Fishbein and Ajzen's (2015) questionnaire and item construction guidelines to measure intentions. The items included "I intend to start my own venture in the next five years", "I will start my own venture in the next five years.", and "I plan to start my own venture in the next five years". These items were measured on 5-point Likert scales.

Situational Variables. Prior entrepreneurial experience was measured using one categorical item relating to whether or not students have ever had entrepreneurial experience. Knowledge of entrepreneurial support was measured using one categorical item, with questions regarding whether or not students know different types of support offered to them to start a venture. These questions called for a *yes* = 1 or *no* = 0 response.

Demographics. Single items were used to measure the demographic characteristics of gender, race, faculty, current year of study, whether NSFAS funded their undergraduate degrees and where they positioned themselves in South Africa's society. These demographic characteristics were selected as they allowed for an in-depth understanding of the characteristics of the sample group.

Contextual Variables. To measure the factors that emerged in the study's first phase, load-shedding and the South African economy, two distinct items were constructed on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). These items included, "Load-shedding makes it difficult for me to start my own venture in the next one to five years" and "The current state of the South African economy makes it difficult for me to start my own venture within the next one to five years".

Ethical Considerations

First, ethical approval, reference number: 021552023, from the University of Cape Town's Commerce Faculty Ethics in Research Committee and the Director of Student Affairs was obtained. Ethical permission and clearance were obtained from the University of the Western Cape and The University of Stellenbosch, as seen in Appendix C. All participants were informed of the study's aim, risks, and benefits. The participant's right to refuse to participate or to withdraw from the study was always respected. Furthermore, their right to participate was wholly voluntary, and participants were informed that their participation would not affect their academic or future careers. Confidentiality was upheld throughout the study as all information collected was stored on a computer with a password.

Procedure

Ethical approval was obtained from all the relevant universities and faculties.

Preliminary Interviews

Preliminary interviews were initially conducted. All interviewees were briefed about the study beforehand, informed of all the ethical considerations, and asked to provide written consent to the audio-recorded interview (see Appendix D). Based on questions developed by Ajzen and Fishbein (1980), open-ended questions were employed to capture any beliefs associated with entrepreneurship. Before the interviews, participants were presented with a description of the behaviour, encompassing details regarding the target, action, context, and timing (TACT). They were subsequently asked a series of open-ended questions to elicit their beliefs. Once saturation was reached, the interviews were concluded, and later, each interview was transcribed.

Questionnaire Development

Selected questionnaire items about the TPB antecedents were adapted from the theory of planned behaviour questionnaire construction by Fishbein and Ajzen (2015). In addition, two supplementary items were formulated based on the insights obtained during the preliminary interviews. Using Qualtrics (https://www.qualtrics.com), an electronic version of the

questionnaire was constructed, and subsequently, a thinking-aloud protocol with a single participant was completed. As Ericsson and Simon (1993) defined, the thinking-aloud protocol involves the real-time verbalisation of one's thoughts while actively engaging in a task, such as responding to a questionnaire. In the current study, participants meeting the population criteria were encouraged to candidly articulate every thought that arose as they read the questions and provided physical and verbal responses.

Cognitive interviewing, also called think-aloud interviewing, has provided researchers with the means to examine several assumptions inherent in standardised surveys. These assumptions include:

- the presumption that respondents possess a universal ability to comprehend the questions posed to them
- that their comprehension aligns with the researcher's intended understanding
- respondents are capable and willing to respond to these questions (Collins, 2003).

This approach has proven valuable in shedding light on how respondents perceive and construe survey questions and pinpointing potential issues within questionnaires (Drennan, 2003). Numerous studies have provided various rationales for employing think-aloud techniques in research. For instance, they have been utilised to assess participants' adherence to instructions (Brown et al., 2009) and to ascertain whether questions are comprehended as intended (Heesch et al., 2010). Additionally, these methods have been recognised for their capacity to uncover potential sources of error, thereby enhancing the reliability of data collected through questionnaires (Heesch et al., 2010). This strategy was applied, and minor modifications were made to item phrasing, layout, and font based on the participant's recommendations.

Subsequently, an email containing a cover page outlining details such as the study's purpose, ethical information and the survey link, see Appendix E, was forwarded to the University of Cape Town's Department of Student Affairs for dissemination to their students via email. The University of the Western Cape and the University of Stellenbosch also facilitated the distribution of this email to their respective student populations. Within this email, participants were informed that their decision to complete the survey and submit their responses would signify their voluntary consent to participate.

A force response format was applied to each measure to minimise non-response item bias; however, information regarding the participants' demographics was not a forced response. To incentivise participation in the survey, the participants were allowed to enter a

draw to win a cash prize of R500. Those who wished to participate had to enter their email addresses or phone numbers at the end of the survey. The winner of the draw was announced once the survey was closed. Data were gathered over approximately five weeks between the 28th of August 2023 and the 2nd of October 2023. Following this, the data were exported into Excel, cleaned and then exported into IBM's Software Package for the Social Sciences (SPSS) (Version 28).

Statistical Analyses

After completing the data cleaning process in Excel, data was imported into IBM's SPSS. Exploratory Factor Analyses (EFA) were performed to examine the dimensionality of the factors. After that, a Confirmatory Factor Analysis (CFA) was conducted, testing different models concerning the TPB antecedents. Reliability analyses were then conducted by measuring the internal consistency using Cronbach's alpha and corrected item-total correlations. Descriptive statistics were additionally employed to gain insights into the sample's responses. Subsequently, hypotheses were tested using Pearson product-moment correlation, regression, and power analyses. A mediation analysis followed this, and lastly, an Analysis of Variance (ANOVA) and independent t-tests were conducted to examine if differences among variables were present across various groups.

Results

The results section includes the statistical findings from the questionnaire, which aimed to examine the factors that may influence the intention to start a venture. First, EFA results for each variable scale in the study are presented. After that, the variability of the underlying dimensions of the TPB determinants is outlined in the CFA results. Thirdly, the reliability analysis results are presented, followed by an outline of the descriptive statistics. The correlation analysis outcomes and the results from the linear and hierarchical multiple regressions are then discussed. This is followed by the mediation analysis, the ANOVA and independent t-test results.

Exploratory Factor Analysis

An EFA was conducted to determine the factor structure of all the scale items used in the current study without imposing any predetermined structure on the outcome (Fabrigar & Wegener, 2011). Principal axis factoring (PAF) was employed for factor extraction due to its focus on shared variance among items, emphasising latent factors that are underlying a set of variables over principal component analysis (PCA), which reduces variables into fewer components without concentrating on the latent factor (Henson & Roberts, 2006). In the context of TPB, where latent constructs like attitudes, SN, and PBC are theorised to underlie

multiple observed indicators, PAF is suitable for extracting factors that represent these latent constructs. Moreover, PAF is a commonly used extraction method that yields precise outcomes (De Winter & Dodou, 2012). Direct oblimin oblique rotation was applied even though Attitude, SN, and PBC represent theoretically distinct predictors of intentions. However, in practice, they are correlated due to the shared influence of information on behavioural, normative, and control beliefs, which are the underlying theoretical determinants of Attitudes, SN, and PBC, respectively (Ajzen, 2020).

Before performing PAF on the items, EFA assumptions were evaluated. These included the Kaiser-Meyer-Olkin (KMO) measure, which needs to exceed .50, indicating adequate data distribution (Kaiser, 1960), and Bartlett's Test of Sphericity, which must be significant (Tabachnick & Fidell, 2014). Furthermore, Kaiser's (1960) criterion was adopted (Eigenvalues => 1). An item was deemed significant if its factor loading surpassed .30, adhering to standard guidelines (Hair et al., 2006).

Theory of Planned Behaviour

The TPB antecedents, encompassing attitude, SN, and PBC, were subjected to an EFA to assess their underlying dimensions. As anticipated, given that the TPB model encompasses three distinct determinants, Table 3 illustrates the EFA results, revealing three factors aligning with the three variables under examination. The EFA revealed a KMO measure of sampling adequacy of .836 coupled with a significant Bartlett's test ($X^2_{66} = 2164.06$, $p <$ .001). Factor one included the four items relating to *attitudes towards entrepreneurship*, factor two contained four items about *SN*, and factor three displayed four items pertaining to *PBC*.

Table 3

Exploratory Factor Analysis: Theory of Planned Behaviour Items

	Factor loading		
TPB item	1	2	3
Factor 1: Attitudes			
Att2	**.729**	-.011	.013
Att3	**.709**	.002	-.003
Aat1	**.690**	.084	.022
Att4	**.611**	-.045	.025
Factor 2: Subjective Norms			
SN3	-.068	**.926**	-.005
SN1	-.039	**.734**	.088
SN2	-.036	**.647**	.018
SN4	.154	**.416**	-.063
Factor 3: Perceived Behavioural Control			
PBC4	-.054	-.072	**.884**
PBC2	-.024	.048	**.671**
PBC3	.107	.030	**.629**
PBC1	.295	.137	**.418**
Eigenvalues	4.359	1.674	1.415
Total Explained Variance	36.33%	13.95%	11.79%
Cumulative Variance	36.33%	50.28%	62.07%

Note. $N = 523$. The extraction method was principal axis factoring with oblimin (Kaiser normalization) rotation. Rotation converged in 6 iterations.
ATT= attitude variables; SN= subjective norm variables; PBC= perceived behavioural control

Entrepreneurial Intentions

A factor analysis was conducted separately for the dependent variable, entrepreneurial intent. Notably, all three items related to entrepreneurial intention exhibited loadings onto a single factor, as seen in Table 4. A KMO measure of sampling adequacy was evident .78 coupled with a significant Bartlett's test ($X^2_3 = 1841.43$, $p < .001$). All of the items loaded above .94 on the factor. Consequently, all the items assessing entrepreneurial intent were retained for further analysis.

Table 4

Exploratory Factor Analysis: Entrepreneurial Intentions items

	Factor loading
Entrepreneurial Intention item	1
Factor 1: Entrepreneurial Intention	
Intention3	**.949**
Intention1	**.949**
Intention2	**.945**
Eigenvalues	2.796
Total Explained Variance	93.21%
Cumulative Variance	93.21%

Note. $N = 523$. The extraction method was principal axis factoring with oblimin (Kaiser normalization) rotation. 5 iterations required.

Confirmatory Factor Analysis

It is typically recommended to conduct an EFA before conducting a CFA (Brown, 2015). EFA, being an exploratory technique, enables the identification of patterns and relationships among variables, offering a preliminary understanding of the underlying structure (Brown, 2015). This initial exploration is valuable in guiding the subsequent confirmatory analysis conducted through CFA, which tests specific hypotheses derived from the insights gained during EFA. While EFA is utilised earlier in the scale development and construct validation process, CFA is applied in later phases, relying on the empirical and theoretical foundations established through EFA (Brown, 2015).

Thus, following the EFA, a CFA was conducted using the items that demonstrated significant loadings. CFA is a multivariate statistical technique employed to evaluate the factor structure of a set of observed variables by establishing connections between the measured variables and the latent variables within a study (Hu & Bentler, 1999). The utilisation of CFA offers several advantages, including assessing how effectively each

measurement corresponds to its intended constructs and providing a means to determine the quality of the measurement when investigating predictive relationships among variables (Kelloway, 1998). In this study, a CFA was conducted to scrutinise whether the TPB determinants, utilised for measuring Attitudes (four items), SN (four items), and PBC (four items), can be distinguished from one another. Three models were compared to determine which model yielded the most favourable fit statistics, see Table 5. The CFA aimed to appraise the degree to which the data conformed to the specified model and served as a method for testing the formulated hypotheses.

Table 5

Overall Fit Indices for the Varying Models Analysed Using Confirmatory Factor Analysis

						90% CI of RMSEA	
Model	X^2	DF	CFI	GFI	RMSEA	Low	High
Null	2169.33	66	.63	.75	.19	.18	.20
Three factor orthogonal	2169.33	66	.84	.88	.11	.10	.12
Three factor oblique	2169.33	66	.93	.94	.07	.06	.09

Note. X^2 = Independence Chi-Square Model; DF = Degrees of Freedom; CFI = Comparative Fit Index; GFI = Goodness-of-Fit Index; RMSEA = Root Mean Square Error of Approximation; CI = Confidence Intervals.

Table 5 presents the model fit statistics for three distinct models: the null, three-factor orthogonal, and three-factor oblique models. The chi-square statistic for the independence model is found in the first column of the CFA table. This statistic assesses the disparities between the variables' observed and expected covariance matrices. A smaller chi-square value, closer to zero, suggests minimal disparities (Hair et al., 2006).

The third column introduces the Comparative Fit Index (CFI), which adjusts the model's discrepancy function for sample size. An acceptable model fit is typically indicated by a CFI value exceeding .90 (Hair et al., 2006). In this context, the three-factor orthogonal model was just below .90, whereas the three-factor oblique model excelled with a CFI value of .97, demonstrating a strong fit.

Next, the table presents the Goodness-of-Fit Index (GFI), which evaluates how well the model-implied covariance matrix predicts variances and covariances compared to a null model. GFI values range between 0 and 1, with higher values denoting a better fit (Marsh et al., 1988). A GFI above .95 is often seen as a good fit relative to the baseline model, while

values above .90 are generally considered acceptable (Marsh et al., 1988). Notably, the three-factor oblique model had the highest GFI value, surpassing .95, signifying a good fit.

The Root Mean Square Error of Approximation (RMSEA) assesses the residual relationship within the model to determine if the model is a good fit. An RMSEA value near 0 and below .08 indicates a good model fit (Hair et al., 2006). In this instance, the three-factor oblique model's RMSEA value fell below the .08 threshold, indicating a strong model fit, while the three-factor orthogonal model surpassed .08.

The three-factor oblique model was the best-fitting model, demonstrating that *attitudes*, *SN*, and *PBC* are distinct yet correlated factors. Before conducting the CFA, several assumptions had to be met. First, the sample group was selected randomly, meeting the study's requirements through purposive sampling from three universities. Second, the data exhibited multivariate normality, as evidenced by the data along the diagonal line in the P-P plots, as seen in Appendix F Figures F1-F3. Finally, the sample size exceeded the typical threshold of 200.

Consistency of Measurement Scales

For the reliability analysis, Cronbach's coefficient alpha (α) was employed to assess the internal consistency of each scale. Nunnally's (1978) guidelines were applied: $\alpha > .70$ = acceptable internal consistency, $.70 > \alpha > .80$ = good internal consistency, $\alpha > .90$ = excellent internal consistency. Furthermore, the corrected item-total correlations were also assessed to determine how much each item correlated with the total score. In fulfilment with Field (2018), items with corrected item-total correlations greater than .30 were retained.

Table 6 provides insights into the internal consistency of various constructs in this study. According to Nunnally (1978), *attitude*, *SN*, *PBC* and *EI* all demonstrated above the acceptable range of internal consistency. Additionally, all the items within the scales showed acceptable corrected item-total correlations. All scales in the current study were considered reliable and valid measures.

Table 6

Reliability Statistics for the Theory of Planned Behaviour Antecedents and Entrepreneurial Intention

Variable	Cronbach's Alpha (α)	Corrected item-total correlations
Attitude	.782	.529 < r <.640
Subjective Norm	.762	.414 < r < .719
Perceived Behavioural Control	.785	.538 < r < .664
Entrepreneurial Intention	.963	.920 < r < .923

Note. N = 523

Descriptive Statistics

The descriptive statistics, presented in Table 7, offer an in-depth insight into the data's value and distribution, illustrating how the variable scores are spread within the sample. The analysed descriptive statistics encompassed minimum scores (min), maximum scores (max), means, median, standard deviations, skewness, kurtosis, and standard error around the mean.

The mean value in the data signifies the data's average score (Tredoux & Durreheim, 2002). The mean score for each scale was compared to its respective midpoint. An average score exceeding the midpoint indicates higher levels of the variable under consideration, while a score below the midpoint signifies lower levels (Tredoux & Durreheim, 2002). Mean scores greater than their respective midpoint indicate a higher level of the variable of interest. In contrast, mean scores less than their respective midpoint show lower levels of the variable of interest. Minimum and maximum statistics reflect the smallest and largest scores within the dataset (Tredoux & Durreheim, 2002).

Additionally, kurtosis assesses the extent to which scores cluster at the end of the distributions, while skewness assesses distribution symmetry (Field, 2018). Both measures gauge distribution normality. Skewness values exceeding 0.50 indicate positive skewness, while values below -0.50 suggest negative skewness. Values between 0.50 and -0.50 indicate a normal distribution (Tredoux & Durreheim, 2002). Furthermore, a positive kurtosis indicates leptokurtic behaviour, a negative kurtosis indicates platykurtic behaviour and a kurtosis of exactly zero shows mesokurtic or normal distribution (Field, 2018).

Table 7

Descriptive Statistics

Variable						Skewness		Kurtosis	
	Min	*Max*	*M*	*Mdn*	*SD*	*Statistic*	*SE*	*Statistic*	*SE*
Attitude	1.50	5.25	4.08	4.16	.78	-.77	.11	.27	.21
Subjective norms	1.00	5.00	4.21	4.38	.77	-1.02	.11	.69	.21
Perceived behavioural control	1.00	5.00	3.99	4.14	.89	-.83	.11	.08	.21
Entrepreneurial intention	1.00	5.00	3.46	3.64	1.37	-.43	.11	-1.10	.21

Note. $N = 523$.

Theory of Planned Behaviour Variables

Attitude (*M* = 4.08, *SD* = 0.78), *SN* (*M* = 4.21, *SD* = 0.77) and *PBC* (*M* = 3.99, *SD* = 0.89). The TPB antecedent's mean scores fell just before the midpoint, indicating that the sample had relatively negative attitudes, SN, and PBC concerning their intention to start a business. Furthermore, the skewness values for all three TPB variables were negatively skewed. However, this was inconsequential given the large sample size (Tabachnick & Fidell, 2014). Kurtosis values ranged from 0.08 to 0.69, indicating relatively normal distributions.

Entrepreneurial Intention

The midpoint for the EI scale was slightly greater than the mean score (*M* = 3.46, *SD* = 1.37), indicating marginally negative entrepreneurial intention. The skewness value for the scale fell within the normal distribution, while its kurtosis indicated platykurtic behaviour.

Correlational Analysis

Given that all assumptions were met, see Appendix G, it was suitable to perform the Pearson product-moment correlation to investigate the relationships between EI and TPB antecedents. The interpretation of correlation coefficients followed Cohen's (1988) guidelines: a coefficient of .10 was indicative of a weak relationship with a small effect size, a coefficient of .30 represented a moderate relationship with a medium effect size, and a coefficient of .50 or higher indicated a strong relationship with a large effect size. As presented in Table 8, Pearson's product-moment correlation demonstrated that the TPB antecedents (*attitude, SN,* and *PBC*) were all positively and significantly related to *EI.* The strength of these statistically significant relationships varied from moderate to strong, suggesting medium to large effect sizes. Among these relationships, the strongest relationship was found between *EI* and *PBC*, followed by the relationship between *EI* and *attitude.*

Table 8

Pearson Product-Moment Correlations of the Theory of Planned Behaviour Antecedents and Entrepreneurial Intention

Variable	*M*	*SD*	1	2	3	4	5
1. Entrepreneurial Intention	3.46	1.37	(0.96)				
2. Attitude	4.08	.78	.517** [.45, .58]	(0.78)			
3. Subjective Norms	4.21	0.77	.409** [.33, .48]	.350** [.27, .42]	(0.76)		
4. Perceived Behavioural Control	3.99	0.89	.598** [.54, .65]	.416** [.39, .53]	.349** [.27, .42]	(0.79)	

Note. $N = 523$. Scale reliabilities (Cronbach's Alpha) are reported on the diagonal for each item.
**$p < .001$.

Regression Analyses

A linear multiple regression analysis was conducted to examine the study's hypotheses, which stated that attitudes, SN and PBC would explain significant variance in EI among South African university students. Following the TPB framework, the independent variables, namely attitude, SN, and PBC, were included in the first step of the model, with EI serving as the dependent variable.

Subsequently, hierarchical multiple regression analyses were performed to evaluate the hypotheses, which stated that the TPB explains significant variance in EI among South African university students over and above the situational and demographic variables, respectively. The hierarchical multiple regression model included the contextual variables relating to load-shedding and the South African economy, two insights from the preliminary interviews, to evaluate their potential impact on EI. By incorporating these additional contextual factors, the TPB model will capture a more nuanced understanding of the influences on EI.

Multiple Regression Analysis Results

Before the analysis, the linear multiple regression model assumptions were tested and met, see Appendix H. The linear multiple regression model was significant, $R^2 = .46$, adjusted $R^2 = .45$, $F(3, 520) = 145.16$, $p < .001$. Results indicated that *attitude* ($b = .466$, $t = 7.089$, $p < .001$), *SN* ($b = .303$, $t = 4.809$, $p < .001$) and *PBC* ($b = .641$, $t = 11.115$, $p < .001$) were all significant determinants of *EI*, accounting for 45.6% of the variance in the dependent variable, see Table 9. Therefore, attitudes, SN and PBC explain significant variance in EI amongst South African university students, respectively, supporting hypotheses Ha1, Ha2 and Ha3.

Table 9

Linear Multiple Regression Results with Entrepreneurial Intention as Dependent Variable

					95.% CI	
Variable	*b*	*SE*	*ß*	*t*	*LL*	*UL*
Attitude	.466	.066	.266	7.089**	.337	.595
SN	.303	.063	.171	4.809**	.179	.427
PBC	.641	.058	.461	11.115**	.528	.754

Note. $N = 523$; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; SN = subjective norms; PBC = perceived behavioural control.
Post hoc power analysis revealed a power of 1 and effect size (f^2) of 0.84 at a significance level of .05.
Dependent variable = entrepreneurial intention.
**$p < .001$.

Hierarchical Regression Assumptions

Before conducting the hierarchical regression analyses, the assumptions were tested. These assumptions included level of measurement, adequate sample size, normality and linearity, normally distributed residuals, homoscedasticity, independent residuals, multicollinearity, non-zero variance and model bias. Table 10 summarises these assumptions. See Appendix I for a detailed analysis of each assumption.

Table 10

Summary of the Hierarchical Regression Model Assumptions Met

Assumption	Criteria	Assumption Evaluation
Level of measurement	Criterion variables require a ratio or interval scale, while predictor variables can be on an interval or categorical scale (Field, 2018).	All scales were evaluated using continuous measurements
Adequate Sample Size	The sample size should be at least five times greater than the number of independent variables (Tabachnik & Fidell,1989).	Largest number of independent variables was 14, with a sample size of 349 participants
Normality	Data should be normally distributed, but deviations from normality are typically inconsequential for sample sizes of 200 or more (Pallant, 2013).	The smallest sample for analysis was 349 participants
Linearity	Dependent and independent variables should exhibit a linear relationship (Field, 2018).	All scatterplots of the variables of interest in each regression demonstrated a clear, straight-line pattern.
Normally Distributed Residuals	Residuals should be normally distributed (Field, 2018).	Residuals were normally distributed with a slightly negative skewness in each regression.

Assumption	Criteria	Assumption Evaluation
Homoscedasticity	Homoscedasticity is indicated when the data points in the graph exhibit a cone-shaped pattern (Field, 2018).	No cone-shaped pattern was evident, and data was randomly distributed in each regression.
Independent Residuals	A Durbin-Watson statistic should fall between 0 and 4, with values ranging from 1 to 3, signifying independence (Field, 2018).	Durbin-Watson value ranged from 1.945 to 2.144 in all regressions.
Multicollinearity	The variance inflation factor (VIF) for each independent variable must be less than 10 across all variables in the investigation (Bowerman & O'Connell, 1990).	VIF values for all the independent variables in regression ranged from 1.020 to 1.894.
Non-Zero Variance	Independent and dependent variables should possess non-zero variances (Field, 2018).	All variables had non-zero standard deviations, indicating non-zero variances.
Model Bias	Standardised residual values exceeding 3.30 or falling below -3.30 may warrant attention for outliers. Additionally, Cook's distances should not exceed a value of 1 (Tabachnick & Fidell, 2014).	Standardised residuals ranged from -3.31 to 2.77. The highest Cook's distance statistic was .05.

Hierarchical Regression Analysis Results

Given that all assumptions were met, hierarchical regression analyses were conducted

Hierarchical Regression Model with Demographic Variables and TPB Antecedents. A two-step hierarchical linear regression model was conducted; see Appendix J Table J1. In Step 1 of the two-step hierarchical regression model, the *demographic variables* explained 20.1% of the variance in the intention to start a business, with an overall statistically significant model, F (7, 341) = 12.28, $p < .001$; however, the only significant predictor was *race*. Subsequently, with the addition of the TPB antecedents (*attitudes, SN* and *PBC*) as predictors, the model's explanatory power increased, accounting for 38.6% of the variance in intention to start a business, with the overall model remaining statistically significant, F(10, 338) = 12.23, $p < .001$. This indicated that including attitudes, SN and PBC as predictors significantly contributed to predicting the intention to start a venture. Only one demographic variable, race, and all three TPB antecedents were significant predictors. The change in the coefficient of determination ($\Delta R^2 = .184$, $p < .001$) from Step 1 to Step 2 showed a significant increase. This signifies that the additional predictors introduced in Step 2 contributed substantially to explaining the variance in the dependent variable. The heightened ΔR^2 underscores the improved explanatory power of the model after incorporating the three TPB antecedents. Adding the TPB antecedents significantly improved the model's ability to predict EI.

Hierarchical Regression Model with Situational Variables and TPB Antecedents. A separate two-step hierarchical linear regression model was conducted; see Appendix J Table J2. In Step 1, the situational variables, *prior entrepreneurial experience* and *knowledge of entrepreneurial support* were added, accounting for 20.2% of the variance in the intention to start a business, with an overall model that was statistically significant, F (2, 520) = 65.10, $p < .001$. Both *prior entrepreneurial experience* and *knowledge of entrepreneurial support* were statistically significant. Step 2 included the TPB antecedents (*attitudes, SN* and *PBC*) as predictors, significantly enhancing the model's explanatory power, explaining 40.8% of the variance in the intention to start a business. The overall model remained statistically significant F(5, 517) = 71.16, $p < .001$, underscoring the substantial contribution of the TPB antecedents to the prediction of entrepreneurial intentions. *Prior entrepreneurial experience, knowledge of entrepreneurial support* and all three TPB antecedents were significant predictors. The ΔR^2 of 0.205 ($p < .001$) indicates that the additional predictors in Step 2 significantly contributed to the model and explained an extra 20.5% of the variance in the

dependent variable beyond that accounted for by the predictors in Step 1. Adding the TPB antecedents improved the model's ability to predict EI.

Hierarchical Regression Model with Contextual Variables and the TPB Antecedents. A two-step hierarchical linear regression model was conducted; see Appendix J Table J3. In Step 1 of the hierarchical regression model, *load-shedding* and *the South African economy* were added. The two contextual variables accounted for 7.2% of the variance in the intention to start a business, with an overall statistically significant model, F (2, 518) = 20.15, $p < .001$. Only *the South African economy* emerged as a statistically significant predictor. Step 2 included the TPB antecedents (*attitudes, SN* and *PBC*) as predictors. This addition further improved the model's explanatory power, accounting for 35.6% of the variance in intention to start a business. The overall model remained statistically significant, $F(5, 515) = 56.82$, $p < .001$, indicating that including attitudes, SN and PBC as predictors significantly contributed to predicting the intention to start a venture. The ΔR^2 of 0.283 ($p < .001$) indicated that introducing the TPB antecedents in Step 2 significantly contributed to the model, explaining an extra 28.3% of the variance in EI. *The South African economy* and all three TPB antecedents (*attitudes, SN* and *PBC)* emerged as significant predictors in Step 2.

Hierarchical Regression Model with Demographic, Situational, Contextual and TPB Antecedents. A final four-step hierarchical regression analysis was conducted to see if the TPB model explains significant variance over and above the demographic, situational and contextual variables; Table 11 shows the last step of the regression. Step 1 includes the demographic variables, which accounted for 20.1% of the variance in the intention to start a business with an overall statistically significant model, F (7, 341) = 12.28, $p < .001$. *Race* was the only statistically significant predictor in the model.

Step 2 included the addition of the situational variables (*prior entrepreneurial experience* and *knowledge of entrepreneurial support*), which accounted for an increased 33.8% of the variance in the intention to start a venture, and the overall model was statistically significant, F (9, 339) = 19.24, $p < .001$. Only *race* and *prior entrepreneurial experience* were significant predictors. In Step 2, the ΔR^2 of 0.137 signifies that the situational variables contributed an additional 13.7% variance in EI ($p < .001$).

In Step 3, *load-shedding* and *the South African economy* variables were included in the regression, which accounted for 36.8% of the variance in entrepreneurial intentions, and the model was statistically significant, F (11, 337) = 17.82, $p < .001$. The ΔR^2 was statistically significant, resulting in a 3% increase in variance explained ($p < .001$). However, l*oad-*

shedding and *the South African economy* were not statistically significant predictors, and only *race* and *prior entrepreneurial experience* emerged as significant predictors.

The final step included the TPB antecedents (*attitude, SN* and *PBC*), which further increased the variance to 48.8% in the intention to start a venture. This model remained statistically significant, F (14, 334) = 22.73, $p < .001$, and all three antecedents (*attitudes, SN* and *PBC), race* and *prior entrepreneur experience*, were all statistically significant predictors in the model. The ΔR^2 of 0.12 ($p < .001$) showed a statistically significant increase, which indicated that Attitude, SN and PBC explained an additional 12% of the variance in EI over and above the demographic, situational and contextual variables.

Table 11

Four-Step Hierarchical Multiple Regression Model with Demographic Variables, Situational Variables, Contextual Variables and the Theory of Planned Behaviour Antecedents

Variable	*b*	*SE B*	*ß*	*t*	95.0% CI	
					LL	*UL*
Demographics						
Female	-.053	.113	-.019	-.474	-.275	.168
Black African	.744	.156	.283	4.771**	.437	1.050
Commerce faculty	-.033	.119	-.011	-.276	-.266	.200
Year of study	-.055	.040	-.055	-1.360	-.133	.024
Age	.003	.009	.013	.339	-.014	.020
NSFAS	.026	.109	.011	.240	-.188	.240
SA Society	.030	.027	.257	1.089	-.024	.083
Situational						
Prior entrepreneurial experience	-.745	.115	-.267	-6.493**	-.971	-.519
Knowledge of entrepreneurial support	-.184	.119	-.066	-1.540	-.418	.051
Contextual						
Load-Shedding	-.109	.050	-.095	-2.171	-.208	-.010
South African Economy	-.096	.054	-.081	-1.787	-.203	.010

Variable	*b*	*SE B*	ß	*t*	*LL*	*UL*
TPB						
Attitude	.311	.079	.165	3.912**	.154	.467
Subjective Norms	.326	.077	.176	4.230**	.175	.478
Perceived Behavioural Control	.292	.069	.183	4.258**	.157	.427

Note. *N* = 349; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; SN = subjective norms; PBC = perceived behavioural control.
Post hoc power analysis revealed a power of 1 and effect size (f^2) of 0.88 at a significance level of .05.
Dependent variable = entrepreneurial intention.
**$p < .001$

Power Analysis

A post-hoc power analysis was conducted for each regression analysis in G*Power using an alpha value of .05. The statistical power indicates the likelihood of the null hypothesis being rejected when false (Faul et al., 2007). According to Cohen's (1988) recommendations, the power of a statistical test should typically exceed .80. Moreover, Cohen (1988) indicated that when interpreting the results of regression analyses, effect sizes (f^2) of .02, .15 and .35 are seen as small, medium, and large, respectively.

The multiple regression analysis, which examined if attitudes, SN and PBC predicted EI, had an effect size (f^2) of .84 and a power of 1.00. The final four-step hierarchical regression analysis examined if the TPB antecedents, demographic, situational, and contextual variables predicted EI, had an effect size (f^2) of .95 and power statistics of .96. These results indicate large effect sizes and acceptable, well-powered outcomes, reinforcing the robustness and reliability of the findings.

Mediation Analysis

Field (2018) explained that mediation analysis involves examining the relationship between the outcome and predictor variables in light of their association with another variable known as the mediator. Mediation occurs when the strength of the relationship between the outcome and predictor variable is diminished by including the mediating variable (Field, 2018).

Ajzen (1991) suggested that in the context of the TPB, "external factors" are presumed to indirectly influence intentions by impacting the TPB antecedents. The external factors are assumed to mediate the effects of background factors on intentions (Ajzen, 1991). Therefore, mediation in the context of TPB involves examining the relationship between the outcome variable (intentions) and predictor variables (external factors), considering their connection with another variable known as the mediator (TPB antecedents: attitudes, SN, and PBC). The analysis aims to explore and understand the intricate pathways through which external factors indirectly affect intentions by influencing the underlying determinants of behaviour outlined in the TPB.

Therefore, given that *race* (Black African) and *prior entrepreneurial experience* were significant predictors of EI in the hierarchical regression model, mediation analyses were conducted on these two external factors. To evaluate the indirect impact of *race* and *prior entrepreneurial experience* on EI, a mediation analysis was performed using Hayes' PROCESS method in SPSS. Hayes (2009) recommends bootstrapping the sampling distribution to test indirect effects. A significant effect is established when a zero is not

evident in the 95% confidence interval. Compared to the Sobel test, this technique offers increased statistical power and more accurate results (Hayes, 2009).

Race

The results revealed a significant indirect effect of *race* (Black African) on EI through *attitudes* (*b* = 0.09, 95% BCa CI [0.03, 0.19]), *SN* (*b* = 0.09, 95% BCa CI [0.02, 0.17]), and *PBC* (*b* = 0.04, 95% BCa CI [0.04, 0.19]). The results indicate that the indirect effect for each antecedent is likely to lie within their corresponding confidence intervals. Bias-corrected confidence intervals calculated do not include zero, an indication that the total indirect effect of the mediators is significantly different from zero. The individual significant relationships indicate that each TPB antecedent plays a mediating role between *race* and *EI*.

Prior Entrepreneurial Experience

The results show a significant indirect effect of *prior entrepreneurial experience* on EI through *attitudes* (*b* = - 0.10, 95% BCa CI [-0.18, -0.04]), *SN* (*b* = -0.06, 95% BCa CI [-0.12, -0.01]), and PBC (*b* = -0.10, 95% BCa CI [-0.16, -0.05]). The findings suggest that the indirect effects for each antecedent are likely to fall within their respective confidence intervals. Given that none of these intervals includes zero, these results offer support that the total indirect effect of the mediators is significantly different from zero. The individual negative significant relationships indicate that the TPB antecedents mediate between *prior entrepreneurial experience* and *EI*.

Group Differences

Both an ANOVA and independent t-tests were conducted to examine potential variations in EI based on several factors, including the students' racial background (1 = Black African, 2 = Coloured, 3 = Indian, 4 = Asian, 5 = White, 6 = other), gender (1 = male, 2 = female), sex (1= male, 2 =female), faculty (1 = commerce, 2 = other), whether their undergraduate studies were financially supported by NSFAS (1 = yes, 2 = no), whether their undergraduate studies were easily financed by their parents or guardians (1 = yes, 2 = no), their self-perceived family socioeconomic status within South African society (1 = those who perceive themselves as more affluent in society, 2 = those who perceive themselves as less affluent in society), their self-perceived academic and social standing within their university (1 = those who perceive themselves with the highest grades and highest standing, 2 = those who perceive themselves with the lowest grades and least friends) and lastly the participants year of study (1= undergraduate, 2 = postgraduate), respectively. However, the participant's gender and faculty were not statistically significant ($p > .05$), indicating no meaningful differences between these subgroups.

Race

A one-way ANOVA conducted on the racial groups and EI within this study was significant, F (3,127) = 13.46, p <.001, $\omega 2$ = .13 and Welch's F (6, 34.75) = 12.84, p < .001. This indicates that there are statistically significant differences in the intention scores between at least two of the racial groups. To gain further understanding, a post hoc Scheffé test was performed to detect which group differed significantly from the rest. The Scheffé test was used as there were three groups, and the ANOVA indicated a significant difference between at least one of these groups (Hancock, 1999). Results showed that there was a significant difference in EI between Black African and Coloured participants (p = 0.04), between Black African and White participants (p < .001), and between White and Coloured participants (p < .001), where White participants showed lower EI (M = 2.66, SD = 1.29), compared to Coloured (M = 3.38, SD = 1.42) and Black African (M = 3.93, SD = 1.22) participants.

Financially Supported by NSFAS

An independent t-test conducted on the participant's financial support status from NSFAS showed that, on average, participants who indicated that their undergraduate studies were financially supported by NSFAS had higher EI (M = 3.81, SE = 1.30) than those who showed their undergraduate studies were not financially supported by NSFAS (M = 3.15, SE = 1.35). The difference 0.67, BCa 95% CI [0.43, 0.92], was statistically significant t (481.567) = 5.551, p < .001; with a medium-sized effect d = .50, BCa 95% CI [0.32, 0.68], indicating a difference in means between the two groups.

Self-Perceived Family Socioeconomic Status

An independent t-test conducted on the participant's socioeconomic status showed, on average, participants who perceived themselves as more affluent in society had lower EI (M = 3.25, SE = 1.39) than those who perceived themselves as less affluent (M = 3.74, SE = 1.29). The difference -0.489, BCa 95% CI [-0.68, -0.29], was statistically significant t (495.599) = -4.102, p < .001; with a small to medium-sized effect d = -.36, BCa 95% CI [-0.54, -0.18].

Year of Study

An independent t-test conducted on the participant's year of study showed that, on average, participants in their undergraduate year had higher EI (M = 3.52, SE = 1.37) than those in their postgraduate year of study (M = 3.23, SE = 1.36). The difference 0.292, BCa 95% CI [-0.01, 0.61], was statistically significant t (130.645) = 1.85, p = 0.03; with a small-sized effect d = .21, BCa 95% CI [-0.01, 0.44].

Summary of Main Results

The main results of the current study are summarised in Table 14. The strongest correlation was found between perceived behavioural control and entrepreneurial intentions. Furthermore, as seen in Table 12, the linear multiple regression analysis revealed that attitudes, SN, and PBC explain significant variances in entrepreneurial intention amongst South African university students, supporting hypotheses Ha1, Ha2, and Ha3. Additionally, the hierarchical regression analyses provided evidence in favour of Hypotheses Hb, Hb1 and Hb2, indicating that the TPB variables continue to hold substantial explanatory power for entrepreneurial intentions among South African students even when considering additional factors such as situational and demographic variables.

Table 12

Summary of Hypotheses and Findings

Hypothesis	Data Analytic Procedure	Support
Ha1: Attitudes will explain significant variance in entrepreneurial intention amongst South African students.	Linear Multiple Regression	Supported
Ha2: Perceived behavioural control will explain significant variance in entrepreneurial intention amongst South African students.	Linear Multiple Regression	Supported
Ha3: Subjective norms will explain significant variance in entrepreneurial intention amongst South African students.	Linear Multiple Regression	Supported
Hb: The TPB explains significant variance in entrepreneurial intentions amongst South African students over and above the situational and demographic variables.	Hierarchical Multiple Regression	Supported
Hb1: The TPB explains significant variance in entrepreneurial intentions amongst South African students over and above the situational variables.	Hierarchical Multiple Regression	Supported
Hb2: The TPB explains significant variance in entrepreneurial intentions amongst South African students over and above the demographic variables.	Hierarchical Multiple Regression	Supported

Discussion

The current study aimed to investigate the predictive utility of the TPB and its antecedents (attitude, SN and PBC) in predicting EI among South African students, contributing to theoretical and empirical literature in this domain. A further exploration was conducted with the addition of situational and demographic variables within the TPB model. This section discusses the central findings of the current research study and outlines the study's main contributions and practical implications. After that, the limitations and recommendations for future research will be addressed, followed by the conclusion.

Psychometric Properties of the TPB Scales

The study's results from the EFA, CFA and reliability analyses all indicate strong support for using the EI and TPB scales within a South African context.

The EFA consistently reveals a unidimensional structure for all scales examined. Ajzen (1991) indicated that the three antecedents of the TPB (attitude, SN, and PBC) should each load onto distinct factors, explaining intention variance across three separate dimensions. These results correspond to large bodies of research conducted on the TPB (Ajzen & Madden, 1986; Autio et al., 2001; Liñán, 2008; Sundelson, 2021).

Following this, a CFA was performed to confirm that an oblique three-factor structure involving attitude, SN, and PBC was the most suitable fit. A CFA should provide the best-fit indices compared to other structural models. Therefore, goodness of fit tests on various structures were conducted to determine if the theoretical relationship was supported. The oblique three-factor structure results in the best goodness of fit statistics compared to the three-factor orthogonal and null models, and the theoretical relationship is supported. This aligns with Archary's (2021) South African study, which concluded that the oblique three-factor structure exhibited the most favourable goodness-of-fit statistics among the TPB antecedents.

In a meta-analysis carried out by Armitage and Connor (2001), it was observed that prior research on the TPB had been criticised for its low internal consistency. Specifically, the SN scales consistently yielded the lowest Cronbach's coefficient alpha scores. However, in previous South African studies that examined the internal consistency of TPB variables (Davids, 2017; Ebewo et al., 2017; Gird & Bagraim, 2008; Mahlaole & Malebana, 2021; Otuya et al., 2013; Sundelson, 2021) various Cronbach alphas were reported, with different variables showing varying degrees of internal consistency. Nevertheless, in the present study, SN exhibits the lowest alpha coefficient (α = 0.76), albeit only slightly lower than attitudes (α = 0.78) and PBC (α = 0.79). As the TPB scales exhibit internal consistency coefficients

above the acceptable range, according to Nunnally (1978), it is established that the TPB performed well in the item analysis. Moreover, the EI scale within the current study results in a reliability score of 0.96, which suggests high internal consistency.

Hence, the findings of this study provide strong evidence supporting the utility of these scales, particularly when compared with previous theoretical and empirical investigations involving TPB and entrepreneurial intention.

Relationships between TPB antecedents and Entrepreneurial Intention

Attitudes and Entrepreneurial Intention

The present study reveals that while attitudes exhibit a significant relationship with EI, it ranked second in correlation strength ($r = .517$, $p < .001$), following PBC. In contrast, Armitage and Conner's (2001) meta-analysis suggested that the relationship between attitudes toward behaviour and intention across various behaviours exhibited the strongest correlation compared to SN and PBC. These findings align with earlier South African studies that explored EI and the TPB, which all indicated that attitudes and EI had the strongest correlation among the TPB antecedents (Davids, 2017; Gird & Bagraim, 2008; Sundelson, 2021). However, in the current study, attitude does not have the strongest relationship with intentions. The subjective nature of attitudes, defined by Ajzen (1991) as the extent to which performing a behaviour is valued positively or negatively, becomes relevant in the entrepreneurial context. Here, attitudes may be influenced by individual backgrounds, experiences, and cultural perceptions. Unlike previous studies that focused on specific cohorts such as final-year commerce students (Gird & Bagraim, 2008), Technical and Vocational Education and Training college students (Sundelson, 2021), or final-year commerce and engineering students (Davids, 2017), the current sample encompasses a diverse group of South African students from various universities and faculties. These differences in sample composition introduce unique contextual factors and socio-cultural influences that may contribute to nuanced variations in the strength of the relationship between attitudes and EI. While attitudes have historically held the strongest correlation with EI in South African studies, the current study's sample composition suggests that students' attitudes towards entrepreneurship may not be as strongly associated across different universities and faculties.

Subjective Norms and Entrepreneurial Intention

The current study’s results indicate that the connection between SN and EI is the weakest among the three antecedents ($r = .409$, $p < .001$). While SN still demonstrates a moderate to strong significant relationship with EI, the findings suggest that students did not perceive social pressure from family or friends as the most influential factor in initiating a business.

This aligns with a recognised limitation of the TPB, which commonly observes a weaker link between SN and intentions (Ham et al., 2015). Although SN exhibits a moderate to strong relationship, it is the weakest among the antecedents, which can be explained by Ajzen's (1991) acknowledgement of individual factors, such as attitudes and PBC, playing a more significant role in shaping intentions. This could be attributed to SN having the weakest correlation in the current study. Likewise, earlier investigations have also consistently shown that the association between SN and intentions tends to be less robust than other TPB antecedents (Ajzen & Madden, 1986; Armitage & Conner, 2001; Davids, 2017; Gird & Bagraim, 2008; Krueger et al., 2000).

Perceived Behavioural Control and Entrepreneurial Intention

The results indicate that PBC has the strongest correlation with EI ($r = .598$, $p < .001$). Thus, the student's perceptions of their ability to control and perform entrepreneurial behaviours were particularly influential or strongly linked to their intentions to become entrepreneurs. A meta-analysis that explored diverse behaviours emphasises a strong correlation between PBC and intention (Armitage & Conner, 2001). The correlation between PBC and EI in the current study reaffirms the findings which support the inclusion of PBC in the TPB model (Rivis et al., 2009).

Nevertheless, these findings diverge from earlier South African studies, where PBC was identified as having the weakest relationship with intention (Archary, 2021; Sundelson, 2021). This departure from the results of prior local studies could be attributed to contextual shifts. One noteworthy factor to consider is the dynamic nature of environmental conditions, including the enduring effects of the COVID-19 pandemic, which may have strengthened the association between students' perceptions of their abilities to perform certain behaviours and their intentions to do so. As the effects of COVID-19 diminish, students may have now perceived that their ability to engage in entrepreneurial behaviours is greater, resulting in a more robust correlation compared to a prior period.

Theory of Planned Behaviour Antecedents as Predictors of Entrepreneurial Intention

One of the current study’s main aims was to examine whether attitudes, SN, and PBC explain a significant variance in EI among South African university students. Collectively, attitudes, SN, and PBC account for 45.6% of the variance in EI in the current study, consistent with the typical variances observed in previous EI studies, which are approximately between 30% and 45% (Kolvereid, 1996; Tkachev & Kolvereid, 1999; Krueger et al., 2000; Liñán & Chen, 2009). Moreover, the variance in the current study surpasses that observed in Gird and Bagraim's (2008) research, which also examined the EI of South African students ($R^2 = 0.27$).

The current study thus offers further support for the applicability of the TPB in explaining EI among South African students. Additionally, this finding is consistent with the conclusions drawn by scholars both internationally (Autio et al., 2001; Moriano et al., 2012; Nanerea et al., 2020) and within South Africa (Davids, 2017; Ebewo et al., 2017; Sundelson, 2021), who have affirmed that the TPB model stands as one of the most reliable predictors of EI.

Attitudes

The results of this study indicate that attitude explains significant variance in EI among students in South Africa, supporting Hypothesis Ha1 ($b = .47$, $p < .001$) and aligning with the observations made by Ajzen (1991), Kolvereid (1996), and Tkachev and Kolvereid (1999). Hence, when South African students hold a positive view of entrepreneurship, their intention to start a venture increases. However, the present study reveals that while attitude remains a significant predictor of EI among students, it is the second most influential factor after PBC. In contrast to the current South African sample, Gird and Bagraim (2008) and Mahlaole and Malebana (2021) identified attitudes as the most influential factor in the decision to initiate a venture in South Africa compared to other predictors (SN and PBC) of EI. One potential explanation for the differing results between prior South African studies and the current study could be attributed to sample variations. The current study encompasses diverse students from various universities, faculties and academic years. Gird and Bagraim (2008) examined final-year commerce students, and Mahlaole and Malebana (2021) specifically focused on entrepreneurial students. In these two cohorts, a favourable appraisal of a business venture may be deemed more crucial, amplifying the explanatory power of attitudes when predicting EI compared to the broader and more diverse sample in the present study.

Subjective Norms

Among the three antecedents in the TPB model, SN shows the weakest relationship to EI in the current study. However, this relationship was still statistically significant ($b = .30$, $p < .001$), indicating that SN explains significant variance in EI among students in South Africa, supporting Hypothesis Ha2. When an individual believes that those in their close social network regard entrepreneurship as socially acceptable, their intention towards said behaviour will likely be stronger, leading to a greater likelihood of creating a venture.

Both local and international studies have also found SN to exert the smallest impact on EI (Autio et al., 2001; Gird & Bagraim, 2008; Krueger et al., 2000; Lortie & Castogiovanni, 2015; Mueller, 2011; Otuya et al., 2013). One explanation for SN limited impact on EI in past and current studies could be linked to the frequent use of student samples in research. Students' social pressure to engage or not engage in behaviour may have diminished relevance

compared to a more diverse adult population (Kautonen et al., 2015). Another plausible factor contributing to this phenomenon could be that SN can be shaped by the personality traits and characteristics inherent in entrepreneurs (Krueger et al., 2000). Typically, entrepreneurs exhibit individualistic tendencies and a proclivity toward inner-directedness(Krueger et al., 2000). Consequently, entrepreneurs may engage in behaviours without significant consideration for external influences, including the opinions of friends and family (Krueger et al., 2000). In the context of South African students, it is conceivable that the sample reflects a higher prevalence of individualistic tendencies. Consequently, these students may experience minimal influence on their EI from the opinions of family and friends.

Perceived Behavioural Control

The present study indicates that PBC is the strongest predictor of EI compared to attitudes and SN. PBC significantly contributes to the predictive ability of the TPB model ($b = .64$, $p < .001$), supporting Hypothesis Ha3, indicating that when one believes that one has the control to start a venture, then one is more likely to have a higher intention to engage in the behaviour. Thus, it is not so much whether students positively or negatively value starting a business nor whether important social groups consider entrepreneurship desirable that leads to entrepreneurial intent. Instead, it is the PBC that students possess toward entrepreneurship. The significance emerges when students perceive factors that could either facilitate or impede their ability to initiate a business, thereby significantly impacting their intentions to pursue entrepreneurship.

Autio et al. (2001) noted that it is logical that PBC is the most important antecedent when investigating EI. The rationale behind this perspective is that the decision to initiate a venture carries more substantial consequences than other behaviours, such as weight loss or recycling behaviours, which have also been investigated using the TPB. Thus, among the three TPB antecedents, it is commonly observed that PBC exerts the most substantial influence on EI (Autio et al., 2001; Kolvereid, 1996; Tkachev & Kolvereid, 1999; Krueger et al., 2000; Nanere et al., 2020).

In contrast to the current study in South Africa, earlier research conducted by Davids (2017), Gird and Bagraim (2008), and Sundelson (2021) suggested that while PBC was significant, it did not play the most prominent role in shaping EI. This divergence could be attributed to the differing environmental and socio-economic contexts during the periods of those studies. The impact of the COVID-19 pandemic on entrepreneurship and business practices may have heightened students' awareness of various factors, including the pandemic itself, that could either facilitate or impede their ability to initiate a business. As a result, PBC

is now emerging as a more significant predictor within the current TPB model. Moreover, the slight decline in the South African unemployment rate compared to previous studies might have contributed to a shift in the perception of PBC's significance in the intention to start a venture. With improved economic conditions, students may recognise fewer barriers and perceive more economic factors facilitating entrepreneurial behaviour. This evolving perspective on the interplay between economic circumstances and entrepreneurial endeavours could be a pivotal factor contributing to the heightened significance of PBC as the most prominent predictor in the present study compared to earlier ones.

Predictors of Entrepreneurship Intention

Hierarchical regression models were conducted to investigate another critical aim of the current study, introducing demographic and situational factors to assess the predictive value these variables may add to the TPB model.

Demographic Variables

In this study, demographic variables, particularly *race*, demonstrate a significant impact on intent, as observed in the first step of both the two-step hierarchical regression (which included the demographic variables and the TPB antecedents) and the four-step hierarchical regression (which included the demographic, situational, contextual variables and TPB antecedents). Nevertheless, in both instances, the TPB effectively addresses this influence, as evidenced by the heightened predictive ability of the model upon the inclusion of TPB antecedents.

The current results indicate that adding TPB variables increases the explained variance in intentions over and above the demographic variables, supporting hypotheses Hb and Hb2. This supports Gird and Bagraim's (2008) findings, which demonstrated that demographics influenced intent in their regression analysis focusing on EI and demographics. However, in their hierarchical regression model, incorporating the TPB, it became evident that the TPB variables could explain and account for that influence.

Furthermore, the current findings indicate that, among the demographic variables, only *race (Black African)* significantly and strongly influences EI ($b = 0.31$, $p < .001$). This aligns with prior research, which has revealed that race or ethnicity is a notable predictor of EI (Gird & Bagraim, 2008; Farrington et al., 2012; Rusteberg, 2013) and indicates that socioeconomic and cultural factors associated with racial identity could play a substantial role in shaping individuals' aspirations for entrepreneurship.

Situational Variables

When the TPB antecedents were added to the two-step hierarchical regression, which included the situational variables (*prior entrepreneurial experience* and *knowledge of entrepreneurial support*), the model was significant ($R^2 = 0.41$, $p < .001$), and its predictive power increased. Similarly, the explained variance increased when the TPB antecedents were added to the four-step hierarchical regression model, which included the demographic, situational and contextual variables. This suggests that the TPB model was able to account for the situational variables in both regression models. Ajzen (1991) indicated that if past behaviour has significant residual effects beyond the predictor variables within the model, then the presence of other factors has not been accounted for. The current results indicate that the addition of TPB antecedents further increases the explained variance in intentions over and above the situational variables, supporting hypotheses Hb and Hb1

Prior entrepreneurial experience ($b = -0.25$, $p < .001$) significantly but negatively influenced entrepreneurial intent. This corresponds to Malebana and Mahlaole (2023), who found a negative but statistically significant relationship between prior entrepreneurship experience and EI amongst South African students, and Aloulou (2016), who identified a negative relationship between prior entrepreneurship experience and EI. This negative relationship could potentially be explained by the nature of the individuals' prior entrepreneurial experiences. These participants might have encountered adverse outcomes or failure while engaging in their previous entrepreneurial activities, attributing to the negative association between prior entrepreneurial experience and EI (Ajzen & Sheikh, 2013; Bandura, 1986; Zapkau et al., 2017).

The *knowledge of entrepreneurial support* and EI had a significant ($p < .001$) relationship aligning with previous research that consistently emphasises its notable connection with EI (Delanoë, 2013; Zanakis et al., 2012). This outcome is further substantiated by a recent South African study (Malebana, 2017), supporting the notion that efforts to foster entrepreneurial activity in the country are more likely to succeed when there exists established awareness of accessible entrepreneurial support. However, in the current study, this relationship was weak ($b = -0.25$). Moreover, in the four-step hierarchical regression model, which incorporated demographic, situational and contextual variables, *the knowledge of entrepreneurial support* was not a significant predictor of EI. One plausible explanation may be the ambiguous nature of the question (I know the different types of support that are offered that I can use to start my own venture in the next five years), as it did not specify the type of entrepreneurial support. This lack of specificity could have introduced variability in responses, potentially diluting the

observed relationship between *knowledge of entrepreneurial support* and entrepreneurial intention, resulting in relationships that are not significant and weak.

Contextual Variables

Although examining contextual variables was not an initial key objective in the current study, the findings from the preliminary interviews indicate that load-shedding and the South African economy are noteworthy factors when exploring the EI of South African students.

The model demonstrates statistical significance in Step 1 of the two-step hierarchical regression, where only load-shedding and the South African economy were considered predictors. Notably, the South African economy emerged as the sole statistically significant predictor in this step. Upon the addition of TPB antecedents in Step 2, the model's explanatory power significantly improved. This indicates that while load-shedding and the South African economy contribute to predicting entrepreneurial intentions, the TPB factors enhance the model's overall explanatory ability. However, the South African economy retained its statistical significance, along with all three TPB antecedents. This suggests that the contribution of the South African economy in predicting EI persists even when accounting for TPB factors. Insights drawn from Bergmann et al. (2018) and Welter (2011) underscored the critical role of economic conditions in shaping EI. The present findings align with these perspectives, acknowledging the significant role that the economy can play in entrepreneurial research, even when accounting for the TPB.

However, in the four-step hierarchical regression, which incorporated the demographic, situational, and contextual variables and the TPB antecedents, neither load-shedding nor the South African economy emerged as significant predictors. In contrast, race, prior entrepreneurial experience, and the TPB antecedents did. The lack of significance for load-shedding and the South African economy in predicting EI within the more comprehensive model could be attributed to several factors. First, these macroeconomic factors might indirectly influence individual EI more than immediate and personal experiences, such as race and prior entrepreneurial experience. Second, the measurement of load-shedding and the South African economy may have lacked the specificity needed to capture the nuanced ways these broader economic conditions influence EI. In contrast, variables like race and prior entrepreneurial experience may have offered a more straightforward link to individual experiences.

Additionally, the complex interplay of variables plays a role, with certain factors interacting in ways that either amplify or diminish their predictive power (Field, 2018). In this case, the dynamics between race and prior entrepreneurial experience may have

overshadowed the influence of broader economic factors. Moreover, the characteristics of the study participants, including their demographics and socioeconomic backgrounds, could have influenced which factors emerge as significant predictors. It is plausible that the sample's distinctive composition emphasises certain variables over others, contributing to their significance in predicting entrepreneurial intentions (Field, 2018).

Race and Prior Entrepreneurial Experience Mediating Effect

Although it was not a key objective of the current study, further investigations were conducted to understand the relationship between the two predictors from the “external factors” that showed significance in the regression analyses.

The findings highlight the significant indirect impact of race and prior entrepreneurial experience on EI through their influence on attitude, SN, and PBC. This finding indicates that individuals from different racial backgrounds or with varying entrepreneurial experiences may shape their EI by influencing their attitudes, SN, and PBC. This is consistent with Ajzen's (1991) assertion that "external factors" indirectly shape intentions by affecting the antecedents of the TPB.

Notably, in contrast to race, prior entrepreneurial experience displayed a negative indirect effect on EI. This indicates that individuals with prior entrepreneurial experience may exhibit a lower inclination toward EI, and this effect is mediated through the impact on attitudes, SN, and PBC. This pattern aligns with Malebana and Mahlaole's (2023) research which indicated that attitude toward behaviour and PBC mediate the negative relationship between prior entrepreneurial experience and EI, with SN not exhibiting significance in mediation. Prior research by Kolvereid (1996) and Tkachev and Kolvereid (1999) suggested that while demographic variables may not significantly enhance the predictive validity of the TPB model, they exert indirect influence on intentions through attitudes, SN, and PBC, comparable to the role of race observed in the current study.

Effect of Group Difference on Entrepreneurial Intention

ANOVA and independent t-test analyses were conducted to further understand the main study results. No differences were found across the participant's gender and the faculty they belonged to. However, the ANOVA analysis shows differences across races, with White participants indicating lower EI than Black African and Coloured participants. Similarly, Wilton and Venter's (2016) ANOVA found that race groups were significantly different, with Black South African respondents having the highest rating of social entrepreneurial intent. This is further supported by the 2021 South African Global Entrepreneurship Monitor (GEM) report on total early-stage entrepreneurial activity (TEA) by race, which indicated that Black

Africans displayed the most substantial rise at 18.9%. However, Gird and Bagraim (2008) and Sundelson (2021) found no significant difference in the means of EI across races.

Independent t-tests were carried out to explore variations between groups. Two demographic variables concerning the students' socio-economic backgrounds were examined, encompassing the participants' perceived socioeconomic status and whether NSFAS financially supported their undergraduate studies. Luiz and Mariotti (2011) indicated that students from lower income brackets tend to view entrepreneurship as a necessity due to uncertainties about their job prospects. In contrast, students from more affluent backgrounds express confidence in securing positions within established companies and building their careers, which leads them to perceive entrepreneurship as a riskier endeavour (Kalitanyi & Bbenkele, 2017). Similarly, the current study indicates that participants who perceived themselves as more affluent in society had slightly lower EI than those who perceived themselves as less affluent. Likewise, participants financially supported by NSFAS had slightly higher EI than those whom NSFAS did not financially support in their undergraduate studies. This indicates that participants who needed financial support to fund their studies tend to have higher intentions of becoming entrepreneurs.

Lastly, the participant's current year of study was also investigated. This result indicates that participants in their undergraduate years of study had higher EI than those in their postgraduate years. Wu and Wu (2008) found that participants pursuing diploma and undergraduate programs exhibited a higher average level of entrepreneurial intention compared to participants pursuing postgraduate degrees, implying that students in diploma and undergraduate programs tend to be more inclined toward entrepreneurship than their postgraduate peers. This difference may be attributed to the varying educational experiences and career aspirations that typically distinguish undergraduate and postgraduate students. Given their advancement in studies within specific fields, postgraduate students may already have a clearer idea of their career trajectories and the industries they want to enter, potentially leading to differences in their entrepreneurial inclinations compared to their undergraduate counterparts.

Contributions of the Current Study

Theoretical Contributions

The findings of this investigation add to the extensive body of research supporting the TPB across a wide range of academic disciplines (Fishbein & Ajzen, 2015). Notably, the study supports using the TPB in EI investigations (Autio et al., 2001; Krueger et al., 2000; Morian

et al., 2012; Nanere et al., 2020). Furthermore, the current research adds to the limited existing literature that has explored the predictive validity of the TPB in a South African context (Davids, 2017; Ebewo et al., 2017; Gird & Bagraim, 2008; Otuya et al., 2013; Sundelson, 2021), adding to the relatively limited body of research in this area. Moreover, the scales developed from Fishbein and Ajzen's (2015) guidelines for constructing a questionnaire, as employed in this research, exhibit robust reliability and validity outcomes, underscoring the effectiveness of the questionnaire construction according to the theory in a South African context.

Additionally, this study makes a theoretical contribution to the field of EI in South Africa by incorporating and examining the impact of contextual factors such as load-shedding and the state of the South African economy. These contextual factors concerning the TPB model and EI have been underexplored in South African literature. By addressing this gap, the research enriches the theoretical landscape by offering a more comprehensive understanding of the dynamics influencing entrepreneurial aspirations among South African students. The decision to conduct preliminary interviews as a contextualisation phase aligns with the broader call in entrepreneurship research to consider historical, temporal, institutional, spatial, and social contexts (Welter, 2011). The theoretical contributions extend beyond the individual-level predictors traditionally emphasised in previous TPB studies, shedding light on the relevance of some macroeconomic conditions and the intricate interplay of contextual elements in shaping EI. While the contextual variables did not emerge as statistically significant in the broader four-step hierarchical regression model, their initial significance in the preliminary interviews underscores their potential importance in specific contexts.

In addition, the present study explored the indirect effect of race and prior entrepreneurial experience on the EI mediated by the TPB antecedents, further adding to the limited theoretical literature concerned with this relationship in South Africa.

Practical Implications

Entrepreneurs are considered pivotal in addressing job creation and poverty alleviation challenges, making it imperative to discern the determinants influencing individuals' intentions to engage in entrepreneurial activities (Nieman, 2001). This study underscores the substantial impact of attitudes, SN and PBC on participants' EI and subsequent entrepreneurial behaviour. Therefore, the broader significance of the TPB for public policy lies in the necessity for perceiving entrepreneurship as desirable, feasible and socially acceptable to cultivate the intention to start a venture (Krueger et al., 2000). This highlights

the need for public and university policymakers to concentrate on positively enhancing the attitude towards entrepreneurship, the social acceptability, and the perceived behavioural control over entrepreneurship. Given that PBC was the most influential contributor to the intention to start a venture within the current student sample, policymakers can strategically tailor interventions, focusing on enhancing the perceived ability of students to navigate the factors influencing entrepreneurship.

Furthermore, the insights gained specifically from the preliminary interviews could guide the implementation of interventions to enhance entrepreneurial intention among South African students. Identifying load-shedding and the South African economy as influential factors in shaping EI within the preliminary interviews underscores the importance of looking further into these macroeconomic challenges. Policymakers could consider initiatives to stabilise the impact of load-shedding and implement economic policies that create a favourable environment for entrepreneurial activities. Strategies to mitigate the impact of load-shedding on aspiring entrepreneurs, such as providing support for alternative energy sources or implementing measures to minimise disruptions, could be explored. Moreover, interventions addressing economic conditions and fostering economic resilience among students may positively impact their perceptions and intentions toward entrepreneurship. The study emphasises the need for targeted policies and support structures that acknowledge the challenges posed by contextual factors, thereby fostering a more conducive environment for entrepreneurship to thrive.

Limitations and Suggestions for Future Research

The first limitation of the study relates to the study's sampling techniques, which makes use of non-probability sampling methods for both the preliminary interviews and the main questionnaire distribution (Gravetter & Forzano, 2015). These techniques might have introduced selection bias as the students were not randomly selected. Still, the choice of this sampling was considered to be the most effective due to resource and time constraints. Nevertheless, it might be useful to use probability sampling techniques; for example, future studies could use IBM's SPSS to randomly select participants (Gravetter & Forzano, 2015). In addition to the sampling limitations, the questionnaire was distributed to three universities in the Western Cape. Therefore, it may not be an adequate proportion of the general South African population. Distributing the survey to other South African provinces and universities could increase future studies' reliability, validity, and overall generalisability.

Another limitation of the study is related to the measurements used. In this research, data was collected through a self-report questionnaire. While participants were assured that their

responses would be kept anonymous, this method could have introduced a risk to the research's validity due to social desirability bias. This bias occurs when respondents provide answers that they believe are more socially acceptable, potentially affecting the accuracy of the data (Brannick et al., 2010). For this reason, it is recommended that future investigations include social desirability scales to ensure they account for this bias, should it occur (Beck & Ajzen, 1991).

The last limitation of the current study relates to the study's design. The study's main phase used a cross-sectional design whereby participants were assessed at one specific point in time. This prevented the study from understanding if the constructs change over time, limiting causal linkages (Gravetter & Forzano, 2015). De Jorge-Moreno et al. (2012) indicated that as EI can evolve, making use of a longitudinal design may be beneficial to examine possible time-lag effects, the direction of causality (Gravetter & Forzano, 2015) and to assess the degree to which EI is maintained and translated into action (Autio et al., 2001).

Future research endeavours could delve deeper into the nuanced relationship between load-shedding, the South African economy, and EI by exploring potential mediating or moderating roles within the TPB framework. Investigating whether these contextual factors act as mediators, influencing the relationship between TPB antecedents and EI, could provide a more comprehensive understanding of the underlying mechanisms. Moreover, considering these factors as potential moderators could unveil the conditions under which the TPB's predictive power is strengthened or weakened. Additionally, future studies could explore the temporal aspects of these contextual factors, considering if they vary over time. By addressing these avenues, researchers can contribute to refining the TPB model in the specific context of South Africa, providing more insights into the intricate interplay of individual and contextual determinants of EI.

Conclusion

The primary aim of this study was to explore the factors impacting the EI of South African students by examining whether the TPB model influences EI beyond situational and demographic variables. The results show strong correlations between attitudes, SN, PBC and EI. The regression results indicate that the TPB can predict EI, aligning with the predictive power in previous research (Kolvereid, 1996; Tkachev & Kolvereid, 1999; Krueger et al., 2000; Liñán & Chen, 2009). The three antecedents of the TPB (attitudes, SN and PBC) significantly contribute to predicting intent. However, consistent with earlier studies (Autio et al., 2001; Kolvereid, 1996; Tkachev & Kolvereid, 1999; Krueger et al., 2000; Nanere et al., 2020), PBC displays the most substantial influence on EI. Thus, students' PBC is the most

important factor in developing their EI within the current study. This indicates that when students believe they have the control to start a venture, they are more likely to have a higher intention to engage in entrepreneurship. While SN displays significant results and contributes to the TPB model's predictive power, it has the weakest relationship, which is not uncommon in prior TPB investigations (Krueger et al., 2000; Autio et al., 2001; Gird & Bagraim, 2008; Mueller, 2011; Otuya et al., 2013). This indicates that, for students, the opinions of friends, family members, or individuals in their social circle regarding their potential as entrepreneurs do not significantly influence their EI.

Furthermore, the regression model results indicate that the TPB can predict EI over and above the demographic, situational, and contextual variables. Even though the demographic, situational, and contextual variables contributed to the predictive power of EI, the TPB was able to explain and account for that influence, as proposed by Ajzen (1991). Moreover, race and prior entrepreneurial experience are two “external factors” significantly influencing EI. Further exploration shows a significant indirect impact of race and prior entrepreneurial experience on EI through their influence on attitude, SN, and PBC, respectively, consistent with Ajzen's (1991) claim that "external factors" indirectly shape intentions by affecting the antecedents of the TPB.

Ajzen (1991) and Krueger et al. (2000) indicated that intentions best predict planned behaviour. Thus, the results obtained in the present study offer additional insights that can aid policymakers in formulating and executing interventions to foster EI among South African students, ultimately influencing their entrepreneurial behaviour. Nonetheless, Autio et al. (2001) advise that further research is needed to confirm whether intentions genuinely predict entrepreneurial behaviour. Until this is established, the TPB, at the very least, provides a tested and theory-driven approach to predicting EI.

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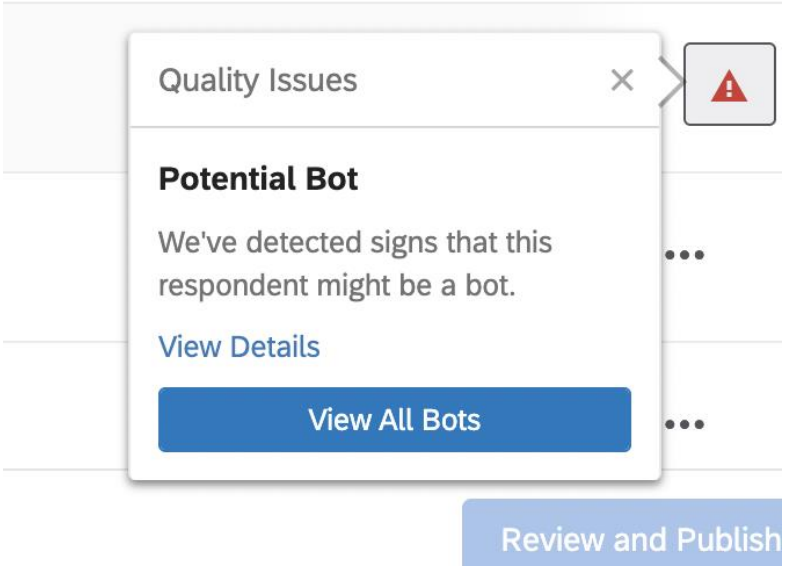
Appendix A

Qualtrics Bot Detection

Figure A1

Qualtrics Bot Detection



Appendix B

Measures

Attitude towards entrepreneurship

1. **Starting my own venture in the next one to five years** will be
   Bad: 1__:___2__:___3__:___4__:___5__: Good

2. **Starting my own venture in the next one to five years** will be unpleasant/pleasant
   Unpleasant: 1__:___2__:___3__:___4__:___5__:Pleasant

3. **Starting my own venture in the next one to five years** will be
   Harmful to others: 1__:___2__:___3__:___4__:___5__:Beneficial to others

4. **Starting my own venture in the next one to five years** will be
   Boring: 1__:___2__:___3__:___4__:___5__:Interesting

Subjective Norms

1. My **family** would approve of me starting a new venture in the next one to five years.
   Disagree: 1__:___2__:___3__:___4__:___5__:Agree

2. My **friends** would approve of me starting a new venture in the next one to five years.
   Disagree: 1__:___2__:___3__:___4__:___5__:Agree

3. **Most people who are important to me** would approve of me starting a new venture in the next one to five years.
   Disagree: 1__:___2__:___3__:___4__:___5__:Agree

4. **My followers on social media** (LinkedIn, Facebook, Instagram) would approve of me starting a new venture in the next one to five years.
   Disagree: 1__:___2__:___3__:___4__:___5__:Agree

Perceived Behavioural Control

1. **I am confident** that I can start a new venture in the next one to five years
   False :1__:___2__:___3__:___4__:___5__: True

2. Starting my own venture in the next one to five years is **completely up to me.**
   Disagree: 1__:___2__:___3__:___4__:___5__:Agree

3. **If I really wanted to**, I could start my own venture in the next one to five years.
   Unlikely: 1__:___2__:___3__:___4__:___5__:Likely

4. For me, starting my own venture in the next one to five years is **under my control.**
   Not at all: 1__:___2__:___3__:___4__:___5__: **Completely**

Appendix C

Institutional Permission

Stellenbosch University Institutional Permission

UNIVERSITEIT • STELLENBOSCH • UNIVERSITY
jou kennisvennoot • your knowledge partner

INSTITUTIONAL PERMISSION:

AGREEMENT ON USE OF PERSONAL INFORMATION IN RESEARCH

Name of Researcher: Bianca Brenner

Name of Research Project: Entrepreneurship Intentions Amongst Generation Z South African Students: An Application of the Theory of Planned Behaviour

Service Desk ID: IG - 4337

Date of Issue: 30 August 2023

The researcher has received institutional permission to proceed with this project as stipulated in the institutional permission application and within the conditions set out in this agreement.

The University of the Western Cape Institutional Permission

UNIVERSITY OF THE WESTERN CAPE
PERMISSION TO CONDUCT RESEARCH

DEAR **Bianca Brenner**

This serves as acknowledgement that you have obtained and presented the necessary ethical clearance and your institutional permission required to proceed with the project referenced below:

RESEARCH TOPIC

Entrepreneurship Intentions Amongst Generation Z South African Students:
An Application of the Theory of Planned Behaviour

Name of researcher	:	Bianca Brenner
Permission valid till	:	15 December 2023
Institution	:	University of Cape Town
Ethics reference	:	COM/02155/2023
Permission reference	:	UWCRP821949

You are required to engage this office (researchperm@uwc.ac.za) in advance if there is a need to continue with research outside of the stipulated period. The manner in which you conduct your research must be guided by the conditions set out in the annexed agreement: Conditions to guide research conducted at the University of the Western Cape.

Please be at liberty to contact this office should you require any assistance to conduct your research or require access to either staff or student contact information.

Regards
Dr Ahmed Shaikjee
Deputy Registrar Academic Administration

Approval status: **APPROVED** 23 May 2023

To verify or confirm the authenticity of this document please contact the University at researchperm@uwc.ac.za.

UNIVERSITY OF THE WESTERN CAPE
Robert Sobukwe Road, Bellville, 7535, Republic of South Africa

Appendix D

Consent Forms for Interviews

UNIVERSITY OF CAPE TOWN
FACULTY OF COMMERCE
Igniting Knowledge and Opportunity

Section of Organisational Psychology

Entrepreneurship Intentions Amongst South African Students: An Application of the Theory of Planned Behaviour

Consent to take part in research.

I _____ willingly agree to participate in this research study.
I understand that I have the right to withdraw my consent at any point during the study. Furthermore, I am aware that if I decide after the interview that I no longer want my data to be used, I have the right to request the erasure of my data.

I acknowledge that I have been provided with a thorough explanation of the study's objectives, potential benefits, risks involved, and its nature. I understand that I can ask questions about the study at any time before, during, or after the interview.

I am aware that my honest perceptions, opinions, and experiences are expected in this study. I consent to being recorded by a cell phone during the interview. I understand that all information shared during the interview is strictly for research purposes and that my personal information and data will be treated as confidential and kept anonymous. I acknowledge that due to the study's focus, I will be asked to provide relevant demographic data, such as age, sex, and nationality. I also understand that direct quotations from the interview may be used in the research paper.

I confirm that if, at any point during or after the interview, I feel I am affected by the interview, I will promptly report it to the interviewer.

I understand that the audio recordings of the interviews and the signed consent forms will be securely stored at the University of Cape Town's Organisational Psychology Department until the end of the researcher's study. I am aware that I have the right to access my data during its storage.

I comprehend that I can contact the individuals involved in the research study for further information, concerns, or clarifications. By signing below, I acknowledge that I have read and understood the information provided above, and I willingly consent to participate in this research study.

Bianca Brenner
Department of Organisational Psychology, University of Cape Town
072 786 8922
BRNBIA010@myuct.ac.za

Signature of research participant _____ Date signed _____
Signature of the researcher _____ Date signed _____

PERMISSION TO TAPE-RECORD INTERVIEWS

I understand that the interview will be tape-recorded and that the researcher will take strict precautions to safeguard my personal information throughout the assignment period.

_____

Participant's Signature

Appendix E

Cover Letter for Questionnaire

UNIVERSITY OF CAPE TOWN
FACULTY OF COMMERCE
Igniting Knowledge and Opportunity

Dear Respondent,

I am Bianca Brenner, a master's student conducting dissertation research which investigates the entrepreneurial intentions of South African students.

Should you wish to participate in this important study, you need to complete one voluntary online survey that should take no longer than 15 minutes.

Please note that you have the option to withdraw at any time and for any reason.

Due to the study's focus, you will be asked to provide relevant demographic data such as sex, race, nationality, and socioeconomic status. All information collected will be securely stored on a password-protected laptop to which only the researcher and the researcher's supervisor have access.

Upon completing the entire survey, you can sign up for a **R500 cash lucky draw.**

Your decision to complete the survey and submit your responses will be interpreted as an indication of consent to participate in the study.

Please contact me if you require further information about the study or have any questions relating to the survey.

Questionnaire Link:
https://ucpcommerce.eu.qualtrics.com/jfe/form/SV_03xBeuxQjdAJyfA

Thank you so much for your time!
Your participation is deeply appreciated!

Note: The Commerce faculty ethics committee and the university have approved this study.

Warm regards,
Bianca Brenner, BRNBIA010@myuct.ac.za
Masters in Organisational Psychology

Appendix F

Confirmatory Factor Analysis Assumptions

Figure F1

Normal P-P Plot of Attitudes

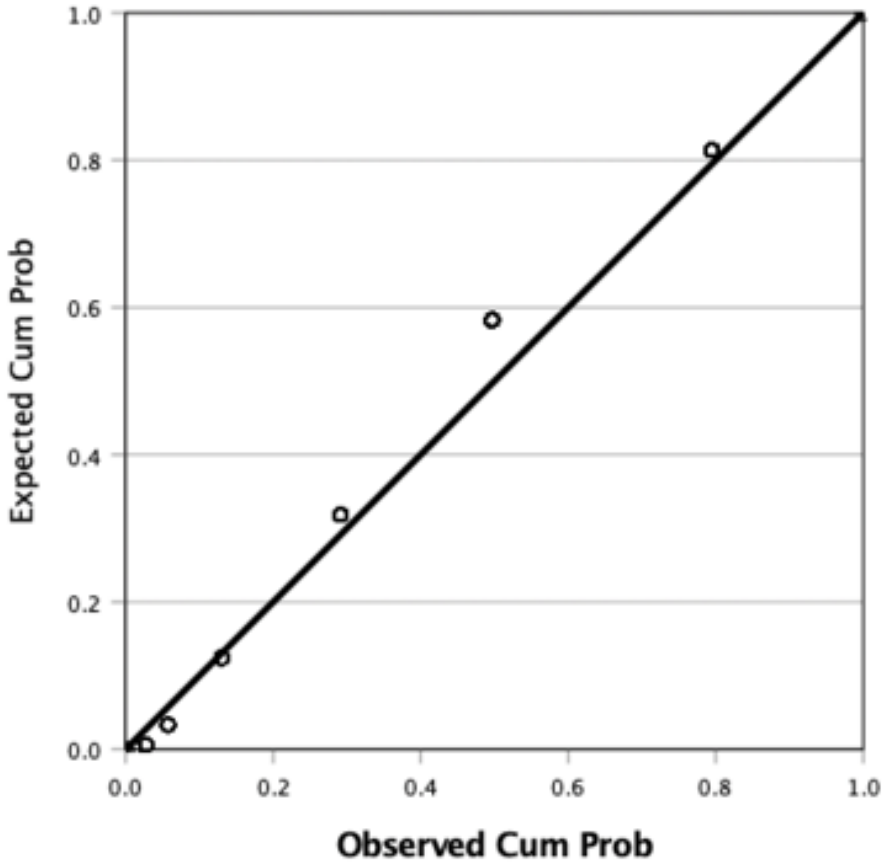


Figure F2

Normal P-P Plot of Subjective Norms

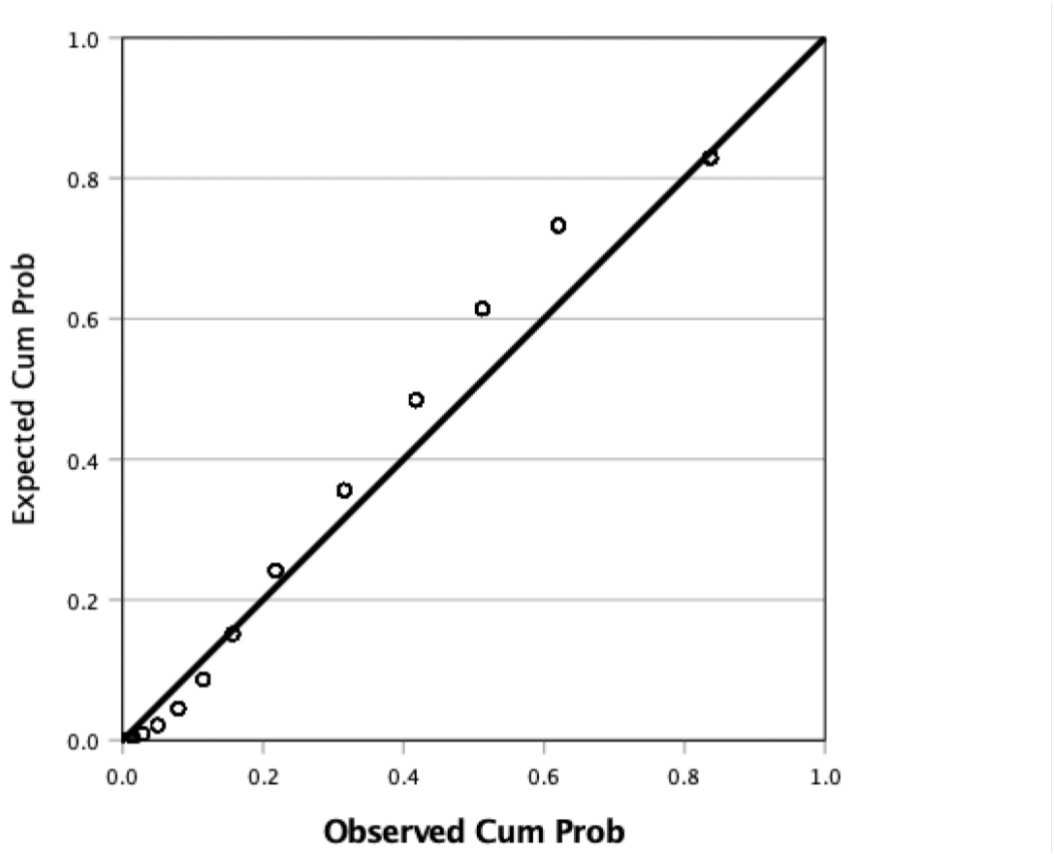
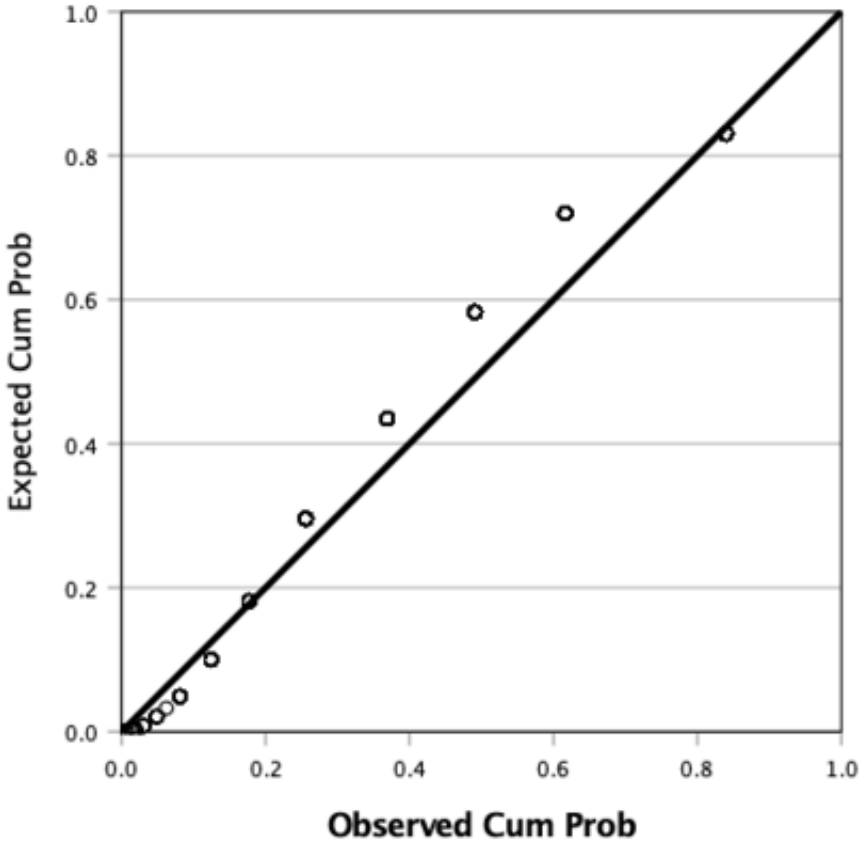


Figure F3

Normal P-P Plot of Perceived Behavioral Control



Appendix G

Correlational Analysis Assumptions

Level of measurement

The variables of interest should be continuous. This implies that attitudes, SN, PBC and intention should all be measured on interval or ratio scales (Field, 2018; Pallant, 2013). This assumption was met, as all variables were measured on interval scales and are thus continuous.

Normality

This assumption implies that the data should exhibit a normal distribution. The adverse impact of violations from normality is expected to have minimal significance when dealing with sample sizes of 200 or greater (Pallant, 2013). Pallant (2013) further contended that the statistical methods employed in SPSS demonstrate sufficient robustness in handling non-normally distributed data. Given that the sample size for the present study amounted to $N = 552$, it was deemed appropriate to disregard the normality assumption.

Outliers

Outliers, which represent scores significantly divergent from the rest of the data, should not be characteristic of the dataset as their presence can exert undue influence on the outcomes of the analysis (Field, 2018; Pallant, 2013). Following Field's guidance (2018), cases identified as extreme scores (denoted with an asterisk, *) in the box-and-whisker plots were identified as outliers. The box-and-whisker plots provided no visual representations of extreme scores, as seen in Figures G1-G4. Therefore, this assumption was met.

Figure G1

Box and Whisker Plot for Attitudes

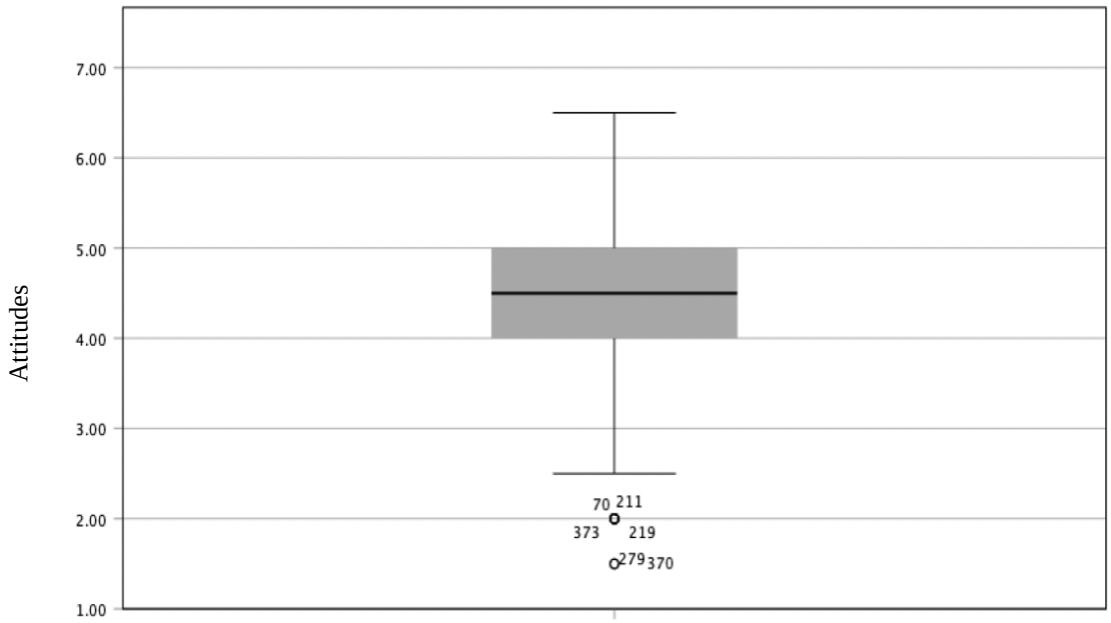


Figure G2

Box and Whisker Plot for Subjective Norms

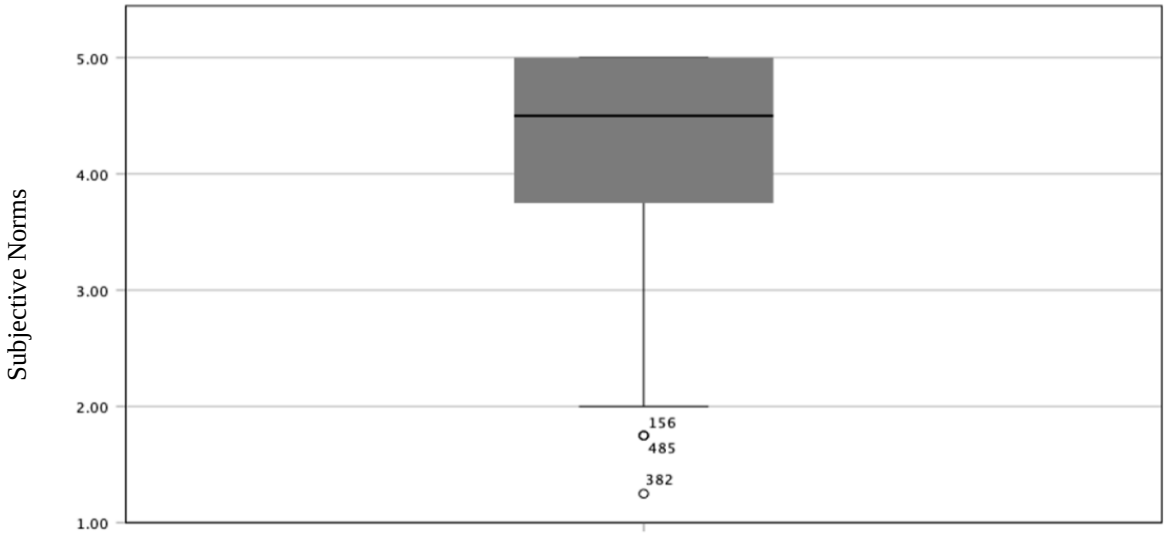


Figure G3

Box and Whisker Plot for Perceived Behavioural Control

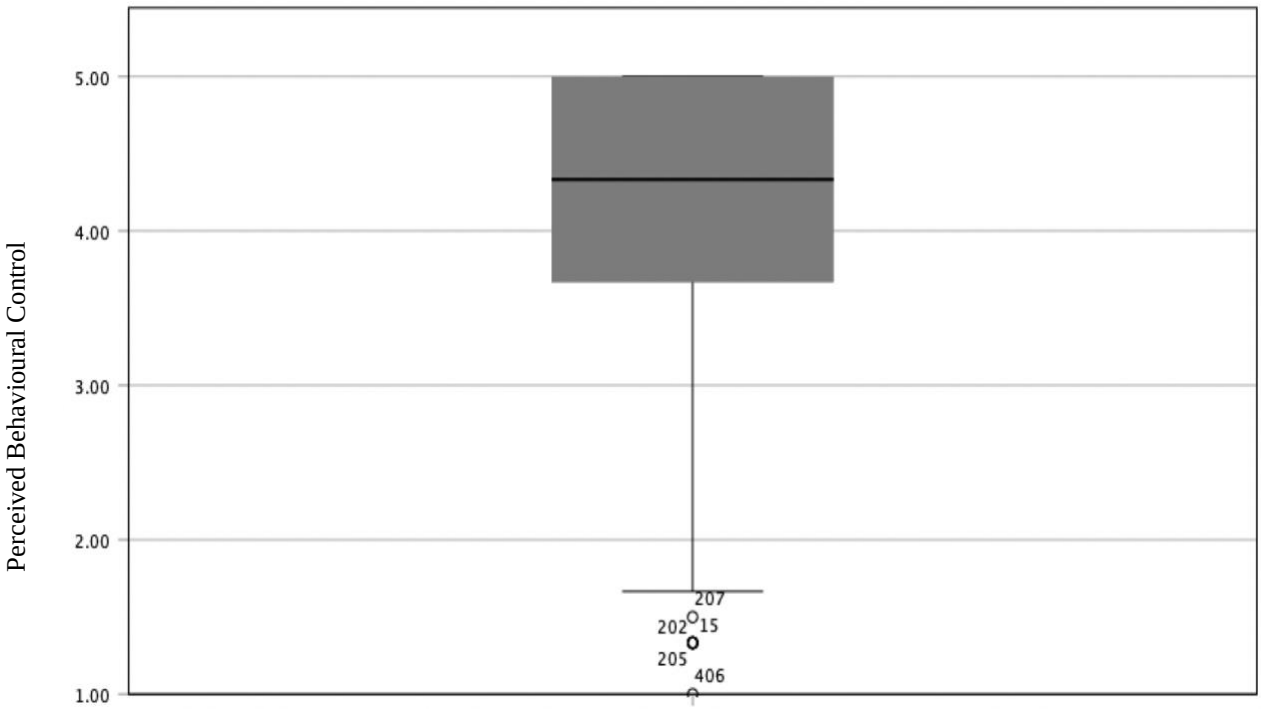
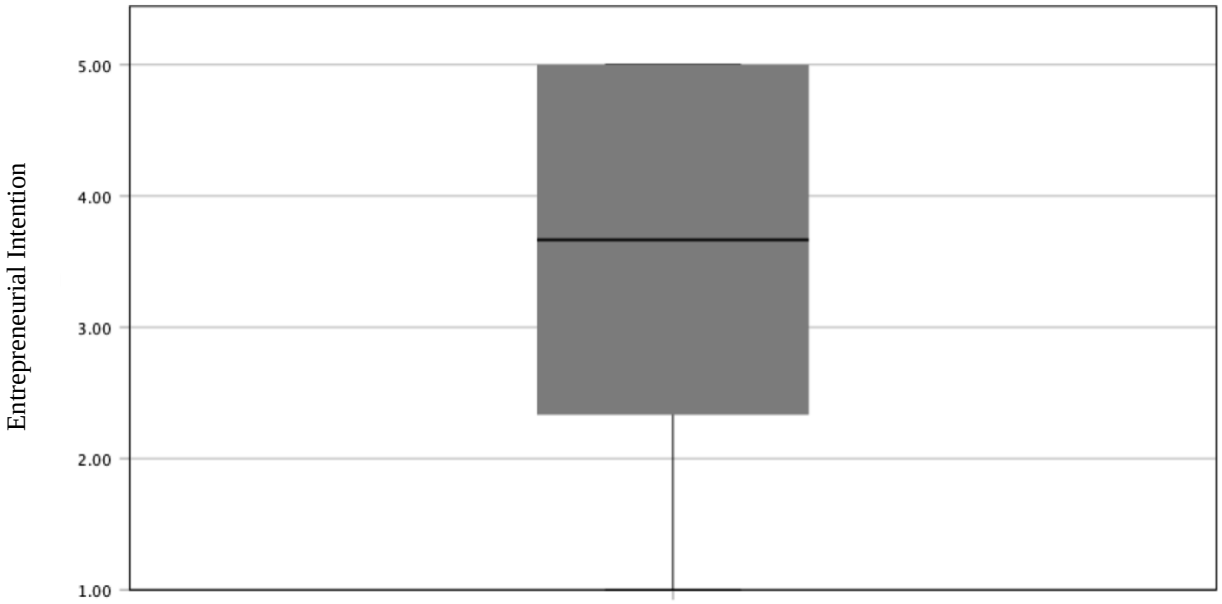


Figure G4

Box and Whisker Plot for Entrepreneurial Intention



Linearity

In each hypothesis, it is essential for the dependent and independent variables to exhibit a linear relationship. This means that when plotting the dependent variable against the independent variable in a scatterplot, the data points should align in a straight-line pattern, as outlined by Pallant (2013). All the scatterplots in this study show a clear straight-line pattern, confirming the fulfilment of the linearity assumption, see Figures G5-G7.

Figure G5

The Linear Relationship between Attitude and Entrepreneurial Intention

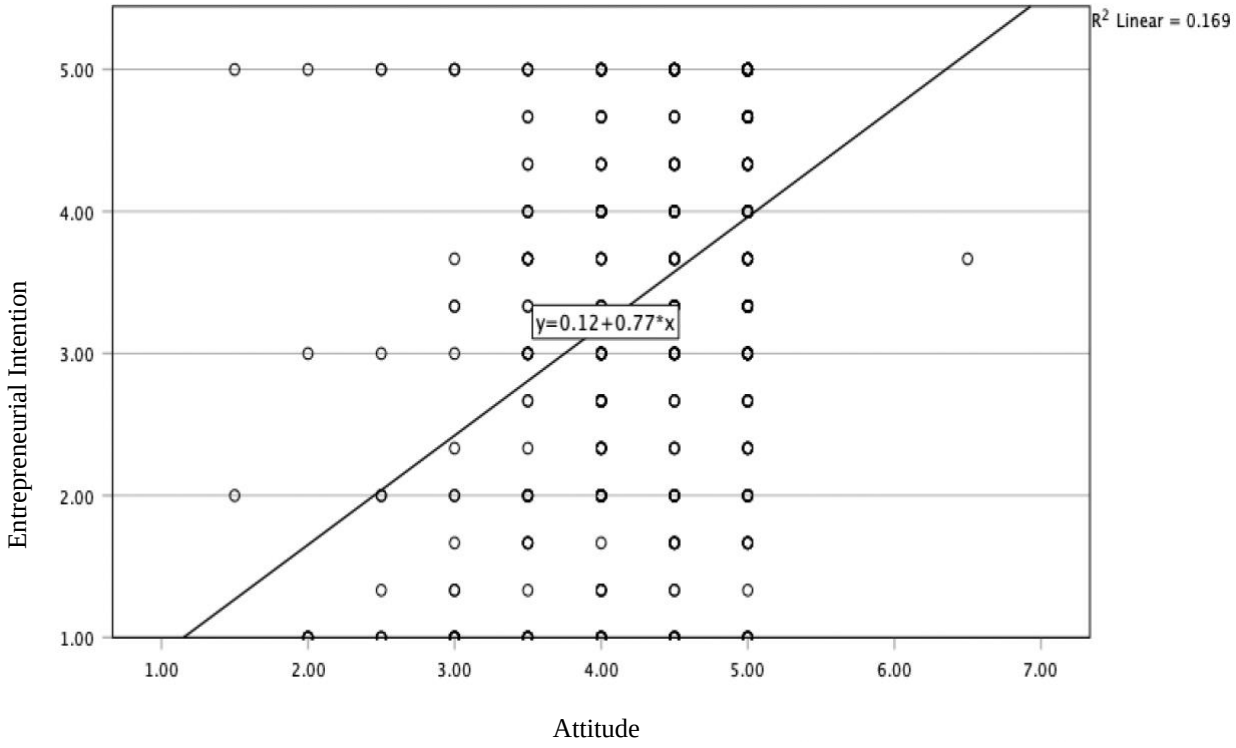


Figure G6

The Linear Relationship between Subjective Norms and Entrepreneurial Intention

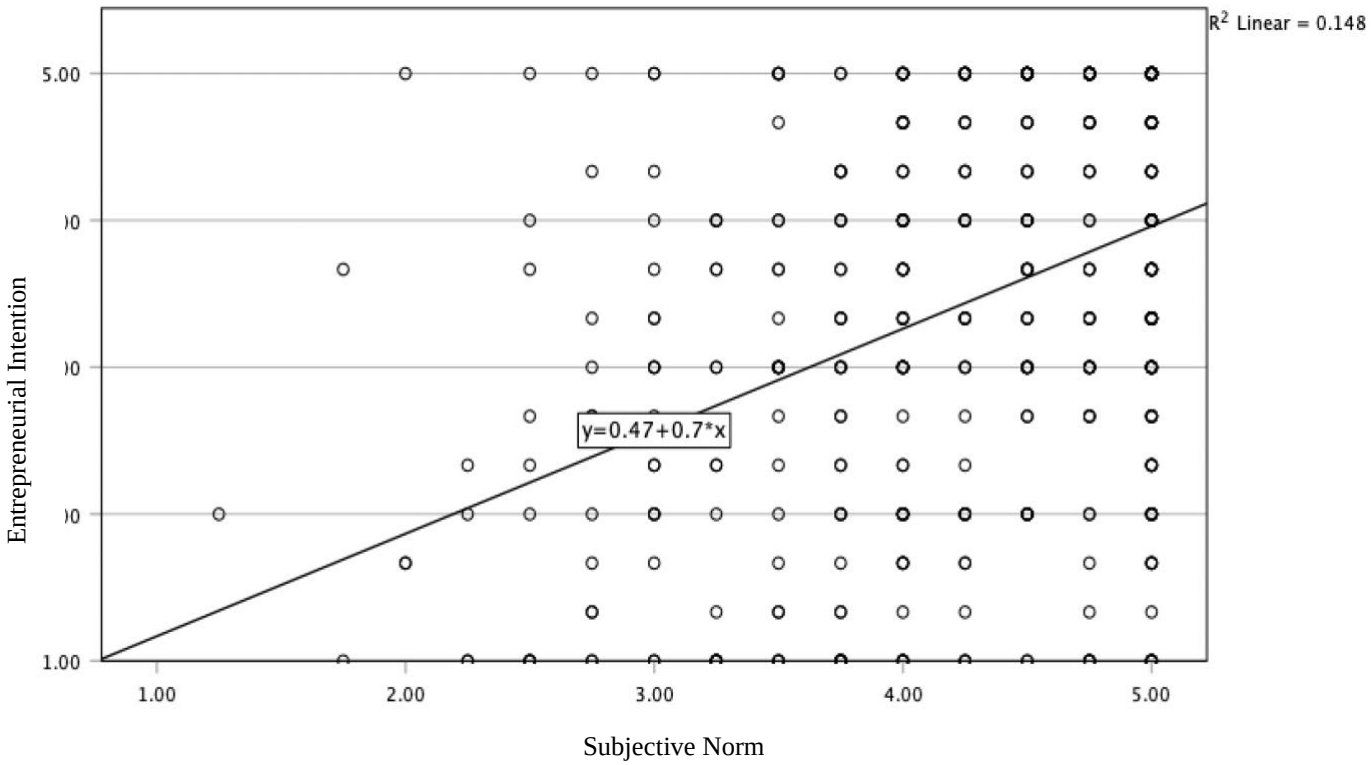
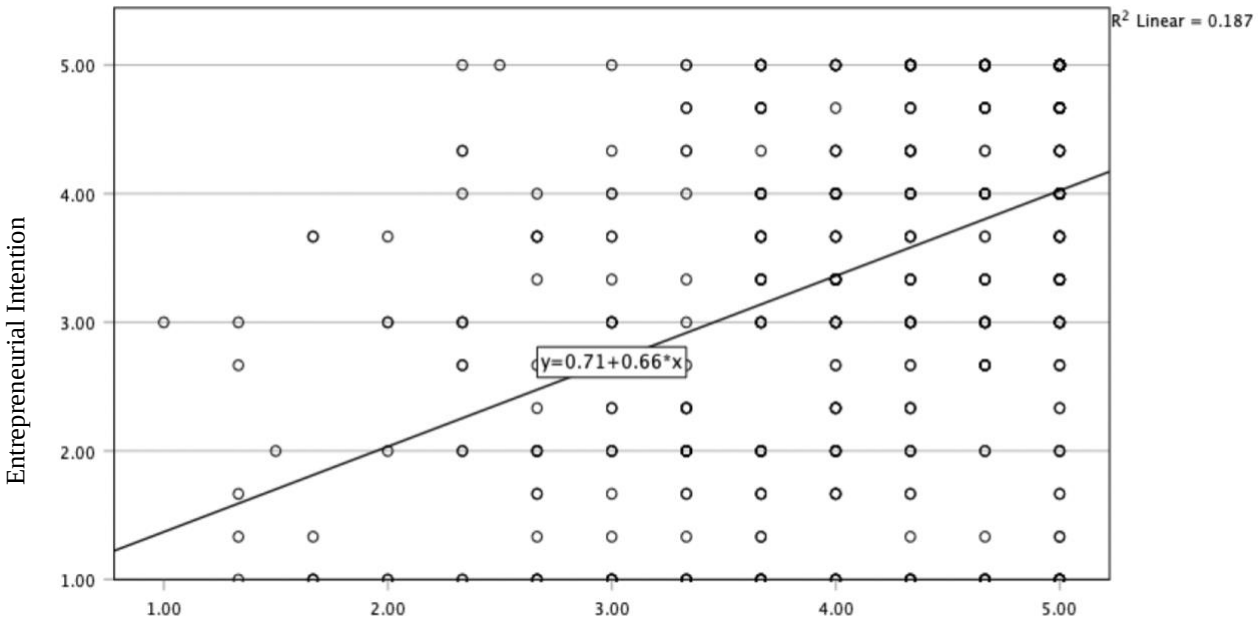


Figure G7

The Linear Relationship between Perceived Behavioural Control and Intention



Appendix H

Linear Multiple Regression Analysis Assumptions

Level of Measurement

As per Field's (2018) recommendations, it is advised that the criterion variable be assessed using a ratio or interval scale, while predictor variables should be measured on either an interval or categorical scale. This study evaluated all scales using continuous measurements, aligning with this assumption.

Adequate Sample Size

According to Tabachnik and Fidell (1989), a fundamental guideline for multiple regression analyses is to ensure that the sample size is at least five times greater than the number of independent variables. The present study had $N = 523$ participants, satisfying this requirement.

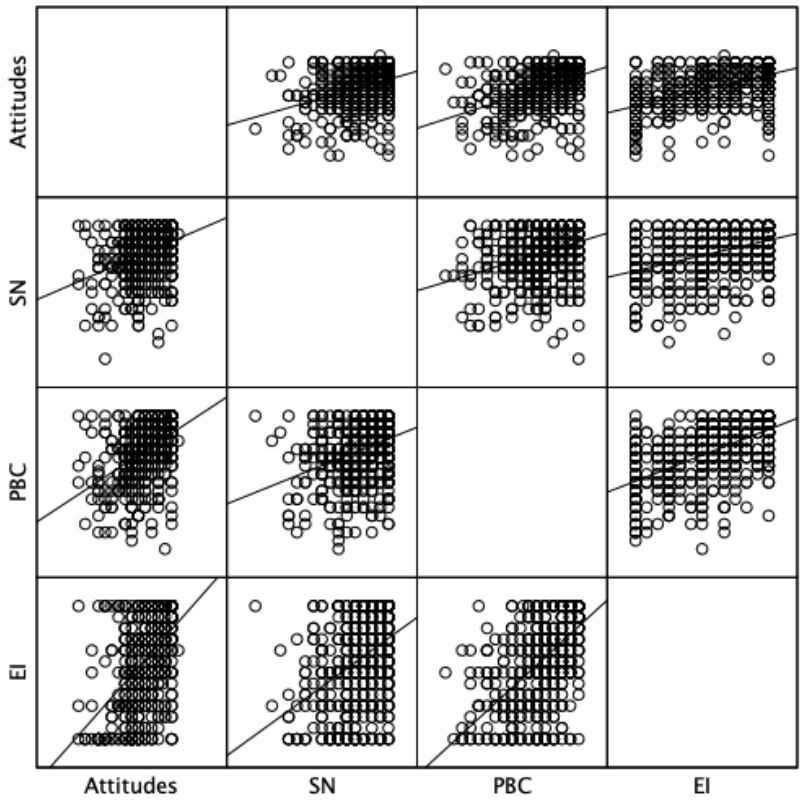
Normality and Linearity

As previously discussed in the correlation analyses, the assumption of normality pertains to the requirement of the data adhering to a normal distribution. Notably, deviations from normality are anticipated to have minimal impact when working with sample sizes of 200 or more (Hair et al., 2006; Pallant, 2013). Pallant (2013) further asserted that the statistical techniques embedded in SPSS exhibit robustness in handling data that deviates from normal distribution. Given that the sample size in this study amounted to $N = 523$, it was considered appropriate to disregard the assumption of normality.

Additionally, as highlighted in the correlation analyses, scatterplots were employed to assess the linearity assumption. As depicted in Figure H1, all the scatterplots exhibited linearity, with data points forming straight-line patterns. This aligns with Field's (2018) recommendation, affirming that additivity was assumed for each model, and consequently, the linearity assumption was met.

Figure H1

Matrix Scatterplot of Attitudes, Subjective Norms, Perceived Behavioural Control and Entrepreneurial Intention



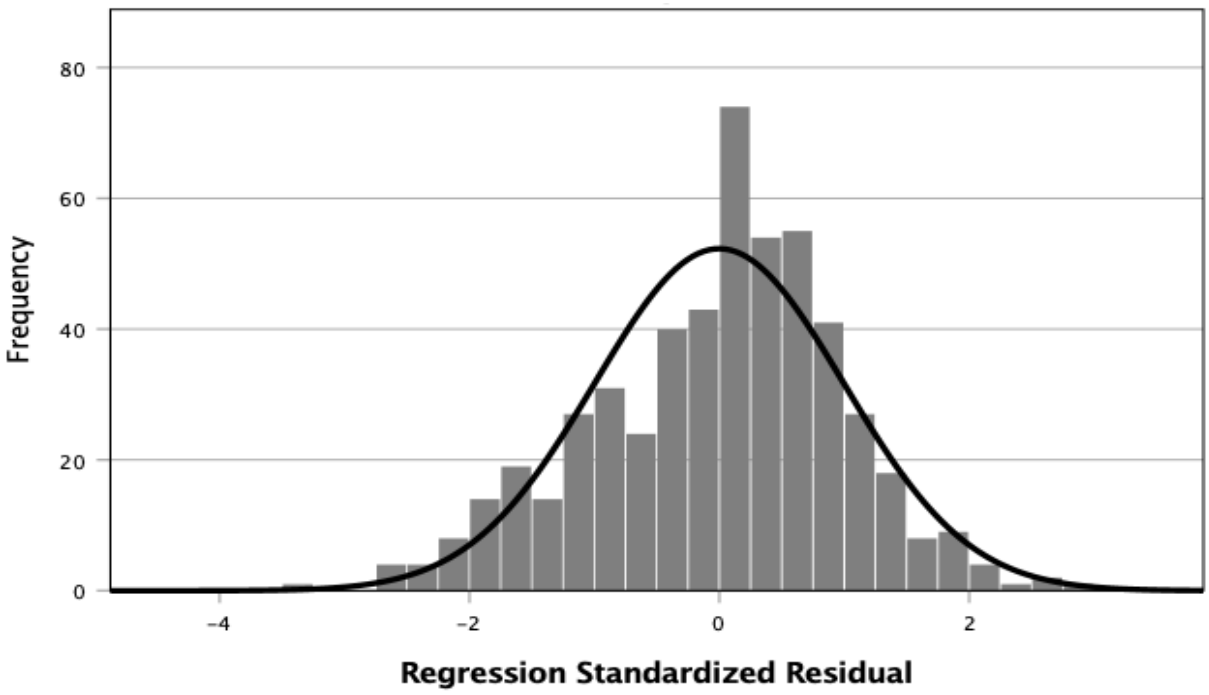
Note. SN = subjective norms; PBC = perceived behavioural control; EI = entrepreneurial intention.

Normally Distributed Residuals

A histogram was used to examine if the residuals were normally distributed. It was clear that the residuals were normally distributed with a slightly negative skewness, as Figure H2 shows a standard bell-curve shape, which illustrates a normal distribution (Field, 2018). Therefore, this assumption was upheld.

Figure H2

Histogram of Normally Distributed Residuals with Entrepreneurial Intentions as the Dependent Variable

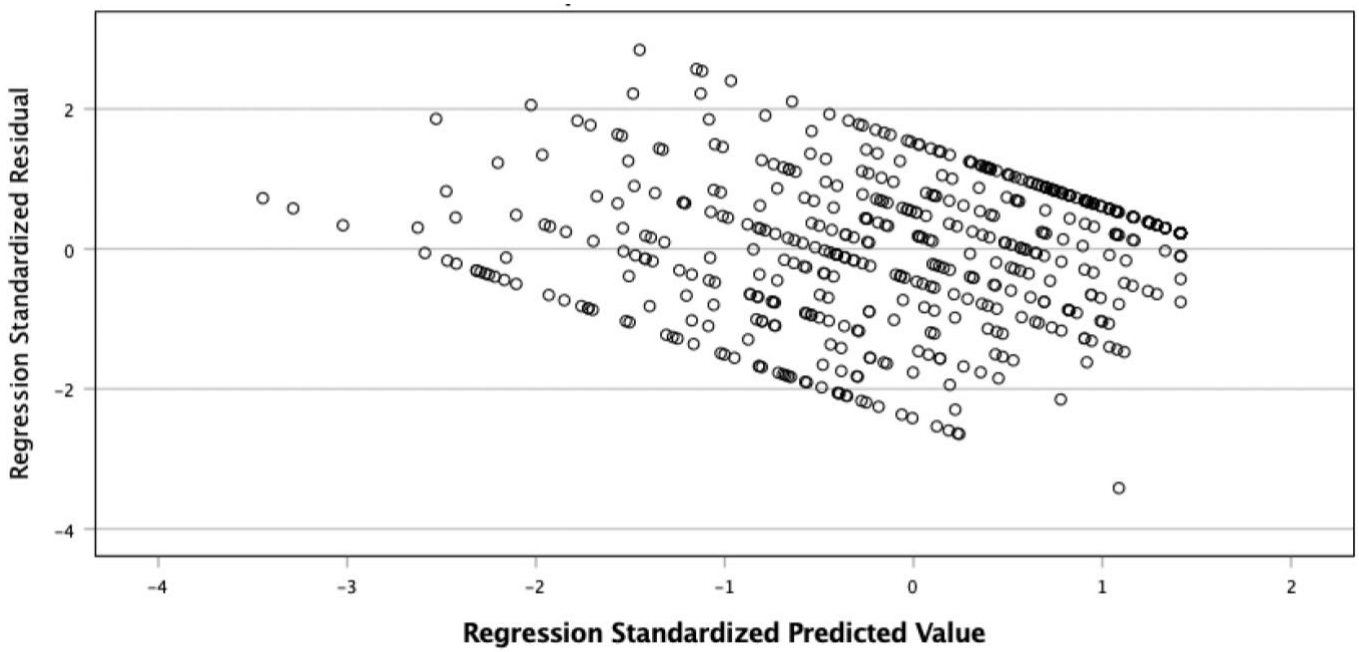


Homoscedasticity

This assumption suggests that the variances of the residuals remain consistent across all levels of the independent variables (Field, 2018). To assess this assumption, standardized predicted residuals were plotted against standardized residuals. Homoscedasticity is indicated when the data points in the graph exhibit a cone-shaped pattern. As depicted in Figure H3, there were no discernible cone-shaped patterns, and the data appeared randomly distributed. This observation suggests that the assumption of homoscedasticity was upheld and not violated.

Figure H3

Scatterplot of Standardised Observed Residuals and Standardised Predicted Residuals



Independent Residuals

Residuals denote the disparities between observed data and the predictions made by the model. In the context of multiple regression, the residuals are expected to exhibit no correlation (Field, 2018). To assess this, a Durbin-Watson statistic was computed. As per Field's (2018) guidance, this statistic falls between 0 and 4, with values ranging from 1 to 3, signifying independence. The Durbin-Watson statistic (1.985) fell within the acceptable range, offering confirmation of independent residuals. Thus, it can be concluded that this assumption remained unviolated.

Multicollinearity

When independent variables exhibit strong correlations ($r > .90$), it signifies the presence of multicollinearity in the dataset (Field, 2018). The average variance inflation factor (VIF) for each independent variable was examined to assess this. According to Bowerman and O'Connell (1990), the VIF must be less than 10 across all variables in the investigation. Table H1 indicates that this assumption has been met.

Table H1

Multicollinearity Diagnostic Variance Inflation Factor Values

Variable	Variance Inflation Factor
Attitude	1.340
Subjective Norm	1.201
Perceived Behavioural Control	1.339

Note. Dependent variable = entrepreneurial intention.

Non-Zero Variance

To satisfy this assumption, it is necessary for both independent and dependent variables to possess non-zero variances (Field, 2018). Attitude, SN, PBC and EI had variances of .54, .57, .80 and 1.88, respectively. Therefore, it can be affirmed that the variables encompassed in the model adhered to the requirement of having non-zero variances.

Model Bias

Model bias is evaluated by examining the presence of outliers and influential cases within the dataset. Following the guidelines of Tabachnick and Fidell (2014), cases exhibiting standardised residual values exceeding 3.30 or falling below -3.30 may warrant attention. As indicated in Table H2, the standardised residuals fell just below this specified range. Nevertheless, Stevens (2002) suggested that Cook's distance should be considered before removing influential cases in the data. A case is considered to unduly skew the model if its

Cook’s distance exceeds 1 (Field, 2018). However, examination of the data revealed that the highest Cook's distance statistic was below 1, signifying an absence of worrisome influential cases. Therefore, it can be concluded that the assumption regarding model bias was satisfied.

Table H2

Residual Statistics

	Min	*Max*	*M*	*SD*
Std. Residual	-3.416	2.844	.000	.997
Cook's Distance	.000	.103	.002	.006

Note. Dependent variable = entrepreneurial intention.

Appendix I

Hierarchical Multiple Regression Assumptions

Level of Measurement

As per Field's (2018) recommendations, it is advised that the criterion variable be assessed using a ratio or interval scale, while predictor variables should be measured on either an interval or categorical scale. This study evaluated all scales using continuous measurements, aligning with this assumption.

Adequate Sample Size

According to Tabachnik and Fidell (1989), a fundamental guideline for multiple regression analyses is to ensure that the sample size is at least five times greater than the number of independent variables. In the regression analysis, there were $N = 349$ participants, satisfying this requirement.

Normality

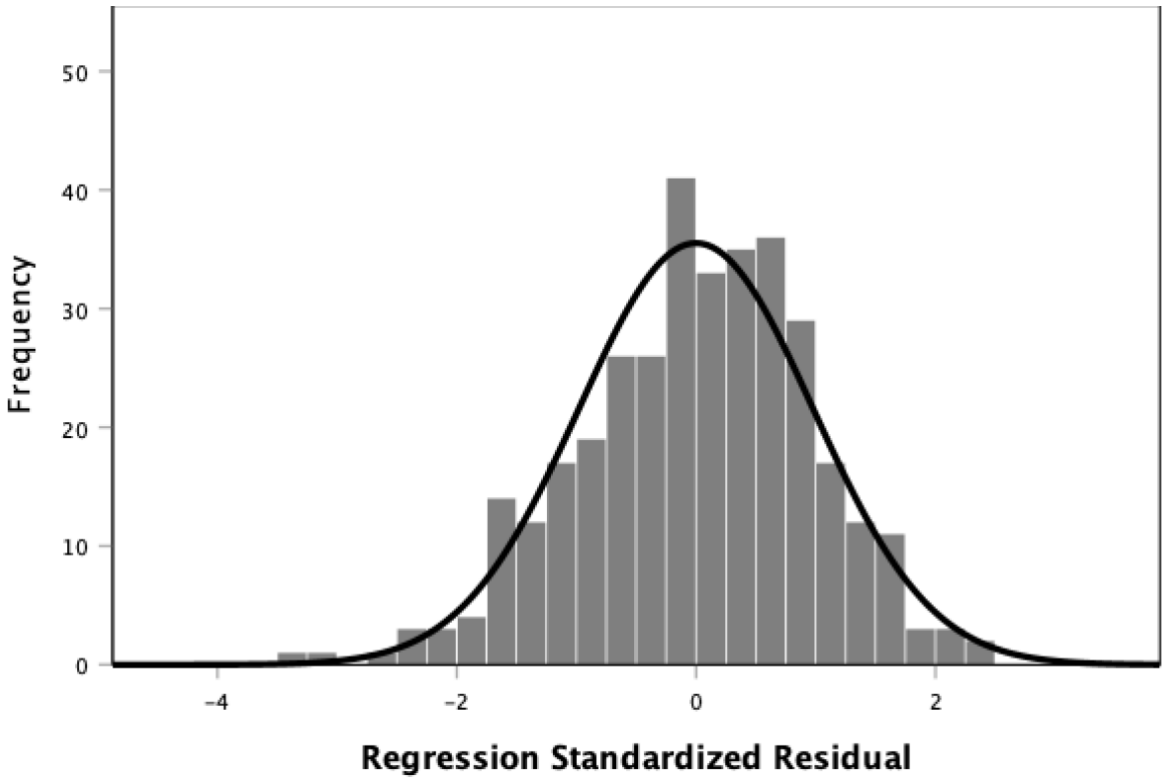
The assumption of normality pertains to the requirement for the data to adhere to a normal distribution. Notably, deviations from normality are anticipated to have minimal impact when working with sample sizes of 200 or more (Hair et al., 2006; Pallant, 2013). Pallant (2013) further asserted that the statistical techniques embedded in SPSS exhibit robustness in handling data that deviates from normal distribution. Given that the sample size in this study amounted to $N = 349$, it was considered appropriate to disregard the normality assumption.

Normally Distributed Residuals

A histogram was used to examine if the residuals were normally distributed. It was clear that the residuals were normally distributed with a slightly negative skewness, as Figure I1 shows a standard bell-curve shape, which illustrates a normal distribution (Field, 2018). Therefore, this assumption was upheld.

Figure I1

Histogram of Normally Distributed Residuals

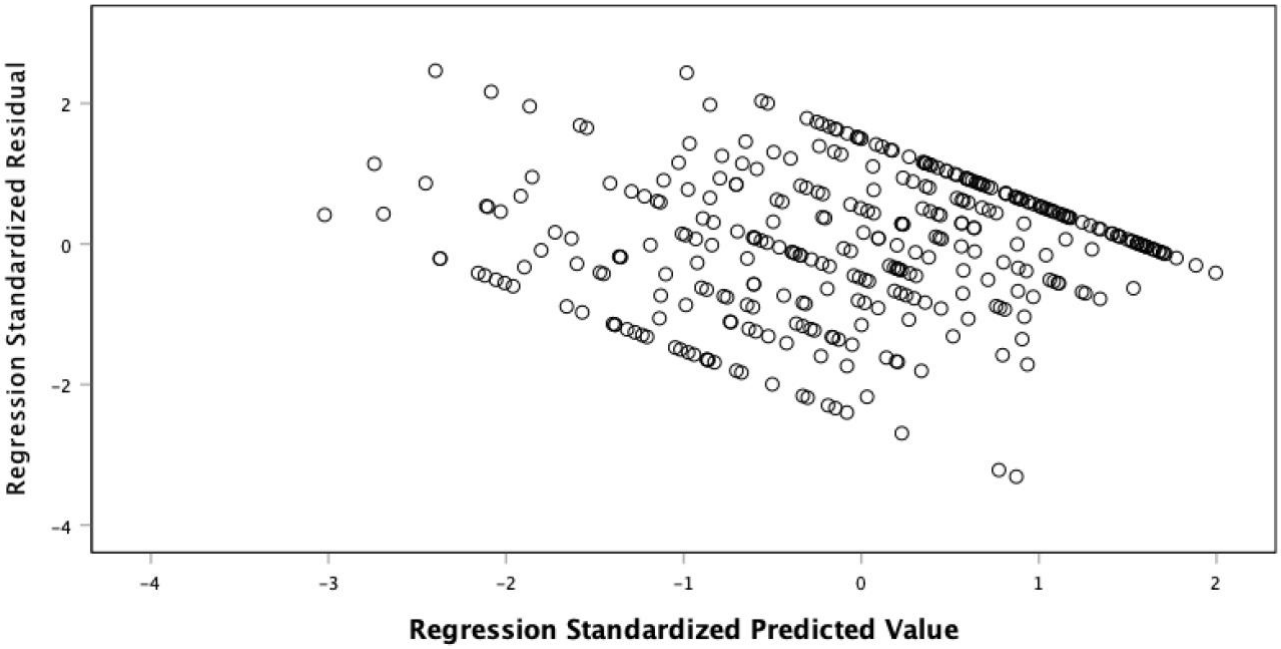


Homoscedasticity

This assumption suggests that the variances of the residuals remain consistent across all levels of the independent variables (Field, 2018). To assess this assumption, standardized predicted residuals were plotted against standardized residuals. Homoscedasticity is indicated when the data points in the graph exhibit a cone-shaped pattern. As depicted in Figure I2, there were no discernible cone-shaped patterns, and the data appeared randomly distributed. This observation suggests that the assumption of homoscedasticity was upheld and not violated.

Figure I2

Scatterplot of Standardized Predicted Residuals against Standardized Residuals



Independent Residuals

Residuals denote the disparities between observed data and the predictions made by the model. In the context of multiple regression, the residuals are expected to exhibit no correlation (Field, 2018). To assess this, a Durbin-Watson statistic was computed. As per Field's (2018) guidance, this statistic should fall between 0 and 4, with values ranging from 1 to 3, signifying independence. The Durbin-Watson statistic (1.999) fell within the acceptable range, offering confirmation of independent residuals. Thus, it can be concluded that this assumption remained unviolated.

Multicollinearity

When independent variables exhibit strong correlations ($r > .90$), it signifies the presence of multicollinearity in the dataset (Field, 2018). The variance inflation factor (VIF) for each independent variable was examined to assess this. According to Bowerman and O'Connell (1990), the VIF must be less than 10 across all variables in the investigation. VIF values for the hierarchical regression analysis variables ranged from 1.026 to 1.894, indicating that this assumption has been met.

Non-Zero Variance

To satisfy this assumption, it is necessary for both independent and dependent variables to possess non-zero variances (Field, 2018). As seen in Table I1, all variables had variances that were not zero, confirming that these variables exhibit variation and that the assumption of non-zero variance is upheld.

Table I1

Non-Zero Variances of All Variables in Hierarchical Regression

Variable	Variance
Entrepreneurial Intention	1.90
Female	.24
Black African	.23
Commerce	.22
Year of study	1.96
Age	41.41
NSFAS	.33
South African Society	6.23
Prior entrepreneurial experience	.24
Knowledge of entrepreneurial support	.24
Load-Shedding	1.44
South African Economy	1.32
Perceived Behavioural Control	.74
Attitude	.53
Subjective Norms	.55

Model Bias

Model bias is evaluated by examining the presence of outliers and influential cases within the dataset. Following the guidelines of Tabachnick and Fidell (2014), cases exhibiting standardized residual values exceeding 3.30 or falling below -3.30 may warrant attention. As indicated in Table I2, the standardized residuals fell just below this specified range. Nevertheless, Stevens (2002) suggestsed that Cook's distance should be considered before removing influential cases in the data. A case is considered to unduly skew the model if its Cook's distance exceeds 1 (Field, 2018). However, examination of the data revealed that the highest Cook's distance statistic was below 1, signifying an absence of worrisome influential cases. Therefore, it can be concluded that the assumption regarding model bias was satisfied.

Table I2

Residual Statistics – Standardised Residuals and Cook's Distance

	Min	*Max*	*M*	*SD*
Std. Residual	-3.31	2.467	.000	.980
Cook's Distance	.000	.044	.003	.005

Note. Dependent variable = entrepreneurial intention.

Appendix J

Hierarchical Regression Results

Table J1

Hierarchical Regression Analysis: Entrepreneurial Intention (Theory of Planned Behaviour and Demographic Variables)

Variable	Step 1	Step 2
Demographic Variables		
Female	-.003	-.007
Commerce	-.004	-.007
Black African	.393**	.307**
Year of study	.010	-.017
Age	.043	.033
NSFAS	-.071	-.028
SA society status	.032	.032
Theory of Planned Behaviour		
Attitude toward entrepreneurship		.197**
Subjective norms		.200**
Perceived behavioural control		.230**
R^2	.201**	.386**
Adjusted R^2	.185**	.386**
Change in R^2		.184**

Note: N = 349. Regression coefficients are standardized. Beta coefficients are shown for each variable. Post hoc power analysis revealed a power of 1 and effect size (f^2) of 0.62 at a significance level of .05.
Note. Dependent variable = entrepreneurial intention.
** $p < .001$

Table J2

Hierarchical Regression Analysis: Entrepreneurial Intention (Theory of Planned Behaviour and Situational Variables)

Variable	Step 1	Step 2
Situational Variables		
Prior entrepreneurial exposure	-.330**	-.250**
Knowledge of entrepreneurial support	-.247**	-.141**
Theory of Planned Behaviour		
Attitude toward entrepreneurship		.231**
Subjective norms		.222**
Perceived behavioural control		.206**
R^2	.202**	.408**
Adjusted R^2	.199**	.402**
Change in R^2		.205**

Note: N = 523. Regression coefficients are standardized. Beta coefficients are shown for each variable. Post hoc power analysis revealed a power of 1 and effect size (f^2) of 0.68 at a significance level of .05.
Note. Dependent variable = entrepreneurial intention.
** $p < .001$

Table J3

Hierarchical Regression Analysis: Entrepreneurial Intention (Theory of Planned Behaviour and Load-Shedding and the South African Economy)

Variable	Step 1	Step 2
Load-Shedding	-.102	-.089
South African Economy	-.208**	-.142**
Theory of Planned Behaviour		
Attitude toward entrepreneurship		.247**
Subjective norms		.233**
Perceived behavioural control		.263**
R^2	.072**	.356**
Adjusted R^2	.069**	.349**
Change in R^2		.283**

Note: N = 521. Regression coefficients are standardized. Beta coefficients are shown for each variable. Post hoc power analysis revealed a power of .95 and effect size (f^2) of 0.55 at a significance level of .05.
Note. Dependent variable = entrepreneurial intention.
** $p < .001$