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EDITED BY
Aloysius H. Sequeira,
National Institute of Technology Karnataka, India

REVIEWED BY
Ansar Abbas,
Airlangga University, Indonesia
Alessandra Colombelli,
Politecnico di Torino, Italy

*CORRESPONDENCE
Shepherd Dhliwayo
sdhliwayo@uj.ac.za

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The entrepreneurial mindset and self-employment intention of high school learners: The moderating role of family business ownership

Ntharika Chilenga[1], Shepherd Dhliwayo[1]* and Abdella K. Chebo[1,2,3]

[1]College of Business and Economics, University of Johannesburg, Johannesburg, South Africa, [2]Department of Management, Kotebe University of Education, University of Johannesburg, Johannesburg, South Africa, [3]Department of Business Management, University of Johannesburg, Johannesburg, South Africa

Entrepreneurship, through successful business venturing, plays a pivotal role in a nation's endeavor to create jobs and boost the economy. The Global Entrepreneurship Monitor (GEM) reports state that South Africa's early stage total entrepreneurial activity (TEA) is lower than most countries that are at comparable levels of development. Therefore, the entrepreneurial mindset of high school learners and its influence on self-employment intention were assessed in this study. Also, the moderating effect of family business ownership on the relationship was measured. The data collected from 320 learners in randomly selected 10 high schools in Gauteng were analyzed using hierarchical regression analysis. The study finds that the level of an entrepreneurial mindset is above average, which provides the potential for a higher total entrepreneurial activity (TEA) in the future. Both entrepreneurial skills and entrepreneurial traits significantly influence self-employment intention, while learners' family business background moderates the relationship. The study establishes the entrepreneurial mindset level of high school students in a country with one of the lowest TEA in the world, South Africa, where (possibly) the latest entrepreneurial mindset measure, the Entrepreneurial Mindset Profile (EMP) instrument is used. Also, it's unique in testing the role of family business background in intensifying the entrepreneurial mindset toward self-employment intention. Therefore, the Department of Basic Education should aim to tap into the existing desire

in high school learners and develop a curriculum that integrates theoretical and experiential learning. It is expected that this intervention will improve the future TEA of the country.

KEYWORDS

entrepreneurial mindset, high school learners, entrepreneurial traits, entrepreneurial skills, family business

Introduction

Nowadays, unemployment is one of the most serious social and economic issues that many countries face. One strategic approach to overcoming this problem is to encourage entrepreneurship (Mengesha, 2020). Unemployment has become a major issue in all developing countries, where the number of educated people is increasing exponentially but jobs are not available (Dubey, 2022). To address these issues, entrepreneurship is regarded as a significant source of employment (Cardella et al., 2020). The role entrepreneurs play in our modern world makes them uniquely important since their contributions are vital to the development of communities as well as whole nations (Van Praag and Versloot, 2007; Neneh, 2012). Mahadea et al. (2011) state that in the past 24 years, the formal sector in many parts of the developing world has faced difficulties in absorbing the yearly growth of job seekers in the market, leading to high unemployment rates. The economic importance of entrepreneurial activities is widely recognized and considered a key factor in creating new jobs (Audretsch, 2007; Davis et al., 2016). Entrepreneurship is critical in addressing economic problems such as unemployment (Awwad and Al-Aseer, 2021) and is viewed as a means of coping with unemployment by providing new job opportunities (Mengesha, 2020).

The entrepreneurial mindset (EM) is the constellation of motives, skills, and thought processes that distinguish entrepreneurs from non-entrepreneurs and contribute to entrepreneurial success (Davis et al., 2016). The decision for an individual to become self-employed or to remain as an employee depends on different factors, which play an important role in motivating and restraining people to become self-employed (Ayalew and Zeleke, 2018). Self-employment is considered synonymous with entrepreneurship. That is, many studies used self-employment as a proxy for measuring entrepreneurship (Rietveld et al., 2014). The term "self-employment" is used in this study to reflect entrepreneurial intention.

Individuals with self-employment intentions are those who are prepared or want to start a business (Dubey, 2022). However, a significant challenge for young people is acquiring and developing the necessary entrepreneurial skills in order to consider entrepreneurship as a viable career option (Georgescu and Herman, 2020).

Entrepreneurial personality traits and entrepreneurial family background are among the factors that influence entrepreneurial intentions positively (Georgescu and Herman, 2020). Besides, educational institutions should prepare future generations for a better economic future by instilling entrepreneurial skills in students (Reyad et al., 2020).

Entrepreneurial education/training and entrepreneurial attitudes significantly predict students' self-employment intention (Ayalew and Zeleke, 2018). Studies have shown that skill acquisition is the most critical factor in the utilization of entrepreneurship opportunities for self-employment (Ekpe et al., 2015). That is, people with innovative mindsets are more likely to initiate business and sustain it through continuous improvement (Okpara, 2007). Globally, entrepreneurship skills programs introduced into educational institutions have been suggested as an effective solution to address the changing marketplace requirements (Reyad et al., 2020).

Regarding entrepreneurial traits, students may have different attitudes and can exhibit positive or negative attitudes toward self-employment depending on their background and other traits (Ayalew and Zeleke, 2018). For instance, students with a family business background are optimistic about their efficacy to pursue an entrepreneurial career (Zellweger et al., 2010). Therefore, the business-owned family background was found to be a significant predictor of students' self-employment intention (Ayalew and Zeleke, 2018). That is, although having self-employed parents as role models and a family business background may affect the likelihood of pursuing an entrepreneurial career (Davidsson, 1995), it is unclear whether the dimensions of an entrepreneurial mindset are equally important (Zellweger et al., 2010).

The result of the research shows that items of EM such as personal control, self-esteem, and innovation were found to have significant and positive relationships with self-employment intention (Ayalew and Zeleke, 2018). For instance, Zain et al. (2010) found that there was a significant relationship between personality traits and self-employment intention. Even though previous studies were available on the relationship between skill acquisition and self-employment (Ekpe et al., 2015), there was a scarcity of research that empirically measured the interaction effect of entrepreneurial skill, entrepreneurial traits, and family business on self-employment intention, particularly in developing countries. Therefore, this study intends to test the

moderating role of family business ownership in the relationship between EM and learners' self-employment intentions.

There is a low level of entrepreneurial activity among young people, measured both by the young self-employed and total early stage entrepreneurship activity (TEA) (Georgescu and Herman, 2020). The Global Entrepreneurship Monitor (GEM) reports state that South Africa's early stage TEA is lower than most countries that are at comparable levels of development (Mahadea et al., 2011). Furthermore, the South African unemployment rate according to Statistics South Africa [Stats SA] (2021) is 34.9%. Statistics South Africa [Stats SA] (2021) states that in South Africa, 50% of the youth are unemployed, downgraded to lives of poverty, or underemployed. Some of these young individuals are forced into lives of crime through desperation (Morrow et al., 2005). More worrisome is the fact that close to one in three young South Africans between the ages of 15 and 24 years are neither in school nor in employment (Statistics South Africa [Stats SA], 2021). This necessitates knowing the reason for low self-employment, which is highly related to entrepreneurship. Herrington et al. (2010) believe that introducing values of entrepreneurship can successfully release the economic power of the South African youth. The low levels of entrepreneurial activity, the high levels of youth unemployment, indicate that there is something fundamentally wrong in the country (Nchu et al., 2015). It then becomes vital to conduct an audit of the levels of the entrepreneurial mindset to discover the source of the entrepreneurial dearth.

Given the above gaps, the contribution of this study is, therefore, first, it clarifies the extent of the influence of entrepreneurial mindset dimensions on self-employment intention. That is, the study establishes the entrepreneurial mindset level of high school students in a country with one of the lowest TEA in the world. Also, this is the only known study carried out in South Africa, where (possibly) the latest entrepreneurial mindset measure, the Entrepreneurial Mindset Profile (EMP) of Davis et al. (2016) is used. Second, this is among the first study that tests the role of family business background in intensifying the entrepreneurial mindset toward self-employment intention. Most previous studies have analyzed the relationship between family business ownership and intention instead. Therefore, the study is unique in that it measures the moderating effect of family business on the relationship between entrepreneurial mindset and self-employment intention.

Third, the OECD LEED (2016) initiatives have one very important factor in common, and that is the belief that in order for more business start-ups to manifest, there needs to be the cultivation of the entrepreneurial mindset. It is thus without a doubt that the entrepreneurial mindset has a very big role to play in creating better entrepreneurial thinking. However, Carree and Thurik (2003) go further to state that even the recent efforts of the GEM have had little to no impact in the void of research surrounding the macro importance of entrepreneurship in research. Thus, such paradox in previous research invites the clarification of the role of entrepreneurial mindset on self-employment intention. It is therefore the stance of this study that when one speaks of the impact of the entrepreneurial mindset, the micro impacts need to be studied further. With this justification, the main aim of this research is to assess the extent of entrepreneurial mindset influence on self-employment intention given the contribution from a family business background.

Theory and hypotheses

The relationship between the entrepreneurial mindset and self-employment intention is analyzed first. The mediating role of family business ownership is discussed afterward. Hypotheses are developed from these discussions.

Entrepreneurial mindset and self-employment intention

The entrepreneurial mindset is the thinking and behavior that allows one to successfully engage in entrepreneurship (Neneh, 2012). Davis et al. (2016, p22) define the entrepreneurial mindset as the "constellation of motives, skills, and thought processes that distinguish entrepreneurs from non-entrepreneurs and contribute to entrepreneurial success." Therefore, the EM enables entrepreneurs to make realistic decisions when faced with uncertainties (Neneh, 2012).

The entrepreneurial mindset construct, as defined by Davis et al. (2016), comprises *traits* and *skills*. Skills can primarily be imparted through training and experience, while traits are more of intrinsic, inborn qualities. Stogdill (1974) gives examples of skills as follows: alertness, ambition, self-confidence, persistence, etc., and traits as the following; creative, diplomatic, organized, and persuasive. Stogdill's (1974) leadership traits and skills set relate very closely to the entrepreneurial mindset as espoused by Davis et al. (2016). The split of the mindset into two components is considered relevant given that the sample studied (high school learners) are undergoing training and may have acquired skills and traits from business-owning parents.

Particularly, skills training could lead to business opportunities and influence entrepreneurship (Emaikwu, 2011). Exploitation of entrepreneurial opportunity also depends on the entrepreneur's level of education, skills, or knowledge acquired through training, work experience, and social network (Shastri and Sinha, 2010; Ekpe et al., 2015). That is, entrepreneurship is the function of the entrepreneur, and hence the entrepreneur requires an entrepreneurial way of thinking or mindset to have better self-employment intention. Besides, Dasmani (2011) and Rufai et al. (2013) found that entrepreneurship graduates could not get employment because they possessed low skills and low self-confidence required by industries. However, numerous studies asserted that skills training and tertiary education could lead to entrepreneurial activity or self-employment

(Stohmeyer, 2007). Further, an entrepreneurial mindset has a very big role to play when it comes to business start-ups because universities find it prudent to use entrepreneurial education to create entrepreneurial thinking (OECD LEED, 2016). Skills training could lead to business opportunities and influence entrepreneurship (Emaikwu, 2011).

Therefore, equipping students with the skills needed to be self-employed has been proposed as an effective solution to address changing market demands. That is, one of the primary goals of university-provided practical entrepreneurship programs for skill development is to encourage students to learn more about real self-employment practices (Reyad et al., 2020). Farooq et al. (2020) added that individuals who have a strong grasp of a specific entrepreneurial skill are more likely to believe that they can start their own business rather than working for another organization. Hynes and Richardson (2007) also emphasized the importance of learning the skills needed for self-employment and encouraging students to start their own businesses (Reyad et al., 2020). Lau et al. (2000), on the other hand, believe that encouraging entrepreneurial characteristics related to entrepreneurship development can influence entrepreneurial intention. Furthermore, Baron (2000) acknowledges that psychological characteristics predict entrepreneurial intent (Karabulut, 2016). It is, therefore, proposed that;

> H1: Entrepreneurial traits positively and significantly affect the individual's self-employment intention.
>
> Individuals with high entrepreneurial traits tend to have better self-employment intention.

> H2: Entrepreneurial skills positively and significantly affect the individual's self-employment intention.
>
> Individuals with high entrepreneurial skills tend to have better self-employment intention.

The role of family background

The entrepreneurial mindset is not limited to the cognitive or mental ambitions of an individual but can also be transferred through various activities into a firm and its strategies. While founding a new firm requires entrepreneurial abilities, it also allows the individual to choose his or her own area of interest and to work independently from family bonds (Schröder et al., 2011). Studies found that students whose parents are self-employed score higher on entrepreneurial intention (Nguyen, 2018) and they are optimistic about having the necessary skills and resources for an entrepreneurial career (Zellweger et al., 2010). McElwee and Al-Riyami (2003) also state that children who grew up with entrepreneur parents had a greater tendency to choose a self-employed career (Nguyen, 2018). Falck et al. (2010) found that students who stated entrepreneurial intentions at an early age were shown to have a significantly higher probability of being an entrepreneur at a young age. Zellweger et al. (2010) find evidence that the family firm context as an external source of behavioral control positively contributes to the inclination to start an entrepreneurial career through heightened perceptions of entrepreneurial efficacy. This is because; students with family business backgrounds seem to be optimistic about their capabilities and resources to pursue an entrepreneurial career.

Crant (1996) and Nguyen (2018) confirm that being raised in a family that is entrepreneurial significantly affects individuals' intentions to start their own businesses. That is, offspring from business families should be more motivated to start their own firm than children without this background (Kolvereid, 1996) because of family support in terms of resources needed to launch a firm, learning effects, or strengthened perceptions about mastery of the challenges related to an entrepreneurial career (Brännback et al., 2007; Zellweger et al., 2010). Similarly, having self-employed parents tend to be especially relevant as mentors and guides for children starting their own businesses (Nguyen, 2018). Conversely, students raised in a family business environment vicariously experience the constraints and personal sacrifices imposed on their parents (Douglas and Shepherd, 2002). Given this fact, it is hypothesized that;

> H3: Having families with business background intensifies the influence of entrepreneurial traits toward self-employment intention.

> H4: Having families with business background intensifies the influence of entrepreneurial skills toward self-employment intention.

Methodology

The research design, measures of variables, and data analysis used in the study are analyzed next.

Research setting and design

To evaluate hypotheses, this article used data collected from a larger research project "An Assessment of the Entrepreneurial Mindset of High School Learners in Gauteng." This study utilized quantitative methodology in order to appropriately gather the relevant information to fulfill the research objectives. Taking into account the fact that the study involved understanding multiple elements of the entrepreneurial mind,

the data were collected through questionnaires that were distributed to various schools chosen at random around the Gauteng province of South Africa.

This study adopted a quantitative research approach and a descriptive and explanatory study design.

Sampling design

In this study, probability sampling, in the form of simple random sampling (Sekaran, 2003), was utilized because the elements in the population had an equal chance of being selected. In order to attain highly reliable and valid results, the identified sample was drawn from high school learners in grades 10–12 in the Gauteng province. The most recent census (2021) indicates that there are approximately 5,000,000 learners in South Africa between grades 10–12, and approximately 3,50,000 are in Gauteng (Department of Basic Education, South Africa, 2021; Statistics South Africa [Stats SA], 2021). The questionnaires were self-administered. The researchers later collected questionnaires at an agreed time from the different schools. The sample size of 380 (not including the 20 students used in the pre-test) was determined from the number of students in grades 10–12 in the targeted 10 high schools. The total number of grade 10–12 students in these schools was 640. Based on the work by Fincham (2008) who states that response rates approximating 60% for most research should be the goal of researchers, especially where an intention is to represent "all" schools. In light of this, the sample size used was limited to around 380 learners. This approach would also minimize the non-response bias and improve representativeness (Draugalis et al., 2008). Gauteng is the economic hub of South Africa and is almost 100% urban. Finally, the researcher managed to produce an acceptable final sample size of 320 learners. Generally, the sample characteristics of valid responses were summarized in **Table 1**.

Measures

The dominant approach in prior attempts to define and measure EM has been to focus on specific traits thought to be linked to entrepreneurial intentions or success, and a number of traits have received attention (Davis et al., 2016). The earlier definition by Neneh (2012) focuses on two elements: a way of thinking about business and capturing the benefits of uncertainty. Davis et al. (2016) introduced skills into the definition. This proves that the definition of the entrepreneurial mindset is one that continues to evolve as time progresses. In fact, the aforementioned authors state that the entrepreneurial mindset was previously known as the entrepreneurial personality, and the debate over which elements make up the entrepreneurial personality has been long argued over time. It led many authors to conclude that any attempts at identifying or measuring the entrepreneurial mindset were misguided (Gartner, 1989). Recent studies on the entrepreneurial mindset have focused on attempting to identify the cognitive motivations and psychological impulses that are prevalent in influencing entrepreneurial activities (Haynie et al., 2010; Brandstätter, 2011). Perhaps the most unfortunate discovery about how the entrepreneurial mindset has been defined and measured over time is the fact that personality instruments that were not uniquely designed to measure it have always predominantly measured it. Previous investigations have used broad personality instruments such as the 16PF, the Myers–Briggs Type Indicator, and measures of the five-factor model (FFM) (Costa and McCrae, 1992), all of which are well known, but none was designed to specifically measure the entrepreneurial mindset (Davis et al., 2016).

The General Enterprising Tendency test measures five characteristics of the entrepreneurial person: autonomy, creative tendency, need for achievement, calculated risk-taking, and the internal locus of control. The Entrepreneurial Attitude Scale developed by Robinson et al. (1991) assesses the need for achievement, innovation, personal control, and self-esteem. The authors describe the test as an attitude measure as opposed to a personality tool, but its focus items strongly resemble those of a personality test. The Measure of Entrepreneurial Tendencies and Abilities, by Ahmetoglu et al. (2011), uses four constructs: entrepreneurial creativity, entrepreneurial awareness, vision, and opportunism. The results of this study are heavily reliant on self-reported entrepreneurial achievements (Davis et al., 2016). Dhliwayo (2014) identifies innovativeness, competitive aggressiveness, proactiveness, strategic renewal, and risk-taking as elements of entrepreneurship but suggests that one will require an entrepreneurial mindset in order to effectively

TABLE 1 Respondents' characteristics.

Gender			Ethnicity			Favorite subject		
	Freq.	%		Freq.	%	Options	Freq.	%
Male	148	46.40	Black	256	80.80	Business studies	112	36.00
Female	171	53.60	Others	61	19.20	Others	200	64.00
Total (N)	319	100	(N)	317	100	(N)	312	100

harness the benefits of entrepreneurship. Davis et al. (2016) developed the EMP, to create an instrument that incorporated more than just a few of the commonly used characteristics and traits of an entrepreneur. They aimed to create a measure that was comprehensive in its scope of portraying the entrepreneurial profile while also being "a systematic approach to the facets of the entrepreneurial mindset." "*The EMP is comprised of 14 dimensions that are assessed in accordance to responses to 72 Likert-type scale items. Respondents are made aware that the instrument asks "a variety of questions about work-related thoughts, feelings, and behaviors" and are asked to indicate for each item "how well it describes you" using a five-point scale running from does not describe me well to describes me very well.*"

According to the EMP developed by Davis et al. (2016), there are 14 dimensions that culminate to create an entrepreneurial mindset. These dimensions were derived from the collective research of many other authors (Cattell et al., 1970; Myers et al., 1985; Costa and McCrae, 1992) and their instruments for measuring the entrepreneurial mindset. The 14 dimensions were to be grouped under two sub-headings in order to better differentiate between *entrepreneurial traits* and *entrepreneurial skills*. Refer to **Figure 1** and **Table 2**. It is true that the EMP tool is a relatively new instrument, but the depth of research involved in the creation of the instrument was comprehensive and it encompassed many other previous psychological and mindset study tools.

The questionnaire used was adapted from Davis et al. (2016). EMP. It was adjusted to better align with the aims and objectives of this study. The questionnaire aims to assess, in extensive detail, the opinions of the respondent in relation to two core sub-constructs that make up the entrepreneurial mindset, the entrepreneurial traits and the entrepreneurial skills.

The questionnaire was made up of three sections: Section A contains background information such as gender, ethnicity, favorite subject, family business background, and self-employment intention. Many scholars used a single-item instrument to assess family business background, which asked whether their families had a business background or not. Nguyen (2018), for example, asked whether their parents were self-employed or not in order to assess family background. We used the same item for this study. Besides, in order to measure self-employment, Abreu et al. (2019) identified individuals who transitioned from waged employment to self-employment in order to measure self-employment. Reyad et al. (2020) developed ten questions to assess students' willingness to engage in self-employment activities. After comparing the various measures used to assess self-employment intention, we asked respondents whether they would prefer to start their own business or work for someone else. They were to choose between the two options.

Section B is about entrepreneurial traits including dimensions such as independence; limited structure; non-conformity; risk acceptance; action orientation; passion; need to achieve, and section C contains entrepreneurial skills items under the dimensions of future focus; idea generation; execution; self-confidence; optimism; persistence; and interpersonal sensitivity. To conclude, it is vital to mention that each of the 14 elements in the instrument (Sections B and C) were measured on a five-point Likert Scale ranging from 1 {Very untrue of me} to 5 {Very true of me}.

Data analysis

The data collected were analyzed using the SPSS 24 software package with PROCESS v3.2 by Andrew F. Hayes. The analytical technique used was hierarchical regression analysis. This technique is used in order to test the independent

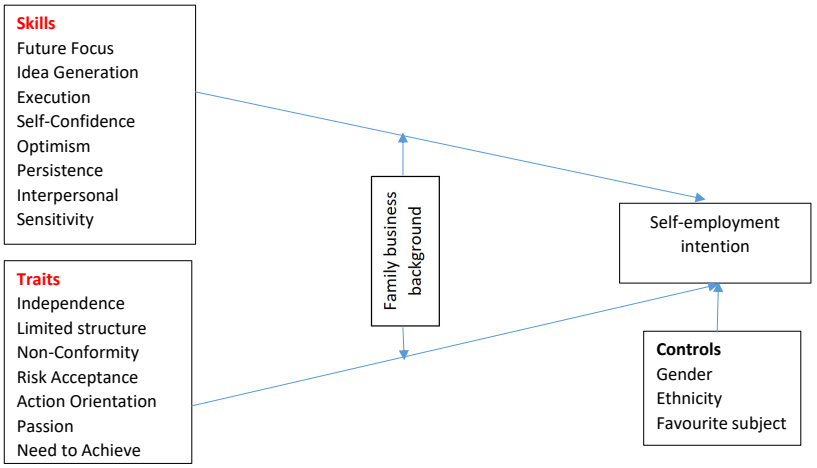

FIGURE 1
Conceptual framework.

TABLE 2 Dimensions of entrepreneurial mindset.

Instruments	Dimensions	Descriptions
Entrepreneurial traits	Independence	The desire to work with a high degree of independence (e.g., I'm uncomfortable when expected to follow others' rules).
	Limited structure	A preference for tasks and situations with little formal structure (e.g., I find it boring to work on clearly structured tasks).
	Non-conformity	A preference for acting in unique ways; an interest in being perceived as unique (e.g., I like to stand out from the crowd).
	Risk acceptance	A willingness to pursue an idea or a desired goal even when the probability of succeeding is low (e.g., I'm willing to take a certain amount of risk to achieve real success).
	Action orientation	A tendency to show initiative, make decisions quickly, and feel impatient for results (e.g., I tend to make decisions quickly)
	Passion	A tendency to experience one's work as exciting and enjoyable rather than tedious and draining (e.g., I'm passionate about the work that I do).
	Need to achieve	The desire to achieve at a high level (e.g., I want to be the best at what I do).
Entrepreneurial skills	Future focus	The ability to think beyond the immediate situation and plan for the future (e.g., I'm focused on the long term).
	Idea generation	The ability to generate multiple and novel ideas and to find multiple approaches for achieving goals (e.g., Sometimes the ideas just bubble out of me).
	Execution	The ability to turn ideas into actionable plans; the ability to implement ideas well (e.g., I have a reputation for being able to take an idea and make it work).
	Self-confidence	A general belief in one's ability to leverage skills and talents to achieve important goals (e.g., I am a self-confident person).
	Optimism	The ability to maintain a generally positive attitude about various aspects of one's life and the world (e.g., Even when things aren't going well, I look on the bright side)
	Persistence	The ability to bounce back quickly from disappointment and to remain persistent in the face of setbacks (e.g., I do not give up easily).
	Interpersonal sensitivity	A high level of sensitivity to and concern for the wellbeing of those with whom one works (e.g., I'm sensitive to others' feelings)

Davis et al. (2016) (for dimensions and descriptions).

effect of controlling variables, main effects, and moderators, as well as the interaction effects of independent and moderating variables. Descriptive statistics such as mean and standard deviation were also used.

Results and discussion

To ensure validity, the questionnaire was sent to the pilot study to ensure that it is understandable and acceptable. Pre-tests of the questionnaire were carried out with 20 respondents. To improve the perceived validity of constructs, Maula and Stam (2019) recommended that the authors use multi-item scales instead of single or categorical indicators to measure complex constructs in order to provide sufficient evidence of reliability of scale and dimensionality, if several indicators can be used. Accordingly, multi-scale items were developed and distributed to experts who know the topic to ensure both face and content validity. Based on Davis et al. (2016), seven items each were used to measure the sub-constructs, entrepreneurial traits and entrepreneurial skills (part of the 14 items of the EMP construct). The effect of the sub-constructs on the intention to self-employment was then tested. For the demographic characteristics, the items were processed further to make them dichotomous. For measuring ethnicity, for example, all response options except black are merged and then categorized as black and others. Similarly, for favorite subject, all disciplines except business studies are merged and categorized into business studies and others.

Cronbach's alpha was used to test reliability. Accordingly, Cronbach's alpha for entrepreneurial trait and entrepreneurial skills is 0.712 and 0.787, respectively. Before undertaking hierarchical regression analysis, the presence of multicollinearity was tested. First, the highest correlation result, 0.667, indicates that multicollinearity is not a concern. Vittinghoff et al. (2012) and James et al. (2021) indicate the presence of multicollinearity when VIF is greater than 10. In our case, all the VIFs are less than 10, which indicates the absence of multicollinearity. Second, 11 outliers were removed using Mahalanobis distance measurement. Mahalanobis distance is used to detect outliers using SPSS software. The outliers are removed based on the *P*-values computed using chi-square (chi2cdf function).

The extent of entrepreneurial mindset among learners

All the mean scores for the dimensions under the entrepreneurial traits and entrepreneurial skills are presented in **Table 3**. In addition to this, all the responses in the questionnaire survey produced results within acceptable ranges. The data structure was therefore deemed good. **Table 3** indicates that the means for the factors were ranging from around

TABLE 3 Descriptive statistics results.

Instruments	Dimensions	Mean (SD)	Aggregate scores of entr. traits and skills	Aggregate scores of EM
Entrepreneurial	Independence	2.9505 (0.8416)		3.6139
	Limited structure	3.0817 (0.7483)		
traits	Non-conformity	3.7138 (0.6112)	3.5715	
	Risk acceptance	3.7420 (0.7525)		
	Action orientation	3.6749 (0.6668)		
	Passion	3.7238 (0.6787)		
	Need to achieve	4.1093 (0.8308)		
Entrepreneurial skills	Future focus	3.7723 (0.6912)	3.6563	
	Idea generation	3.4855 (0.6739)		
	Execution	3.4675 (0.6974)		
	Self-confidence	3.5884 (0.6765)		
	Optimism	3.7286 (0.7155)		
	Persistence	3.8283 (0.6733)		
	Interpersonal sensitivity	3.7235 (0.6779)		

Davis et al. (2016) (for dimensions and descriptions).

2.9505 to 4.1093, which is relatively good because it can be understood as being from around the 3 (Neutral) to around the 4 (True of Me) mark. Therefore, these tables indicate that the learners perceived themselves to be more above average in terms of possessing features or elements of entrepreneurial traits. The entrepreneurial skill dimensions in Table 3 illustrate that the means for the factors were ranging from 3.4675 to 3.8283. This mean can further be understood as leaning more toward the 4 (True of Me) mark. That is, the mean value of entrepreneurial skills dimensions indicates that the learners confidently perceived themselves to be more above average in terms of possessing features or elements of the entrepreneurial skills.

Table 3 presents a consolidated reading of the mean scores of entrepreneurial traits and entrepreneurial skills. The average of these provides the mean score of the entrepreneurial mindset. According to Table 3, the entrepreneurial traits have a mean score of 3.5715 and theentrepreneurial skills have a mean score of 3.6563. These scores represent a state that both the dimensions are leaning toward the scale mark of 4 (True of Me). Furthermore, the aggregate mean score representing the entire entrepreneurial mindset of high school learners is 3.6139 (translated to 73.23%) learning favorably toward the scale mark of 4 (True of Me). This indicates that a majority of the high school learners in Gauteng perceive themselves to be entrepreneurial. That is, the percentage score of 73.23% further indicates a high overall level of entrepreneurial mindset among high school learners in Gauteng. The analysis to follow has gender, ethnicity, and favorite subject as control variables. The data were assumed to possibly influence self-employment intentions. Ethnicity was considered important given South Africa's apartheid past and current structural policies to redress the past. It was also felt that, student's inclination to, commercial sciences or humanities subjects should be controlled.

The role of entrepreneurial traits and family business on self-employment intention

Table 4 reveals the interaction influence of entrepreneurial traits and family business on self-employment intention.

The entrepreneurial traits dimension of entrepreneurial mindset did have a significant effect on self-employment intention ($\beta = -0.247$; $P < 0.01$) (Table 4). Hypothesis H1 is therefore supported. That is, as the entrepreneurial traits become or get higher, the individuals tend to prefer starting their own businesses (code 0) rather than working for others (code 1). A negative β, ($\beta = -0.247$) as in this case, shows the more extreme intention to start a business/self-employment. If the β was positive, say above 0.5, then this would be a reflection of a higher intention to work for others. Basically, the "normal" value range would be between 0 and 1, with 0.5 being the median.

Consistently, the previous theories stated that individual traits have a positive effect on self-employment intention. That is, the result from the selected area stated that individuals who prefer more independence and limited structure have developed self-employment intentions. In addition, an individual's mindset related to risk acceptance, action orientation, and passion were changing the respondent's self-employment intention. This indicates the entrepreneurial mindset in the area is weak in general. However, the findings by Baum and Locke (2004) show that some traits may not be significant to some skills, which means that an increase in strengthening some core traits or core skills will prove valuable. Baron (2000) acknowledges that psychological traits predict entrepreneurial intention (Karabulut, 2016), which is consistent with this finding. That is, personal characteristics of individuals have contributed to the development of self-employment intention. Students

TABLE 4 Hierarchical regression results: The role of entrepreneurial traits and family business on self-employment intention.

Models	Model 1	Model 2	Model 3	Model 4
F-value	0.128	37.817**	89.658**	75.337**
R^2	0.001	0.331	0.595	0.598
Adjusted R^2	−0.009	0.322	0.588	0.590
Constant	0.219 (0.149)	2.017 (0.191)**	0.504 (0.183)**	0.389 (0.199)*
Gender	0.015 (0.053)	0.029 (0.043)	0.032 (0.034)	0.029 (0.034)
Ethnicity	0.039 (0.067)	0.018 (0.055)	0.046 (0.043)	0.041 (0.043)
Fav_sub	0.003 (0.054)	−0.027 (0.45)	−0.005 (0.035)	−0.003 (0.035)
Traits		−0.478 (0.039)**	−0.283 (0.033)**	−0.247 (0.041)**
Fambus			0.535 (0.038)**	0.680 (0.107)**
Famibus_traits				−0.042 (0.029)

**$P < 0.01$; *$P < 0.05$. Standard error in parenthesis. Self-employment coded as 0 = starting own business; 1 = working for others.

who exhibit traits of independence and risk acceptance are more likely to pursue self-employment than students who exhibit lower levels of independence and risk-taking. Furthermore, having traits of passion, a need to achieve, and an action orientation will help to improve self-employment intention.

The above result indicates that having a family business is significantly influencing the self-employment intention ($\beta = 0.680$; $P < 0.01$). Hypothesis H3 is therefore accepted. Kolvereid (1996) and Zellweger et al. (2010) found that offspring from business families have been more motivated to start their own firm than children without this background. Besides, Crant (1996) and McElwee and Al-Riyami (2003) stated that being raised in a family that is entrepreneurial significantly affects individuals' intentions to start their own businesses (Chaudhary, 2017; Nguyen, 2018). The finding of Zellweger et al. (2010) stated that students with a family business background are optimistic about their efficacy to pursue an entrepreneurial career. Besides, family business background significantly predicts students' interest in entrepreneurship (Osakede et al., 2017). That is because, having self-employed parents tend to be relevant as mentors and guides for children starting their own businesses (Matthews and Moser, 1996; Nguyen, 2018). Individuals with family business will learn many lessons from their parents, which makes them, develop better self-employment intentions than their counterparts. Alsos et al. (2011) and Nguyen (2018), also indicate that a family business has a role to play in enhancing the development of entrepreneurship among family members, which further enhances the individual's self-employment intention. That is, learners who have families with business backgrounds have better entrepreneurial traits, which positively raises the learners' self-employment intention compared to those individuals, which have no families with a business background.

Close family members can also influence an individual's decision to pursue entrepreneurship (Farooq et al., 2016). People who grow up in a family that runs their own business or where family business is practised are more likely to learn and model entrepreneurial tendencies, viewing it as more feasible, socially desirable, and rewarding than formal employment in a well-established organization (Mengesha, 2020). This is because students from self-employed families would have had a "lived experience" of self-employment from family business ownership. Students look up to their parents as role models in order to follow in their footsteps. Furthermore, the families provide guidance to family members on the importance of self-employment. Therefore, it's concluded that those individuals whose families have entrepreneurship backgrounds tend to have more self-employment intentions than their counterparts.

The role of entrepreneurial skills and family business on self-employment intention

Table 5 presents the interaction effect of entrepreneurial skills and family business on self-employment intention.

Entrepreneurial skills positively and significantly affect individuals' self-employment intention ($\beta = -0.377$; $P < 0.01$). Hypothesis H2 is therefore supported. Considering the perceived behavioral control element of the theory of planned behavior (Ajzen, 1991), the students confirm confidence in the entrepreneurial skills in their possession. This control–behavior causal (Sussman and Gifford, 2019) explains the result. Consistently, other studies indicate that entrepreneurial skills can be used to identify and exploit opportunities for self-employment (Samian and Buntat, 2012). Conversely, Ekpe et al. (2015) stated that entrepreneurial skill acquisition could not lead to self-employment practice without considering the entrepreneur's characteristics. At this level of their studies, the perceived skills level does significantly support the intention to self-employment.

The interaction between family business and entrepreneurial skills also has a significant influence on SEI ($\beta = 0.614$; $P < 0.01$). Hypothesis H4 is therefore supported. That means the individuals' families' business background will make a difference in improving the entrepreneurial skills toward

TABLE 5 Hierarchical regression results: The role of entrepreneurial skills and family business on self-employment intention.

Model	Model 1	Model 2	Model 3	Model 4
F-value	0.128	54.912**	110.804**	92.495
R^2	0.001	0.418	0.645	0.646
Adjusted R^2	−0.009	0.410	0.639	0.639
Constant	0.219 (0.149)	2.735 (0.205)**	1.136 (0.197)**	0.960 (0.265)**
Gender	0.015 (0.053)	0.035 (0.040)	0.036 (0.031)	0.034 (0.032)
Ethnicity	0.039 (0.067)	−0.036 (0.052)	0.008 (0.041)	0.009 (0.041)
Fav_sub	0.003 (0.054)*	−0.047 (0.042)	−0.021 (0.033)	−0.019 (0.033)
Skills		−0.654 (0.044)**	−0.427 (0.038)**	−0.377 (0.063)**
Fambus			0.498 (0.036)**	0.614 (0.122)**
Fambus_Skills				−0.033 (0.033)**

**$P < 0.01$; *$P < 0.05$. Standard error in parenthesis.

developing enhanced self-employment intention. The split in the analysis of the entrepreneurial mindset into traits and skills has provided a more detailed analysis of the relationship between the mindset and business start-up intention.

It becomes a bit difficult to compare this result with earlier studies, which did not split the EM into traits and skills. General deductions can however still be made with other studies. For example, a study done by Dunn and Holtz-Eakin (2000) and Tarling et al. (2016) revealed that exposure to entrepreneurship at an early age instill personal responsibility, accountability, and a work ethic, which are some of the building blocks of a successful business start-up. For example, Krueger (1993), Aldrich and Jennings (2003), and Arregle et al. (2015) confirm that an exposure to family business steers one toward self-employment.

Scientists disagree about whether certain cognitive traits are acquired by special-purpose learning mechanisms (as opposed to general learning) (Griffiths and Linquist, 2022). Given an insightful analysis of innate traits and acquired characteristics (skills), we take a simplistic approach that traits are a natural set of features (natural abilities), which would remain constant over the years. According to psychological experts, individuals either have or do not have specific traits. Although some may vary on a spectrum, new traits are relatively unlearnable, but they can be developed and enhanced. Unlike traits, individuals can learn new skills as long as they have the physical or mental capacity to do so. Skills advance over a period the more they are used. This approach supports the thinking that the entrepreneurial mind can be developed.

Mets et al. (2017) found that developing cognitive and skill-based entrepreneurial outcomes might lead to the development of entrepreneurial behavior and social-economic outcomes in students' real life. Edelman et al. (2016) allude to the fact that instrumental social support in the form of social capital and family instrumental support, positively affects business establishments that nascent student entrepreneurs may engage in. This supports the call for experiential entrepreneurship education (Dhliwayo, 2008), which imparts awareness and practical skills on business start-ups. The findings that the entrepreneurial mindsets of high school in Gauteng are high (mean scores, **Table 3**) bodes well for the future of entrepreneurship in the country.

An individual's close family members and parental occupations are unintended factors that can influence entrepreneurial intention (Farooq et al., 2016), which further influences self-employment intention. This demonstrates that people from business families tend to be more entrepreneurial. The interaction of entrepreneurial skills with having families with business backgrounds can then boost self-employment intention. Georgescu and Herman (2020) found that students from entrepreneurial families had higher entrepreneurial intentions than those from non-entrepreneurial families. Further, According to Cardella et al. (2020), people learn certain skills from others who serve as models. As a result, one can conclude that family guidance toward developing entrepreneurial skills leads students to consider independence or autonomous employment. That is, entrepreneurial skills passed down through families in the form of experience and learning play a significant role in increasing students' desire to work for themselves. Students from business families, in particular, tend to have better skills, which can boost self-employment intentions.

In conclusion, the study on entrepreneurial mindset provides different results in different countries, particularly among developing and developed countries. This study measures the entrepreneurial mindset in South Africa and found that both the level of entrepreneurial traits and entrepreneurial skills are above average. The aggregate mean score also shows the majority of high school learners in Gauteng perceive themselves as entrepreneurial. The two dimensions (sub-constructs) of entrepreneurial mindset significantly influence the learners' self-employment intention. Learners from families with business background also have better SEI than their counterparts. Regarding the interaction

effect, learners having families with business background tend to develop better entrepreneurial traits that further improve their intention toward self-employment.

Implications

Based on the results of this study, practitioners and future research implications are suggested.

Practitioners

First, the South African government could use this conclusion to implement a systematic but incremental change to the overall entrepreneurial education of high school learners by working on programs that increase the skills or traits of the average high school learner. This will lead to better entrepreneurially minded high school learners with an ambition to eventually start entrepreneurial ventures that may have a direct impact on reducing the high level of unemployment in the nation. Second, the Department of Basic Education should aim to tap into the existing desire for self-employment in high school learners and develop a curriculum that integrates theoretical and experiential learning. Both the Departments of Basic Education and that of Higher Education and Training should look at the 33.3% of those aged 15–24 years who are not in school nor at work. A business start-up training program to be run through technical and vocational education and training (TVET) or related institutions may provide them with an avenue to economic participation. The private sector, supported by agencies run by the two departments could also play an active role.

Third, it is expected that this intervention will improve the future TEA of the country. Having families with business background improves traits, therefore, the schools should adopt linking the learning process to the learners' background to make it more practical. Local businesses and entrepreneurs should be used as role models or case studies. The family business managers should take into consideration attending entrepreneurial mindset programs. These help learners to take a lesson from what they already have. Analyzing factors that influence individuals' decision to become self-employed and why people choose paid employment rather than launch their own business will provide an important guide for policymakers (Ayalew and Zeleke, 2018).

Future research

This study is not without limitations. First, the scope of the study is limited to Gauteng province. However, it has more importance if the study is conducted countrywide or compared to different countries. Therefore, future researchers should conduct their study by increasing the geographic scope of the study. Second, we have adopted the entrepreneurial mindset scales from Davis et al. (2016). However, the scale may not equally be applicable among developing and developed countries. Therefore, researchers in the future should modify the existing scales to make it fit to different countries through cross-country studies.

Data availability statement

The original contributions presented in this study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the (patients/participants OR patients'/participants' legal guardian/next of kin) was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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