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The Theory of Planned Behaviour as Predictor of Entrepreneurial Intent

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COMPULSORY DECLARATION:

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works of other people has been attributed, and has been cited and referenced.

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Abstract

The theory of planned behaviour (TPB) was tested as a predictor of entrepreneurial intent amongst final year commerce students at two universities in the Western Cape (n = 247). 'External factors' (personality traits, situational factors, exposure to entrepreneurship and demographics) were also tested as predictors of entrepreneurial intent, and were used to test the sufficiency of TPB. Questionnaires were administered to students before lectures at both universities. The results of the multivariate analyses indicated that TPB significantly explained 27% of the variance in students' entrepreneurial intentions. Out of the external factors, only exposure to entrepreneurship was found to increase the predictive power of TPB and therefore questioned the sufficiency of the theory. The findings here suggest that TPB is a valuable tool for predicting entrepreneurial intent.

CHAPTER 1: INTRODUCTION

Entrepreneurship and domestic new venture creation are considered essential for sustainable economic development, job creation and poverty alleviation in South Africa (Mitchell, 2003; Kroon, de Klerk & Dippenaar, 2003; Louw, Van Eeden, Bosch & Venter, 2003; Luiz, 2002). Over the past few years the unemployment rate in South Africa has been rising consistently (Kingdon & Knight, 2004); especially as formal employment opportunities have been decreasing (State of Small Business in South Africa, 2001). Foreign direct investment has also failed to provide a solution to slow growth and high unemployment in Africa (United Nations, 2005a). As a consequence, entrepreneurship is considered vital for the economic development of South Africa (Mitchell & Co, 2004). According to Davidsson (1995) a similar situation emerged for many Western countries in the 1970s, and has persisted to date. Large established firms in Western countries have not been able to create a net increase in employment, resulting in a focus on the relative importance of small business and new ventures in alleviating unemployment (Davidsson, 1995). It has also been recognised that entrepreneurship is vital in attaining competitiveness in international markets, specifically because it drives innovation in the business world (United Nations, 2005b). Entrepreneurship is defined in this study using Gartner's (1988) definition: "the creation of new organizations". The entrepreneur is therefore one who creates new organizations, and is thus self-employed. Entrepreneurial intent is thus an intention to become self-employed through starting a new venture.

South Africa has, over the last few years, displayed consistently lower entrepreneurial activity than developed countries, and far lower entrepreneurial activity than other developing countries (Orford, Herrington & Wood, 2004). The lack of entrepreneurial activity in South African is a recognised cause of concern. The South African government has acknowledged the importance of entrepreneurship to the economy, and the resultant need to play a role in facilitating new venture creation. Hence the initiation of various government programmes to stimulate new venture creation and growth, mainly driven through the Department of Trade and Industry (South Africa Handbook 2004/2005, 2005).

The renewed political interest in entrepreneurship has been mirrored by increased academic interest (Davidsson, 1995). The initial focus of entrepreneurship research was on possible psychological traits of entrepreneurs (Davidsson, 1995). This line of inquiry focused mainly on ex-post situations, examining the traits of *existing* entrepreneurs rather than *potential* entrepreneurs (Autio, Keeley, Klofsten, Parker & Hay, 2001). The approach therefore assumes that the actual experience of starting a new business does not change the traits and attitudes of the entrepreneur (Gartner, 1989). However entrepreneurial traits could develop as a consequence of the entrepreneurial behaviour, and in fact not be determinants of that behaviour (Autio et al., 2001). Of all the traits that have been associated with the entrepreneurial personality, none have convincingly and consistently been proven to discriminate between entrepreneurs and other people (Brockhaus & Horwitz, 1986; Low & MacMillan, 1988). According to Krueger, Reilly and Carsrud (2000), attempts to predict entrepreneurial activity using trait approaches have yielded disappointingly poor results. As a consequence researchers have started to develop integrated explanatory models that include situational variables, demographics, personal background and domain-specific attitudes (Davidsson, 1995). While situational, demographic and background factors have proved inconsistent predictors of entrepreneurial activity, intentions-based approaches have consistently produced encouraging results (Krueger et al., 2000).

The rationale for investigating entrepreneurial intent lies in the relative success that psychological researchers have had in using intentions to predict behaviour that is rare, hard to observe or involves unpredictable time lags (Krueger et al., 2000; Bagozzi, Baumgartner & Yi, 1989). Entrepreneurship is a type of planned behaviour (Katz & Gartner, 1988), and there is evidence that entrepreneurial intentions are a relatively good indicator of new venture creation (Chrisman, 1997; Reynolds & Miller, 1992). Moreover, examining intentions to start a business overcomes the limitations of ex-post research (examining existing entrepreneurs). The study of potential entrepreneurs also has value for planning entrepreneurial facilitation interventions:

> "For the purpose of policy decisions aimed at stimulating new firm formation it is more useful to know what kind of individuals do and do not consider going into

business for themselves, than to learn about the characteristics of those who already did so" (Davidsson, 1995. p 3).

Intentions-based models offer testable, theory-driven methods that account for the affect of exogenous factors, such as personality, situation and demographics, on attitudes and intentions (Krueger & Carsrud, 1993). Ajzen's (1991) 'theory of planned behaviour' (TPB) is one such approach which aims to predict intentions by investigating domain-specific attitudes and beliefs from a reasoned action perspective. TPB has generally been proven a successful predictor of intentions for various behaviours across different contexts (Ajzen, 1991; Terry, Hogg & White, 1999). The process of starting a new business is clearly an intentional one (Bird, 1988; Krueger & Carsrud, 1993) and a planned one (Autio, Keeley, Klofsten & Ulfstedt, 1997). TPB is therefore well suited to the prediction of entrepreneurial intentions. According to the theory, intentions predict behaviour, while attitudes toward entrepreneurship, perceived subjective norms about entrepreneurship and perceived behavioural control over starting a business, together predict intentions (Ajzen, 1991). The model is also particularly well-suited to the entrepreneurial process as it focuses on situations where an individual has incomplete volitional control, such as starting a business (Autio et al., 2001). Perceived behavioural control, as the name suggests, taps into *perceived* control over the process as well as self-efficacy. It therefore deals with situations where the individual may not be in control of all the factors that may influence the intended outcome of the behaviour. Indeed many researchers have, with varying degrees of success, predicted entrepreneurial intent and career choice intentions with TPB (e.g. Autio et al., 2001; Krueger, et al, 2001; Tkachev & Kolvereid, 1999; Kolvereid, 1996).

In TPB the effects of 'external factors' (such as personality traits, situational factors, previous experience and demographics) on intentions are claimed to be moderated through attitudes and beliefs captured by measurements of attitude toward entrepreneurship, subjective norm and perceived behavioural control (Ajzen, 1991, 2005). If the TPB model does account for the external factors via its predictors, then the theory is said to be 'sufficient' in that it sufficiently captures the influence of the external factors through its predictor variables (Ajzen, 2001). Therefore if any of these external factors actually do significantly predict intention along with attitude

toward entrepreneurship, subjective norm and perceived behavioural control, it would be an indication that variables not included in TPB are needed to provide the most accurate prediction of intentions (Tkachev & Kolvereid, 1999). In short, it would question the sufficiency of the theory. Ajzen (1991) himself suggests including external factors in research employingTPB, in order to test the sufficiency of the theory.

This study considered whether TPB predicts entrepreneurial intentions for final year commerce students at two universities in the Western Cape. It also tested the direct predictive power of personality traits, situational factors, previous experience and demographics on intent. Furthermore it tested the sufficiency of the TPB by including these external factors in the TPB model. Career decisions and identifying new venture opportunities are clearly both planned processes, and thus intentional processes (Katz 1990; Krueger et al., 2000). Therefore TPB is specifically suited to investigating the entrepreneurial intentions of final year university students, who face imminent career choices, one of which is self-employment. As a final aim, this study tested the robustness of TPB across different samples.

Orford, Wood, Fischer, Herrington and Segal's (2003) research, as presented in the South African executive report for the Global Entrepreneurship Monitor, suggested that a low proportion of people in SA believe they have the skills to start a business and that this contributes to lower levels of entrepreneurial activity. They suggested further that the lack of self-belief is explained by the lack of entrepreneurial role-models and low levels of education. The current research involves investigating how entrepreneurial intent is influenced by perceived behavioural control, of which self-belief is an important component. It also seeks to investigate the impact of entrepreneurial role models on intentions to start a business, and therefore to contribute to the work of Orford et al. (2003). This study is also a response to the lack of relevant entrepreneurship research in the South African context (Mitchell & Co, 2004).

The value of predicting entrepreneurial intent with TPB lies in the fact that it is possible to investigate specifically what factors inform intentions. By examining the relative contributions of perceived behavioural control, subjective norm and attitude

toward entrepreneurship to the formation of entrepreneurial intent, it is possible to investigate which factor is most important in the development of that intent for a specific sample. If this is possible, then it offers policy makers and practitioners in the field of entrepreneurial development a tool with which to diagnose the state of entrepreneurial intentions of a specific group, as well as the antecedents to the intent. Thereby gaining insight into what factors need to be developed in order to increase entrepreneurial intentions for that group. The current study investigated whether TPB could provide such a tool, by testing the predictive validity of the model and analysing the antecedent influences.

In the fist section of this dissertation the literature on entrepreneurial intent, the theory of planned behaviour, and other approaches to predicting entrepreneurial intent was reviewed. Testable propositions were developed from an analysis of the evidence provided by the literature. These propositions were then tested using multivariate statistical techniques, which are described along with the procedure, sample and measures in the Method section. The Results section presents the analysis of the data and reveals the relationships between entrepreneurial intent, TPB, and other approaches to predicting entrepreneurial intent. The final section discusses the results in light of the relevant literature and reviews the theoretical and policy implications. It also provides suggestions for further research and concludes on the usefulness of TPB in predicting entrepreneurial intent.

CHAPTER 2: LITERATURE REVIEW

This chapter provides a critical discussion of the literature informing this research. It seeks to review and evaluate the theory and research upon which this study is based. The chapter is presented in four parts. The first part examines the independent variable in this study, entrepreneurial intent, and examines the application of the construct in previous research. The second part deals with the theory of planned behaviour (TPB), and examines the theory as an approach to predicting entrepreneurial intent. The literature supporting the link between TPB and entrepreneurial intent is examined and critically reviewed. The final section explores other independent variables that have been used in the prediction of entrepreneurial intent, such as personality traits, situational variables, exposure to entrepreneurship variables and demographic variables. The supporting literature is examined and reviewed, and the usefulness of these variables in explaining entrepreneurial intent is critically evaluated.

The search strategy for this literature review was two-pronged. First, relevant searches were conducted using online database hosts, primarily EBSCO and Emerald, focusing initially on the most recent papers in the field. Significant studies were then downloaded from the sites or retrieved from local and national libraries. Second, important references from the seminal studies were obtained from the same sources (e.g. Ajzen, 1991; Autio et al., 2001; Krueger et al., 2000); in what was essentially a snowball approach.

Entrepreneurial Intent

Bird (1988) defined intent as a state of mind that directs a person's attentions towards a specific goal in order to achieve something. Ajzen (1991) made the assumption that intentions capture the motivational factors that influence a behaviour: "they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior" (p. 181). He stated further that, as a general rule, the stronger the intention to engage in a certain behaviour, the more likely that behaviour will take place (Ajzen, 1991). Of

course intentions interact with ability, opportunity and resources (e.g. time, money, assistance) in predicting the behaviour (Ajzen, 1991). According to Krueger et al. (2000), intentions are the best predictor of any planned behaviour; including entrepreneurship. Sheppard, Hartwick and Warshaw's (1988) review of the theory of reasoned action literature also evidences that intentions successfully predict behaviour.

Ajzen and Fishbein (1980) and Ajzen's (1991) seminal works on intentions and behaviour prediction formed the basis for many subsequent studies concerning the relationship between intentions and behaviour. The success of these studies spurred researchers in the field of entrepreneurship to consider intentions as a predictor of entrepreneurial intent (e.g. Bird, 1988; Krueger & Carsrud, 1993; Krueger et al., 2000). Studies in the field of entrepreneurial intent emphasized the intentional, expectancy-driven and situational nature of the entrepreneurial decision (Autio et el., 2001). For example, Krueger et al. (2000) argued that the decision to start a new business is a planned and intentional process, and therefore, merits attention from an intentions-based perspective.

Some approaches to measuring entrepreneurial intent have focused on the career choice intentions of students, as well as the likelihood of them starting their own business. Kolvereid (1997) and Tkachev and Kolvereid (1999) employed an almost identical three-item measure to assess what they called 'employment (or occupational) status choice intentions'. Of the three questions, one item asked respondents: 'If you could choose between being self-employed and being employed by someone, what would you prefer?' (1=Would prefer to be self-employed; 7=Would prefer to be employed by someone). The remaining two items inquired how likely it was that the respondent would choose a career as self-employed and employed respectively. The average score of these three items was then taken as an index of employment status choice intentions. This construct therefore has imbedded in it a measure of preference for entrepreneurship.

Cone and Foster (1993) warn that single-item measures of a construct are "notoriously unreliable". Yet entrepreneurial intent has often been measured using only a single item. For example Krueger (1993a) simply asked the question: 'Do

you think you'll ever start a business?'; requiring a dichotomous yes/no response. Krueger et al. (2000) used a single probability item that asked respondents to: 'Estimate the probability you'll start your own business in the next five years'. Lüthje and Franke (2003) also used a single item consisting of a 1-4 scale (1=very probable; 4=very probable), where respondents indicated their intentions to become self-employed by answering the question: 'Do you plan to be self-employed in the foreseeable future after you leave the MIT?' Autio et al. (2001) used a multiple item scale of entrepreneurial intent that averaged the intention to start a business part-time or full-time, within one year or in or five years. The scale was a more complex indication of employment intentions, compared to a single item measure.

Entrepreneurial intent is often approached as a dependent variable in studies using theories of reasoned action or planned behaviour (Ajzen's theory of planned behaviour for example), where personality traits, demographic variables and others are only considered to impact on intentions indirectly. However, several studies have considered the direct effects of personality traits, demographics, prior exposure to entrepreneurship and contextual elements on entrepreneurial intention (e.g. Kolvereid, 1996; Mazzarol, Volery, Doss & Thein, 1999; Lüthje & Franke, 2003; Kristiansen & Indarti, 2004; Segal, Bogia & Schoenfeld, 2005). The following sections review the theoretical underpinnings and empirical support for the theory of planned behaviour and other approaches to predicting entrepreneurial intent.

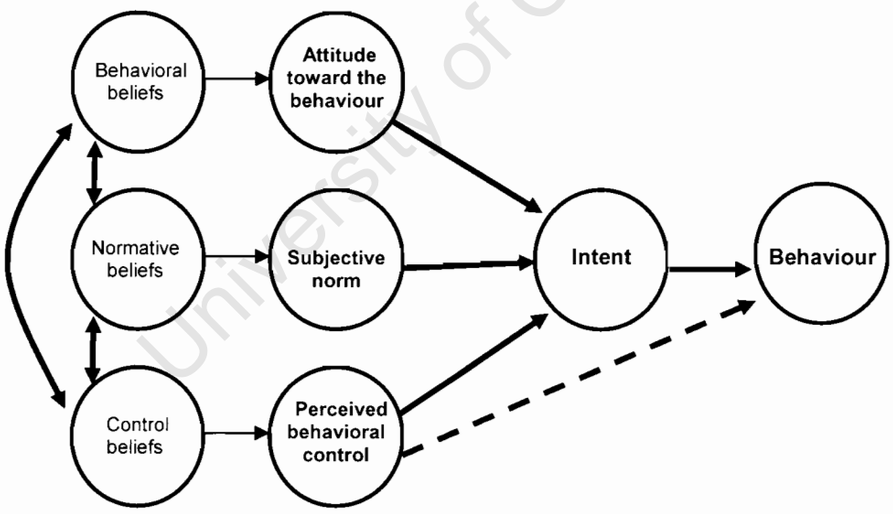
The Theory of Planned Behaviour

The theory of planned behaviour (Ajzen, 1988; 1991) posits three separate antecedents of intention (see Figure 1). The first is the attitude toward the behaviour. This refers to how favourable an appraisal a person has of the behaviour and depends on expectations and beliefs about personal impacts of outcomes resulting from the behaviour. Ajzen (1988) termed these salient beliefs 'behavioral beliefs'. These beliefs underlie the attitudes towards the behaviour, and are influenced by the strength of the association between the behaviour and the outcomes. The behavioural belief is the subjective probability that the behaviour

will result in a certain outcome, and along with the perceived value of the outcome, determine the attitude toward the behaviour (Ajzen, 2005).

The second predictor of intentions is subjective norm, and refers to the perceived social pressure to perform the behaviour. These pressures stem from what important people in the person's life think about the particular behaviour. These influential people serve as reference guides to behaviour, and are hence termed 'referents' (Ajzen, 1988). Referents influence beliefs which underlie subjective norms. Ajzen (1988) termed these beliefs 'normative beliefs'. Normative beliefs refer to the perceived behavioural expectations of the important referents in the individual's relevant context (Ajzen, 2005). Referents could therefore be family, friends, colleagues, doctors or any person with perceived importance to the individual, depending on the behaviour and sample under investigation. The normative beliefs, weighted by the motivation to comply, are assumed to determine subjective norm. Ajzen (2005) explains that the motivation to comply with each referent contributes to the subjective norm in direct proportion to the strength of the person's subjective probability that the referent thinks the person should perform the behaviour in question.

Figure 1. The Theory of Planned Behavior (Adapted from Ajzen, 2005)



The third predictor of entrepreneurial intent is perceived behavioural control, which refers to the perceived ease or difficulty of performing the behaviour. Actual and perceived personal inadequacies and external obstacles can interfere with the ability to perform a given behaviour, and thus with the perception of the control that one has over the action and outcomes of the behaviour. These 'control beliefs' Ajzen (1988) underlie perceptions of behavioural control. They are the perceived presence of factors that may impede or aid the enactment of a particular behaviour. They are presumed to reflect past experience as well as anticipated obstacles (Ajzen, 1988). The control beliefs, in combination with the perceived power of each control factor, determine the prevailing perceived behavioural control (Ajzen, 2005). The construct is similar to Bandura's (1982) concept of perceived self-efficacy, in which people's behaviour is greatly influenced by their confidence in their ability to perform it (Ajzen, 1991; Krueger et al., 2000).

According to Ajzen (1991) the three antecedents work together in predicting intent. The more favourable the attitude and the social norm toward the behaviour, and the greater the perceived control of behaviour and its outcome, the stronger the intention to enact the behaviour should be. While attitude toward the behaviour and social norm are expected to influence intent, it is perceived behavioural control that is seen as decisive for action. If a person does not perceive to have control over the behaviour and its outcomes, then intent to perform that behaviour is unlikely, even if the person has a positive attitude toward the behaviour and perceives positive social norms related to that behaviour. In as much as behavioural intentions are intentions to *try* and perform the behaviour, *actual* behavioural control plays a direct role in the enactment of the behaviour.

Ajzen (2002c) noted that it is important to distinguish perceived behavioural control from other conceptions of control; dedicating a whole article to this topic. He particularly distinguishes perceived behavioural control from the concept of 'locus of control'. While perceived behavioural control is linked to a particular behaviour and usually varies across situations, locus of control is a "generalized expectancy that remains stable across situations and actions" (Ajzen, 1991). By way of explanation, Ajzen (1991) suggested, "a person may believe that, in general, her outcomes are determined by her own behavior (internal locus of control), yet at the

same time she may also believe that her chances of becoming a commercial airplane pilot are very slim (low perceived behavioral control)" (p.183).

The theory of planned behaviour (TPB) is a progression on the theory of reasoned action developed by Ajzen and Fishbein (1980). The theory of reasoned action was developed explicitly to deal with volitional behaviours (Ajzen, 1988). However in many situations success will also depend on non-motivational factors such as the availability of requisite opportunities and resources for the behaviour to take place. TPB takes this into consideration by introducing situations where a person has "incomplete volitional control", that is, situations in which one cannot decide at will whether to enact a certain behaviour or not (Autio et al., 2001). For an individual to make a decision in these types of circumstances he or she needs to experience a certain degree of actual or perceived control over the behaviour and its outcomes. The individual needs to feel confident that the behaviour is possible (the theory of reasoned action presumes this) and that the end result will be positive as intended (Autio et al., 2001). TPB takes these perceptions of control into account when predicting behavioural intent.

When using TPB to predict intentions, Azjen (2005) suggests using direct measures of attitude toward the behaviour, subjective norm and perceived behavioural control. Although measures of behavioural beliefs are assessing the same underlying construct, intent itself is measured directly, and thus for consistency direct measures are preferred. According to Ajzen (2005) not all the components of TPB need to be significant to successfully explain intentions. If a regression analysis shows that one of the components does not make a significant contribution to the explanation of intent, then for that particular behaviour and population that factor in question (assuming a reliable scale) is not an important consideration in the formation of intent. The relative importance of the three components is likely to change from one population to another, and there is nothing in the theory to suggest that all three components will make a significant contribution (Ajzen, 2005).

TPB is expected to account for 'external factors' that may influence intent, such as demographics and context factors (Ajzen, 2005). Attitude toward entrepreneurship,

subjective norm and perceived behavioural control are expected to account for the influence of external factors. If external factors are important, it is thought that their influence will impact on one or more of the antecedent predictors, and therefore indirectly on intent. If this is the case, then the theory accounts for all influential factors through its antecedents, and can therefore be said to be sufficient. According to Azjen (2001) "a model that is sufficient contains all important variables in the set of determinants, and thus accounts for all non-error variance (p. 202). If, on the other hand, "external factors are found to have a significant residual effect beyond the predictor values contained in the model, then it would suggest the presence of other factors that have not been accounted for" (Ajzen, 2001: 202). Azjen (2001) recommended including external factors to the model of TPB to test its sufficiency. Tkachev and Kolvereid (1999) did just that, including family background, gender and self-employment experience to the TPB model. They found that the external factors added nothing to the explanation of the variance in entrepreneurial intentions, thus confirming the sufficiency of TPB.

The Theory of Planned Behaviour as Predictor of Entrepreneurial Intent

The theory of planned behaviour has been used to test and predict a range of human behaviour, from voting decisions to drinking problems (see Ajzen, 1991 for a review of the studies). Most of these studies were able to use the three predictors from the theory of planned behaviour to account for a considerable amount of variance in intentions (Ajzen, 1991). Almost all the studies showed that attitudes toward the behaviour and perceived behavioural control made significant contributions to predicting intent, while results for subjective norm were less conclusive for some studies (Ajzen, 2001).

In an entrepreneurial context TPB, along with approaches based on this theory, have been used successfully to predict entrepreneurial intent. Kolvereid (1996) used the theory of planned behaviour to predict the employment intentions of undergraduate business students in Norway. He focused on students' choice between becoming self-employed or becoming a salaried employee. He also investigated the role of family background, gender and prior self-employment

experience (demographic variables) on career intentions. Kolvereid (1996) employed a 'perceived values' approach to compiling a score of attitude towards self-employment. He constructed items for two respective indices that indicated respondents' preferences for self-employment and preferences for organisational employment. The difference between the self-employment index and the organisational employment index was the final attitude measure. Kolvereid (1996) measured subjective norm with three Likert-type items that asked respondents whether they believed people close to them ('closest family', 'closest friends' and 'people who are important to me') think that they 'should' or 'should not' pursue a career as self-employed (1=should not; 7=should). They included a corresponding three-item 'motivation to comply' component that gauged the influence of each group. The initial subjective norm items were recoded into bipolar scales and multiplied with the respective motivation to comply item, and the scores added to obtain an overall score of subjective norm. Six items were used to measure perceived behavioural control. The items investigated the perceived difficulty of being self-employed, perceived control over the situation, and the perceived likelihood of success.

Kolvereid (1996) found that the three antecedents to intentions proposed by TPB, namely, perceived behavioural control, subjective norm, and attitude toward the behaviour, significantly influenced self-employment intentions. There was no direct relationship between the demographic variables and career intention. However Kolvereid (1996) explored the influence of demographics on the components of TPB and found that they did influence intentions indirectly through their effect on attitude, subjective norm and perceived behavioural control.

A similar study was conducted by Tkachev and Kolvereid (1999) with a sample of 512 Russian students from one medical and two technical universities in Russia. They also used the TPB and demographic variables to predict entrepreneurial career intentions. In addition, they tested whether tracking models (an approach that proposes children are greatly influenced by their parental role models, and hence are more likely to intend to become entrepreneurs if their parental role models were entrepreneurs) exerted an influence on self-employment career intentions. The results showed that attitude, subjective norm and perceived

behavioural control determined employment status intentions, not tracking or demographics. Similarly to Kolvereid (1996), Tkachev and Kolvereid (1999) found that demographics and tracking only influenced intentions indirectly to the extent that they affected the three antecedents of intent in TPB.

In an empirical comparison between Ajzen's (1991) theory of planned behaviour and Shapero's (1982) model of the entrepreneurial event (SEE), Krueger et al. (2000) employed a competing models approach to test the relative predictive power of the two theories. Shapero's (1982) model of the 'entrepreneurial event' (SEE) is a similar intentions approach that shares many of the constructs of TPB. Krueger and Brazeal (1994) compared the two theories and found considerable overlaps in their constructs and predictive powers. Shapero's (1982) model also presents three antecedents to entrepreneurial intent; perceived feasibility, perceived desirability, and propensity to act. Perceived desirability and perceived feasibility are very similar to TPB's attitude toward behaviour and perceived behavioural control (Autio et al., 2001). The primary difference between the theories is that the propensity to act in SEE is replaced by subjective norm in TPB, demonstrating TPB's emphasis on the role of prevailing social norms as opposed to SEE's emphasis on the characteristics and previous entrepreneurial experience of the individual (Autio et al., 2001). According to Krueger and Brazeal (1994) and Autio et al. (2001) both theories offer valuable contributions to understanding entrepreneurial intentions by investigating reasoned action.

In their comparison study of TPB and SEE, Krueger et al. (2000) simply asked what the likelihood was that the respondent would start their own business in the next five years, to measure entrepreneurial intent. For the components of TPB they used single items, but also employed multiple item scales to measure the underlying behaviour beliefs, normative beliefs and control beliefs, with which to correlate their direct measures. For subjective norm they investigated the perceived reactions of normative influences (friends, parents/family, mentor/role model, 'significant other') on the respondents' intentions to start a business, as well as the perceived importance of their opinions to measure normative beliefs. This composite measure correlated highly with their direct, single-item measure of 'social norms'. The single item required respondents to rate whether family and

friends would want them to start their own business (on a scale of 1-100). They operationalized perceived behavioural control using a single probability item (scale: 0-100): 'How practical is it for you to start your own business'. Although they used only one direct measure of PBC, they did use a multiple-item scale of self-efficacy (relating to entrepreneurial tasks) as an indirect measure of PBC (control beliefs). This correlated positively with the single direct item. Krueger et al. (2000) used a single probability item (scale: 0-100): 'Is starting your own business an attractive idea to you?' to measure attitude toward entrepreneurship. This correlated highly with their behavioural beliefs construct, 'expected utilities or values'. The index comprised of the sum of the perceived value of five different outcomes of starting a business (autonomy, stress, financial performance, personal satisfaction, personal quality of life), weighted by the expected likelihoods of these occurring. Using a sample of 97 senior university students, they found significant support for TPB, with an adjusted R^2 of 0.35 for the regression of global perceived feasibility (perceived behavioural control), attitude toward the behaviour and social norms (subjective norms) upon intentions. However the social norms component alone was nonsignificant. Shapero's (1982) SEE was found to predict intention with a slightly higher adjusted R^2, and all the components of the model were statistically significant. Krueger et al. (2000) could not confidently isolate reasons for the deficiency of the social norms component of TPB. They tentatively cited possible cultural differences in entrepreneurial traditions and the possibility that entrepreneurs' self-directedness may reduce the impact of social forces.

Autio et al. (2001) used different measures of perceived social norm to investigate institutional situational variables. Their aim was to "develop and test a model that incorporates situational variables, reflected in perceived social norm, that can be manipulated through policy intervention" (Autio et al., 2001: 150). They therefore constructed items that reflected the perceived social norms of the university environment (e.g. "In my university, people are actively encouraged to pursue their own ideas"). In the second phase of their research Autio et al. (2001) employed a separate four-item scale (bipolar: -3=Bad; +3=Good) for MBA students. The first item required students to complete the statement: 'If I became an entrepreneur, my family would consider it to be…' by choosing a value from the scale. The other three items replaced 'my family' with 'my friends', 'my colleagues', and 'other

people close to me' respectively. They used only a single item for attitude toward entrepreneurship, stating evidence of strong construct and criterion validity as their rationale. To measure perceived behavioural control they used four Likert-type items that assessed the perceived ease of starting a business, the perceived chances of success, and the belief that the person possessed the skills to start their own business. To discern entrepreneurial intent they employed a Likert-type scale requiring respondents to rate different types of careers (an entrepreneurial career being one of them, the rest being dummy items). They tested their model of TPB with a sample of 3445 university students chosen randomly from the student populations of universities in Sweden, Finland and the United States, and found support for the theory. All three antecedents in the theory influenced entrepreneurial intent; with perceived behavioural control exerting the strongest influence, and social norms the weakest influence. The researchers modified and expanded their measures of attitudes to entrepreneurship and perceived social norm and tested them on a further sample of 97 MBA students at the London Business School. For this sample, opinions of friends and family were included in the operationalization of social norm, yet no significant influence was observed for social norm. Apart from improved reliability in the scales used for attitudes towards entrepreneurship, the other results were similar to the previous sample. Autio et al. (2001) therefore also raised the issue of the relative inadequacy of the social norm component of TPB to predict entrepreneurial intent. The study highlighted the robustness of the intent approach by showing "remarkable uniformity in the country samples, considering that the samples have been compiled in highly diverse cultural environments". This fact questions Kreuger et al.'s (2000) speculation that cultural differences may account for the low predictive value of perceived social norms in predicting intent.

An altered structural model of TPB was recently proposed and tested by Lüthje and Franke (2003). Consistent with TPB, their approach positions attitude towards entrepreneurship as a direct predictor of entrepreneurial intent. They also position two context variables, perceived barriers and perceived support, as direct predictors of intent. These two context variables, if taken together, are similar in nature to TPB's perceived behavioural control. They also hypothesised that two personality traits, risk taking propensity and internal locus of control, would have a

positive effect on attitude towards entrepreneurship. That is, individuals with a higher risk taking propensity and an internal locus of control are more likely to have a positive attitude towards entrepreneurship. There was no measure of perceived social norm.

The authors tested their approach with a sample of 512 MIT School of Engineering students and found that attitude towards entrepreneurship emerged as the most important antecedent of self-employment intentions. This is in keeping with previous findings on this variable's influence on entrepreneurial intent within TPB. Furthermore, they found that attitude towards entrepreneurship is influenced by the personality of the respondent, and therefore indirectly affects entrepreneurial intent. That is, the model implied that students who are willing to accept risks and perceive control over there own lives have more favourable attitudes towards starting their own business, and therefore more intention to start their own business. They also found that perceptions of entrepreneurship-related barriers and supporting factors contributed a direct explanation for preferred employment status. Students who perceive the business start-up environment as antagonistic (for different reasons) are less likely to want to start their own venture, while students who perceive the business start-up environment as helpful and rich in facilitation, are more likely to want to start their own venture. Based on their findings, Lüthje and Franke (2003) suggest that public and university policy-makers be well advised to implement various programmes to remove the perceived and objective context factors which are adverse to starting a company. They also warn that encouragement offered to students to start up firms will not have the same effects on all students.

Autio et al. (2001) suggested that the theory of planned behaviour, in the context of entrepreneurial situations, is very much in early phase. Although the body of theory is growing, they warn that additional studies are needed to further validate the constructs and demonstrate the robustness of the approach in explaining entrepreneurial intent. Nevertheless, the evidence reviewed here suggests that TPB is a good predictor of entrepreneurial intent.

Proposition 1: The theory of planned behaviour (attitude toward entrepreneurship, subjective norm and perceived behavioural control) will significantly predict entrepreneurial intent.

The Trait Approach

The trait, or personality, approach has sought to define the entrepreneurial personality by directly measuring a variety of personality traits associated with the entrepreneur. In efforts to identify entrepreneurial tendencies, personality research has used ex-post situations, measuring traits in existing entrepreneurs rather than potential ones (Autio et al., 2001), as well as predictive approaches, using entrepreneurial intentions. The identification of entrepreneurial personality characteristics found its primary impetus with three strains of research: 1) the work of McClelland and his colleagues (McClelland, Atkinson, Clark, & Lowell, 1953; McClelland, 1961) on need for achievement; 2) Rotter (1966) and Brockhaus' (1975) work on internal locus of control; and 3) and studies investigating risk-taking propensity (Hull, Bosley & Udell, 1980; Brockhaus, 1982). After a review of the literature on entrepreneurial traits, Koh (1996, as cited in Cromie, 2000), argued that entrepreneurs have "a high need for achievement, an internal locus of control, a moderate orientation towards risk, a high tolerance for ambiguity, a good deal of self confidence, and are innovative" (p.12-13). According to Crant (1996) five attributes have consistently been found to covary with entrepreneurship: need for achievement, locus of control, risk-taking propensity, tolerance for ambiguity, and Type-A behaviour.

Other approaches to personality and entrepreneurship (see Caird, 1993, for a review of some of these approaches) employ well known, general dimensions of personality, such as the "big five" (extroversion, neuroticism, agreeableness, conscientiousness and openness to experience) as applied by Brice (2004) and Singh and DeNoble (2003), and Cattel's 16PF as applied by Boshoff and van Vuuren (1992). However, the focus of the current study, in terms of personality theory, will be on the need for achievement, locus of control, and risk-taking propensity and tolerance for ambiguity because of their wide application to the

entrepreneurial context (Crant, 1996). These constructs, and the literature supporting their relationship with entrepreneur intent, are expounded below.

Need for Achievement

McClelland's (1961; 1965) concept of the need for achievement (nAch) characterises individuals with a high level of nAch as having a strong desire to succeed. People who are high in nAch possess the following attributes: they prefer personal responsibility for decisions; are moderate risk takers as a function of skill; and possess interest in concrete knowledge of results of decisions (Brockhaus & Horwitz, 1986). McClelland asserted that a need for achievement is what drives people to become entrepreneurs. Many studies have investigated the relationship between entrepreneurship and nAch and found that entrepreneurs have a higher need to achieve than do non-entrepreneurs (e.g. Begley & Boyd, 1987; Hornaday & Aboud, 1971; Lagan-Fox & Roth, 1995; Stewart, Watson, Carlund & Carlund, 1998). However Cromie (2000) cited a variety of studies that found no difference between levels of nAch between managers and entrepreneurs, and concluded that it is not clear cut whether nAch distinguishes entrepreneurs from non-entrepreneurs. Measures of nAch have commonly been based on the work of McClellend (1961) and later Lynn (1969). In separate studies of entrepreneurial characteristics Hull et al. (1980) and Littunen (2000) borrowed nAch items from Lynn (1969) and Cassidy and Lynn (1989) respectively. Littunen (2000) observed very low internal consistencies for the components of the nAch construct, while Hull et al. (1980) found that the nAch items did not load onto the nAch scale as expected. These results offer little support for the nAch construct as operationalized by Lynn (1969) and Cassidy and Lynn (1989). Johnson (1990) provides a comprehensive review of studies involving entrepreneurship and nAch. His review revealed a fairly consistent relationship between nAch and entrepreneurship, yet he suggests that nAch needs further investigation with improved measures and methods.

Locus of Control

The concept of locus of control (LoC), as originally posited by Rotter (1966), suggests that an individual perceives the outcome of an event as either within or beyond his or her personal control. According to Rotter (1966), when an individual

interprets the results of his or her actions as contingent on factors beyond their own control, attributing the outcomes to the complexity of surrounding forces (or chance or luck), they are demonstrating a belief in external control - they exhibit an external LoC. If an individual perceives that the outcomes of their actions are contingent upon his or her own behaviour, they are demonstrating internal control - an internal LoC. Rotter also proposed that individuals with an internal locus of control would exhibit a high need for achievement (Brockhaus & Horowitz, 1986). Many studies have found that entrepreneurs have a high internal locus of control, but they are typically not higher than managers within companies (see Jennings and Zeithaml, 1983, for a review of studies using LoC with entrepreneurs).

Studies investigating the LoC of entrepreneurs have attempted to link internal LoC beliefs to an individual's propensity to start a business venture (Brockhaus & Horowitz, 1986; Shaver & Scott, 1991). However, Hull, Bosley and Udell (1980) found no significant difference between internal LoC of entrepreneurs and managers. Brockhaus (1980) found that more successful entrepreneurs (those whose businesses survived over time) held more internal LoC beliefs than unsuccessful entrepreneurs. Levenson (1973) suggested that the external dimension should be split into two sub-dimensions, namely 'chance' and 'powerful others' to specify external influences, while Lee and Tsang (2001) suggested that entrepreneurial research need only consider the internal component.

Propensity for Risk

Risk-taking propensity can be defined as an individual's orientation toward taking chances in a decision-making scenario (Sexton & Bowman, 1985, as cited in Stewart et al., 1998). Entrepreneurship is often highly associated with risk-taking (Brockhaus & Horowitz, 1986), more specifically entrepreneurs are thought to exhibit a higher propensity to take risks than non-entrepreneurs and managers (Hull et al., 1980). Stewart et al. (1998) found support for this in their study of entrepreneurs, small business owners and managers (using Carland, Hoy, Boulton and Carland's, 1984, definitions to differentiate entrepreneurs and small business managers). They found that entrepreneurs scored higher in measures of risk-taking propensity than corporate managers and small business owners. Pearson and Chatterjee (2001) found similar differences between entrepreneurs and non-

entrepreneurs. However, earlier studies by Brockhaus (1980) and Masters and Meier (1988) found no significant statistical difference in general risk patterns between a group of managers and a group of entrepreneurs. The studies, however, each employed different measures of propensity for risk-taking, highlighting the possible impact of using different operationalizations of one construct. Entrepreneurial studies involving the propensity for risk have often used general measures of risk, assessing risk attitudes to a range of situations. For example Masters and Meier (1988) used Wallach and Kogan's (1961, as cited in Masters & Meier, 1988) Choice Dilemma Questionnaire (CDQ), which deals with risk in "everyday life situations" (p.33), to measure propensity for risk. Kogan and Wallach (1964, as cited in Masters& Meier, 1988) observed reliability coefficients of 0.53 for men and 0.62 for women (Spearman-Brown formula) for the construct using this instrument; an internal consistency deemed adequate by the authors. Lüthje and Franke (2003) also employed general measures of risk-taking (e.g. Likert-type item: "When I travel I tend to use new routes") in their three-item index of propensity for risk. While the internal consistency of the scale was acceptable (Cronbach alpha = 0.64), the actual item scenarios were far removed from the risks associated with entrepreneurial activities. Pearson and Chatterjee (2001), on the other hand, used items more readily associated with entrepreneurship. They assessed propensity for risk using three items from the Jackson Personality Inventory (Jackson, 1976, as cited in Pearson & Chatterjee, 2001). The index elicits scores on monetary, physical, social and ethical risk-taking. However Pearson and Chatterjee (2001) selected only the monetary risk-taking items for their study "as they best approximate the reality of business situations" (p. 282).

Tolerance for Ambiguity

Pearson and Chartterjee (2001) defined tolerance for ambiguity as the perceived willingness to deal with uncertainty. A high level of tolerance for ambiguity has been identified as a possible trait associated with entrepreneurial behaviour (Mazzarol et al., 1999). Schere (1982, as cited in Mazzarol et al., 1999) found that managers and entrepreneurs can be distinguished by their level of tolerance for ambiguity. Pearson and Chartterjee (2001) claimed there is "anecdotal evidence that entrepreneurs express greater ambiguity tolerance than either senior executives or general managers" (p. 277), and used the construct in distinguishing

between entrepreneurs and non-entrepreneurs. Krueger (1993b) tested whether students who were exposed to entrepreneurship while growing up displayed higher levels of tolerance for ambiguity and entrepreneurial intent. He found that both tolerance for ambiguity and entrepreneurial intent were higher amongst students who were exposed to entrepreneurship while growing up.

McClelland (1961) suggested that people with high nAch and an internal LoC, not uncommon for entrepreneurs (as discussed above), actually have moderate risk-taking propensity. The apparent paradox is resolved by Brockhaus and Horowitz (1986):

> Entrepreneurs have such a high belief in their ability to influence the achievement of business goals that the perceived possibility of failure is relatively low. Thus, the entrepreneur's perceived level of risk is correspondingly lower than that of a non-entrepreneurial personality. (p. 29)

The support for the four personality factors discussed here is mixed. Although some theorists claim that the trait line of research has long ago reached a saturation point in terms of predictive value (Autio et al., 2001; Gartner, 1988), and that there has been a theoretical shift away from examining the characteristics of entrepreneurs (Aldrich & Martinez, 2001), studies employing personality traits in entrepreneurship research continue to be published (e.g. Kristiansen & Indarti, 2004; Segal et al., 2005). Indeed, Llewellyn and Wilson (2003) call for further research investigating the role of personality traits in entrepreneurship before the approach be judged valueless.

Traits as Predictors of Entrepreneurial Intent

Most of the studies on the entrepreneurial personality cited above focused on measuring the traits of *existing* entrepreneurs. A major criticism of the entrepreneurial personality approach is that if focuses on these "ex-post situations", on entrepreneurs who have already started a business (Autio et al., 2001). This approach assumes that the person's traits, attitudes and beliefs are unaffected by the actual entrepreneurial experience itself. Gartner (1989) argued, in his criticism

of the ex-post tendency, that individuals seldom behave consistently in different situations and therefore personality traits are not good predictors of future behaviour. However, many other studies explore the direct influence that personality traits may exercise on entrepreneurial intent. These studies are reviewed below.

McClelland (1965) claimed that a high need for achievement drives people to become entrepreneurs. However there is a lack of empirical evidence in support of this assertion. Kristiansen and Indarti (2004) found that nAch had no significant effect on the entrepreneurial intentions of 251 Norwegian and Indonesian students. They concluded that personality factors only affect entrepreneurial intentions if they affect self-efficacy. Lee and Tsang (2001) investigated whether nAch had any effect on venture growth among Chinese entrepreneurs. They found that nAch had a positive effect on venture growth, along with an internal LoC.

There is at least partial support for a direct relationship between an internal LoC and entrepreneurial intent. Borland (1975, as cited in Hull et al., 1980) found significant differences in LoC between university students (enrolled in business courses) who expected to start a company and those who did not. Similarly, Brockhaus (1975) linked graduate students' (enrolled in an entrepreneurship course) entrepreneurial intentions with high internal LoC beliefs. However the sample was very small (n=20). Brockhaus (1980) compared the locus of control scores collected in 1975 with the success rate of those firms a few years later. The owners of businesses which still existed in 1978 were found to exhibit more internal locus of control than those whose businesses had ceased to exist. Lüthje and Franke (2003) demonstrated that an internal LoC affects entrepreneurial intent indirectly through its affect on attitude toward entrepreneurship, while Pearson and Chatterjee (2001) found that both Australian and Singaporean entrepreneurs displayed higher levels of internal LoC than their non-entrepreneurial counterparts.

There is mixed support in the literature for the relationship between propensity for risk and entrepreneurial intentions. Raijman (2001) surveyed a group of 315 Mexican immigrants in the USA and observed that risk disposition positively affected potential entrepreneurship. Wang and Wong (2004) conducted a large-

scale study on 5317 students from the National University of Singapore. They hypothesised that students with low levels of interest in entrepreneurship would be more risk averse than those from the high interest group. They were unable to demonstrate this statistically and rejected the hypothesis. Their findings may have been compromised by the use of only a single item to measure risk aversion. Segal et al. (2005) tested for a direct positive relationship between an individual's tolerance for risk and his or her intention to become an entrepreneur. They found a significant positive relationship and concluded that a higher tolerance for risk led to a higher likelihood that an individual would engage in entrepreneurial activity. Douglas and Shepard (2002) hypothesised that the less disutility individuals receive from risk, the higher their entrepreneurial intention. They found that those with more positive attitudes to risk displayed higher intentions to be an entrepreneur, confirming their hypothesis.

Bird (1988) suggested that certain personality traits, such as nAch and LoC, predispose individuals to entrepreneurial intent. Yet the evidence based on the studies reviewed here is not conclusive. Hull et al. (1980) suggested that the hunt for personality characteristics that predict entrepreneurial intent has produced inconclusive results, and the search for characteristics that identify entrepreneurial types of individuals continues. Although Ajzen (1991) posited that aggregating specific behaviours across situations may allow researchers to predict behavioural aggregates which represent a more valid measure of the underlying behavioural disposition, he concludes that general personality traits are not a good predictor of *specific* behaviours. According to Ajzen (2005) personality factors are exogenous to the theory of planned behaviour. They are deemed to affect intentions only through their affect on the antecedents in the theory. Therefore if it can be proven that personality factors improve the predictive validity of the theory when they are added as direct predictors, then TPB is not sufficient.

> **Proposition 2**: Personality variables will not add predictive validity to the theory of planned behaviour when predicting entrepreneurial intent.

External Factors

A range of studies have considered situational (contextual) factors, previous exposure to entrepreneurship and demographic variables as independent variables that predict entrepreneurial intent (Davidsson, 1995). Situational variables have included access to financial support and access to business information and expertise through social networks. Exposure to entrepreneurship has included variables such as previous self-employment experience and history of entrepreneurship in the family. Demographic variables applied have included age, gender, ethnicity and previous work experience. Ajzen (2005) considers these factors 'external' or 'exogenous' factors, as they are only thought to influence intent through their influence on perceived behavioural control, subjective norm and attitude toward entrepreneurship. The application of these constructs and their effects on entrepreneurial intent are reviewed below.

Situational Variables

Kristiansen and Indarti (2004) investigated the impact of three contextual factors on entrepreneurial intent: access to capital, availability of business information, and social networks. They constructed a three-item index to measure the construct (which measured perceptions of these context factors) which they termed 'instrumental readiness'. This construct was tested as a predictor of entrepreneurial intent on Indonesian and Norwegian students. In their model, instrumental readiness affected entrepreneurial intentions significantly. Social network size and construction has received wide attention in entrepreneurship research (Greve & Salaff, 2003; Hoang & Antoncic, 2003), and play an important role in the success of new ventures. (Greve, 1995; Jenssen & Greve, 2002). Raijman (2001) investigated the effects of involvement in social networks that involved business as a major concern. Latent entrepreneurs (those who demonstrated entrepreneurial intent) were more involved in networks where 'business' was a main concern, than those not predisposed to entrepreneurship. They also stressed that close social ties (family) provide an important source of financial and non-financial support that might put business ownership within the reach of people with few resources.

Exposure to Entrepreneurship

A number of researchers have reported that prior experience of entrepreneurship leads to entrepreneurial behaviour (Brockhaus & Horwitz, 1986). Phan, Wong and Wang (2002) and Wang and Wong (2004) explored the affect of a family background in entrepreneurship on the intention of students to start their own business. Both studies confirmed that family entrepreneurial background significantly influenced these intentions. These findings are supported by Raijman (2001), although her sample of Mexican immigrants to the USA was clearly a very different group. Borland (1975, as cited in Hull et al., 1980) found that whether or not a student's father had started a company was the most important factor for predicting intention to start a business. Scherer, Adams, Carley and Wiebe (1989) used Social Learning Theory to investigate the link between parental role model and entrepreneur career preferences in university business students. They found that a parent entrepreneurial role model was associated with an increased expectancy for an entrepreneurial career. Crant (1996) also found that students with entrepreneurial parents were more likely to display entrepreneurial intentions.

Tkachev & Kolvereid (1999) found no support for family entrepreneurial background, but did find that previous self-employment experience significantly increased intentions to become self-employed. Similar results were reported by Douglas and Shepard (2002). They found a very weak relationship between previous self-employment and entrepreneurial intentions, and a weak negative relationship between having a self-employed family member and entrepreneurial intent. Krueger (1993b) found that students who reported themselves as having grown up in a family business displayed significantly higher levels of entrepreneurial intent and more positive attitudes toward entrepreneurship.

Demographics

Gender has been shown to exert a significant influence on the prediction of entrepreneurial intent. Singh and DeNoble (2003) analysed data from 342 American university students and their results showed that gender exerted an influence on entrepreneurial intent; males specifically were more likely to show greater levels of entrepreneurial intent. They also found gender to influence entrepreneurial intent indirectly through personality. Crant (1996) also found that

males were more likely to display higher levels of entrepreneurial intent. Phan, Wong and Wang (2002) and Wang and Wong (2004) conducted similar studies at the National University of Singapore on large groups of randomly selected students. Both studies found gender to be a significant influence on entrepreneurial intentions in students. Mazzarol et al. (1999) also found gender to be an important factor in influencing small business start-ups. Kristiansen and Indarti (2004) and Tkachev and Kolvereid (1999) on the other hand found no statistically significant impact of gender on entrepreneurial intent. Wang and Wong (2004) cited mixed results from studies attempting to determine the effect of ethnicity on entrepreneurial intent. However their results showed that ethnicity and citizenship had no impact on students' entrepreneurial intentions.

Regardless of the statistical evidence, Robinson, Stimpson, Huefner, and Hunt (1991) argued that demographic variables are static in nature and cannot be used to predict future entrepreneurial behaviour. He suggests that demographics only affect intent through their affect on attitudes. Krueger (1993b) likewise argued that role models only affect entrepreneurial intentions through their effect on attitudes. In support of these views, Kolvereid (1996) found that family background in entrepreneurship, gender and self-employment experience only indirectly influenced the entrepreneurial intentions of undergraduate students through their impact on the components of TPB (attitudes towards entrepreneurship, social norms and perceived behavioural control). Ajzen (2005) suggests that context variables, exposure to entrepreneurship and demographics are all accounted for by TPB. According to the theory they only influence intent indirectly through their influence on the antecedent components of intent. Therefore if context variables, exposure to entrepreneurship and demographics can be shown to increase the predictive power of TPB, then the sufficiency of the theory is put into question.

Proposition 3: Situational variables will not add predictive validity to the theory of planned behaviour.

Proposition 4: Exposure to entrepreneurship will not add predictive validity to the theory of planned behaviour.

Proposition 5: Demographics will not add predictive validity to the theory of planned behaviour.

Conclusion

According to TPB, exogenous factors, typically person variables (e.g. personality traits and demographics) or situation variables (e.g. economic climate and access to financial support), influence intent indirectly through their influence on attitudes (Ajzen, 2005). Therefore it is only through their effect on behavioural, normative and control beliefs (and therefore attitude toward the behaviour, social norms, and perceived behavioural control) that exogenous factors indirectly impact on entrepreneurial intent. Kolvereid (1996) suggested that TPB passes the test of sufficiency only if it can be shown that demographics and self-employment experience do not contribute directly to the prediction of self-employment. Azjen (1991) similarly suggests that exogenous factors should not add to the predictive capability of TPB. If it can be shown that exogenous factors do add explanation over and above TPB, then the sufficiency of the theory is questionable.

While demographics and context variables may have predictive usefulness themselves, they can also be used to assess the sufficiency of the theory of planned behaviour (Ajzen, 1991). Tkachev and Kolvereid (1999) explain how this is possible:

> If past entrepreneurial behaviour is a significant predictor of behaviour along with attitude, social norm, and perceived behavioural control, this is an indication that additional variables not included in TPB are needed in order to obtain an accurate prediction of the behaviour in question. Provided the theory of planned behaviour passes the test of sufficiency, demographics such as family background, gender, and self-employment experience should not contribute significantly to the prediction of intentions (p. 273).

The same could then be said of other exogenous variables such as personality traits, which, according to TPB, only influence intent indirectly through attitude,

subjective norm, and perceived behavioural control (Krueger & Carsrud, 1993). Therefore studies using TPB may do well to include exogenous variables as a test of the sufficiency of the approach. This would go some way in further validating the approach, as Autio et al. (2001) claim is still necessary.

CHAPTER 3: METHOD

This chapter describes in detail the nature of the chosen methods and participants in the study, the measures and instruments used to test the hypotheses, and the data gathering procedure. The primary foci of this study were to test the explanatory value of a well-tested theoretical framework (the theory of planned behaviour), and then to test it against other approaches (trait approach, situational approach, previous exposure approach, demographics approach). The study utilized a cross-sectional survey design to explain the entrepreneurial intentions of final year commerce students. It does not, therefore, consider entrepreneurial intentions over time. Rather it presents a snap-shot of students' intentions at the time of taking the survey. However a cross-sectional design is appropriate for the purposes of theoretical model testing (Krueger et al., 2000), in this case testing whether TPB can predict entrepreneurial intentions. The research design is based largely on that of previous investigations (e.g. Autio et al., 2001; Kristiansen & Indarti, 2004; Krueger et al., 2000; Lüthje & Franke, 2003).

Participants

Final year commerce students were sampled at two universities in the Western Cape. University A (UniA) is a historically white, advantaged university, while university B (UniB) is a historically black, disadvantaged university. Final year (4th year) Bachelor of Business Science (BBusSci) students at UniA, and final year (3rd year) Batchelor of Commerce (BCom) students at the UniB participated in the study. Survey questionnaires were distributed to 222 UniA BBusSci students attending their 'Business Strategy' class (total registration for the class = 511). Of these, 168 questionnaires were returned; representing a response rate of 75.68%. Three questionnaires were discarded as unusable. The mean age of respondents in the UniA sample was 21 years (range 19-24). The respondents were predominantly male students (56.55%). UniA Business Science students are enrolled in different 'streams' of study within their degree. The different streams include: finance, computer science, marketing, economics, organisational psychology, law, information systems, actuarial science and quantitative finance.

A total of 84 survey questionnaires were distributed to the UniB Batchelor of Commerce students attending their 'Services Marketing and Communication' lecture – a subject that is required in the 3rd year of the degree (210 students were registered for the course). Of these, 79 usable questionnaires were returned; representing a response rate of 94.05%. The mean age of the UniB students was 22 (range 19-35). The sample was predominantly female (62.82%). As with the UniA students, the UniB students are also enrolled in specific programmes within their BCom degree. These programmes include: accounting, economics, management, information systems, and human resource management. The combined sample for both universities was 247 students (see Appendix 1 for further descriptive statistics).

Final year students were sampled because intentional processes are sensitive to initial conditions, and studying existing entrepreneurs introduces biases that censor data unpredictability (Krueger et al., 2000). Focusing on final year students allows for an examination of entrepreneurial intentions prior to actual entrepreneurial activity. Senior students also reveal vocational inclinations at a time when they will soon be required to make important career choices, and such a sample includes subjects with a broad spectrum of intentions and attitudes towards entrepreneurship (Krueger et al., 2000). Autio et al. (2001) suggested that an institutional environment, such as the university environment, reflects social norms which affect the individuals in those environments. Therefore it is beneficial to sample students specifically to measure the impact of the institutional norms on the 'subjective norm' component of the TPB.

Procedure

Students at UniA and UniB were accessed in their core subject lectures. 'Business Strategy' is a compulsory course for UniA final year BBusSci students, and 'Services Marketing and Communication' is a compulsory course for final year UniB BCom students. The lecturers for the respective courses were contacted and the proposed study and procedure explained. Both lecturers agreed to allow time in

their lectures for the data collection. A research ethics form was submitted to the UniA research ethics board and approved before the data collection process. Before the lecture began, in both cases, an overhead was screened which presented the title and aim of the research. The overhead also stressed that participation was voluntary, that students should not put their name on any part of the questionnaire, and that survey responses were completely anonymous and confidential. The lecturer then introduced the research and encouraged students to fill out the forms which were then handed out. The lecturer stressed again that participation was voluntary and that students should not put their name on any part of the questionnaire, as the study was anonymous and confidential. Students completed the questionnaire before the start of the lecture, and either left the questionnaire on their desk or handed it to the lecturer as they left the venue. The questionnaires were then collected at the end of the lecture.

Measures

The measures used in this study have been adapted from previous studies investigating the same phenomena. Most studies reviewed made use of the Likert-type items (either seven-point or five-point scale), and the majority of the constructs in the current study are operationalized as the mean score of multiple Likert-type questions on a 1-5 scale (1='strongly disagree'; 5='strongly agree'). According to Ajzen (2005) there is "nothing sacred" about a 7 a seven point scale as opposed to a 5 point scale and it is up to the researcher to choose more or less scale points. The specific operationalizations of the dependent variable (entrepreneurial intent) and the constructs within the independent variables (TPB, trait variables, situational variables) are detailed below. Single-item measures of constructs were avoided.

Entrepreneurial Intent

In this study, entrepreneurial intent is measured using Autio et al.'s (2001) four-item measure of entrepreneurial intent (see Appendix 2). Each statement assesses the perceived likelihood of an individual to start a business, either part-time or full-time, and either within one or five years from the time the survey was conducted. Autio et al. (2001) observed a Cronbach alpha of 0.82 for their scale with a large random

sample of American, Scandinavian and British students from 4 different Universities. The four items are measured on a 1-5 scale in response to the question: 'How likely is it that you will start a firm of your own or with friends?' (1=Not likely at all; 5=Already started a firm). The variable is measured as a mean of the four construct statements. The index is essentially a sum of the 'likelihoods' (part-time versus full-time; short-term versus long-term) of starting a business. The term 'firm' was replaced with 'business' to be more relevant to South African students. Krueger et al.'s (2000) single probability item ('Estimate the probability you'll start your own business in the next 5 years') was also included in the questionnaire as a check on convergent validity of the construct. The 4-item summary measure was expected to correlate positively with this item.

The Theory of Planned Behaviour

In this study the three antecedent components of TPB, attitude toward the behaviour, subjective norm and perceived behavioural control, are used to predict entrepreneurial intent. The following sections detail the scales used to measure each of these constructs (see Appendix 2 for details of all items and scales included in the operationalization of each variable).

Attitude toward entrepreneurship. The index for attitude toward entrepreneurship in this study comprised of Autio et al's (2001) career desirability scale as well as their additional single item investigating the specific desirability of entrepreneurship as a career. The career alternative item was scored on a -3 to 3 bipolar scale (-3=not at all desirable; 3=highly desirable) as Autio et al. (2001) employed it in their follow-up study of MBA students (Cronbach alpha = 0.76). The item required students to rate the desirability of different career options. According to Ajzen (1991) attitudes are usually assumed to form a bipolar continuum, thus the bipolar scale is particularly appropriate for this attitudinal construct. This study also adopted Krueger et al.'s (2000) probability statement: 'Is starting your own business an attractive idea to you?' (scale 0-100) as a check on the attitudinal scales. In theory there should be a strong positive correlation between this item and the other attitudinal items.

Subjective Norm. In the current study a scale of subjective norm was composed by adapting items from Autio et al. (2001). Both scales from Autio et al. (2001) were included (four-item scale used with an undergraduate sample, Cronbach alpha = 0.70; and a four-item scale used with an MBA sample, Cronbach alpha = 0.80), with minor adjustments and omissions. One of the items measuring the subjective norm based on the university environment was not included ('I know many people in my university who have successfully started their own firm'). For the remaining three items the term 'firm' was replaced with 'business' (to be more relevant to South African students), and the university context was made more immediate by replacing the general reference to 'my university' with either 'At UniB' or 'At UniA'.

One item from the Autio et al. (2001) scale used with the MBA sample was omitted. This item refereed to respondents' 'colleagues', which was suitable for the MBA sample who would most likely be working full-time, but not suitable for undergraduates who may not be working at all. The remaining three questions were taken verbatim; however the response scale was slightly altered. The scale rating was changed from 'Bad/Good' to 'Not at all desirable/Highly desirable', maintaining the bipolar (-3 to +3) format. This format is consistent with Autio et al.'s (2001) measures of 'attitude toward entrepreneurship', which were also adopted for this study. Krueger et al.'s (2000) single probability item: 'Would family and friends want you to start your own business?' (scale: 0-100) was also included in the study as a check on the subjective norm scale. This item was expected to correlate positively with the subjective norm scale.

Perceived Behavioural Control. Perceived behavioural control was operationalized according to Autio et al. (2001), who compiled a four-item measure for the construct. As recommended by Ajzen (2002) the items attempt to gauge peoples' confidence that they will be able to perfom the behaviour. The items were scored on a five-point scale (1 = Strongly disagree; 5 = Strongly agree). They observed a Cronbach alpha of 0.75 for this construct. The only amendment to the items for the current study was the replacement of the term 'firm' with the term 'business', for reasons already stated above.

Traits

Four constructs were included in the study to represent trait theory. These constructs were: need for achievement, locus of control, propensity for risk and tolerance for ambiguity. The operationalization of each of these variables is detailed below. The specific items and scales that comprise each variable are detailed in Appendix 2.

Need for Achievement. Three items were borrowed from Lee and Tsang's (2001) index of nAch (Cronbach alpha = 0.81), and four items from Kristiansen and Indarti's (2004) index of nAch (Cronbach alpha not stated, but authors noted that only their index for LoC showed an alpha of lower than 0.50), to form a composite measure. Both studies investigated the role of nAch as a personality variable that impacted on entrepreneurial intent or behaviour. Both indexes consisted of seven-point Likert-type items (1=strongly disagree; 7=strongly agree), and were altered to five-point items for the present study.

Locus of Control. For this study, three of the internal LoC items from Lee and Tsang (2001), originally from Levenson (1977, as cited in Lee & Tsang, 2001), were borrowed to form an index of LoC (see Appendix 1). Lee and Tsang (2001) obtained an alpha of .85 for their full model of LoC. Two of the items also appear in Littunen's (2000) four-item, Likert-type scale of LoC. The items in the current study were scored on a five-point Likert-type scale (1=strongly disagree; 5=strongly agree).

Propensity for Risk. The current study adopted Pearson and Chatterjee's (2001) four-item scale of propensity for monetary risk-taking, which they based on the Jackson Personality Inventory. The seven-point scale was adjusted to a five-point scale for consistency in the questionnaire. While Pearson and Chaterjee (2001) reverse scored two items, in this study the non-reverse scored item was re-worded so that all the items were to be reversed to obtain a score of propensity for risk. The term 'stocks' was replaced with the term 'shares', to be relevant to South African respondents.

Tolerance for Ambiguity. Tolerance for ambiguity was measured using Pearson and Chatterjee's (2001) three-item Likert-type scale. Their index was drawn from the Budner Scale of Tolerance (Budner, 1962), which measures respondents' perceived willingness to deal with uncertainty. The scales were adjusted from seven-point to five-point items (1=strongly disagree; 5=strongly agree) for consistency with the rest of the questionnaire. While Pearson and Chaterjee (2001) reverse scored two items, in this study the non-reverse scored item was re-worded so that all the items had to be reversed to obtain a score of tolerance for ambiguity.

Other Independent Variables

Much like personality traits, other external variables, such as, instrumental readiness, social support, demographics, and exposure to entrepreneurship are considered to be accounted for by TPB, in that they are seen to influence intention through their impact on attitudes, subjective norm, and perceived behavioural control (Ajzen, 2005). The operationalization of instrumental readiness and social support is detailed below, along with a review of the demographic items and items concerning prior exposure to entrepreneurship (see Appendix 2 for the specific items and scales included in the operationalization of each variable).

Instrumental Readiness and Social Support. Kristiansen and Indarti's (2004) instrumental readiness construct and index was included in the current study. The scaling was altered to a five-point measure (1=strongly disagree; 5=strongly agree), and the item assessing the perceived availability of business information: 'I have access to supporting information to start to be an entrepreneur' was changed to: 'I have access to supporting information to help me start a business', to improve the semantic clarity of the item. Otherwise the index was unchanged.

While there is an element of social support in instrumental readiness (social networks), it does not explore close social support in any detail. Therefore a specific index was compiled for this construct (see Appendix 1). The index consists of two items inquiring whether the respondent could rely on parents or close family for business advice and information and start-up capital, and one item inquiring whether they could rely on friends for business advice and information.

Exposure to Entrepreneurship and Demographics. Exposure to entrepreneurship was measured by asking the students whether they had ever started their own business (dummy variable, yes = 1; no = 0), whether one or both of their parents owned a business while they were growing up (dummy variable, yes = 1; no = 0), and whether any of their close relatives own and run a business (dummy variable, yes = 1; no = 0). Demographic information was requested from respondents in order to test whether demographic variables contributed to predicting entrepreneurial intent. Demographic details requested in this study were: gender, age, race, nationality, home language, major stream of study, years of working experience (small and large firms), current employment status.

CHAPTER 4: RESULTS

The following sections present the results of the analyses carried out on the data. The data were analysed using the statistical programme *Statistica 7*. The initial analyses involved testing the dimensionality of the scales through factor analysis, and testing the reliability of the scales through reliability analysis (Cronbach alphas). Correlation analysis was conducted to identify relationships between the construct variables, and regression analysis was conducted to measure the effectiveness of the various approaches and their components in predicting entrepreneurial intent. To test the sufficiency of TPB, two-step hierarchical regressions were conducted. Each hierarchical regression involved TPB and a different approach to predicting entrepreneurial intent. The robustness of TPB is also tested by comparing different groups within the sample.

Initial Analysis

Dimensionality of the Scales

All of the summary scales representing the independent variables were entered into a factor analysis to test the dimensionality of the constructs. The factor analysis resulted in 9 separate factors, corresponding to the nine conceptual variables represented by the items. The dependent variable (*entrepreneur intent*) was entered into a separate factor analysis.

Entrepreneurial Intent. All four items loaded onto one factor (see Table 1). Three of the items loaded above .77 on the factor; however one item loaded at .50. Although this is a comparatively low loading, it is a significant and acceptable loading for a sample size of over 120 (Hair, Anderson, Tatham & Black, 1998). Therefore the item was retained as part of the summary variable.

Theory of Planned Behaviour. All the items for *subjective norm*, *university subjective norm* and *attitude towards entrepreneurship* loaded significantly on respective factors (see Table 2). All the factor loadings were significant. Three out of the four items for *perceived behavioural control* loaded onto one separate factor,

however one item clearly loaded with *attitude toward entrepreneurship*, and was therefore dropped. The *subjective norm* construct was initially conceptualised as a combination of Autio et al.'s (2001) university environment subjective norm and general subjective norm. However when entered into the factor analysis, the three items regarding the university environment loaded on one factor, and the three items regarding respondents beliefs about what close people would think loaded onto a separate factor. Thus two separate summary variables emerged: '*university subjective norm'* and '*subjective norm'*.

Trait and Situational Constructs. The *LoC* and *tolerance for ambiguity* items loaded clearly onto two separate factors. However the seven items in the original *need for achievement (nAch*) scale did not load on the same factor (see Table 2). As a consequence three items were dropped from the *nAch* index as these three items did not load clearly onto a factor, and did not, together, contribute additional conceptual meaning to the construct. The remaining four items loaded onto one factor, with significant loadings. Two of the three items representing *propensity for risk* loaded onto a separate factor, yet one item loaded significantly with the *tolerance for ambiguity* items and not with the *propensity for risk* items. That item was therefore dropped. The items representing the situational constructs, *instrumental readiness* and *social support,* loaded adequately onto respective factors.

Table 1
Factor Analysis: Dependent Variable (Entrepreneurial Intent)

Variables	**Factor 1**
E_Intent1	**-0.775**
E_Intent2	**-0.821**
E_Intent3	**-0.819**
E_Intent4	-0.499
Explained Variance (Eigenvalue)	2.196
Prp.Totl	0.549

Note: Loadings marked in bold are > .5
Extraction method: Principal components
Casewise deletion of missing data

Table 2

Factor Analysis: Theory of Planned Behaviour, Trait Variables and Situational Variables

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8	Factor 9
PBC1	.193	.067	.073	.099	-.011	.109	**.746**	.001	.211
PBC2	.084	-.030	.119	.030	.124	.080	**.683**	.115	-.058
PBC4	.196	.020	.033	.174	.081	.014	**.626**	.180	.371
SubNorm4	**.804**	-.037	.130	.129	.056	.047	.201	.023	.143
SubNorm5	**.880**	-.122	.023	.048	.088	.067	.070	.057	.103
SubNorm6	**.882**	-.032	.031	.082	.095	.117	.131	.099	.097
SubNorm1_Univ	.031	-.157	-.035	.091	**.817**	-.015	.159	.025	.135
SubNorm2_Univ	.111	.016	.076	.039	**.727**	.062	-.038	.112	-.038
SubNorm3_Univ	.059	-.088	-.009	.000	**.770**	.067	.046	.031	.028
Att1	.362	.077	.097	.079	.039	.019	.353	.091	**.622**
Att2	.127	-.033	.055	-.020	.063	.084	.084	.013	**.827**
nAch2	-.002	-.135	.098	**.656**	.150	.039	.176	.188	-.143
nAch3	.132	.116	-.153	**.629**	-.136	.090	.241	.141	.009
nAch4	.148	.021	.064	**.765**	-.018	-.019	-.150	.051	.158
nAch5	.013	-.022	-.027	**.716**	.136	.177	.068	-.149	.013
LoC1	.048	-.104	-.033	.157	.203	**.663**	.122	-.120	-.111
LoC2	.094	.059	-.014	.072	.065	**.803**	.095	.047	.092
LoC3	.072	.030	.143	.025	-.120	**.726**	-.022	.234	.118
Ambig1	-.089	**.697**	.102	-.037	-.139	.024	.024	.008	-.153
Ambig2	.001	**.799**	-.019	.128	-.003	-.001	-.083	-.072	.051
Ambig3	-.073	**.776**	-.073	-.117	-.073	-.027	.124	.083	.107
Instr_Read1	-.010	.262	.316	-.061	-.117	-.001	.349	**.501**	-.277
Instr_Read2	.096	.044	.180	.121	.110	.006	.102	**.743**	-.030
Instr_Read3	.048	-.078	-.046	.003	.089	.163	.114	**.787**	.171
Soc_Support1	.021	.034	**.846**	.013	-.020	.092	.100	.074	.116
Soc_Support2	.096	-.005	**.850**	-.082	.026	.015	.185	.061	-.023
Soc_Support3	.130	-.059	.475	.204	.102	-.068	-.177	.402	.061
Explained Variance	2.553	1.918	1.933	2.137	2.026	1.750	2.022	1.838	1.560
Eigenvalue	4.853	2.511	1.994	1.911	1.560	1.458	1.233	1.176	1.042
% Total variance	17.973	9.298	7.387	7.076	5.778	5.399	4.568	4.356	3.859

Note: Loadings marked in bold are > .5 extraction method: Principal components; varimax normalized.

Cumulative Eigenvalue = 17.737; cumulative % variance = 65.694; Casewise deletion of missing data

Reliability of the Scales

Entrepreneurial Intent. The *entrepreneurial intent* construct displayed adequate internal consistency (standardized alpha = .713; average inter-item correlation = .396; n = 241).

Theory of Planned Behaviour. All the TPB summary variables, *perceived behavioural control* (standardized alpha = .678; average inter-item correlation = .419; n = 245), *attitude toward entrepreneurship* (standardized alpha = .622; n = 245), *subjective norm* (standardized alpha = .877; average inter-item correlation = .709; n = 243), *university subjective norm* (standardized alpha = .709; average inter-item correlation = .453; n = 246) displayed adequate internal consistency. All the construct measures displayed inter-item correlations of above .30, which is a desirable minimum (Hair et al., 1998).

Trait and Situational Constructs. The trait summary variables displayed lower reliabilities overall. *nAch* (standardized alpha = .671; average inter-item correlation = .339; n = 245), *LoC* (standardized alpha = .617; average inter-item correlation = .353; n = 246) and *tolerance for ambiguity* (standardized alpha = .659; average inter-item correlation = .352; n = 240), displayed adequate reliabilities. However, *propensity for risk* (two-items, as one was dropped after the factor analysis) displayed very low internal consistency (standardized alpha = .443; n = 245). Hair et al. (1998) suggest a minimum alpha of .6 for exploratory research, and according to George and Mallery (2003, as cited in Gliem & Gliem, 2003) an alpha of below .5 is unacceptable. The variable was therefore dropped and not included in any further analyses. The situational summary scales, *social support* (standardized alpha = .674; average inter-item correlation = .421; n = 243) and *instrumental readiness* (standardized alpha = .631; average inter-item correlation = .365; n = 246), displayed adequate internal consistency.

Outliers

After checking for outliers using univariate (analysis of standard scores), bivariate (scatterplot analysis, with 95% confidence interval ellipse) and multivariate

methods (analysis of Mahalanobis distances), one case clearly presented extreme values, especially on *nAch*. After an examination of the original questionnaire it was clear that the respondent displayed extreme central tendency bias in his responses. Removing this case produced minimal effects on the summary variable correlations. Overall the trait regression model results are nonsignificant with or without the extreme case. Nevertheless the case was removed from the data set as it was considered unrepresentative of the population (Hair, Anderson, Tatham & Black, 1998).

Correlation Analysis

The means, standard deviations and reliability coefficients (standardized Cronbach alphas) of the summary variables are presented in Table 3, along with the intercorrelations between the variables. As predicted by TPB, *perceived behavioural control* ($r = .396$; $p < .001$), *subjective norm* ($r = .339$; $p < .001$) and *attitude toward entrepreneurship* ($r = .472$; $p < .001$) all displayed significant positive correlations with *entrepreneurial intent*. Autio et al.'s (2001) conception *subjective norm* (university subjective norm) also correlated positively with *entrepreneurial intent* ($r = .159$; $p < .05$), although not strongly. All of these correlations were statistically significant.

The independent variables in TPB all show statistically significant positive correlations with each other. To check for multicollinearity each independent TPB variable was regressed on the other two variables (see Appendix 4). The highest R^2 obtained for these analyses was 0.40 (*perceived behavioural control* regressed on *subjective norm* and *attitude toward entrepreneurship*), which indicates no threat of multicollinearity (Allison, 1999).

Table 3

Correlation Matrix: TPB, Trait and Situational Variables

Variable	N	M	SD	1	2	3	4	5	6	7	8	9	10
1. Perceived behavioural control	245	3.490	0.659	(.68)									
2. Subjective norm	243	5.716	1.030	**.376*** **	(.88)								
3. University subjective norm	246	2.949	0.763	**.188** **	**.200** **	(.71)							
4. Attitude toward entrepreneurship	245	0.011	0.845	**.434*** **	**.440*** **	**.143***	(.62)						
5. Entrepreneurial Intent	241	2.404	0.845	**.396*** **	**.339*** **	**.159***	**.472*** **	(.71)					
6. Need for achievement	245	3.911	0.567	**.246*** **	**.236*** **	.121	.130	**.151***	(.67)				
7. Locus of control	246	3.973	0.636	**.234*** **	**.213** **	.121	**.159***	.051	**.219** **	(.62)			
8. Tolerance for ambiguity	240	2.835	0.823	.048	-.125	-**.202** **	.006	-.015	-.019	-.011	(.66)		
9. Instrumental readiness	246	3.098	0.791	**.315*** **	**.161***	.095	**.139***	**.200** **	**.139***	**.176***	.112	(.63)	
10. Social support	243	3.438	0.826	**.223** **	**.199** **	.082	**.176** **	.098	.065	.122	.003	**.380*** **	(.67)

Note: N = 227; standardized Cronbach alphas shown for each variable

* p<.05 **p<.01 ***p<.001

Casewise deletion of missing data

Of the trait variables, only *nAch* showed a weak, yet statistically significant, positive correlation with *entrepreneurial intent* ($r = .151$; $p < .05$). Surprisingly, *tolerance for ambiguity* was negatively correlated to *entrepreneurial intent*; however this relationship was weak and nonsignificant. Amongst the trait variables only *nAch* and *LoC* were significantly positively correlated ($r = .219$; $p < .01$). None of these correlations were significantly strong enough to suggest multicollinearity (Allison, 1999). Of the situational variables, *instrumental readiness* correlated significantly with *entrepreneurial intent* ($r = .200$; $p < .01$), while social support showed a nonsignificant positive correlation with *entrepreneurial intent*. The two situational variables displayed a statistically significant positive correlation to each other ($r = .380$; $p < .001$), yet not strong enough to suggest multicollinearity.

Regression Analysis

Table 4 shows the results for the regression of *entrepreneurial intent* on TPB. The TPB model consisting of *perceived behavioural control*, *subjective norm* and *attitude toward entrepreneurship* explained almost 28% of the variance in entrepreneurial intent ($R^2 = .279$; $p < .001$). The *attitude toward entrepreneurship* component (beta=.340; $p < .001$) displayed the strongest effect on *entrepreneurial intent*, while the *perceived behavioural control* component (beta=.185; p=.01) and the *subjective norm component* (beta=.129; p=.05) both displayed weaker statistically significant effects. The *subjective norm component* especially displayed a very small influence on *entrepreneurial intent*.

Table 4
Multiple Regression Analysis: Entrepreneurial Intent (TPB)

Variable	Beta	SE	B	SE	t(230)	p-level
Perceived behavioural control	**.185**	.064	.213	.074	2.894	.004
Subjective norm	**.129**	.064	.096	.048	2.016	.045
Attitude toward entrepreneurship	**.340**	.066	.306	.060	5.144	.000

Note: N = 234; R = .528; $R^2 = .279$; adjusted $R^2 = .269$; $F(3,230) = 29.619$; $p < .001$; SE of estimate: .656

Casewise deletion of missing data

Substituting *university subjective norm* for *subjective norm* (Table 5) had little impact on the R^2 for the model (R^2 decreased by .01). Moreover, *University*

subjective norm displayed no statistically significant influence on *entrepreneurial intent* (beta=.056; p=.330).

Table 5
Multiple Regression Analysis: Entrepreneurial Intent (TPB with University Subjective Norm)

Variable	Beta	SE	B	SE	t(232)	p-level
Perceived behavioural control	**.209**	.063	.242	.073	3.315	.001
University subjective norm	.056	.057	.056	.057	0.976	.330
Attitude toward entrepreneurship	**.378**	.062	.342	.056	6.065	.000

Note: N = 236; R = .519; R^2 = .269; adjusted R^2 = .260; F(3,232) = 28.485; p <. 001; SE of estimate: .660

Casewise deletion of missing data

The results of the regression of *entrepreneurial intent* on the trait variables are presented in Table 6. The results indicate that the trait model does not account for a significant explanation of the variance in *entrepreneurial intent* (R^2 = .024; p < .137). This was expected because of the low correlations between the trait variables and *entrepreneurial intent*. Only *nAch* shows a statistically significant, yet small, effect on *entrepreneurial intent* (beta = .138; p = .042); while none of the other components of the trait model display a significant effect.

Table 6
Multiple Regression Analysis: Entrepreneurial Intent (Trait Variables)

Variable	Beta	SE	B	SE	t(230)	p-level
Need for achievement	**.150**	.067	.222	.099	2.248	.026
Locus of control	.015	.067	.019	.088	0.218	.827
Tolerance for ambiguity	-.005	.065	-.005	.067	-0.082	.935

N = 234; R = .154; R^2 = .024; adjusted R^2 = .011; F(3,230) = 1.859; p <. 137; SE of estimate: .841

Casewise deletion of missing data

The results of the regression of *entrepreneurial intent* on the situational variables are presented in Table 7. The results indicate that the situational variables account for approximately 5% of the variance in entrepreneurial intent (R^2 = .053; p < .002). *Instrumental readiness* shows a statistically significant effect on *entrepreneurial intent* (beta = .229; p = .001), while *social support* does not display a significant effect.

Table 7

Multiple Regression Analysis: Entrepreneurial Intent (Situational Factors)

Variable	Beta	SE	B	SE	t(235)	p-level
Instrumental readiness	**.229**	.069	.223	.067	3.321	.001
Social support	.006	.069	.006	.064	0.087	.931

Note: N = 238; R = .231; R^2 = .053; adjusted R^2 = .045; F(2,235) = 6.617; p <. 002; SE of estimate: .749

Casewise deletion of missing data

Table 8 displays the results for the regression of *entrepreneurial intent* on the exposure to entrepreneurship variables. These variables account for approximately 12% of the variance in *entrepreneurial intent* (R^2 = .116; p < .001). Only *self-employment experience* displayed a significant effect on *entrepreneurial intent* (beta = .345; p < .001).

Table 8

Multiple Regression Analysis: Entrepreneurial Intent (Exposure to Entrepreneurship)

Variable	Beta	SE	B	SE	t(230)	p-level
Self-employment experience (0 = no; 1 = yes)	**.345**	.063	.612	.112	5.463	.000
Self-employed parent (0 = no; 1 = yes)	-.034	.064	-.052	.097	-0.535	.593
Self-employed close relative (0 = no; 1 = yes)	-.011	.063	-.019	.112	-0.170	.865

Note: N = 234; R = .340; R^2 = .116; adjusted R^2 = .104; F(3,230) = 10.045; p <. 001; SE of estimate: .723

Casewise deletion of missing data

Table 9 displays the results for the regression of *entrepreneurial intent* on demographic variables. The demographic variables account for 4% of the variance in *entrepreneurial intent* (R^2 = .040; p < .029). Only *gender* (beta = .193; p = .006) displayed a significant, but small, effect on *entrepreneurial intent. Age* and *Race* ('Black' is made up of students who reported their race as 'Coloured', 'Indian' or 'Black' – there was no significant difference in the means between these sub-groups) displayed no significant influence on *entrepreneurial intent.*

Table 9

Multiple Regression Analysis: Entrepreneurial Intent (Demographics)

Variable	Beta	SE	B	SE	t(221)	p-level
Gender (0 = female; 1 = male)	.193	.069	.296	.106	2.799	.006
Age	.000	.067	.000	.041	0.006	.995
Race (0 = black; 1 = white)	.132	.070	.093	.049	1.891	.060

Note: N = 225; R = .200; R^2 = .040; adjusted R^2 = .027; F(3,221) = 3.056; p <. 029; SE of estimate: .758

Casewise deletion of missing data

Hierarchical Regression Analysis

To test whether alternative approaches to predicting entrepreneurial intent added to the predictive validity of TPB, each alternative approach was entered into a separate hierarchical regression model after the TPB variables. If the addition of variables representing an alternative approach results in a significant change in the R^2 of the model, then the additional variables add to the predictive validity of TPB.

The results of the hierarchical regression with trait variables are presented in Table 10. The three TPB constructs were entered into the model first, and accounted for 27.28% of the explained variance in *entrepreneurial intent*. The trait theory variables (*nAch*, *LoC*, and *tolerance for ambiguity*) were added in step two and accounted for a negligible and nonsignificant change in the model (ΔR^2 = .008; p = .488).

Table 10
Hierarchical Regression Analysis: Entrepreneurial Intent (TPB and Trait Variables)

Variable	Step 1	Step 2
Theory of Planned Behaviour		
Perceived behavioural control	**.203****	**.210****
Subjective norm	.116	.117
Attitude toward entrepreneurship	**.329*****	**.332*****
Trait Variables		
Need for achievement		.049
Locus of control		-.085
Tolerance for ambiguity		-.013
R^2	**.273*****	**.281*****
Adjusted R^2	**.263*****	**.261*****
Change in R^2		.008

Notes: N = 230; casewise deletion of missing data
* p<.05 **p<.01 ***p<.001
Regression coefficients are standardized; Beta coefficients are shown for each variable

Table 11 presents the results of the hierarchical regression with situational variables entered in the second step. The TPB explained 28.27% of the variance in *entrepreneurial intent* initially. In the second step *Instrumental readiness* displayed a statistically significant coefficient (beta = .137; p = .029), while *social support* showed no significant explanatory value for entrepreneurial intent. The situational

variables as a whole had no significant additional effect on the regression model (ΔR^2 = .017; p = .071).

Table 11
Hierarchical Regression Analysis: Entrepreneurial Intent (TPB and Situational Variables)

Variable	Step 1	Step 2
Theory of Planned Behaviour		
Perceived behavioural control	**.191*** **	**.163***
Subjective norm	**.130***	**.133***
Attitude toward entrepreneurship	**.339*** **	**.346*** **
Situational Variables		
Instrumental readiness		**.137***
Social support		-.088
R^2	**.283*** **	**.299*** **
Adjusted R^2	**.273*** **	**.284*** **
Change in R^2		.017

Notes: N = 232; casewise deletion of missing data

* p<.05 **p<.01 ***p<.001

Regression coefficients are standardized; Beta coefficients are shown for each variable

Table 12 presents the results of the hierarchical regression with exposure to entrepreneurship variables entered in the second step. *Self-employment experience* (dummy variable: 0 = no; 1 = yes) displayed a highly significant effect on *entrepreneurial intent* (beta = .238; p < .001). The remaining two variables, *self-employed parent* and *self-employed close relative* (dummy variables: 0 = no; 1 = yes), had no significant effect on the model. The exposure to entrepreneurship variables added slight, but significant, explanatory power to the explanatory power of the model (ΔR^2 = .056; p = .004).

The final hierarchical regression included three demographic variables: *gender* (dummy variable: 0 = female; 1 = male), *race* (dummy variable: 0 = black; 1 = white) and *age* in the second step (see Table 13). None of these variables accounted for any significant explanation of the variance in *entrepreneurial intent.* Demographic variables did not significantly impact on the overall predictive power of the regression model (ΔR^2 = .019; p = .350).

Table 12
Hierarchical Regression Analysis: Entrepreneurial Intent (TPB and Exposure to Entrepreneurship)

Variable	Step 1	Step 2
Theory of Planned Behaviour		
Perceived behavioural control	**.197****	**.151***
Subjective norm	**.133***	**.132***
Attitude toward entrepreneurship	**.328*****	**.312*****
Exposure to Entrepreneurship		
Self-employment experience (0 = no; 1 = yes)		**.238*****
Self-employed parent (0 = no; 1 = yes)		-.095
Self-employed close relative (0 = no; 1 = yes)		.005
R^2	**.275*****	**.331*****
Adjusted R^2	**.265*****	**.313*****
Change in R^2		**.056*****

Notes: N = 227; casewise deletion of missing data

* p<.05 **p<.01 ***p<.001

Regression coefficients are standardized; Beta coefficients are shown for each variable

Table 13
Hierarchical Regression Analysis: Entrepreneurial Intent (TPB and Demographics)

Variable	Step 1	Step 2
Theory of Planned Behaviour		
Perceived behavioural control	**.193****	**.169***
Subjective norm	**.133***	**.151***
Attitude toward entrepreneurship	**.327*****	**.316*****
Demographics		
Gender (0 = female; 1 = male)		**.145***
Age		.009
Race (0 = black; 1 = white)		.068
R^2	**.278*****	**.298*****
Adjusted R^2	**.680*****	**.278*****
Change in R^2		.019

Notes: N = 219; casewise deletion of missing data

* p<.05 **p<.01 ***p<.001

Regression coefficients are standardized; Beta coefficients are shown for each variable

The only variables to add significant explanatory power to TPB in any of the hierarchical regressions were *instrumental readiness* and *self-employment experience*. However, only the regression which included *self-employment experience* significantly added to the explanation of variance in *entrepreneurial intent* above TPB variables.

Between Group Differences and the Robustness of TPB

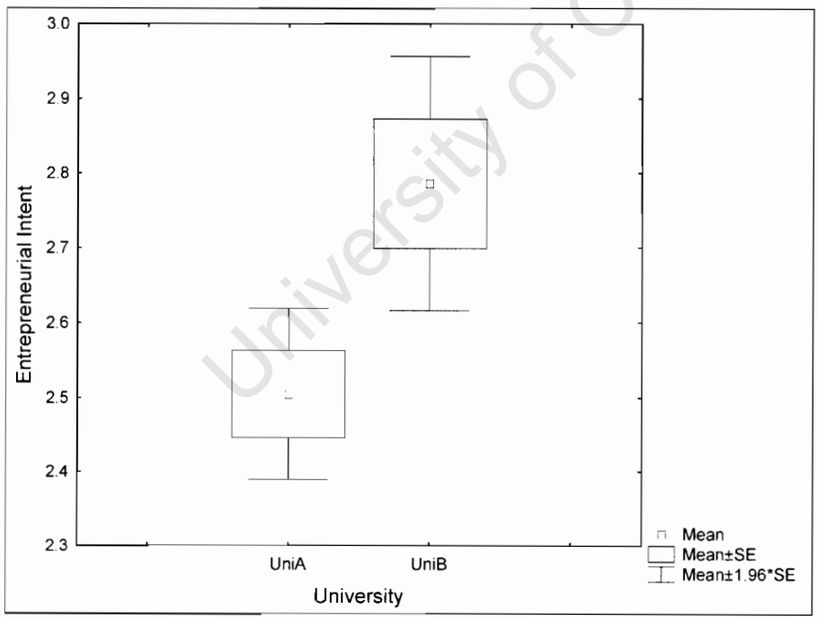
T-tests were carried out to analyse the difference in *entrepreneurial intent* between sub-groups, and regressions were run for sub-groups of the sample to test the robustness of TPB in predicting *entrepreneurial intent*. A t-test for difference in means (see Table 14) revealed that UniB students scored significantly higher on *entrepreneurial intent* than UniA students (t= -2.659; p=. 008). Figure 2 presents this result graphically in a box and whisker plot.

Table 14
T-Test for Difference in Means: Entrepreneurial Intent (University)

	UniA	***UniB***				***Uni A***	***Uni B***	***UniA***	***UniB***		
	M	**M**	**t**	**df**	**p**	**N**	**N**	**SD**	**SD**	**F**	**p var.**
Entrepreneurial intent	2.505	2.786	-2.695	239	**.008**	165	76	0.752	0.757	1.012	.931

As a follow up, *entrepreneurial intent* was regressed on TPB for each student sample separately, to investigate the effect of university. The results of these regression analyses are displayed in Table 15 and Table 16 respectively.

Figure 2. Box and Whisker Plot: Entrepreneurial Intent (University)



The regressions for both samples resulted in statistically significant R^2 values ($p < .001$ in both cases). While the difference between the R^2 values of the university sub-samples is small (.032), the beta values for *perceived behavioural control* and *attitude toward entrepreneurship* differ significantly. *Attitude toward entrepreneurship* explains much more of the variance in the UniA sample (beta = .378; $p < .001$) than *perceived behavioural control* does (beta = .163; p = .028). In the UniB sample *attitude toward entrepreneurship* is statistically non-significant, while *perceived behavioural control* explains more variance than it does in the UniA sample (beta = .291; p = .030). The difference in sample size should be noted for its affect on significance levels. The *subjective norm* component is nonsignificant for both samples.

Table 15
Multiple Regression Analysis: Entrepreneurial Intent (UniA)

Variable	Beta	SE	B	SE	t(154)	p-level
Perceived behavioural control	**.163**	.074	.201	.091	2.220	.028
University subjective norm	.144	.074	.108	.056	1.947	.053
Attitude toward entrepreneurship	**.378**	.075	.347	.069	5.061	.000

Note: N = 158; R = .527; R^2 = .278; adjusted R^2 = .264; F(3,154) = 19.784; p <. 001; SE of estimate: .649

Casewise deletion of missing data

Table 16
Multiple Regression Analysis: Entrepreneurial Intent (UniB)

Variable	Beta	SE	B	SE	t(72)	p-level
Perceived behavioural control	**.291**	.132	.293	.133	2.211	.030
University subjective norm	.069	.131	.051	.097	0.526	.601
Attitude toward entrepreneurship	.211	.144	.182	.125	1.457	.149

Note: N = 76; R = .496; R^2 = .246; adjusted R^2 = .215; F(3,72) = 7.842; p <.001; SE of estimate: .675

Casewise deletion of missing data

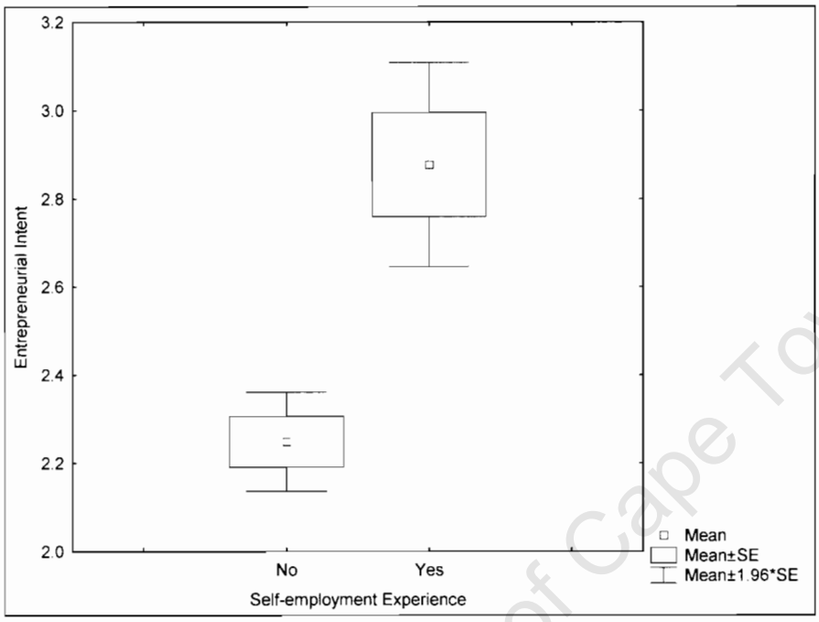
The hierarchical regression including exposure to entrepreneurship revealed that *self-employment experience* adds to the explanation of the variance in *entrepreneurial intent* beyond TPB. Therefore a t-test to explore the difference in the means between those who had started a business and those who had not, was carried out (see table 17). Figure 3 presents this result graphically in a box and whisker plot. The results showed that those students who had started a business

displayed a significantly higher level of entrepreneurial intent compared to those who had never started their own business (t = -5.173; p < .001).

Table 17
T-Test for Difference in Means: Entrepreneurial Intent (Self-employment Experience)

	No	*Yes*				*No*	*Yes*	*No*	*Yes*		
	M	**M**	**t**	**df**	**p**	**N**	**N**	**SD**	**SD**	**F**	**p var.**
Entrepreneurial Intent	2.249	2.877	-5.173	236	**.000**	181	57	0.770	0.890	1.336	.159

Figure 3. Box and Whisker Plot: Entrepreneurial Intent (Self-employment Experience)



Two multiple regressions were run to test how the TPB model works for those who have no previous self-employment experience, and those who do. The results are displayed in tables 18 and 19 below. It is clear that the model works differently for the two sub-sets. *Subjective norm* explained more variance in *entrepreneurial intent* for students who reported no self-employment experience (beta = .206; p = .006), than for the whole sample, or any other sub-set analysed above. *Perceived behavioural control* displayed no statistically significant explanation of the variance in *entrepreneurial intent* for both students with and without self-employment experience. *Attitude toward entrepreneurship* displayed the most significant influence on *entrepreneurial intent* for both sub-sets. Overall the model was a much

better predictor of *entrepreneurial intent* for those with no self-employment experience (R^2 = .266; p < .001), rather than those with self-employment experience (R^2 = .157; p < .030).

Table 18

Multiple Regression Analysis: Entrepreneurial Intent (No Self-employment Experience)

Variable	Beta	SE	B	SE	t(171)	p-level
Perceived behavioural control	.135	.073	.148	.080	1.837	.068
Subjective norm	**.206**	.075	.142	.052	2.757	.006
Attitude toward entrepreneurship	**.312**	.075	.258	.062	4.138	.000

Note: N = 175; R = .516; R^2 = .266; adjusted R^2 = .254; F(3,171) = 20.709; p <. 001; SE of estimate: .612

Casewise deletion of missing data

Table 19

Multiple Regression Analysis: Entrepreneurial Intent (Self-employment Experience)

Variable	Beta	SE	B	SE	t(52)	p-level
Perceived behavioural control	.086	.140	.106	.173	0.612	.543
Subjective norm	-.011	.143	-.008	.101	-0.078	.938
Attitude toward entrepreneurship	**.360**	.148	.368	.151	2.431	.019

Note: N = 56; R = .396; R^2 = .157; adjusted R^2 = .108; F(3,52) = 3.230; p <. 0297; SE of estimate: .711

Casewise deletion of missing data

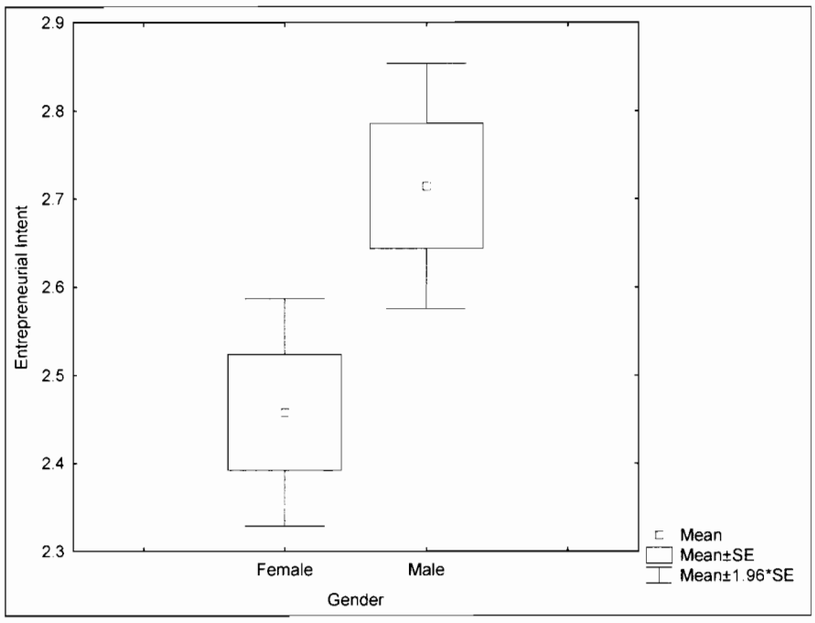
In a further analyses of the effect of gender on the TPB model, a t-test for differences in means (see Table 20) revealed that males scored significantly higher on *entrepreneurial intent* than females (t = -2.652; p = .009). Figure 4 represents this graphically in a box and whisker plot.

Table 20

T-Test for Difference in Means: Entrepreneurial Intent (Gender)

	M	***F***				***M***	***F***	***M***	***F***		
	M	**M**	**t**	**df**	**p**	**N**	**N**	**SD**	**SD**	**F**	**p var.**
Entrepreneurial Intent	2.458	2.715	-2.652	238	**.009**	119	121	0.719	0.779	1.175	.382

Figure 4. Box and Whisker Plot: Entrepreneurial Intent (Gender)



Separate regressions of *entrepreneurial intent* on TPB were run for male and female students, to check the effect of *gender* on the TPB model. The results are displayed in Table 21 and Table 22, below. They indicate that the overall model has better predictive validity for male students (R^2= .338; p < .001) than female students (R^2 = .243; p < .001). The *perceived behavioural control* component shows a higher beta coefficient for males (beta = .294; p = .001), while for females the *attitude toward entrepreneurship* component displays a higher beta (beta = .389; p = .001) and *perceived behavioural control* is nonsignificant. The overall explanatory power of the model for males (R^2 = .338; p < .001) is higher than that of the whole sample of students (R^2 = .279; p < .001), explaining about 6% more of the variance in entrepreneurial intent.

Table 21
Multiple Regression Analysis: Entrepreneurial Intent (Females)

Variable	Beta	SE	B	SE	t(110)	p-level
Perceived behavioural control	.041	.097	.042	.100	0.416	.678
University subjective norm	.123	.104	.089	.075	1.189	.237
Attitude toward entrepreneurship	**.389**	.109	.306	.086	3.563	.001

Note N = 114; R = .493; R^2 = .243; adjusted R^2 = .223; F(3,110) = 11.796; p <. 001; SE of estimate: .640

Casewise deletion of missing data

Table 22
Multiple Regression Analysis: Entrepreneurial Intent (Males)

Variable	Beta	SE	B	SE	t(115)	p-level
Perceived behavioural control	**.294**	.084	.372	.106	3.516	.001
University subjective norm	.164	.083	.119	.061	1.965	.052
Attitude toward entrepreneurship	**.312**	.083	.313	.083	3.775	.000

Note: N = 119; R = .582; R^2 = .338; adjusted R^2 = .321; F(3,115) = 19.609; p <. 0001; SE of estimate: .643

Casewise deletion of missing data

Convergent Validity of TPB

Single-item measures for *perceived behavioural control*, *subjective norm*, *attitude toward entrepreneurship* and *entrepreneurial intent* (see Method section) were included in the questionnaire. These four probability items were used by Krueger et al. (2000) as the only measures for the TPB constructs. The single items were entered into a correlation matrix along with the summary variables used in the current study. Presuming both sets of measures for TPB are valid, they should display strong correlations across like measures, and hence convergent validity (Hair et al., 1998). Table 23 shows that all the summary variables correlate significantly with their single-item counterparts. However these correlations were lower than expected. *Attitude toward entrepreneurship* displayed the highest correlation with its single-item counterpart (r = .691; p < .001), followed by *entrepreneurial intent* and its single-item counterpart (r = .672; p < .001). All the summary variables display higher correlations with their corresponding single-item alternative, than with the other single-items.

Table 23
Correlation Matrix: TPB Sum Variables and TPB Probability Items

Variable	*Perceived behavioural control (summary)*	*Subjective norm (summary)*	*Attitude toward entrepreneurship (summary)*	*Entrepreneurial Intent (summary)*
Perceived behavioural control (single)	**.510**	**.370**	**.496**	**.549**
Subjective norm (single)	**.373**	**.540**	**.533**	**.462**
Attitude toward entrepreneurship (single)	**.471**	**.458**	**.691**	**.571**
Entrepreneurial Intent (single)	**.445**	**.397**	**.567**	**.672**

Notes: N = 226; casewise deletion of missing data; all coefficients significant at p<.001

Conclusion

According to the results, TPB is able to explain a significant amount of the variance in entrepreneurial intent for final year commerce students. While some of the constructs operationalized by summary items displayed reliability coefficients below .70, they are still acceptable and the results significant. The results also show that TPB does not wholly explain the variance in entrepreneurial intent beyond all the external factors. The hierarchical regression showed that while trait variables, situational variables and demographic variables did not add any significant explanation to the variance in entrepreneurial intent over TPB, exposure to entrepreneurship (via *self-employment experience*) indeed did. It is also clear from the results that the antecedents to entrepreneurial intent in TPB work differently between different sub-samples.

CHAPTER 5: DISCUSSION

The primary aims in this study were to test how well TPB would predict entrepreneurial intent amongst final year commerce students and whether other approaches to predicting entrepreneurial intent would add to the predictive power of TPB (testing the sufficiency of TPB). This chapter discusses the outcomes of the study in relation to the literature on TPB and entrepreneurship. The predictive value and sufficiency of TPB are discussed in light of the results, and practical and policy implications are reviewed. The chapter concludes with suggestions for future research and a final overview of the study.

Predictive Validity of TPB

The Complete Model

The results show significant support for TPB as a model for predicting entrepreneurial intent; and therefore support for Proposition 1. Overall the TPB model explained almost 28% of the variance in entrepreneurial intent amongst students ($R^2 = .279$; $p < .001$). This result confirms much of the findings of previous work in the field, which have shown slightly higher levels of explained variance. Autio et al. (2001) found that TPB accounted for just over 30% of the variance in entrepreneurial intentions. Krueger et al. (2000) established that TPB accounted for 35% of the variance with their sample, and Tkachev and Kolvereid (1999) had even greater success with the model, explaining 67% of the variance in entrepreneurial intent.

Model Components

All three of the model components, *perceived behavioural control*, *subjective norm* and *attitude toward entrepreneurship*, significantly explained some of the variation in *entrepreneurial intent*. Therefore Proposition 1 is further supported. However the strength of explanation varied between the three components.

Subjective Norm. Out of the three antecedents in the TPB model, *subjective norm* displayed the weakest relationship with *entrepreneurial intent*, at a relatively low

level of statistical significance (beta = .129; p = .045). *Subjective norm* therefore contributed the least to the prediction of *entrepreneurial intent*. The context-specific version of subjective norm, *university subjective norm*, made no significant contribution to the model when substituted for *subjective norm*, even though the variable correlated significantly with *entrepreneurial intent* in the correlation analysis. The poor predictive power of subjective norm is not an uncommon result in studies employing TPB to predict entrepreneurial intent. Krueger et al. (2000) tested the TPB model on senior university students to find that while the whole model explained significant variance in entrepreneurial intent (R^2 = .350; p < .001), the subjective norm component was non-significant, even though it correlated significantly with intent. Autio et al. (2001) observed similar results in their study with MBA students, where subjective norm was the only component not to show a significant affect on entrepreneurial intent. However when they employed subjective norm as reflecting norms of the university environment (termed university subjective norm in the current study) they observed a significant beta.

The weak influence of *subjective norm* on *entrepreneurial intent* questions the predictive efficiency of the TPB model. However according to Ajzen (2005) there is nothing in TPB to suggest that all three components will make a strong, or indeed significant, contribution to predicting intent:

> The relative importance of these three factors is likely to vary from one behavior to another and from one population to another. In some cases, one or another of the three factors will be found to have no significant effect on intention. Assuming that the factors were measured with equal reliability, lack of predictive validity merely indicates that for this particular behavior and population, the factor in question is not an important consideration in the formation of intention. (Theory of planned behaviour: frequently asked questions, University of Massachusetts at Amherst website, 2005)

Krueger et al. (2000) suggested that entrepreneurs' individualistic, "inner-directedness" reduces the effect of social norms. Indeed Ajzen (1988) and Bagozzi et al. (1989) noted that a highly internal locus of control moderated the effect of subjective norm on intent. Bird and Jelinek (1988) cited various studies that have shown that entrepreneurs have a stronger sense of personal control and stronger

tendencies to disregard social norms than people in general. It would seem that for both UniA and UniB students, subjective norm (and university subjective norm) is not an important consideration in the development of entrepreneurial intentions.

Perceived Behavioral Control. Out of the three antecedents of TPB, perceived behavioural control has often been found to exert the greatest influence on entrepreneurial intent (e.g. Kolvereid, 1996; Tkachev & Kolvereid, 1999; Krueger et al., 2000; Autio et al., 2001). This is also true for most TPB studies that use student samples (Notani, 1998). However in this study *perceived behavioural control* did not exert the greatest influence on intent, that mantle belonging to the *attitude toward entrepreneurship* component. While the influence of *perceived behavioural control* was low compared to *attitude toward entrepreneurship*, it did account for a statistically significant amount of the variance in *entrepreneurial intent* (beta = .185; p = .004). This result suggests that while perceived behavioural control over starting a business does contribute significantly to students' intentions to start one, it is not the most important factor in forming those intentions. As mentioned above, this is more the exception than the rule for most studies using TPB to predict students' self-employment intentions.

Attitude Toward Entrepreneurship. As mentioned above perceived behavioural control is most often found to explain the greatest proportion of variance in intent. Yet in this study attitude toward entrepreneurship, rather than perceived behavioural control, accounted for the greatest explanation of the variance in entrepreneurial intent (beta = .340; $p < .001$). *Attitude toward entrepreneurship* accounted for almost double the amount of variance than *perceived behavioural control*, and almost triple that of *subjective norm*. This result suggests that for final year commerce students in the Western Cape, their attitude toward entrepreneurship is the most important factor in developing entrepreneurial intent. Therefore it is not so much whether students feel they are able to start a business and can control the process, nor whether important referents are perceived as considering the behaviour desirable, that leads to entrepreneurial intent. Rather it is more the attitude that students possess toward entrepreneurship. If they consider self-employment to be a highly desirable career choice then it is more likely that they will actually show intentions to become self-employed. While this is

a logical deduction for the whole sample, some important between-group differences question the veracity of that conclusion. These differences are explored later in this chapter.

Although there is nothing in TPB to suggest that one component will be, or should be, a better predictor than another (Ajzen & Fishbein, 2004; Ajzen, 2005), Autio et al. (2001) suggest that it is logical that perceived behavioural control would be the most important factor when investigating intentions to start a business, as opposed to other behaviours. They suggest that the decision to start up a new business has much more important consequences than, for example, the decision to vote or to lose weight, and that there is considerably less volitional control in a behaviour such as starting a new business. Therefore they conclude that it can be expected that the role of perceived behavioural control is relatively more important for the decision to start a new firm, than for other behaviours. Autio et al.'s (2001) sentiments about perceived behavioural control were not confirmed by the results in this study.

The Sufficiency of TPB and the Predictive Value of 'External Variables'

Ajzen (2005) considered factors such as personality traits, demographics, and past experience as 'external variables', and considered these factors to influence intentions only through their effect on the antecedent components of TPB. If the external variables can be shown to impact intentions directly, then it brings the sufficiency of TPB into question (Ajzen, 1991). Variables representing personality traits, instrumental readiness, social support, exposure to entrepreneurship and demographics were entered into a hierarchical regression with TPB variables in order to test the sufficiency of the theory. The discussion of the results and their implications are discussed in the following sections.

Traits

When added to TPB model in step two of the hierarchical regression, the trait variables did not effect any significant change in the model. The R^2 increased negligibly, and the increase was non-significant. Moreover, none of the trait

variables (*nAch*, *LoC* and *tolerance for ambiguity*) showed any significant influence on *entrepreneurial intent*. Proposition 2 is therefore supported. According to TPB, personality traits impact intentions only through their indirect affect on perceived behavioural control, attitude toward entrepreneurship or subjective norm, via respective behavioral, control and normative beliefs (Ajzen, 2002b). This study did not test whether these indirect effects actually occurred, but the results of the separate regression of intent on the trait variables show that personality traits had no direct effect on intent, and only *nAch* displayed a weak, significant influence on intent (beta = .150; p = .026).

The results offer very little support for traits as predictors of entrepreneurial intent. Only promulgators of nAch as a predictor could claim some supporting evidence from this study. McClelland's (1965) claim that a high nAch drives people to become entrepreneurs received support from Hornaday and Aboud (1971) and later from Lagan-Fox and Roth (1995). That research was, however, conducted with existing entrepreneurs. Kristiansen and Indarti (2004) examined the relationship between nAch and entrepreneurial intentions of university students and found that nAch had no significant affect on entrepreneurial intent. While the current study revealed a statistically significant relationship between nAch and entrepreneurial intent (in the separate regression of entrepreneurial intent on trait variables), the practical significance is debatable, as the relationship was very weak. However, as other researchers have pointed out (Johnson, 1990; Shaver & Scott, 1991), it seems that out of the trait variables nAch shows the most potential for predicting entrepreneurial intent.

There is no support for LoC as a predictor of entrepreneurial intent in this study, and therefore no support for the findings of Brockhaus (1975). Rotter (1966) warned that LoC was intended as a broad construct to study behaviour in a variety of situations, and therefore may not be suitable for studying a specific kind of situation. It therefore may not be useful for specific behaviours such as starting a business. The current study also found no evidence for a relationship between tolerance for ambiguity and entrepreneurial intent. In the separate regression, tolerance for ambiguity did not explain any of the variance in entrepreneurial intent. In previous research LoC and tolerance for ambiguity have not been proven

convincing discriminators between entrepreneurs and non-entrepreneurs (Brockhaus, 1982; Brockhaus & Horwitz, 1986). In this study they were poor discriminators between prospective and non-prospective entrepreneurs as well. The results of this study support the claims that personality variables are poor predictors of entrepreneurial intent (Ajzen, 1991; Gartner, 1988; Shaver & Scott, 1991). The personality traits of final year commerce students in the Western Cape do not impact on whether or not these students express an intention to become an entrepreneur.

Situational Factors

Instrumental readiness and *social support* (which constitute situational factors) were entered into a hierarchical regression after the TPB model. The two variables had no significant effect on the hierarchical regression model ($\Delta R^2 = .017$; $p = .071$), and therefore added no explanatory value to TPB. Proposition 3 is thus supported. However, even though there was no significant effect on the overall predictive value of the model, *instrumental readiness* did exert a small significant influence on *entrepreneurial intent*. Therefore the contextual elements in *instrumental readiness* seem to influence *entrepreneurial intent* slightly, supporting the conclusions of Kristiansen and Indarti (2004). In a separate regression of *entrepreneurial intent* on situational factors, the effect of *instrumental readiness* is confirmed. While situational variables as a whole do significantly account for some variance in *entrepreneurial intent*, it is very weak (approximately 5%). Within this model, *social support* does not significantly influence entrepreneurial intent. Therefore, for this group of university students, the presence of either a strong or weak social support network (as operationalized in this study) does not influence their intentions to start their own business.

This result also vindicates the addition of a social support construct beyond the item included in instrumental readiness. Instrumental readiness was found to influence intent, yet social support was not. However instrumental readiness contains an item regarding social networks ("I have good social networks that could be utilized if I decide to start a business"), and therefore it could have been concluded that social support (as a component of instrumental readiness) exerted

an influence on entrepreneurial intent if there was not a specific summary variable to demonstrate that this is not the case.

Exposure to Entrepreneurship

Out of the three items measuring prior exposure, *self-employment experience* was the only one to exert a significant influence on intent in the hierarchical regression model with TPB. This influence was enough to effect a significant, albeit small, change in the overall model ($\Delta R^2 = .056$; $p = .004$), and thus adds to the predictive power of TPB. Therefore proposition 4 is not fully supported. According to Ajzen (1991: 202): "if past behavior is found to have a significant residual effect beyond the predictor variables contained in the model, it would suggest the presence of other factors that have not been accounted for" . This is clearly the case, even though the effect is not very strong. With this sample, previous experience in entrepreneurship significantly affects entrepreneurial intentions over and above the TPB model. It suggests that for this sample, TPB is not picking up the effect of previous entrepreneurial experience through the antecedent constructs of attitude toward entrepreneurship, subjective norm or perceived behavioural control.

This result is contrary to the claims of Ajzen (1991; 2005) and to previous research on exposure to entrepreneurship and TPB. Tkachev and Kolvereid (1999) found that self-employment experience added nothing to the explanation of the variance in intentions when added to TPB in a hierarchical regression. However in a separate regression, *self-employment experience* did significantly influence intent. Krueger (1993a) demonstrated, with a model very similar to TPB, that prior entrepreneurial experience affected attitude toward entrepreneurship (perceived desirability in his model) and perceived behavioural control (perceived feasibility in his model), and intentions indirectly.

While entrepreneurial experience should, according to Ajzen (2001) and Tkachev and Kolvereid (1999), be accounted for by TPB, there is clear evidence that it does influence entrepreneurial intent. Moreover the experience does not necessarily need to be direct to influence intent; it can be vicarious. Krueger (1993b) reported that those respondents in his study who grew up in a family business showed significantly higher intentions to become self-employed, while Scherer et al. (1989)

concluded that the presence of an entrepreneurial role model was associated with increased expectancy for an entrepreneurial career. Davidsson (1995) found that vicarious experience of entrepreneurship had an affect on convictions and intentions to become self-employed through their effect on a range of attitudes towards entrepreneurship. Using Davidsson's (1995) model as a basis, Autio et al. (1995) confirmed that result. Crant (1996) also found that entrepreneurial intent was significantly associated with having an entrepreneurial parent. Indeed researchers on the topic have often come to the conclusion that prior exposure to entrepreneurship, either vicariously or directly, can influence entrepreneurial intentions (Phan et al., 2002; Wang & Wong, 2004; Singh & DeNoble, 2003). This study adds evidence for this conclusion, yet only for the effect of direct self-employment experience. The experience of entrepreneurship itself does not directly lead to intentions (Ajzen, 1991), and TPB claims to demonstrate how it is mediated through beliefs and attitudes. However, in this study TPB did not fully account for the affect of past self-employment experience.

Demographics

The final step in the hierarchical regression model introduced demographic variables into the equation. None of the demographic variables displayed a significant influence on intent, and as a whole they did not significantly increase the predictive power of the model. Therefore Proposition 5 is supported. As with the other 'background factors' in TPB, demographics are thought to influence intent through their effect on behavioural, normative, and or control beliefs (Ajzen, 2005). The results here offer support for that contention. The separate regression of entrepreneurial intent on the demographic variables showed that both gender and race significantly, although weakly, influenced intent. *Age* did not exert an influence on entrepreneurial intent, most likely because there was not much variation around the mean for age; most students in the sample were of similar age.

In this study, demographics (*gender* and *race* specifically) do marginally influence intent, as evidenced in the separate regression of *entrepreneurial intent* on demographics. However, in the hierarchical regression TPB is able to account for the influence. This offers partial support for the findings of Tkachev and Kolvereid (1999). They found that gender did not add to the explanation of the variance in

entrepreneurial intentions when entered into a regression with TPB variables, nor did it influence intent when entered into a separate regression. Other studies have found that demographics do influence intent, but are mediated by dispositions such as risk propensity (Raijman, 2001; Wang & Wong, 2004). Phan et al. (2002) on the other hand, found that gender had a direct influence on the propensity for new venture creation, and it was not mediated by attitude toward entrepreneurship. Mazzarol et al. (1999) also found that gender had a direct influence on small business formation.

Between-Group Differences and the Robustness of TPB

The results of the analyses for the whole data set do not reflect the results displayed by some of the sub-groups within the sample. TPB works quite differently between some groups within the sample; particularly between universities, between those with and without self-employment experience, and between genders. Amongst these sub-sets *perceived behavioural control*, *subjective norm* and *attitude toward entrepreneurship* exert different levels of influence on intent.

University Differences

UniA students mirrored the whole sample in that *attitude toward entrepreneurship* displayed the most influence on intent and *perceived behavioural control* displayed a significant (although weaker) impact. It should be noted that UniA students made up 68% of the sample. For the UniB students, on the other hand, *attitude toward entrepreneurship* was non-significant, and *perceived behavioural control* exerted a much greater significant influence on *entrepreneurial intent*. Both groups' regression results produced very similar R^2 coefficients, but via different influences. Thus TPB works equally well for each group, but differently. The results suggest that UniB students' intentions to start a business are greatly influenced by their perceived behavioural control over the process, and not by their attitude toward entrepreneurship. That is, UniB students who believe strongly that they are capable of starting a business, and can exert control over the process, are more likely to display strong intentions for entrepreneurship. Yet whether or not they perceive self-employment as a desirable career path (attitude toward

entrepreneurship) does not significantly influence their intentions to enter an entrepreneurial career. It seems they are driven to entrepreneurship more by self-confidence and self-efficacy, than by their attitudes towards entrepreneurship as a career.

It is almost the opposite case for the UniA students. Their intentions are primarily influenced by their perceptions of entrepreneurship as a career (attitude toward entrepreneurship), and to a much lesser extent their perceived ability to actually start their own venture (perceived behavioural control). If their attitude towards entrepreneurship is very positive, then they are more likely to show higher levels of entrepreneurial intent. This is also true for perceived behavioural control, but to a far lesser extent. It is more likely that UniA students will show higher levels of entrepreneurial intent if they have a positive attitude toward entrepreneurship, rather than a strong belief that they are able to start their own business.

Self-employment Experience

Separate regressions of intent on TPB for students who had previous self-employment experience and those who had none, revealed significant differences in how the TPB model worked for the two groups. The TPB model explained 27% of the variance in *entrepreneurial intent* for those who had no self-employment experience, which was very similar to the results for the whole data set (28%). However for those students who had previously started their own business, the model is not a good predictor of future self-employment intentions. For these students only 16% of the variance in entrepreneurial intent is explained by the TPB model. Therefore those with experience show more entrepreneurial intent, but the antecedents to the intent are just not picked up by TPB. Although of course the sample is much smaller for this group and thus the relationships need to be much stronger to achieve statistical significance. For both groups attitude toward entrepreneurship is the most important predictor of entrepreneurial intent. However subjective norm explains a significant amount of variance in intent for students with no self-employment experience. This suggests that the entrepreneurial intentions of students who have not been through the experience of starting their own business are significantly influenced by what people close to them think of them starting their own business venture. It is therefore possible that the experience of

self-employment may mediate the affect that the perceived opinions of important referents have, on entrepreneurial intentions.

Gender

A closer examination of the effect of *gender* in this sample reveals that males display significantly higher levels of entrepreneurial intent than females do. Moreover the TPB regression model works differently for males and females. The regression of entrepreneurial intent on TPB variables for female students displays an insignificant beta value for perceived behavioural control, suggesting that perceived behavioural control has no impact on entrepreneurial intent for females. The results are otherwise almost the same as the whole sample model. For males, the model is more effective. Perceived behavioural control and attitude toward entrepreneurship show stronger influences on intent than they do for the female sample and the whole sample. The overall predictive power of the model is also 5% higher for male students than it is for the whole sample. The results suggest that TPB does not pick up the influences on intent through its antecedents as well for females as it does for males.

Theoretical and Policy Implications

The results of this study contribute to the already substantial body of research in support of TPB across various disciplines (Ajzen & Fishbein, 2004). Specifically, this study adds to the support for TPB in the context of entrepreneurship. None of the external variables, apart from self-employment experience, added any value to the predictive capacity of TPB. It confirms that the study of 'the person in the situation' (Krueger et al., 2000) is more beneficial than just person variables (e.g. personality) or situation variables (e.g. past experience) in predicting entrepreneurial intent. This study also contributes to the field by applying TPB within the South African entrepreneurial context. The literature search for this study did not identify any studies that applied TPB in the South African entrepreneurial context. Most of the research in the field has been conducted with European or American student samples. This study shows how the application of TPB works for South African students. Because the measures of TPB variables were taken from

Autio et al. (2001) it is worthwhile to compare their results of that study with the current study. The TPB model in this study explained a similar proportion of the variance as Autio et al.'s (2001), but operated slightly differently. Both studies revealed that subjective norm was the weakest predictor of entrepreneurial intent, however perceived behavioural control and attitude toward entrepreneurship worked differently for the two samples. Autio et al. (2001) found that perceived behavioural control was the most important predictor of entrepreneurial intent, while the current study revealed that attitude toward entrepreneurship was the most important factor in the formation of entrepreneur intent in students.

Kolveried and Tkachev (1999) and Autio et al. (2001) have demonstrated the robustness of the theory by obtaining similar results with different student samples in their studies. This was not the case in this study. There were definite differences in how TPB predicted entrepreneurial intent for UniA students and the UniB students, for those with and without self-employment experience, and for males and females. This is, however, useful information as it tells us how certain groups develop entrepreneurial intent. For example, students from different universities developed intent through different antecedents of the TPB model. It is a good example of how TPB offers a diagnostic tool for identifying areas that may need to be addressed for specific groups of people. This diagnostic value may be useful for developing entrepreneurial intent where it is needed, but lacking. For example, if it was known that black women start fewer businesses than other groups, it would be possible to use TPB to investigate whether their intentions to start a business are influenced by their perceived behavioural control over the act of starting a business or by their attitudes toward entrepreneurship. If there is a clear relationship between one or both of these components and entrepreneurial intent, then steps could be taken to decrease the perceived difficulty of starting a business, and improve the perceived desirability of self-employment. The responsibility for this task, and the methods employed to achieve it, would be dependent on the context – political and practical. However, as pointed out by Krueger et al. (2000), it is TPB that provided us with the diagnosis. Moreover TPB could be a means for evaluating entrepreneurship training interventions as a pre- and post-test tool. For example if the aim of an intervention is to promote the desirability of entrepreneurship amongst a certain group, towards increasing the entrepreneurial intentions of that

group, then TPB could be tailored as a tool to evaluate the programme, specifically through pre- and post-test measures of attitude toward entrepreneurship and entrepreneurial intent.

The broader implication that TPB has for public policy is that entrepreneurship has to be perceived as desirable and feasible in order for people to develop the intention to start new ventures (Krueger et al., 2000). This is especially important in South Africa where entrepreneurs may hold the key to job creation and poverty alleviation (Nieman, 2001). It is even more relevant because of the apparent lack of self-belief in South Africans when it comes to starting their own business (Orford et al., 2003). While this study confirms that a lack of self-belief affects entrepreneurial intentions negatively, it is students' attitudes toward entrepreneurship that predominantly affect their intentions to become self-employed. Lüthje and Franke (2003) suggest that public and university policy-makers be well advised to implement various programmes to remove the perceived and objective context factors which are adverse to starting a company. They also warn that encouragement offered to students to start up firms will not have the same effects on all students. This is confirmed in the current study, where subgroups of the sample displayed varied relationships between entrepreneurial intent and perceived behavioural control. The fact that students with self-employment experience displayed significantly higher intentions to start a business in the future, suggests that experience in self-employment may lead to intentions to repeat the behaviour. Therefore a practical experience of starting a business may be a way to develop entrepreneurial intent. Although this may sound paradoxical, it could have practical value. Programmes that afford scholars and students a chance to start their own businesses in fairly low-risk circumstances may be a way to tap into the power of experience. Government and the corporate sector could work together in developing schemes that allow potential entrepreneurs the experience of starting their own business. According to Kroon et al. (2003) the corporate sector in South Africa is aware of the need to offer such programmes. Finally, public policy needs to promote entrepreneurship in such a way that it will foster positive attitudes toward entrepreneurship as well as present entrepreneurship as a viable and practical alternative to traditional careers. The latter would need to be bolstered by

government intervention that offers assistance to nascent or prospective entrepreneurs.

Suggestions for Further Research

In testing the sufficiency of TPB, this study included a range of 'external factors' against which the predictive strength of TPB was tested. In an attempt to avoid the pitfalls of single-item measures (Cone & Foster, 1993), these factors (nAch, LoC, propensity for risk, tolerance for ambiguity, instrumental readiness and social support) were measured using multiple items. Categorical variables were also created for exposure to entrepreneurship and demographics. The inclusion of all these items lengthened the questionnaire substantially, the result being less space for the inclusion of belief-based measures of the *antecedents* to perceived behavioural control, subjective norm and attitude toward entrepreneurship (see Figure 1). This study used only direct measures of the components of TPB; as adapted from Autio et al. (2001). Francis et al. (2004) advocate the inclusion of belief measures, along with direct measures: "when different methods are tapping the same construct, scores are expected to be positively correlated, so it is recommended that both be included in TPB questionnaires" (p. 9). Krueger et al. (2000) employed this strategy when comparing TPB with a competing reasoned action approach. However Francis et al. (2004) also state that it can be appropriate to use only direct measures:

> If the goal of the research is simply to do an analysis to predict variance in behavioural intentions, it would be sufficient to measure intentions (3 generalised intention items) and the three predictor variables using direct measures (3 items x 3 variables), resulting in a 12-item questionnaire. (p. 27)

Ajzen (2005) concurred with this. He stated that either belief-based measures or direct measures can be used to predict intentions. However he advises that the direct measures are usually preferred for consistency because intentions are also assessed directly. Therefore it is recommended that future studies include measures of beliefs if practical. However it is not deemed essential by Ajzen (2005).

In this study four single items adopted from Krueger et al. (2000) were included as correlates for the direct summary measures of the components of TPB. High correlation between the two sets of measures would suggest convergent validity (Hair et al., 1998). However the correlations between the summary and single-items for perceived behavioural control, subjective norm and attitude toward entrepreneurship were not particularly strong. Therefore single probability items as used by Krueger et al. (2000) do not display strong convergent validity with the summary items used in this scale. It is therefore suggested that researchers bear in mind that single-item measures do not necessarily reflect precisely the same constructs as summary items may.

It is recommended that future studies using TPB include a measure of 'control' when operationalizing perceived behavioural control. Controllability items investigate people's beliefs that they have control over the intended behaviour - the extent to which the performance is up to the actor (Ajzen, 2002c). Ajzen (2002a) strongly recommends that controllability items be included in a measure of perceived behavioural control, along with self-efficacy items. Although a separate summary measure of control may not be necessary, Ajzen (2002c) suggests that even an overall index of perceived behavioural control should include a control item. Future research dealing with trait constructs also need to consider more reliable scales, specifically for propensity for risk. The trait construct measures, apart from propensity for risk, displayed Cronbach alphas of between .607 and .703, which is acceptable for exploratory research (Hair et al., 1998). However propensity for risk displayed an unacceptably low alpha, and was therefore dropped. Although risk-related measures displaying low reliability have been used in entrepreneurship research, it has been with the acknowledgment of the need to refine the scale (e.g. Louw et al., 2003). Future entrepreneurship research using trait measures should use more precisely operationalized variables (Johnson, 1990) that result in superior levels of reliability and therefore validity. It has been recommended that studies in the field of entrepreneurship generally need to pay more attention to reliability and validity (Chandler & Johnson, 2001), even when borrowing measures from previous studies (Shaver & Scott, 1991). These recommendations are reiterated here.

The current study examines a snapshot of a student sample to explore whether the relationships among variables emerge as predicted. This cross-sectional nature is limiting in that it does not explore actual behaviours, only intentions. Although the primary aim of this study was to test the predictive power and sufficiency of TPB, ultimately there is a need to examine behaviour over time, requiring longitudinal studies (Krueger et al., 2000). Longitudinal research needs to build on previous intent surveys, to check the extent that entrepreneurial intent is followed through (Autio et al., 2001). This call for longitudinal research is not confined to entrepreneurial intent research alone. Commentators on the state of entrepreneurship research in general have also echoed this sentiment (Low & MacMillan, 1988; Bygrave, 1989; Aldrich & Martinez, 2001).

Conclusion

The primary aim of this study was to test how well TPB could predict entrepreneurial intent amongst final year commerce students. It also aimed to test the sufficiency of the theory by examining whether other approaches to predicting intent increased the predictive quality of TPB. The predictive power of each approach was also examined independently. The regression results suggest that TPB is able to predict entrepreneurial intent. However in this study the predictive power is not as strong as has been found by previous researchers (e.g. Tkachev & Kolvereid, 1999; Krueger et al., 2000; Autio et al., 2001). For the full sample, perceived behavioural control, subjective norm and attitude toward entrepreneurship all significantly contributed to the prediction of intent. However it was attitude toward entrepreneurship that clearly displayed the strongest relationship with entrepreneurial intent, and not perceived behavioural control. Orford et al.'s (2003) conclusion that low rates of entrepreneurial activity in South Africa is as a result of low levels of self-belief (people do not believe they have the skills to start a business), is therefore only partially supported.

Therefore students' attitude toward entrepreneurship is the most important factor in developing their entrepreneurial intent. This holds true between the genders, for UniA students and between those who have and have not started a business

before. However UniB students' entrepreneurial intentions are significantly influenced only by their perceived behavioural control over the act of starting a business. Subjective norm consistently displayed low predictive power in the TPB model, (except for those students who had never started a business, where is displayed a small influence). As has been discussed, this result is not uncommon in TPB studies (Krueger et al., 2000; Ajzen, 2005). It does suggest though, that for final year commerce students, perceptions of what family, friends and people close to them think about the desirability of them becoming an entrepreneur, is not a critical factor in forming entrepreneurial intentions.

TPB did not comprehensively pass the test of sufficiency. Although the trait, situational and demographic variables did not contribute to the prediction of intent beyond the TPB, self-employment experience was found to contribute significantly to the TPB model. Substantially, however, the effect of self-employment experience was not considerable (increased the explanation of variance in intent by almost 6%). Nevertheless the statistically significant affect of self-employment experience on intent, over and above the TPB variables, suggests that this past experience is influencing intent, but not through perceived behavioural control, attitude toward entrepreneurship or subjective norm (as they are operationalized in this study). The TPB variables in this study are, in essence, not picking up the affects of past self-employment experience as they are purported to (Ajzen, 1991). Kolvereid (1996) employed different operationalizations of the TPB variables and found that prior self-employment experience did not directly influence intent, but it did have an indirect affect via the variables of TPB. The contrasting results between this study and Kolvereid (1996) could be as a result of the differences in the operationalizations of the relevant variables, or else differences in the self-employment experiences of the participants. However further research is needed to explore the affect of previous entrepreneurship experience on attitudes and beliefs as captured by TPB.

Gartner (1988) and Low and MacMillan (1988) argued that entrepreneurship should be defined by the behaviour of creating a new venture, not by the personality of the entrepreneur. Azjen (1988) considered personality to correspond to behavioural categories and not specific behaviours, and therefore unsuitable for

the prediction of specific behaviours. Notwithstanding, research on entrepreneurial traits still abounds, and is even adopted as a framework for practical entrepreneurial development interventions (e.g. United Nations, 2005b). Carland, Hoy and Carland (1988) argued that the trait approach is necessary along with other approaches in order to understand the concept of entrepreneurship. However this study concludes that personality traits add very little to the explanation of entrepreneurial intent, and therefore, in this context, add little to the field of research. According to Aldrich and Martinez (2001), "process and context interact in a recursive process driving the fate of entrepreneurial process" (p. 41). Context, as operationalized by instrumental readiness and social support, displayed a very small influence on entrepreneurial intent in this study, and the affect was sufficiently captured by TPB.

Even with the existing body of entrepreneurial research, there is lack of consensus on what influences the initiation of new venture creation (Carland & Carland, 2001). Ajzen's (1991) review of the literature concludes that intentions consistently explain more of the variance in behaviour than do traits, or other dispositional measures. Krueger et al. (2000) reiterated this, suggesting that intentions are the best predictors of any planned behaviour. If this is the case, then TPB is a valuable tool with which to predict behaviour via intentions. It has the potential to incorporate a range of possible antecedents to entrepreneurial intent, through their impact on attitudes, norms and perceptions of control over the behaviour. However Autio et al. (2001) suggest that more research is needed before it can be confirmed that intentions do indeed predict entrepreneurial behaviour. Until this is clear, the TPB at least offers a well-tested, theory-driven method of predicting entrepreneurial intent.

Appendix

Appendix 1: Descriptive Statistics

Descriptive Statistics: Demographics - UniA Students

	UniB		UniA	
	Count	**% of Valid**	**Count**	**% of Valid**
Gender				
Female	49	62.82	73	43.45
Male	29	37.18	95	56.55
Missing	1	1.28	-	-
Language				
English	44	57.14	132	79.52
Afrikaans	11	14.29	3	1.81
Xhosa	9	11.69	7	4.22
Other SA language	5	6.49	12	7.23
Other	8	10.39	12	7.23
Missing	2	2.60	2	1.20
Race				
White	4	5.80	109	66.46
Coloured	20	28.99	25	15.24
Black	32	46.38	17	10.37
Indian	13	18.84	11	6.71
Other	10	14.49	2	1.22
Missing	-	-	4	2.44

Table 3
Descriptive Statistics: Demographics - Combined Sample

	Count	**% of Valid**
Gender		
Male	124	50.41
Female	122	49.59
Missing	1	0.40
Language		
English	176	72.43
Afrikaans	14	5.76
Xhosa	16	6.58
Other SA language	17	7.00
Other	20	8.23
Missing	4	1.65
Race		
White	113	48.50
Coloured	49	21.03
Black	45	19.31
Indian	24	10.30
Other	2	0.86
Missing	14	6.00
University		
UniA	168	68.02
UniB	79	31.98
Missing	0	0.00

Appendix 2: Operationalization of Constructs

Entrepreneurial Intent

(Likert-type: 1 = Not at all likely; 2 = Not very likely; 3 = Likely; 4 = Very likely; 5 = Already started a business)

How likely is it that you will start a new business of your own or with friends?

1. Start a business on full-time basis within one year
2. Start a business on full-time basis within five (5) years
3. Start a business on part-time basis within one year
4. Start a business on part-time basis within five (5) years

Perceived Behavioural Control

(Likert-type: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree)

1. I am confident that I would succeed if I started my own business
2. It would be easy for me to start my own business
3. To start my own business would probably be the best way for me to take advantage of my education
4. I have the skills and capabilities required to succeed as an entrepreneur

Attitude toward entrepreneurship

(Likert-type: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree)

1. I personally consider entrepreneurship to be a highly desirable career alternative for people with my professional and educational background

Please rate the following:

(Likert-type: -1 = Not at all desirable; +3 = Highly desirable)

1. A corporate career (working for large, established, private sector employer) would be… [dummy item]
2. A civil servant career (working for a government agency or non-profit organisation) would be…[dummy item]
3. An entrepreneurial career (starting up and or managing a business of my own or with family or friends, self-employed) would be…
4. An academic career (working at a university or a research institute) would be…[dummy item]

Subjective Norm

(Likert-type: -1 = Not at all desirable; +3 = Highly desirable)

Please rate the following:

1. If I became an entrepreneur my family would consider it to be…
2. If I became an entrepreneur my friends would consider it to be…
3. If I became an entrepreneur other people close to me would consider it to be…

Need for Achievement

(Likert-type: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree)

1. I try hard to improve on past work performance
2. I seek added responsibilities in tasks assigned to me
3. I try to perform better than my friends
4. I will not be satisfied unless I have reached my desired level of results

Locus of Control

(Likert-type: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree)

1. When I get what I want, it is usually because I have worked for it.
2. My life is mostly determined by my own actions
3. I can pretty much control what will happen in my life

Propensity for Risk

(Likert-type: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree. All reverse-scored.)

1. If I invested in shares they would be safe shares from well-known companies
2. Even if the possible reward was very high I would hesitate putting my money in a new business deal that could fail
3. I would probably would not take the chance of borrowing money for a business deal even if it might be profitable

Tolerance for Ambiguity

(Likert-type: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree)

1. A good job is one where what has to be done is always clear [reverse-scored]
2. I prefer to solve problems that have clear goals and objectives, rather than complicated ones [reverse-scored]
3. I prefer to live an even, regular life with few surprises and have certainty about my responsibilities [reverse-scored]

Instrumental Readiness

(Likert-type: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree)

1. I have access to capital to start a business
2. I have good social networks that could be utilised if I decide to start a business
3. I have access to supporting information to help me start a business

Social Support

(Likert-type: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree)

1. If I were to start my own business I could rely on my parents or close family for business advice and information
2. If I were to start my own business I could rely on my parents or close family for start-up capital (funds or/and surety)
3. If I were to start my own business I could rely on my friends for business advice and information

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