Entrepreneurial education's and entrepreneurial role models' influence on career choice

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Orientation: Little research has been done into the impact of entrepreneurial education and entrepreneurial role models on entrepreneurship as a career choice, especially in developing countries.

Research purpose: The purpose of the study is to firstly explore the differences in entrepreneurial intentions between entrepreneurship students and non-entrepreneurship students, and secondly to investigate the relationship between entrepreneurial education and entrepreneurial intentions as well as between role models and entrepreneurial intentions.

Motivation for the study: There is a need for stakeholders, such as training authorities and training providers, to understand the influence of entrepreneurship education and role models on entrepreneurial career choice. Knowing this could assist in developing and implementing more effective entrepreneurial education programmes.

Research design, approach and method: The study was conducted amongst a convenience sample of 269 final-year students, of which 162 (60.2%) were entrepreneurship and 107 (39.8%) non-entrepreneurship students from a higher education institution in Johannesburg. The entrepreneurial intentions of entrepreneurship students were compared with those of non-entrepreneurship students.

Main findings: The findings of the study suggest that entrepreneurship students have stronger entrepreneurial intentions than non-entrepreneurship students, and that there is a positive relationship between entrepreneurship education and entrepreneurial intentions and between role models and entrepreneurial intentions respectively.

Practical/managerial implications: Entrepreneurship stakeholders can use the findings of the study to improve curriculum design, delivery methods and assessment strategies in their efforts to advance entrepreneurship.

Contribution/value-add: The findings of the study suggest that entrepreneurship education and role models can influence students' entrepreneurial intentions in a developing country.

Introduction

Key focus of the study

Poverty and unemployment are two of the biggest challenges South Africa (SA) is currently grappling with. A study conducted by the University of Stellenbosch's Department of Economics in 2009 showed that 47.1% of the SA population consumes less than the lower-bound poverty line proposed by Statistics SA in 2007 (Armstrong, Lekezwa & Siebrits, 2009). The latest unemployment figures released by Statistics SA alarmingly showed that unemployment in SA continued to rise. The unemployment rate for the first quarter of 2011 is 25% (Statistics SA, 2011). Entrepreneurship is a way of alleviating the challenges of poverty and unemployment; furthermore, it creates new, competitive markets and businesses which lead to job creation and have a multiplying effect on the economy (Fal *et al*., 2010).

SA's entrepreneurial activity lags behind. The most widely used measure of entrepreneurship is the Total Early-Stage Entrepreneurial Activity (TEA) Index. It measures entrepreneurial activity by looking at the percentage of the active population, people between 25 and 64, who are entrepreneurs in any given country. SA's TEA in 2008 stood at 7.8%, which is greater than it was in 2006 (5%) but still lower than India-Brazil (11.5% – 12%), Colombia (24.5%), Mexico (13.1%) and the United States of America (USA) (10.8%). However, in 2009, following the economic crisis, the TEA level in SA dropped again to just over 5% (Fal *et al*., 2010).

Global interest in developing business and entrepreneurship education and initiatives has been rapidly growing because entrepreneurship has been considered as a generator of national prosperity and competitiveness (Beugelsdijk & Noorderhaven, 2004; Martinez, Levie, Kelley, Saemundsson & Schott, 2010). In most developed countries[1] and developing countries[2] there is a tendency to view entrepreneurship and entrepreneurship education as the panacea for stagnation or declining economic activity (Matlay, 2005). It is not surprising that this topic has moved to the top of the political agenda and entrepreneurship education has become a high-priority item in public policy and throughout the industrially developed world (Matlay, 2005).

The level of interest in entrepreneurship amongst higher education institutions and business school students has intensified to such an extent that most of these institutions are introducing courses on how to start and finance businesses (Matlay, 2005). However, a great deal of disparity continues to exist in the content and quality of entrepreneurship education programmes on offer, particularly curriculum design, delivery methods and assessment strategies (Matlay, 2005). In this context, Charney and Libecap (2003) pointed out that approaches to entrepreneurship education have varied from offering single courses in new business development or business plans preparation to integrated curricula that include marketing, finance, competitive analysis and business plan development.

The mere exposure to a course in entrepreneurship might not necessarily ensure an entrepreneurial orientation nor create more positive expectations about entrepreneurial abilities and careers (Mitchell & Co, 2006). A course usually forms part of a programme in either formal or informal training. It may include unaccredited evening courses at a higher education institution, local business organisation or a government agency, whereas a programme can lead to the awarding of a certificate, diploma or a degree (Martinez *et al*., 2010).

As far as the adequacy of entrepreneurship education and training is concerned, in a Global Entrepreneurship Monitor (GEM) survey in 2008, experts in only six (out of 30) countries (i.e. Germany, Finland, Republic of Korea, Ireland, Spain and the United States) believe that public and/or private agencies provide adequate entrepreneurship education and training outside the formal education system. Finland recorded the highest level of entrepreneurship training. For the other countries, perceptions about the adequacy of training offered do not match the perceived need for assistance. The unusually positive result for Finland is noteworthy (Martinez *et al*., 2010). As Kyro (2006) reported, Finland's government had committed to entrepreneurship education throughout its school system.

In this same survey 30% of the mentions of constraints (negative aspects of the environment for entrepreneurship) included the state of entrepreneurship education and training. This was the third most frequently mentioned constraint, after financial support and government policies. It constituted over half of constraints mentioned in Egypt and SA, compared with only 15% in Finland, 8% in Argentina and none in Iran. Experts were also asked to make recommendations to improve the environment for entrepreneurship in their country. On average, 49% of the recommendations across the 30 countries were about entrepreneurship education and training – more than any other Entrepreneurial Framework Condition (EFC). The exception was Iran, where only 5% of recommendations related to this EFC. By contrast, 71% of Turkish recommendations and 68% of SA's recommendations were in this area. Hence, it is clear that in most countries, entrepreneurship experts regard the provision of entrepreneurship education and training as inadequate (Martinez *et al*., 2010).

Entrepreneurship education in SA is in its developmental stage and has done little to develop the skills and competencies for, and positive attitudes towards, entrepreneurship (Mitchell & Co, 2006). SA's higher education system is not suitable to enhance entrepreneurial skills. It has a legacy of being too theory-based and non-respondent to the skills in demand in the business world. Some believe that the problem starts as early as primary and secondary school (Fal, Daniels & Williams, 2010).

The relative lack of entrepreneurial activity in this country has been recognised as a cause of concern to the extent that the SA government has acknowledged its role and introduced several initiatives to stimulate new venture creation (South African Yearbook 2004/2005, 2005). The higher education sector has an important role to play in the enterprise economy. Galloway, Anderson, Brown and Wilson (2005) believe that higher education institutions can have a greater impact because they provide access to a spectrum of knowledge-based resources that support the development of the technologically sophisticated enterprises needed to compete in the international marketplace. However, it is not at all clear from the literature whether people on average experience a gain from training in terms of their awareness of or attitudes toward entrepreneurship, their entrepreneurial intentions or indeed their entrepreneurial activity (Martinez *et al*., 2010).

Against this background, the aim of this article is to firstly determine if there are differences in entrepreneurial intentions between students undergoing entrepreneurial education *vis-à-vis* students not exposed to such a programme and secondly to investigate the relationship between entrepreneurial education and entrepreneurial intentions as well as between role models and entrepreneurial intentions. The main question to be addressed is: are students' intentions to choose entrepreneurship as a career option in SA likely to be higher as a result of being exposed to an entrepreneurship-specific education programme and being exposed to entrepreneurial role models?

1. Developed countries are industrialised countries with a high per capita income, such as the United Kingdom (UK) and European countries.

2. Developing countries are countries with a low level of material well-being such as South Africa.

The study makes a theoretical, practical as well as a methodological contribution. It contributes to the body of knowledge by providing a better understanding of the differences in entrepreneurial intentions between entrepreneurship students and non-entrepreneurship students, and of the relationship between entrepreneurial education and entrepreneurial career choice as well as of the relationship between role models and entrepreneurial career choice in the context of a developing country. The study has methodological value in the sense that it delivered a questionnaire for collecting data on entrepreneurial intentions. Its practical value lies in the fact that its findings can assist stakeholders such as academics, policy developers, the Education Training and Development Practices (ETDP) Sector Education and Training Authority (SETA) and learned societies to develop more effective delivery strategies that could stimulate the intentions of students to start businesses.

The rest of the article is structured as follows: firstly, the extant literature relevant to entrepreneurship, the influence of entrepreneurial education on career choice, and the influence of entrepreneurial role models on career choice is reviewed. Secondly, entrepreneurial intentions models are discussed. This is followed by a description of the research methods and procedures used in the study. Next, the results of the enquiry are discussed. Finally, implications, limitations, and directions for future research are offered.

Background to the study

There is no consensus in the literature concerning the definition of an entrepreneur. Nieman and Nieuwenhuizen (2009, p. 9) defined an entrepreneur as a person who sees an opportunity in the market, gathers resources, and creates and grows a business venture to meet these needs. An entrepreneur bears the risk of the venture and is rewarded with profit if it succeeds. Stokes and Wilson (2010, p. 34) defined an entrepreneur as an individual (or group of individuals) who act(s) as principal mediator of the process of change described through undertaking a specific project based on an opportunity that requires the implementation of a new idea (or ideas).

Despite the interest in entrepreneurship, there remains considerable confusion over exactly what is involved in entrepreneurship (Stokes, Wilson & Mador, 2010). Entrepreneurship is defined by Nieman and Nieuwenhuizen (2009, p. 9) as the process of creating or seizing an opportunity and pursuing it regardless of the resources currently controlled. Entrepreneurship is regarded as the emergence and growth of new businesses. Melicher (2009, p. 7) defined entrepreneurship as the process of changing ideas into commercial opportunities and creating value. Hisrich and Peters (2002, p. 10) defined entrepreneurship as the process of creating something new of value by devoting the necessary time and effort, assuming the accompanying financial, psychic and social risks, and receiving the resulting rewards of monetary and personal satisfaction and independence. The similarity in the given definitions is that authors largely agreed on defining entrepreneurship as a process aimed at the pursuit of opportunities.

Entrepreneurship education can be defined in numerous ways. Jones and English (2004) defined entrepreneurship education as:

> the process of providing individuals with the concepts and skills to recognise opportunities that others have overlooked and to have the insight, self-esteem and knowledge to act where others have hesitated.
>
> (Jones & English, 2004, p. 416)

It includes instruction in opportunity recognition, obtaining resources, and initiating a business venture in the face of risk. It also includes instruction in business management processes such as business planning, capital development and marketing. Another definition of entrepreneurship education is by Politis (2005, p. 401), who defined it as 'a continuous process that facilitates the development of necessary knowledge for being effective in starting up and managing new ventures'. Martinez *et al*. (2010, p. 8) defined entrepreneurship education 'as the building of knowledge and skills "about" or for "the purpose of" entrepreneurship generally, as part of recognised education programmes at a primary, secondary or tertiary-level educational institution'.

According to Lockwood (2006, p. 36), role models are defined as 'individuals who provide an example of the kind of success that one may achieve, and often also provide a template of the behaviours that are needed to achieve success'. These are people who others look up to as examples to be imitated.

Trends from the research literature

Entrepreneurial career choice

Several major career development theorists have contributed to the literature on careers. Dyer's (1994) Model of Entrepreneurial Careers and the Social Cognitive Career Theory (SCCT) developed by Lent, Brown and Hackett (1994) are two of the most accepted and validated models in the career literature.

Dyer's Model of Entrepreneurial Careers explores four components of the theory of entrepreneurial careers, such as career selection, career socialisation, career orientation, and career development (Dyer, 1994). According to this model, entrepreneurial career choice can be influenced by individual factors such as entrepreneurial attitudes, social factors such as role models, and economic factors such as availability of a resource network and economic resources. Education is one of the factors that prepare an individual for an entrepreneurial career (Dyer, 1994).

According to the SCCT, the career development process is affected by a variety of personal, environmental and situational factors that interrelate and change over the course of time. There are three interrelated variables that affect the choice of careers. The core variables are perceived self-efficacy, outcome expectation and future performance or goals. Self-efficacy affects individuals' expectations about

outcomes as well as their intentions towards performance. Outcome expectations affect individuals' future performance or goals and, ultimately, their actual career goals. Individuals are motivated to choose a career based on their intentions towards performance and outcome expectations (Lent *et al*., 1994).

The influence of entrepreneurial education on entrepreneurial career choice

There are various studies that examine the link between entrepreneurial education and entrepreneurial career choice. These studies have been conducted from within both quantitative and qualitative paradigms and cover a whole range of approaches, from the trait approach to the intentions-based approach.

Dickson, George, Solomon and Weaver (2008) conducted a qualitative study in the USA to explore the relationship between general education, specific forms of entrepreneurial education and a range of entrepreneurial activities. The relationships were investigated through an analysis of peer-reviewed research published in a wide range of journals and proceedings between 1995 and 2006. The findings suggested a positive link between entrepreneurship education and both the choice to become an entrepreneur and subsequent entrepreneurial success.

Matlay (2008) also conducted a qualitative study in which the impact of entrepreneurship education on entrepreneurial outcomes was explored. The main aim was to investigate the perceived influence that various entrepreneurship education courses had on a cohort of 64 graduate entrepreneurs from eight higher education institutions in the UK. Semistructured, in-depth telephone interviews conducted annually over a 10-year period (1997–2006) were used. Matlay documented, measured and analysed respondents' progression from graduation into entrepreneurship. Results indicated that graduate needs for entrepreneurship education did not match actual outcomes in terms of entrepreneurial skills, knowledge and attitudes. This mismatch influenced an entrepreneur's perception of actual and future educational needs. However, most of the graduate entrepreneurs seemed to be satisfied with the outcomes (in terms of skills, knowledge and attitudes) of their entrepreneurship education, both in relative and in absolute terms. However, this study did not clearly indicate whether the graduate entrepreneurs would be interested in creating businesses.

Another qualitative study was conducted by Albert, Fournier and Marion (1991) in France. They found that the proportion of higher education students, who, having completed a support programme for new business development, went on to start businesses was approximately 25%.

A study conducted in India by Saini and Bhatia (2007) adopted a comparative approach. The study suggested that entrepreneurs who had in fact received training in entrepreneurship presented significantly higher levels of performance in terms of sales development and job creation, as compared to entrepreneurs without training. Their entrepreneurial visions along with their ability to anticipate and plan for the future also seemed to be of higher quality.

Stokes *et al*. (2010) contend that early findings have shown that participation in enterprise programmes can positively influence people's enterprise potential and attitudes to entrepreneurship. A good example is the Young Enterprise Programme in the UK, which aims to inspire and equip young people to learn and succeed through enterprise.

Bandura (1986) conducted an empirical study to test the link between entrepreneurial education and entrepreneurial self-efficacy. The study generally concluded that entrepreneurial education positively affects individuals' perceptions of their ability to start new businesses.

The line of research into entrepreneurial intentions began with Boyd and Vozikis (1994), who theorised that self-efficacy in performing tasks associated with venture creation was instrumental in motivating an individual to engage in entrepreneurial activities (Dickson *et al*., 2008).

Noel (2002) conducted a quantitative study in the USA and specifically concentrated on the impact of entrepreneurship training on the development of entrepreneurial intentions and the perceptions of self-efficacy. Different groups of students were involved in that research. The sample of 84 included final-year students in entrepreneurship, management and those in other disciplines. All the students had attended an entrepreneurship-training programme (ETP). The results showed that the propensity to act as an entrepreneur, entrepreneurial intentions and entrepreneurial 'self-efficacy' all scored highest amongst the final-year students in entrepreneurship.

Fayolle, Gailly and Lassas-Clerc (2006) conducted a quantitative study in France on the impact of an entrepreneurial education programme in which 20 students were involved. They found that the programme had a strong measurable impact on the entrepreneurial intention of the students, whilst it had a positive, but not very significant, impact on their perceived behavioural control.

Peterman and Kennedy (2003) conducted a quantitative study in Australia and examined the effect of participation in an entrepreneurship education programme on perceptions of the desirability and feasibility of starting a business. They did this by analysing changes in perceptions of a sample of 236 secondary school students enrolled in the Young Achievement Australia (YAA) enterprise programme. The analysis was done using a pre-test post-test control group research design. After completing the entrepreneurship programme, respondents reported significantly higher perceptions of both desirability and feasibility. The degree of change in perceptions is related to the positiveness of prior experience and to the positiveness of the experience in the ETP. Self-efficacy theory was used to explain the impact of the programme.

Gird and Bagraim (2008) conducted a quantitative study in SA to test the theory of planned behaviour (TPB) as a predictor of entrepreneurial intent amongst 247 final-year commerce students at two higher education institutions. They examined the theoretical adequacy of the theory by considering four additional factors that are believed to influence entrepreneurial intentions: that is, personality traits, demographic factors, situational factors and prior exposure to entrepreneurship. The results of the multivariate data analysis indicated that the TPB significantly explained 27% of the variance in students' entrepreneurial intentions. They also found that, of all the other purported predictors of entrepreneurial intent examined in the study, only prior exposure to entrepreneurship was found to add significantly to the predictive power of the TPB in explaining entrepreneurship intention. Personality traits, demographic factors and situational factors did not add significantly to the variance explained by the TPB. The findings therefore suggest that the TPB is a valuable tool for predicting entrepreneurial intent.

In conclusion, it was evident that studies using a variety of approaches were conducted to examine the link between entrepreneurial education and entrepreneurial activities. The general findings were that there is a positive link between entrepreneurial education and venture creation. A huge interest seems to have come from UK and other European countries. Very few researchers in this field are from SA, implying that this topic is under-researched in the SA context.

The influence of role models on entrepreneurial career choice

By identifying with an outstanding role model, individuals can become inspired to pursue similar achievements. The implication here is that by identifying with successful role models who own or run their own businesses, students studying entrepreneurship may be inspired to start and run their businesses successfully. Fayolle *et al*. (2006) stated that intentions of creation of businesses are stronger when the degree of self-efficacy grows due to the presence of entrepreneurial role models and when the influences come from several close relatives.

Parental role models can also play a role in influencing children in the family to become entrepreneurs. Children of entrepreneurial mothers who perceive their role models as both positive and successful are likely to imitate those role models (Brennan, Morris & Schindehutte, 2003). According to social learning theory (Bandura, 1977), which emphasises the importance of observing and modelling the behaviours, attitudes, and emotional reactions of others, individuals who perceive that an entrepreneurial parent has been successful express a greater preference for an entrepreneurial career than those who have not had this kind of role model performance effect (Brennan *et al*., 2003).

Van Auken, Fry and Stephens (2006) examined the impact of role model activities on potential entrepreneurs' desire to own businesses. In their study, they asked students whose role models owned businesses to rank the influence on career intentions of twenty specific activities in which role models and potential entrepreneurs might engage. The study looked at the relationship between those activities and the desire to own businesses. Role models' activities related to involving the respondent in professional activities, employment in the business, and discussions about the business were found to be significantly related with interest in starting businesses.

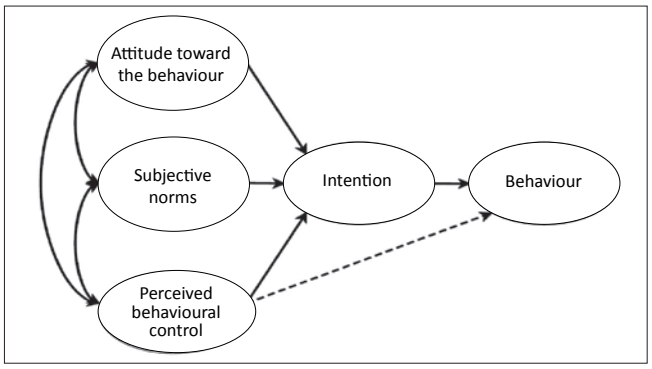
Quimby and DeSantis (2006) conducted an online survey at Towson University in Maryland (USA) in which 368 female undergraduate students responded. The study examined self-efficacy and role models' influence as predictors of career choice across Holland's (1997) six RIASEC (Realistic, Investigative, Artistic, Social, Enterprising and Conventional) types. Findings revealed that levels of self-efficacy and role model influence differed across Holland's types. Multiple regression analyses indicated that self-efficacy and role model influence accounted for significant variance in the career choice for all six RIASEC types. Role model influence added to the prediction of career choice over and above the contribution of self-efficacy in all but one (Investigative) of the RIASEC types.

On the influence of role models, other authors on organisational emergence seemed to express different views from what has been explained above. In their quantitative study, Krueger and Carsrud (1993) applied the TPB, which posits that exogenous influences on entrepreneurial intentions and behaviour happen by influencing attitudes indirectly. Scott and Twomey (1988) found that the existence of entrepreneurial role models only weakly predicts future entrepreneurial activity, and that its impact is subjective. Krueger (1996) and Scherer, Adams, Carley and Wiebe (1989) argued that role models affect entrepreneurial intentions, but only if they affect attitudes such as self-efficacy.

Ajzen's Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) is one of the most influential and popular conceptual frameworks for the study of human action (Ajzen, 2002). According to this theory, human action is guided by three kinds of considerations: behavioural, normative and control beliefs. These are beliefs about the likely outcome of the behaviour, the normative expectations of others, and the presence of factors that may facilitate or impede performance of the behaviour. Figure 1 is a schematic representation of the TPB (Ajzen, 1991).

Ajzen (1991) contended that, in their respective aggregates, behavioural beliefs produce a favourable or unfavourable attitude toward the behaviour; normative beliefs result in perceived social pressure or subjective norm; and control beliefs give rise to perceived behavioural control. In combination, attitudes toward the behaviour, subjective norm, and perception of behavioural control lead to the formation of a behavioural intention. The general rule is that the more favourable the attitude and subjective norm, and the greater the perceived control, the stronger should be



Source: Ajzen, I. (1991). Theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, *50*, 182. http://dx.doi.org/10.1016/0749-5978(91)90020-T

FIGURE 1: Theory of Planned Behaviour.

the person's intention to perform the behaviour in question. Finally, given a sufficient degree of actual control over the behaviour, people are expected to carry out their intentions when the opportunity arises (Ajzen, 2002; 2006). Intention is therefore assumed to be the immediate antecedent of behaviour. They are indications of how hard people are willing to try, and of how much of an effort they are planning to exert in order to perform the behaviour. To the extent that perceived behavioural control is veridical, it can serve as a proxy for actual control and contribute to the prediction of the behaviour in question.

As indicated before, the intention becomes the fundamental element in explaining behaviour. In this case it indicates the effort that a person will make to carry out that entrepreneurial behaviour. Linan and Chen (2006) contend that intention is the cognitive representation of a person's readiness to perform a given behaviour, and is considered the immediate antecedent of behaviour. The first claim is that intention is the result of three conceptual determinants:

1. Attitude toward behaviour: It refers to the degree to which the individual holds a positive or negative personal valuation about being an entrepreneur (Ajzen, 2006). It would include not only affective (e.g. 'I like it'; 'it makes me feel good'; 'it is pleasant'), but also evaluative considerations (e.g. 'it is more profitable'; 'it has more advantages').
2. Perceived social norms: This measures the perceived social pressure to carry out or not to carry out entrepreneurial behaviour. In particular, it would refer to the perceptions that 'reference people' would approve of the decision to become an entrepreneur, or not. From a social-capital point of view, Matthews and Moser (1995) argue that values transmitted by 'reference people' or 'important others' would cause more favourable intentions regarding personal attraction and self-efficacy.
3. Perceived behavioural control: This is defined as the perception of the easiness or difficulty in fulfilling the behaviour of interest (becoming an entrepreneur). It is a concept quite similar to perceived self-efficacy and perceived feasibility. In all three instances, the important thing is the sense of capacity regarding the fulfilment of business creation behaviours. Nevertheless, recent work has emphasised the difference between perceived behavioural control and self-efficacy (Ajzen, 2002).

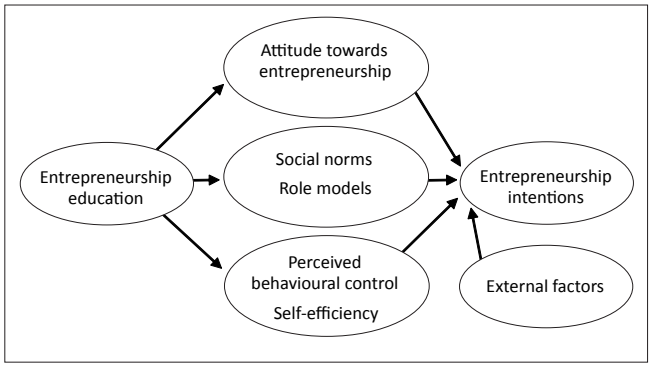
The TPB is part of the larger family of intentional models that have been used to explain the emergence of entrepreneurial behaviour. In those approaches, career intentions depend on the attitude related to the behaviour considered, social standards and the level of perceived control. In view of many authors, such as Autio, Keely, Klofsten, Parker and Hay (2001), venture creation is a planned and hence an intentional behaviour.

An integrative intentions model

The researchers developed an integrative model for this study, which formed the base for the measuring instrument. The model is based on Ajzen's (1991) model but also integrates aspects of other intentions and career choice models. Dyer's (1994) model of Entrepreneurial Careers reveals that role models can be classified as a social factor that influences people's intentions to choose an entrepreneurial career. The model also indicates that education is one of the factors which affect career socialisation. This means that, according to Dyer's model, education and role models are factors that have a bearing on influencing entrepreneurial intentions.

Similarly, SCCT (Lent *et al.*, 1994) illustrated the main variables, that is, self-efficacy (self-beliefs) and outcome expectation (perceived feasibility), which affect the individuals' goals (intentions) to start businesses. Since all the aforementioned models deal with entrepreneurial career choice they are related.

Figure 2 integrates the variables that are described in the models discussed earlier. Figure 2 depicts entrepreneurial education as the independent variable and the antecedents of entrepreneurial intentions, that is, attitude towards entrepreneurship, social norms, role models, perceived behavioural control, self-efficacy and entrepreneurial intentions, as the dependent variables. The integrative model makes a clear distinction between role models and social norms, and between self-efficacy and perceived behavioural control. Measuring role models and self-efficacy as separate variables is where the integrative model differs from Ajzen's (1991) model.



Source: Adapted from Ajzen, I. (1991). Theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, *50*, 182. http://dx.doi.org/10.1016/0749-5978(91)90020-T

FIGURE 2: Integrative Model for Assessing Entrepreneurial Intentions.

Figure 2 suggests that there is both a direct and an indirect link between entrepreneurial education and entrepreneurial intentions. The indirect link is through the antecedents of entrepreneurial intentions, that is, attitude towards entrepreneurship, social norms, role models, self-efficacy and perceived behavioural control. Figure 2 also depicts that external factors such as economic, political and social may have an influence on an individual's decision to start a business. These are the factors over which individuals have no control.

Research objectives

Based on the research objectives, that is, to explore the differences in entrepreneurial intentions between entrepreneurship students and non-entrepreneurship students and secondly to investigate the relationship between entrepreneurial education and entrepreneurial intentions as well as between role models and entrepreneurial intentions, eight hypotheses were set for this study. The first six hypotheses deal with the differences in entrepreneurial intentions between the entrepreneurship group and the non-entrepreneurship group. The last two dimensions deal with the relationship between education and entrepreneurial intentions and between role models and entrepreneurial intentions respectively:

Hypothesis 1: There are no significant differences in attitude towards entrepreneurship between entrepreneurship students and non-entrepreneurship students.

Hypothesis 2: There are no significant differences in social norms between entrepreneurship students and non-entrepreneurship students.

Hypothesis 3: There are no significant differences in entrepreneurial role models between entrepreneurship students and non-entrepreneurship students.

Hypothesis 4: There are no significant differences in self-efficacy between entrepreneurship students and non-entrepreneurship students.

Hypothesis 5: There are no significant differences in perceived behavioural control between entrepreneurship students and non-entrepreneurship students.

Hypothesis 6: There are no significant differences in entrepreneurial intentions between entrepreneurship students and non-entrepreneurship students.

Hypothesis 7: There is no significant relationship between entrepreneurial education and entrepreneurial intentions.

Hypothesis 8: There is no significant relationship between entrepreneurial role models and entrepreneurial intentions.

Research design

Research approach

This study falls within the quantitative research paradigm and used primary data. A questionnaire was used to collect data in a cross-sectional field survey. The main reason for using this approach was its cost-effectiveness. It was quick and easy, saving time and money as all respondents were available in a classroom situation. A data set was constructed from the data collected with the questionnaire. The data set was factor analysed, where after analyses of variances and correlation analyses were carried out on it.

Research method

The various elements of the research method, that is, the research participants, the measuring instrument, research procedure and statistical analysis, are discussed next.

Research participants

This study made use of convenience sampling. A convenience sample is when the more convenient elementary units are chosen from a population for observation (Coldwell & Herbst, 2004). Compared to random sampling or stratified sampling, where the larger population is divided into subgroups, and a random sample taken from each subgroup, convenience sampling is the least reliable, but is normally the cheapest and easiest to conduct.

The study was done amongst a sample of final-year students from the Faculty of Management of a higher education institution in Johannesburg. The respondents were not randomly selected, but all who met the criteria, that is, were final-year entrepreneurship or non-entrepreneurship students from the faculty and were available and willing to participate, were included. Such an approach is regarded as unscientific (De la Rey, 1978). However, Kerlinger (1973) defends the use of non-probability samples by noting that whilst they may lack the virtues of random sampling, they are often necessary and unavoidable. Their weaknesses can to some extent be mitigated by using knowledge, expertise and care in selecting samples.

The sample consisted of two main groups, namely entrepreneurship students and non-entrepreneurship students. The entrepreneurship group was subdivided into two groups: (1) students who have Entrepreneurship as a major subject, and (2) students who have Entrepreneurship as a minor subject. The Non-Entrepreneurship group consisted of students who do not have entrepreneurship as a subject. These groups were labelled Entrepreneur Major, Entrepreneur Minor and Non-Entrepreneur respectively. Table 1 illustrates the size of these groups.

A closer look at Table 1 indicates that of a total of 269 respondents, 162 (60.2%) respondents have Entrepreneurship as a subject, either as a major or a minor, whereas 107 (39.8%) respondents do not have Entrepreneurship as a subject. Eighty-seven (32.3%) respondents have Entrepreneurship as a major subject, whilst 75 (27.9%) respondents have it as a minor subject. Seeing that there were differences in sample size between the groups and sample size affects levels of significance, due consideration was given to it during the analysis phase.

TABLE 1: Sample of final-year students.

Student groups	*n*	Percentage
Entrepreneur Major	87	32.3
Entrepreneur Minor	75	27.9
Entrepreneur sub total	162	60.2
Non-Entrepreneur	107	39.8
Total	**269**	**100**

n, Sample size.

Table 2 shows a breakdown of gender per group. From Table 2 it is evident that the proportion of females is high in all groups, and the highest (88%) is in the Entrepreneur Minor group.

The mean age of the three groups is basically the same, that is, 22 years, with a minimum age of 19 and a maximum age of 31 years.

Measuring instrument

The researchers developed a measuring instrument called the Entrepreneurship Intentions Questionnaire, as a review of the literature did not yield a measuring instrument that includes the variables the researchers wanted to study. The objective of the questionnaire was to measure a respondent's intention to become an entrepreneur. In an attempt to ensure the validity of the measuring instrument, the researchers carefully selected the items for inclusion in the instrument. Items for inclusion were based on the specifications drawn up after a thorough examination of the subject domain. The questionnaire is of the self-report type. It consisted of 87 items grouped into four sections. The instrument measured the following variables: attitude, subjective norms, role models, self-efficacy, perceived behavioural control, entrepreneurial intentions and education.

Attitude (environment): Five items seek to ascertain the perceptions of respondents regarding the external business environment in SA. The aim is to find out to what extent the business environment is perceived as conducive to entrepreneurial activities; for example, 'SA is an entrepreneur-friendly country'.

Attitude (entrepreneur): Five items measure the respondents' attitude towards becoming entrepreneurs themselves; for example, 'I would love to own a business'.

Attitude (entrepreneurship): Entrepreneurship attitude is measured by 17 items. Each item consists of a pair of opposites and the respondents have to reflect their perceptions of an entrepreneurial career on a 5-point scale; for example, 'Thinking of entrepreneurship as a career option, I perceive it as: uninteresting – interesting'.

The difference between entrepreneurship attitude and entrepreneur attitude is that entrepreneurship attitude has an impersonal nature, whilst entrepreneur attitude has a more personal nature. In the case of entrepreneurship attitude, the respondents could have very positive attitudes towards entrepreneurship as a career, but this does not mean that they want to pursue an entrepreneurial career. An entrepreneur attitude puts them personally in the role of an entrepreneur.

Subjective norms: Five items measure perceived social norms. This refers to the perceptions that 'important others' would approve of the decision to become an entrepreneur or not; for example, 'An entrepreneur is a respected person in a society'.

Role models: Seven items assess the respondent's entrepreneurial role model(s). These are individuals the respondent would aspire to be like in terms of career choice. For the purposes of this study a role model is regarded as a type of a subjective norm; for example, 'Several of my role models are entrepreneurs'.

Self-efficacy: Eight items determine the confidence level of the respondent in starting a business; for example, 'I am confident that I would succeed if I started my business' and 'My entrepreneurial knowledge and skills are well developed'.

Perceived behavioural control: This construct is measured by 15 items. It deals with the respondent's perceived ability to perform the work of an entrepreneur. The respondents have to assess their current level of proficiency regarding each of the given functions of entrepreneurial work and indicate how easy or difficult it would be for them to execute that function; for example, 'How difficult or easy would it be for you to develop business plans?'

Intention: This construct is measured by five items. The aim is to determine the respondents' intentions to start businesses after the completion of their studies; for example, 'I intend to become an entrepreneur'.

Education: This construct is measured by seven items. The main aim here is to find out if respondents perceive their education as adding value to becoming an entrepreneur and if they have been influenced by their studies to decide to become entrepreneurs in future; for example, 'My current studies prepare me well for a career in entrepreneurship'.

The questionnaire also collected biographical data, such as gender, age, citizenship, relationships with entrepreneurs and entrepreneurial experience.

Research procedure

As research is a form of human conduct, it follows that such conduct has to conform to generally accepted norms and values (Mouton, 2006). Based on this concern, reasonable measures were taken to adhere to all ethical considerations.

TABLE 2: Gender per student group.

Gender	Percentage		
	Entrepreneur Major	Entrepreneur Minor	Non-Entrepreneurs
Male	36.8	12.0	33.6
Female	63.2	88.0	66.4
Total	**100**	**100**	**100**

TABLE 3: Employment status after two years.

Employment status	Percentage		
	Entrepreneur Major	Entrepreneur Minor	Non-Entrepreneur
Self-employed	39.1	35.1	20.6
Family business	5.7	2.7	3.7
Private sector	18.4	20.3	35.5
Public sector	6.9	17.6	5.6
Both sectors†	25.3	17.6	31.8
Don't know	4.6	6.8	2.8

†, Both self-employed and employed by an organisation.

Ethical clearance for the research project was obtained from the higher education institution. The ethics protocol for the research was approved by the institution's Management Faculty Ethics in Research Committee.

Final-year (third-year) entrepreneurship and non-entrepreneurship students were approached to complete the survey questionnaire. A pilot study was first conducted on a sample of the students to test the measuring instrument and identify and rectify possible problems. A group of 20 students, male and female, volunteered to participate in the pilot study. Questions asked were found to be clear. The questionnaires in the form of hard copies were distributed and administered by lecturers during their lecture periods. Respondents were informed about the confidentiality, anonymity and objectives of the study. They were also informed that participation was voluntary and that they had the right to withdraw at any stage during the process. The researcher personally collected the questionnaires immediately after they were completed. A data set was then developed from the survey information collected with the measuring instrument. The data set was analysed and interpreted. The results were discussed in relation to the findings of the literature review. Finally, recommendations for future research in the area of entrepreneurship education and role models were made.

Statistical analysis

Various statistical analyses were carried out on the data set. These included both descriptive and inferential statistics, such as reliability coefficients, factor analysis, analysis of variance and correlation coefficients. All calculations were done by means of the Statistical Package for the Social Sciences (SPSS).

Results

What follows is a discussion of the descriptive statistics, the reliability analysis, factor analysis, analyses of variance, correlation analysis and the testing of the hypotheses based on the various statistical analyses.

Descriptive statistics

The respondents' expected employment status two years after completion of their studies is reflected in Table 3.

From Table 3 it is clear that the largest proportion of students in the entrepreneur group would like to be self-employed two years after they have completed their studies. The proportion for the Entrepreneur Major group is 39.1% and for the Entrepreneur Minor group 35.1%. The largest proportion of students in the Non-Entrepreneur group (35.5%) would like to be employed in the private sector.

A fairly high proportion of students in all three groups indicated that they would like to be employed either in the private sector or would like to be both self-employed and employed by an organisation.

Only a small proportion of students in all groups (Entrepreneur Major: 4.6%, Entrepreneur Minor: 6.8% and Non-Entrepreneurs: 2.8%) did not know where they saw themselves in the two years after graduation. Similarly, very few students see a family business as an option in their future careers.

A summary of the descriptive statistics for the various parts of the questionnaire is reflected in Table 4.

From Table 4 it is clear that the means for Part A (attitude towards business environment; attitude towards becoming an entrepreneur; subjective norms; role models; self-efficacy; education; intention) (M = 3.8, SD = 0.461) and Part B (attitude towards entrepreneurship) (M = 3.96, SD = 0.654) are high, whilst the distributions for these parts are slightly negatively skewed (skewness for Part A is -0.834 and for Part B is -1.410) and leptokurtic (kurtosis for Part A is 1.728 and for Part B is 3.376). The distribution for Part C (perceived behavioural control) falls within the parameters of a normal distribution,

TABLE 4: Descriptive statistics (summary).

Questionnaire	Statistic	Value	Standard error
Part A	Mean	3.800	0.028
	Median	3.840	-
	Variance	0.213	-
	Standard deviation	0.461	-
	Minimum	2.000	-
	Maximum	5.000	-
	Range	3.000	-
	Skewness	-0.834	0.150
	Kurtosis	1.728	0.299
Part B	Mean	3.960	0.040
	Median	4.060	-
	Variance	0.428	-
	Standard deviation	0.654	-
	Minimum	1.000	-
	Maximum	5.000	-
	Range	4.000	-
	Skewness	-1.410	0.150
	Kurtosis	3.376	0.299
Part C	Mean	3.120	0.034
	Median	3.130	-
	Variance	0.300	-
	Standard deviation	0.548	-
	Minimum	1.000	-
	Maximum	4.000	-
	Range	3.000	-
	Skewness	-0.246	0.150
	Kurtosis	0.142	0.299

TABLE 5: Reliability statistics for the variables.

Variable	Number of items	Cronbach's Alpha
Attitude (environment)	5	0.44
Attitude (entrepreneur)	6	0.77
Attitude (entrepreneurship)	17	0.91
Social norms	5	0.57
Role models	7	0.73
Self-efficacy	8	0.86
Perceived behavioural control	15	0.86
Intention	5	0.88
Education	7	0.81

with a mean of 3.12, skewness of -0.246, and kurtosis of 0.142. The internal consistency of the various factors (the degree of homogeneity amongst the items) was computed using Cronbach's coefficient Alpha. Table 5 reflects that, with the exception of attitude (environment) ($\alpha = 0.44$) and social norms ($\alpha = 0.57$), all Cronbach's Alphas are higher than 0.7, reflecting acceptable reliabilities.

Overall, the descriptive statistics pointed to the suitability of the data set for factor analysis. What follows is an exposition of the results of the factor analysis.

Factor analysis

The item scores for Parts B and C of the questionnaire were factor analysed in order to determine their underlying factor structure. All calculations were done by means of the SPSS-Windows program.

The factor matrix for Part B (attitude towards entrepreneurship) was rotated to simple structure by means of Varimax rotation. Varimax rotation is used to see how groupings of items measure the same concept. Table 6 depicts the three factors extracted.

Based on the similarities between the items grouped together, these factors were labelled as follows: 'attractiveness', 'viability' and 'demanding'.

Attractiveness refers to how appealing an entrepreneurship career is. Viability refers to the possibility of becoming an entrepreneur and demanding refers to how challenging an entrepreneurial career is.

The factor matrix for Part C was rotated to simple structure by means of Varimax rotation.

From Table 7 it can be seen that four factors were extracted. It can also be seen from Table 7 that Factors 3 and 4 have only two and one items loadings respectively. That makes them non-determined, as a factor should consist of at least three items for it to be determined.

Based on the similarities between the items grouped together, the first two perceived behavioural control factors were labelled 'managing' and 'developing'. The last two factors were non-determined and were dropped as a result.

Managing refers to the perceived ease or difficulty of managing or operating one's own business. Developing refers to the perceived ease or difficulty of starting up and growing one's own business.

Following the factor analysis, an analysis of variance was conducted to test Hypotheses 1–6.

Analysis of variance

The results of the one-way analysis of variance (ANOVA) are depicted in Table 8.

From Table 8 it can be seen that the ANOVA is significant ($p < 0\ .05$) for the following factors:

- Attitude: $F(2, 264) = 4.173$, $p = 0.017$
- Role model: $F(2, 264) = 3.286$, $p = 0.039$
- Self-efficacy: $F(2, 266) = 5.550$, $p = 0.004$
- Intention: $F(2, 266) = 6.663$, $p = 0.002$

If more than two groups are analysed, the one-way ANOVA does not specifically indicate which pairs of groups are significantly different. Post-hoc tests are applied to determine such pairs. The Tamhane's test was selected, as it is suitable in cases where group sizes and observed variances are unequal. The following is an interpretation of the mean differences between the Entrepreneur Major group and the Non-Entrepreneur group on the respective variables at the 0.05 level.

As far as attitude is concerned, it is clear from Table 9 that the mean difference (0.239) between the Entrepreneur Major group and the Non-Entrepreneur group is significant ($p = 0.036$). The Entrepreneur Major group has a more positive attitude towards becoming entrepreneurs than the Non-Entrepreneur group. Hence, Hypothesis 1, which states that there are no significant differences in attitude towards

TABLE 6: Rotated factor matrix for Part B of the questionnaire (attitude towards entrepreneurship).

Item number	Item description – Pairs of opposites	Factor		
		1	2	3
B6.	Uninspiring – inspiring	0.731†	0.361	0.070
B4.	Dull – stimulating	0.631†	0.253	0.029
B7.	Impoverishing – enriching	0.624†	0.310	0.202
B2.	Harmful – beneficial	0.604†	0.055	0.237
B8.	Uninteresting – interesting	0.554†	0.483	0.200
B1.	Unattainable – attainable	0.515†	0.209	0.282
B5.	Unpleasant – pleasant	0.499†	0.165	0.349
B11.	Enslaving – liberating	0.478†	0.425	0.277
B14.	Unfeasible – feasible	0.145	0.744†	0.261
B13.	Impossible – possible	0.288	0.609†	0.239
B16.	Disempowering – empowering	0.561	0.587†	0.121
B12.	Disheartening – uplifting	0.540	0.555†	0.236
B10.	Worthless – valuable	0.518	0.537†	-0.040
B17.	Tensing – relaxing	0.032	0.220	0.579†
B15.	Frustrating – fulfilling	0.375	0.343	0.529†
B9.	Strenuous – refreshing	0.314	0.165	0.502†
B3.	Difficult – easy	0.043	0.003	0.352†

Extraction Method: Principal Axis Factoring.
Rotation Method: Varimax with Kaiser Normalisation.
Rotation converged in 8 iterations.
†, Values of the extracted factors.

TABLE 7: Rotated factor matrix for Part C of the questionnaire (perceived behavioural control).

Item number	Item description	Factor			
		1	2	3	4
C10.	Comply with relevant legislation?	0.677†	0.046	0.107	0.114
C9.	Manage the human resources of the business?	0.615†	0.053	0.044	0.243
C11.	Utilise appropriate technologies (e.g. information and communication)?	0.611†	0.190	0.132	0.010
C12.	Deal with suppliers?	0.554†	0.176	0.367	0.080
C13.	Utilise support networks?	0.509†	0.054	0.467	0.013
C6.	Market a product or service?	0.486†	0.354	0.135	0.153
C7.	Manage the finances of the business?	0.386†	0.247	0.251	0.284
C1.	Identify business opportunities?	0.080	0.580†	0.051	0.033
C4.	Mitigate business risks?	0.127	0.527†	0.182	0.145
C3.	Get the necessary help to start a business?	0.041	0.485†	0.160	0.431
C2.	Start up your own business?	0.096	0.484†	0.195	0.353
C5.	Develop business plans?	0.357	0.453†	0.084	-0.040
C14.	Overcome barriers to entrepreneurship?	0.194	0.150	0.843†	0.158
C15.	Cope should the business fail?	0.142	0.263	0.496†	0.138
C8.	Raise capital for business purposes?	0.269	0.146	0.149	0.847†

†, Values of the extracted factors.

TABLE 8: One way analysis of variance (ANOVA).

Factor	Between or within groups	Sum of squares	*df*	Mean square	*F*	Sig.
Environment	Between groups	0.624	2	0.312	1.115	0.329
	Within groups	73.818	264	0.280	-	-
	Total	74.441	266	-	-	-
Attitude	Between groups	3.183	2	1.592	4.137	0.017*
	Within groups	101.573	264	0.385	-	-
	Total	104.756	266	-	-	-
Social norms	Between groups	1.195	2	0.597	1.663	0.191
	Within groups	94.804	264	0.359	-	-
	Total	95.999	266	-	-	-
Role model	Between groups	3.070	2	1.535	3.286	0.039*
	Within groups	123.330	264	0.467	-	-
	Total	126.400	266	-	-	-
Self-efficacy	Between groups	3.985	2	1.993	5.550	0.004*
	Within groups	95.498	266	0.359	-	-
	Total	99.484	268	-	-	-
Education	Between groups	2.463	2	1.231	2.462	0.087
	Within groups	133.055	266	0.500	-	-
	Total	135.517	268	-	-	-
Intention	Between groups	8.398	2	4.199	6.663	0.002*
	Within groups	167.642	266	0.630	-	-
	Total	176.040	268	-	-	-
Attractiveness	Between groups	0.622	2	0.311	0.510	0.601
	Within groups	160.284	263	0.609	-	-
	Total	160.906	265	-	-	-
Viability	Between groups	0.663	2	0.332	0.526	0.591
	Within groups	164.412	261	0.630	-	-
	Total	165.075	263	-	-	-
Demanding	Between groups	0.063	2	0.031	0.049	0.952
	Within groups	166.867	261	0.639	-	-
	Total	166.930	263	-	-	-
Managing	Between groups	1.131	2	0.566	1.302	0.274
	Within groups	114.675	264	0.434	-	-
	Total	115.806	266	-	-	-
Developing	Between groups	0.098	2	0.049	0.126	0.882
	Within groups	102.402	264	0.388	-	-
	Total	102.499	266	-	-	-
Behavioural control factor 3	Between groups	0.280	2	0.140	0.189	0.828
	Within groups	195.882	264	0.742	-	-
	Total	196.163	266	-	-	-
Behavioural control factor 4	Between groups	1.322	2	0.661	0.588	0.556
	Within groups	296.663	264	1.124	-	-
	Total	297.985	266	-	-	-

df, degrees of freedom; *F*, ratio between mean square between groups and mean square within groups; Sig., statistical significance.
*, $p < 0.05$

TABLE 9: Tamhane post hoc test for multiple comparisons.

Dependent variable	(I) Category of entrepreneur	(J) Category of entrepreneur	Mean difference (I–J)	Standard error	Sig.	95% Interval confidence	
						Upper bound	Lower bound
Attitude (entrepreneur)	Entrepreneur Major	Entrepreneur Minor	0.03770	0.08468	0.960	-0.1666	0.2420
		Not an entrepreneur	0.23897†	0.09420	0.036	0.0120	0.4659
	Entrepreneur Minor	Entrepreneur Major	-0.03770	0.08468	0.960	-0.2420	0.1666
		Not an entrepreneur	0.20127	0.09071	0.081	-0.0174	0.4199
	Not an entrepreneur	Entrepreneur Major	-0.23897†	0.09420	0.036	-0.4659	-0.0120
		Entrepreneur Minor	-0.20127	0.09071	0.081	-0.4199	0.0174
Role model	Entrepreneur Major	Entrepreneur Minor	-0.10450	0.10277	0.673	-0.3525	0.1435
		Not an entrepreneur	0.15482	0.10498	0.368	-0.0982	0.4078
	Entrepreneur Minor	Entrepreneur Major	0.10450	0.10277	0.673	-0.1435	0.3525
		Not an entrepreneur	0.25932†	0.09594	0.022	0.0280	0.4906
	Not an entrepreneur	Entrepreneur Major	-0.15482	0.10498	0.368	-0.4078	0.0982
		Entrepreneur Minor	-0.25932†	0.09594	0.022	-0.4906	-0.0280
Self-efficacy	Entrepreneur Major	Entrepreneur Minor	0.24103†	0.08563	0.017	0.0341	0.4480
		Not an entrepreneur	0.27138†	0.08354	0.004	0.0701	0.4726
	Entrepreneur Minor	Entrepreneur Major	-0.24103†	0.08563	0.017	-0.4480	-0.0341
		Not an entrepreneur	0.03034	0.09558	0.985	-0.2001	0.2608
	Not an entrepreneur	Entrepreneur Major	-0.27138†	0.08354	0.004	-0.4726	-0.0701
		Entrepreneur Minor	-0.03034	0.09558	0.985	-0.2608	0.2001
Intention	Entrepreneur Major	Entrepreneur Minor	0.22382	0.10952	0.124	-0.0411	0.4887
		Not an entrepreneur	0.41828†	0.10929	0.001	0.1548	0.6817
	Entrepreneur Minor	Entrepreneur Major	-0.22382	0.10952	0.124	-0.4887	0.0411
		Not an entrepreneur	0.19447	0.12895	0.349	-0.1164	0.5054
	Not an entrepreneur	Entrepreneur Major	-0.41828†	0.10929	0.001	-0.6817	-0.1548
		Entrepreneur Minor	-0.19447	0.12895	0.349	-0.5054	0.1164

Sig., statistical significance.
†, The mean difference is significant at the 0.05 level.

being an entrepreneur between entrepreneurship students and non-entrepreneurship students, is rejected.

From Table 8 it can be seen that there are no significant differences in the mean scores for the three general attitude factors, that is, attractiveness (p = 0.601), viability (p = 0.591) and demanding (p = 0.952) The results for attitude towards the environment are not interpreted because of the low reliability (α = 0.44) of this variable (see Table 5).

In respect of social norms, it is clear from Table 8 that the differences in social norms mean scores between the entrepreneur and the Non-Entrepreneur groups are non-significant (p = 0.191). Therefore, Hypothesis 2, which states that there are no significance differences in subjective norms between entrepreneurship students and non-entrepreneurship students, is accepted.

Concerning entrepreneurial role models, Table 9 shows that the mean difference (0.259) between the Entrepreneur Minor group and the Non-Entrepreneur group is significant (p = 0.022). The Entrepreneur Minor group has a higher mean score on role models than the Non-Entrepreneur group. Hence, Hypothesis 3, which states that there are no significant differences in entrepreneurial role models between entrepreneurship students and non-entrepreneurship students, is rejected.

Regarding self-efficacy, it is clear from Table 9 that the mean difference (0.271) between the Entrepreneur Major group and the Non-Entrepreneur group is significant (p = 0.004). The self-efficacy of the Entrepreneur Major group is higher than that of the Non-Entrepreneur group. Hence, Hypothesis 4, which states that there are no significant differences in self-efficacy between entrepreneurship students and non-entrepreneurship students, is rejected.

With regard to perceived behavioural control it is clear from Table 8 that there are no significant differences in the mean scores for the two perceived behavioural control factors, that is, managing (p = 0.274) and developing (p = 0.882). Hence, Hypothesis 5, which states that there are no statistically significant differences in perceived behavioural control between entrepreneurship and non-entrepreneurship students, is accepted.

As far as entrepreneurial intentions are concerned, Table 9 shows that the mean difference (0.418) between the Entrepreneur Major group and the Non-Entrepreneur group is significant (p = 0.001). The Entrepreneur Major group has higher intentions of becoming entrepreneurs than the Non-Entrepreneur group. Hence, Hypothesis 6, which states that there are no significant differences in entrepreneurial intentions between entrepreneurship students and non-entrepreneurship students, is rejected.

Correlation coefficients

The Spearman correlation was conducted to test Hypothesis 7 and Hypothesis 8 regarding the relationship between entrepreneurial education and the dimensions of entrepreneurial intentions and between role models and the

TABLE 10: The Spearman correlations between education and the dimensions of entrepreneurial intentions (N = 269).

Factor	Education
Attitude (entrepreneur)	0.228†
Attitude (entrepreneurship)	0.291†
Role models	0.347†
Self-efficacy	0.430†
Perceived behavioural control	0.248†
Intention	0.352†

†, Correlation is significant at the 0.01 level (2-tailed).

TABLE 11: The Spearman correlations between role model and the dimensions of entrepreneurial intentions (N = 267).

Factor	Role model
Attitude (entrepreneur)	0.412†
Attitude (entrepreneurship)	0.353†
Self-efficacy	0.465†
Perceived behavioural control	0.222†
Intention	0.463†
Education	0.347†

†, Correlation is significant at the 0.01 level (2-tailed).

dimensions of entrepreneurial intentions. The correlations between entrepreneurial education and the dimensions of entrepreneurial intentions are depicted in Table 10.

From Table 10 it can be seen that there are moderately positive correlations, ranging from 0.228 to 0.430 ($p < 0.01$) between entrepreneurial education and the dimensions of intention. Hence, Hypothesis 7, which states that there is no significant relationship between entrepreneurial education and entrepreneurial intention, is rejected.

The correlations between role model and the dimensions of entrepreneurial intentions are depicted in Table 11.

Table 11 reflects moderately positive correlations, ranging from 0.222 to 0.465 ($p < 0.01$, 2-tailed) between role model and the dimensions of intention. Hence, Hypothesis 8, which states that there is no significant relationship between role models and entrepreneurial intentions, is rejected.

Discussion

This study explored the differences in entrepreneurial intentions between entrepreneurship students and non-entrepreneurship students, and also investigated the relationship between entrepreneurial education and entrepreneurial intentions as well as between role models and entrepreneurial intentions. Insight into these areas will assist relevant stakeholders to enhance their initiatives aimed at promoting entrepreneurship in SA.

The study makes a theoretical, practical as well as methodological contribution. It contributes to the body of knowledge by providing a better understanding of the differences in entrepreneurial intentions between entrepreneurship students and non-entrepreneurship students, and of the relationship between entrepreneurial education and entrepreneurial career choice as well as of the relationship between role models and entrepreneurial career choice in the context of a developing country. The study has methodological value in the sense that it delivered a questionnaire for collecting data on entrepreneurial intentions. Its practical value lies in the fact that its findings can assist stakeholders such as academics, policy developers, the ETDP SETA and learned societies to develop more effective delivery strategies that could stimulate the intentions of students to start businesses.

The empirical findings of the study are generally in line with the findings of various studies from both the quantitative and qualitative paradigms covering a wide range of approaches, from the trait approach to the intentions-based approach, which was the approach followed in this study. The following is a discussion of the findings of the study in relation to the findings of other researchers. Firstly, differences in intentions between entrepreneurship students and nonentrepreneurship students will be discussed where after the links between entrepreneurship education and entrepreneurial intentions and also between role models and entrepreneurial intentions will be discussed.

As far as attitude is concerned, the results of the study indicate that entrepreneurship students have a more positive attitude towards becoming entrepreneurs than non-entrepreneurship students. Although both the entrepreneurship and the non-entrepreneurship groups agree that an entrepreneurial career is an attractive, viable and somewhat demanding career, the entrepreneurship group is more positive than the non-entrepreneurship group towards becoming an entrepreneur. This finding is in line with the contention of Stokes *et al*. (2010) that participation in enterprise programmes can positively influence peoples' attitudes to entrepreneurship.

Regarding subjective norms, the findings of the study reveal that there are no differences in subjective norms between entrepreneurship students and non-entrepreneurship students. In other words entrepreneurship students do not perceive more social pressure than non-entrepreneurship students to become entrepreneurs. This finding is contrary to the TPB of Ajzen (1991) which postulates that there is a link between subjective norms and intentions to carry out behaviour. A possible explanation for the finding of this study is that the objectives of the education programme were not really focused on enhancing the subjective norms of the students and the programme may not have much direct control over it. A further possible explanation is that the questionnaire did not accurately assess this variable as reflected by its low reliability.

Regarding role models, the findings of the study suggest that entrepreneurship students perceive a stronger influence of entrepreneurial role models on their choice of a career than non-entrepreneurship students. This finding is in line with the findings of previous empirical research that role models influence potential entrepreneurs' desire to own businesses (Brennan *et al*., 2003; Fayolle *et al*., 2006; Van Auken, Fry & Stephens, 2006).

Concerning self-efficacy, the findings of the study indicate that entrepreneurship students have higher entrepreneurial self-efficacy than non-entrepreneurship students. This finding is consistent with the findings of Bandura (1986) and Boyd and Vozikis (1994) that there is a positive link between entrepreneurial education and entrepreneurial self-efficacy. This means that entrepreneurship students have stronger beliefs in their capabilities to become entrepreneurs, will be more prepared to expend effort on entrepreneurial activities and will persist longer in the face of obstacles and aversive experiences than non-entrepreneurship students.

With regard to perceived behavioural, the results of the study indicate no significant differences in perceived behavioural control between entrepreneurship and non-entrepreneurship students. This means that for both entrepreneurship and non-entrepreneurship students it will be equally easy or difficult to develop and manage their own businesses. This finding is contrary to the findings of previous empirical research that entrepreneurship training programmes had a positive impact on the perceived behavioural control of the respondents in their studies (Fayolle *et al*., 2006; Peterman & Kennedy, 2003). A possible explanation for the finding of this study is that the insight the entrepreneurship education programme gave entrepreneurship students into what entrepreneurship entails made them realise that entrepreneurship is not an easy activity. As Krueger and Carsrud (1993, p. 327) put it: 'Teaching people about the realities of entrepreneurship may increase their entrepreneurial self-efficacy, but simultaneously decrease the perceived desirability of starting a business'.

Concerning entrepreneurial intentions, the results of the study suggest that entrepreneurship students have stronger intentions of becoming entrepreneurs than non-entrepreneurship students. This finding is in line with the findings of Gird and Bagraim (2008) that the entrepreneurial intentions of entrepreneurship students have grown after attending an entrepreneurship course.

The findings of the study further indicate that there is a positive relationship, though not very strong, between entrepreneurial education and entrepreneurial intentions. This finding supports the findings of previous studies. Dickson *et al*. (2008), Albert *et al*. (1991) and Saini and Bhatia (2007) also found a positive link between entrepreneurship education and entrepreneurial career choice.

Finally, the results of the study indicate a slightly positive relationship between the presence of entrepreneurial role models in students' lives and their intentions to start businesses. This finding is in line with previous studies. Krueger (1996), Krueger and Carsrud (1993), Scott and Twomey (1988), and Scherer *et al*. (1989) argued that the existence of entrepreneurial role models only indirectly and weakly affects entrepreneurial intentions.

The overall findings of the study are in line with the findings from the literature, in which entrepreneurial education and the presence of role models are found to be effective in influencing entrepreneurial career choice. The managerial implications of the study are that stakeholders should target the areas of entrepreneurial intentions identified as 'no differences areas', that is, subjective norms and perceived behavioural control in their developmental efforts. Increased perceived behavioural control will mean that students will perceive entrepreneurship as an 'easy' and 'feasible' career and they will be more willing to pursue an entrepreneurial career. In this regard the utilisation of role models could be very effective as research has indicated that role models influence entrepreneurial intentions.

Although the study has provided relevant and interesting insights into entrepreneurial education at a higher educational institution in a developing country, it is important to recognise the limitations of this study. A limited sample of students from one higher education institution in SA was used. The convenience sampling approach was used and the measuring instrument somewhat lacked internal consistency. Hence, caution should be exercised in making generalisations to other higher education institutions. The study is based on measuring intentions. Clearly this is not the same as measuring the action of starting a business itself.

In the light of the limitations of the study it is recommended that a longitudinal study be undertaken to follow up on these students and find out if indeed they have established businesses within two years after their graduation. It is further recommended that the measuring instrument be improved and that qualitative approaches, including interviews and focus groups, are employed to get a deeper understanding of the influence of entrepreneurial education and role models on entrepreneurial intentions.

Conclusion

Entrepreneurship education is a relatively new field of study in most SA higher education institutions. Entrepreneurship education at higher education institutions is of the utmost importance in SA and Africa at large as the unemployment rate is generally high. Education that is specifically intended to stimulate interest in starting businesses is becoming increasingly important.

This study assessed the link between entrepreneurial education and role models and students' intentions to choose entrepreneurship as a career option. The empirical findings of the study support the findings of previous research that there is a positive relationship between entrepreneurial education and the intention to start businesses by students at a higher education level. The study revealed that entrepreneurship students have a more positive attitude towards becoming entrepreneurs and have higher entrepreneurial self-efficacy and intentions of becoming an entrepreneur than non-entrepreneurship students. The study found no significant differences in perceived behavioural control between entrepreneurship and non-entrepreneurship students, whilst the findings regarding the influence of subjective norms are inconclusive due to a lack of reliability.

The findings also indicate a positive relationship between the presence of entrepreneurial role models in students' lives and their intentions to start businesses. This implies that exposing students to entrepreneurial role models during their studies can aid in increasing entrepreneurial intentions and eventually venture creation.

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Competing interests

The authors declare that they have no financial or personal relationship(s) which may have inappropriately influenced them in writing this paper.

Authors' contributions

N.J.M. and W.F.d.T. jointly designed the project and the measuring instrument. N.J.M. did the literature study, collected the research data and wrote the article. W.F.d.T. did the research design, interpreted the statistical analyses, and made conceptual contributions.

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