Development and validation of sources of entrepreneurial self-efficacy and outcome expectations: A social cognitive career theory perspective

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Abstract

The purpose of this study was to develop and validate the sub-dimensions of the learning experiences sources of self-efficacy and outcome expectations of social cognitive career theory (SCCT) in the domain of entrepreneurship. The validation process was done in three phases. The first phase was the item generation and expert reviews of the items. In the second phase (N = 335 students), we subjected the scale to exploratory factor analysis (EFA) and discovered 5-theory consistent factors. In the third phase (N = 376), we collected another independent sample to further validate the scale, using confirmatory factor analysis (CFA) and a whole spectrum of validity approaches. Overall, the results suggested that the scale is psychometrically sound and supported the theory consistent five-factor structure, with adequate reliability estimates. Our proposed instrument addresses the limitations of previous intention-based models by incorporating other theory that accounts for the achievement of entrepreneurial intention and behaviour outcomes. Finally, we highlight pedagogical, policy and practical implications.

Keywords: sources of self-efficacy and outcome expectations; social cognitive career theory; personal mastery; verbal persuasion; vicarious learning; positive emotion; negative emotion

1. Introduction

This paper proposes a new measuring instrument that can more adequately capture the sources of self-efficacy and outcome expectations as posited by social cognitive career theory (SCCT) by Lent, Brown and Hackett (1994) within the context of entrepreneurship. The present study is set against the backdrop of critique of intention-based theories and their limitations and the alternative framework offered by SCCT. SCCT has a more robust ability to predict many entrepreneurial outcomes, especially new venture creation, better than previous psychological theories. Therefore, scholars (Carsrud, Brännback, Elfving, and Brandt 2009; Liguori, Bendickson, & McDowell, 2018; Liñán & Fayolle, 2015) have called for the application of SCCT in an entrepreneurial context. Several researchers (Lanero, Vázquez, & Aza, 2016; Liguori, Winkler, Vanevenhoven, Winkel, & James, 2019; Meoli, Fini, Sobrero, Wiklund, 2020; Vanevenhoven & Liguori, 2013) have begun to respond to this call. However, most of their works have concentrated on the proximal aspects of the theory, leaving the distal parts of the theory unexplored.

One crucial variable in the distal parts is learning experiences. Learning experiences are variables conceived by Bandura (1986; 1997) to serve as the primary sources of self-efficacy. Lent et al. (1994) further posited that these variables could serve more function as a connecting bridge between the distal and proximal parts of SCCT. It, therefore, seems reasonable to argue that the entrepreneurial application of the distal aspects of the theory is hampered by the lack of a validated scale to measure entrepreneurial learning experiences (ELE). Some individuals may argue that most of the research on the antecedents of entrepreneurial self-efficacy (ESE) has been based on the learning experiences, according to Newman, Obschonka, Schwarz, Cohen and Nielsen, (2019). Nevertheless, as will be discussed in the latter parts of this study, we argue that prior works in entrepreneurship did not conceptualize and measure learning experiences as defined by Bandura

(1986; 1997). Therefore, those related constructs could not be applied within the SCCT framework. There are few exceptions (such as Erikson, 1999; Farashah, 2015; Mauer, Eckerle & Brettel, 2013) that tried to measure ELE as defined by Bandura. However, they did not validate the research instruments. Besides, Farashah (2015) scale may be used for only adults who are practising entrepreneurs. Furthermore, following Moberg (2013)'s argument that entrepreneurship should expand beyond the business school and be taught to all students, regardless of their discipline, we argue that there is a need for a validated ELE scale that can be used among students who have little or no entrepreneurial experiences.

Therefore, this study filled this gap by developing and validating an ELE scale for students with little entrepreneurial experience. Filling the gap in knowledge in this regard should open up the distal aspect of SCCT for entrepreneurial research and provide more depth of knowledge on several entrepreneurial outcomes.

1.1 Outline of the study

The subsequent section of this paper contains a general review of the SCCT. Next, we discussed why SCCT is a crucial and better theory than the extensively used intention-based theory that permeates the entrepreneurship literature. In the next section, we discussed the learning experiences aspect of the theory and why their application is faulty in an entrepreneurial context. The next section is the methodology. It comprises three phases. In the first phase, we discussed how the items were generated to capture ELE as Bandura (1997) and Lent et al. (1994) posited. Also, we discussed the initial stage of face validity done by a panel of expert reviewers. In the second phase, we discussed how the items were validated through exploratory factor analysis (EFA). In the third phase, we discussed further validation processes comprising construct validity, confirmatory factor analysis (CFA), convergent validity and discriminant validity. Furthermore,

in this phase, we conducted a composite reliability test – as scholars argue that it is better than the typical Cronbach's alpha (Fornell & Larcker, 1981). The next section is the result section. Here, we present the EFA result in the second phase. This is followed by the construct validity results, CFA, convergent and discriminant validity, and reliability. Finally, we had the discussion section, the implications of the research and its limitations.

2. Literature review

2.1. Social cognitive career theory: an overview

With roots in vocational psychology, SCCT aims to provide a unifying framework for explaining experiential and cognitive processes that account for an individual's career choices. It emphasizes the role of personal agency and human capacity. The theory brings together five inter-connected models: interest development, choice-making, performance and persistence in educational and vocational domains, satisfaction and well-being in educational and vocational contexts, and career self-management (Lent and Brown, 2019). In effect, SCCT provides an integrated framework for many theories relating to educational and career interest, choice, and behaviour (Lent and Brown, 2019; Schaub and Tokar, 2005; Tokar, Thompson, Plaufcan, Williams, 2007). It analyses the content of people's career development (i.e., what career preference you wish for). The theory triadic-reciprocal model of causality accounts for the interactions between personal attributes, external environmental factors, and overt behaviours.

The theory can be divided into two broad parts – the proximal and distal portions. The proximal portions comprise self-efficacy, outcome expectations, goals, etc. Self-efficacy refers to people's perception of their capability to organize and implement actions required to achieve designated outcomes and performances (Bandura, 1986). While self-efficacy focuses on an individual's response capabilities, outcome expectations refer to the imagined consequences of performing

particular behaviours. Outcome expectations can be physical, social, or self-evaluative. A goal is defined as the determination or ability of an individual to engage in a particular activity or behaviour in order to effect a particular future outcome. It highlights the agency of individuals to shape, organize and guide their behaviours, even in the absence of external reinforcement, towards a future outcome. The distal portions include person inputs (e.g., ethnicity/race, gender), contextual affordances (e.g., socioeconomic status [SES]), and learning experiences (comprising of: personal mastery, vicarious learning, verbal persuasion, and emotion). Thus, Lent et al. (1994) present three distinct but interlocking models to highlight the socio-cognitive mechanisms that influence career and academic development from interest development to choice and performance.

2.2 Social cognitive career theory and the entrepreneurial process

Personal agency is at the heart of the entrepreneurial process, focusing on the means and actions through which individuals discover, evaluate and exploit opportunities for value creation and value capture. Intention models, such as Ajzen's theory of planned behaviour (Ajzen, 1991), have made significant contributions in explaining some situational and cognitive factors associated with entrepreneurship. However, they have failed to adequately grapple with the complexity and non-linearity of the entrepreneurial process (Liguori et al., 2018). While previous psychological models put intention at the core of the entrepreneurial process, SCCT provides a more comprehensive framework that enables scholars to move beyond this limiting and limited intention-based perspective. In other words, the SCCT model recognizes that, while the intention is an important starting point in the journey to new venture creation, intention alone is not sufficient (Meoli et al., 2020).

For example, current empirical attention is on the intention-behaviour link or implementation intention. Some empirical (e.g. Neneh 2019; Pham, Jones, Dobson, Liñán & Viala 2021) works

are beginning to surface in this regard. Furthermore, other areas such as entrepreneurial success are calling for more research attention (Staniewski & Awruk 2019). SCCT provides an excellent framework to investigate all these emerging areas from both the distal and proximal variables. In summary, SCCT provides a framework to analyze transition to entrepreneurship not as a final destination but as a process embedded in a career path, and where a wider range of antecedents and outcomes come into play (Pérez-López, González-López and Rodríguez-Ariza, 2019). Against this backdrop, we highlight four key constructs that elucidate the entrepreneurial learning experiences (ELE) within the social cognitive career theory model.

2.3 Entrepreneurial learning experiences (ELE)

Given the primary purpose of this study, we will discuss how learning experiences have been applied in the entrepreneurial context and the limitations of such applications that further warranted this study. Within the SCCT model, learning experiences occupy a spot where they can function as either an outcome, predictor, or mediating variable. We discuss its sub-dimensions within the context of entrepreneurship below.

2.3.1 Entrepreneurial Personal Mastery (EPM). This has to do with past performances influencing future performances in a similar domain. A person who has had success in the past as an entrepreneur has more confidence to do it again. Although researchers (e.g., Bike, 2013) have commented on the moderating impact of cognitive assessment of performance, generally speaking, successful performance in a particular area has been found to increase self-efficacy and outcome expectations in that area (Lent, Ireland, Penn, Morris, & Sappington, 2017). Entrepreneurship research has studied this variable in the form of prior entrepreneurial experience (e.g., Lee, Hallak & Sardeshmukh, 2016; Zhao, Seibert, & Hills, 2005). However, previous experience is not EPM. It only provides the opportunity to have EPM. That is, two individuals can have similar EPM, yet

one judged himself a failure, while the other judged himself a success. Thus, EPM is a subjective assessment of entrepreneurial performance.

2.3.2 Entrepreneurial vicarious learning (EVL). This has to do with observing models (Lent et al., 2017). The mere act of observing others should produce a subjective perception of being able to do what they do to get what they have acquired. This aspect of learning experiences has been explored considerably in entrepreneurship research. Having family, friends, acquaintances, etc., engage in entrepreneurial activities have been found to predict ESE (BarNir, Watson, & Hutchins, 2011; Farashah, 2015; Vanevenhoven & Liguori, 2013) and entrepreneurial intention (Abbasianchavari & Moritz 2021; Nowiński & Haddoud 2019).

However, we argue that exposure to entrepreneurial models or coming from a family of entrepreneurs does not automatically mean having an entrepreneurial role model. Indeed, there are lots of career models an individual will be exposed to – particularly, a high SES individual (Adebusuyi, Kolawole, Abu, Adebusuyi & Ajulo, in press; Duffy Blustein, Diemer, & Autin, 2016). Therefore, the decision to pick entrepreneurial models depends on the individual's psychological characteristics and the entrepreneurs they have access to. For example, research has shown that personality traits like risk-taking propensity and the need for achievement separate those who are entrepreneurially inclined from those who are not (Sun, Ni, Teh & Lo 2020). Similarly, Nowiński and Haddoud (2019) reported that individuals are only inspired by successful entrepreneurs. In summary, having an entrepreneurial role model is beyond being exposed to such models. Entrepreneurs become role models if the observer values and desires the benefits of being an entrepreneur (i.e. entrepreneurially inclined) and the type of entrepreneurs they are exposed to.

2.3.3 Entrepreneurial verbal persuasion (EVP). This has to do with the words of encouragement from people you love and whose opinion you respect (Lent et al., 2017). It is a morale-boosting

variable to make the actor persevere in the face of challenges and/or setbacks. Encouraging a person to persevere about a given task implies that the person has been seen making attempts to do the task. In this instance, the actor has probably been seen exhibiting entrepreneurial behaviours in the past. From this perspective, one can argue that entrepreneurial EVP is the opposite of EPM. The former is about past failure, whereas the latter is about past success.

There is another variable that is similar to EVP and common in the entrepreneurial literature – it is the subjective norm. It is defined as a social pressure by significant others to carry out entrepreneurial activities (Liñán & Chen 2009). The former is about others asking you to continue in what you are doing, whereas the latter is others asking you to start what they think is suitable for you. In other words, the subjective norm is a push entrepreneurial motivation, whereas EVP is a pull entrepreneurial motivation.

Compared to other ELE subscales, EVP has received the least attention in the entrepreneurial literature (Mauer et al., 2013). Besides, the few studies that have investigated it did not measure it accurately. For instance, Erikson (1999) and Mauer et al.'s (2013) measured entrepreneurial EVP in a way analogous to subjective norms. Farashah, (2015) measurement tool reads: "You often see stories in the public media about successful new businesses and entrepreneurs." This item seems to be a tool to measure entrepreneurial EVL instead of EVP. Also, none of the past measures of EVP reported psychometric properties of reliability and validity.

2.3.4 Emotional arousal. Emotion in entrepreneurship studies has been acknowledged by many researchers (Fodor & Pintea, 2017; Cardon, Foo, Shepherd, & Wiklund, 2012; Cardon, Gregoire, Stevens, & Patel, 2013). They showed that emotion is useful in the exploration and exploitation of entrepreneurial opportunities, the ability to raise investment funds, hire and motivate workers, etc. Lent et al. (2017) further theorized that emotional arousal in the SCCT model could be broken

down into distinct parts of positive emotion (PE) and negative emotion (NE). Most of the emotion measures in the literature are useful for practising entrepreneurs. Also, past research that has investigated ELE did not either include emotional arousal (e.g., Erikson 1999), correctly measure it (e.g., Mauer et al., 2013) or further break it down into entrepreneurial positive (EPE) and negative emotion (ENE) as was posited by Lent et al. (2017).

In summary, there is a dire need for a psychometrically sound scale to measure ELE. Filling the gap in knowledge in this regard should open up the distal aspect of SCCT for other entrepreneurial researchers.

3. Methodology

3.1 Phase 1: Item generation

Based on a closer study of the sources of self-efficacy by Bandura (1997), we developed 40 items to measure EPM (12 items), EVP (14 items), and EVL (14 items). Items were written in a first-person statement, and some of them were negatively worded. For EPM, however, two items were adapted from early commercialization behaviour, a sub-scale of early entrepreneurial competence scale by Obschonka, Silbereisen, Schmitt-Rodermund, and Stuetzer (2011).

The items and a brief explanation of each ELE subscales as posited by Bandura (1997) were sent to a panel of reviewers who have at least a master's degree in any social sciences fields (e.g. psychology, sociology, economics and business administration) and are lecturers. We mixed the items up such that items designed for a particular factor were not serially arranged. So, the reviewers' job was to read each item, and based on the definition of each subscale they have read, identify where each item should belong. Also, they should check each item for relevance, confusing sentences and suggest any addition or subtraction they felt necessary. Three persons

responded and became the three-man panel that reviewed the items. Two were from the psychology department, and the last person was from business administration. The two in psychology have 10 and 14 years of lecturing experience, and the last person has 15 years of lecturing experience. The three-man panel identified each item, and where their identification did not agree, the authors used their discretion to determine where the item should be. Furthermore, items they felt were ambiguous were either reworded or deleted. This process reduced the number of items to 30. These items are presented in the appendix of this paper. For emotional arousal, however, we did not send the items out to be reviewed since we were only adapting an existing scale.

3.2 Phase 2: Exploratory factor analysis

3.2.1 Sampling technique

For phase 2, we sampled the three major ethnic groups in Nigeria (Yoruba, Igbo, and Hausa) to provide generalizability for the scale. We collected samples at Obafemi Awolowo University, Ile-Ife, (a university in southwestern Nigeria) that is chiefly populated by Yoruba students. We also collected data at the University of Nigeria, Nsukka (a university in southeastern Nigeria), whose student population is predominately Igbo. For the Hausa participants, we collected data from Kano State Polytechnic (a higher institution of learning in northern Nigeria).

3.2.2 Participants

 The participants in this phase were 335 students. Forty-five (13.4%) were postgraduate students, while 290 (86.57%) were undergraduate students. There were 181 (54%) males, 152 (45.4%) females, and two (0.6%) did not indicate their sex. Their ages ranged from 18 to 48 ($M =$25.26, $SD = 4.67$) years. On ethnicity: Yoruba were 78 (23.3%), Igbo were 134 (40%), and

Hausa were 123 (36.7%). On religion, 195 (58.2%) were Christians, 137 (40.9%) were Muslims, and 3 (0.9%) did not indicate their religion. The respondents were from faculties and departments of the tertiary institutions used. Out of the 335 respondents, 56 (16.72%) had 1 to 3 item responses missing.

3.2.3 Procedure

We presented the 30 items we retained in phase 1. Also, we adapted the 20-item Positive and Negative Affect Schedule (PANAS) by Watson, Clark, and Tellegen (1988) to fit the entrepreneurial context in order to measure entrepreneurial PE and NE. However, the whole 20 items were not adapted. The item "guilty" was removed since it could not be felt in an entrepreneurial context.

On the questionnaire, the first part comprised demographic information such as sex, department, state of origin, religion, and age. The instruction reads: "On a 6-point scale, from (1) *strongly disagree* to (6) *strongly agree,* how would you rank yourself in the following:" after that followed the 30 items. For emotional arousal, the instruction reads: "When you hear, think, or others talk about entrepreneurship in the past, to what extent have you felt…." The response format was on a scale of 1(very slightly not at all true) to 5 (extremely true of me). Furthermore, we added three additional items that are not related to the study to exclude mindless respondents. An example of this is "I sleep less than one hour per night".

3.2.4 Data Screening

Since the data collected were in a paper and pencil format, we manually entered the data into SPSS version 21. We checked the data for anomalies such as non-normality, unengaged responses, extreme values, missing data, skewness and kurtosis. We checked for non-normality using

histogram and boxplot. Extreme values occurred due to the manual approach of data entry. We anticipated this problem; therefore, we uniquely labelled each questionnaire so that we can go back to it when we encounter an extreme value. Unengaged responses were deleted. Skewness and kurtosis were also within an acceptable range of -2 to + 2 (Weston & Gore, 2006). Finally, as Tabachnick and Fidell (2013) recommended, we used full information maximum likelihood (FIML) to generate data for the missing values in the dataset. Statistical scholars (e.g. Singer & Willett, 2003; Tabachnick & Fidell, 2013) argued that it is the best approach to handling missing data. We carried out this same process of data screening for the other study carried out in this paper.

3.3 Phase 3: Validity analysis

In phase 3, we present the scale in another independent sample. The purpose of this phase is to conduct further validation by estimating construct validity, CFA, convergent and discriminant validity, and composite reliability.

3.3.1 Construct validity

According to DeVellis (2017), the requirements for construct validity is satisfied if the new scale relates to other scales in a theoretically predetermined way. In the theoretical reasoning of SCCT, ELE subscales should correlate positively to ESE and entrepreneurial outcome expectations (EOE). The only exception is ENE, in which case we expect it to relate negatively with ESE and EOE. Conversely, we included the neuroticism personality subscale, defined as a trait-based negative emotion. We expect it to negatively connect to other ELE subscales but positively relate to the ENE subscale. Furthermore, we subject the EFA result in phase 3 to CFA to cross-check the scale's factor structure using this different sample.

3.3.2 Confirmatory factor analysis

We further validate the scale's factor structure by conducting CFA and checking the factor loadings and the fitness statistics of the hypothesized model, as recommended by Iacobucci (2010) and Worthington and Whittaker (2006). In addition, following the example of Lent, Lopez, Brown, and Gore (1996) and Lent et al. (2017), we considered alternative models of CFA. First, previous scale development procedures in the career literature have found personal mastery and verbal persuasion to covary substantially, and they tried to test a model where the two forms one factor, alongside other factors. Similarly, we did a 4-factor model, where EPM and EVP formed one factor. Also, Lent et al. (1996) did another model where personal mastery, emotional arousal and verbal persuasion formed one factor, and vicarious learning only formed a separate factor. In this study, we also present a 3-factor model where EPM, EVP and EPE covary. Furthermore, we did another 3-factor model where EPM, EVP, and EVL formed one factor. Since several works that have developed scales using learning experiences did not separate the emotional arousal into positive and negative components, we want to see if combining the EPE and ENE to form one factor would negatively affect the scale. Finally, we combine the whole subscale to determine whether the scale is unidimensional.

Also, research (e.g., Dempsey & Jennings, 2014) has found gender to influence many entrepreneurial outcomes. Therefore, we tried to see if the scale is invariant across gender.

3.3.3 Convergent and discriminant validity

Convergent validity is the extent to which measures designed for a particular construct are related. Contrastingly, discriminant validity is the extent to which scales designed to measure opposing constructs are uncorrelated. Authors have investigated these validities from different perspectives. Some (e.g., Miller, Ewest, & Neubert 2019) have correlated related constructs to determine

convergent validity and connect unrelated constructs to assess discriminant validity. Others (e.g. Wang, Tseng, Wang, & Chu, 2020) have used the extent to which items designed to measure the same construct are correlated, as convergent validity, and the degree to which items to measure different constructs are uncorrelated as discriminant validity. Still, scholars (e.g., Lanero et al. 2016; Pei-Boon, Jaafar, Chin-Siang, & Nee-Nee 2020; Pattnaik, 2019) use average variance extracted (AVE) – which is the amount of variance a scale captures from its indicators, relative to the amount of measurement errors (Farrell, 2010). Values greater than 0.5 for each measured construct are regarded as meeting convergent validity requirements (Fornell & Larcker, 1981). In comparison, discriminant validity is determined when the square root of the measured scales is greater than its correlation with other scales (Netemeyer, Bearden & Sharma, 2003). In this phase of the study, we used AVE.

3.3.4 Composite reliability

Finally, for reliability, we computed both Cronbach's alpha and composite reliability. Both are suitable methods for determining the reliability of a scale. However, there are researchers (e.g., Bacon, Sauer, & Young, 1995; Peterson & Kim, 2013) that argue that the latter is better than the former. Values above .70 are considered reasonable for Cronbach alpha and composite reliability (Nunnally, 1978; Nunnally & Bernstein, 1994).

3.3.5 Sampling technique

For phase 3, we purposively collected data from three tertiary institutions in Ekiti state – a state in southwestern Nigeria. Each tertiary institution was chosen to represent a different SES. Adebusuyi and Adebusuyi (2020) discussed how different tertiary institutions could be used as a proxy to measure students' SES in Nigeria. Guided by their example, we collected data from Afe Babalola University, Ado-Ekiti (a private university) – as a proxy for high SES students. Also, we collected

data from Ikere College of Education – as a proxy for low SES students. Finally, we collected data from Federal University, Oye-Ekiti – as a proxy for a mix of high and low SES students. All of these were done to ensure the scale's generalizability across different social classes.

3.3.6 Participants

The study participants were 376 undergraduate students which 137 (36.4%) were males, 238 (63.3%) were females, and one person (.3%) did not indicate sex. Their ages ranged from 16 to 30 (M_{age} = 21.75; SD = 2.84). For religion: 324 (86.2%) were Christians, 45 were Muslims (12%), 5 (1.3%) traditional religion and 2 (.5%) did not indicate religion. One hundred and two (27.1%) samples were collected from Afe Babalola University, Ado-Ekiti, 205 (54.5%) samples were collected from Federal University, Oye-Ekiti, and 69 (18.4%) samples were collected from Ikere College of Education. The respondents were from faculties and departments of the tertiary institutions used. Out of the 376 respondents, 51 (13.56%) had 1 to 6 item responses missing.

3.3.7 Measures

ESE. The ESE scale used for this study was developed by Moberg (2013). Using this scale was because it was designed to measure the ESE of people with little or no entrepreneurial experience. It is a 20 item scale with five sub-dimensions. The whole scale was collapsed in this study to produce one general ESE measure. Sample item includes: "Identify ways to combine resources in new ways to achieve". For reliability, the scale ranged from .67 to .85 for the five subscales. The collapsed general ESE scale has a Cronbach's alpha of .88. For validity, Moberg did an EFA and CFA. The CFA fit statistics showed: Comparative fit index (CFI) > .90, Standardized Root Mean

Square Residual (SRMR) < .08 and the Root Mean Square Error of Approximation (RMSEA) ranged from .06 to .07.

EOE. The EOE scale we used was developed by Lanero et al. (2016). The scale has two factors of intrinsic and extrinsic EOE. The reliability coefficient for each subscale was .92. Also, the combined scale used in this study has a .92 reliability coefficient. A convergent validity using the average variance extracted (AVE) value for each subscale were .64 and .70. For this study, however, the two were also collapsed into one single measure of EOE. The combined EOE scale is a 14-item scale measured on a Likert scale from (1) *strongly disagree* to (7) *strongly agree*. Sample item includes: "As an entrepreneur, I would obtain work autonomy and independence". The reliability coefficient for the collapsed scale was .85

Neuroticism. This was measured by the Big Five Inventory (BFI) developed by John and Srivastava (1999). A 44-item scale measured on a 5-point Likert-type scale ranging from (1) *strongly disagree* to (5) *strongly agree*. However, we used the neuroticism subscale, comprising of 8 items. Sample item includes: "I see myself as someone who gets nervous easily". It has been used in several empirical studies and has been reported to have a Cronbach's alpha of .87

4. Results

4.1. Factor analysis of the ELE items

The data of the 49 items developed to measure EPM, EVL, EVP, EPE, and ENE were subjected to maximum likelihood (ML) extraction method and promax rotation in EFA. We used ML because, according to Worthington and Whittaker (2006), it is better for scale development and is the estimation method of CFA. Also, we followed the precedence of Usher and Pajares (2009), who used ML to extract their EFA sources of mathematics self-efficacy. Items that fall below .40 in the communalities, its primary factor in the pattern matrix, and cross-loadings < .15 on non-

primary factors were deleted as recommended by Howard (2015). This process removed 25 out of the original 49 items, and all of the negatively worded items were deleted. The factor that suffers the most in this process of elimination was EPM. Most of the items developed to measure it was removed to retain just two.

The retained 24 items have a Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) of .872 (which is meritorious according to Hutcheson & Sofroniou, 1999). Also, the values for the individual KMO ranged from .788 to .933, which is greater than the acceptable limit of .5, according to Field (2018). Based on Kaiser's criterion of 1 and the scree plot, the EFA produced five theory-consistent factors, with total variance, explained at 51.22%. Although there are no specific criteria for the level of total variance explained, Pett, Lackey and Sullivan (2003) recommended a range of 50 to 60 per cent for EFA in social sciences. Therefore, our variance explained is acceptable as it falls within this range. We present the eigenvalues, percentage of variance accounted for by each factor and the factor loadings for each item in Table 1.

Table 1. Items and Factor Loadings for Entrepreneurial Learning Experiences

	EPE	ENE	EVP	EVL	EPM
Attentive	.773				
Interested	.767				
Inspired	.722				
Strong	.674				
Determined	.667				
Excited	.625				
Irritable		.828			
Jittery		.765			

Hostile		.706			
Distressed		.700			
Ashamed		.667			
People close to me have verbally declared their faith in my abilities to succeed as an entrepreneur			.911		
My parents have encouraged me to develop my entrepreneurial skills			.718		
People have told me that I am a born entrepreneur			.660		
I have been praised for my entrepreneurial abilities in the past			.578		
People close to me have let me know that I am good at entrepreneurship			.461		
I have role models who are good entrepreneurs				.687	
I have role models who have explained to me how to be a successful entrepreneur				.674	
I have family relations that I admire making good money as entrepreneurs				.654	
I have seen friends doing well as entrepreneurs				.612	
When I read about successful entrepreneurs, I see myself becoming one				.459	
I have followed very closely (on TV or internet) entrepreneurs that I admire a lot				.441	
I have been successful at selling things in the past					.813
I have been good at trading/exchange of things in the past					.791
Eigenvalues	6.52	3.26	2.16	2.16	1.16
% of Variance	27.14	13.56	9.01	9.01	4.84

4.2 Construct validity

Correlational analyses, as shown in Table 2, provide evidence for the construct validity of the ELE scales. As indicated in Table 2, EPM is positively associated with ESE ($r = .45$) and EOE ($r = .34$), but, although not significant, is negatively related to neuroticism ($r = -.03$). Similarly, EVL is positively related to ESE ($r = .49$) and EOE ($r = .50$), but negatively related to neuroticism ($r = -.05$). Also, EVP positively related to ESE ($r = .52$) and EOE ($r = .39$). EPE also positively related to ESE ($r = .66$) and EOE ($r = .52$), whereas, it negatively related with neuroticism ($r = -.11$). Finally, ENE is negatively related to ESE ($r = -.11$) and EOE ($r = -.24$), but positively related to neuroticism ($r = .26$).

Table 2. Correlations, means, standard deviations, and internal consistency estimates

	Mean	SD	EPM	EVL	EVP	EPE	ENE	ESE	EOE
EPM	7.52	2.93	1						
EVL	26.21	7.31	.574**	1					
EVP	19.10	6.71	.619**	.597**	1				
EPE	23.16	5.43	.394**	.422**	.428**	1			
ENE	10.73	5.33	-.022	-.151**	.031	-.119*	1		
ESE	85.10	18.96	.454**	.491**	.516**	.664**	-.107*	1	
EOE	65.69	15.09	.341**	.502**	.372**	.519**	-.241**	.667**	
neuroticism	23.18	4.31	-.03	-.049	-.064	-.105*	.258**	-.116	-.095

Note. $* p < .05$, $** p < .01$

4.3 Confirmatory Factor Analysis

We used Analysis of Moment Structure (AMOS) version 23 for the CFA. As recommended by Hair, Black, Babin, & Anderson (2013) and Bentler and Bonett (1980), the threshold for a good model fitness includes the following: RMSEA $\leqslant 0.08$, SRMR $\leqslant 0.10$, and CFI $\geqslant 0.9$.

The result of the CFA, using the 5-factor model we found in phase 2 of this study yielded a well-fitting model ($\chi^2_{(242)} = 519.677$, $p < .001$, CFI $= .946$, RMSEA $= .055$ and SRMR $= .0514$) as presented in the first row of Table 3 (model 1). The goodness of fits of the alternative models was also presented in Table 3 (model 2 to 6).

Table 3. Goodness-of-Fit Statistics for CFA Models.

Model		χ2	df	χ2/df	CFI	SRMR	RMSEA	AIC
1	Five factors	519.677*	242	2.147	.946	.0514	.055	633.677
2	Four factors with EPM and EVP as one factor	653.295*	246	2.655	.921	.0567	.066	761.295
3	Four factors with EPE and ENE as one factor	1805.662*	246	7.340	.698	.1975	.130	1913.662
4	Three factors, where EPM, EVP, and EPE are one factor	1475.493*	249	5.926	.762	.0967	.115	1577.493
5	Three factors, where EPM, EVP, and EVL are one factor	982.946*	249	3.948	.858	.0699	.089	1084.948
6	One factor	2796.663*	252	11.098	.507	.1551	.164	2892.663

Note. N = 376. AIC = Akaike information criterion; CFI = Comparative Fit Index; df = degrees of freedom; RMSEA = root mean square error of approximation. *p < .001.

To determine the difference between fit indices of the models, the Akaike information criterion (AIC) was used, with lower values indicating better fit. Other researchers (e.g., Miller et al. 2018; Gunawan, Creed, & Glendon, 2018) have also used it to compare models. Comparing the 5-factor model with the alternative models presented in Table 3, it is clear that the 5-factor model is the best. The one that came close is model 2, and the worst is model 6. Summarily, the CFA in phase 3 confirmed the EFA in phase 2. The result of the 5-factor CFA is illustrated in Figure 1. As shown in Figure 1, all the standardized factor loading ranged from .64 to .86, and significant at $p < .001$
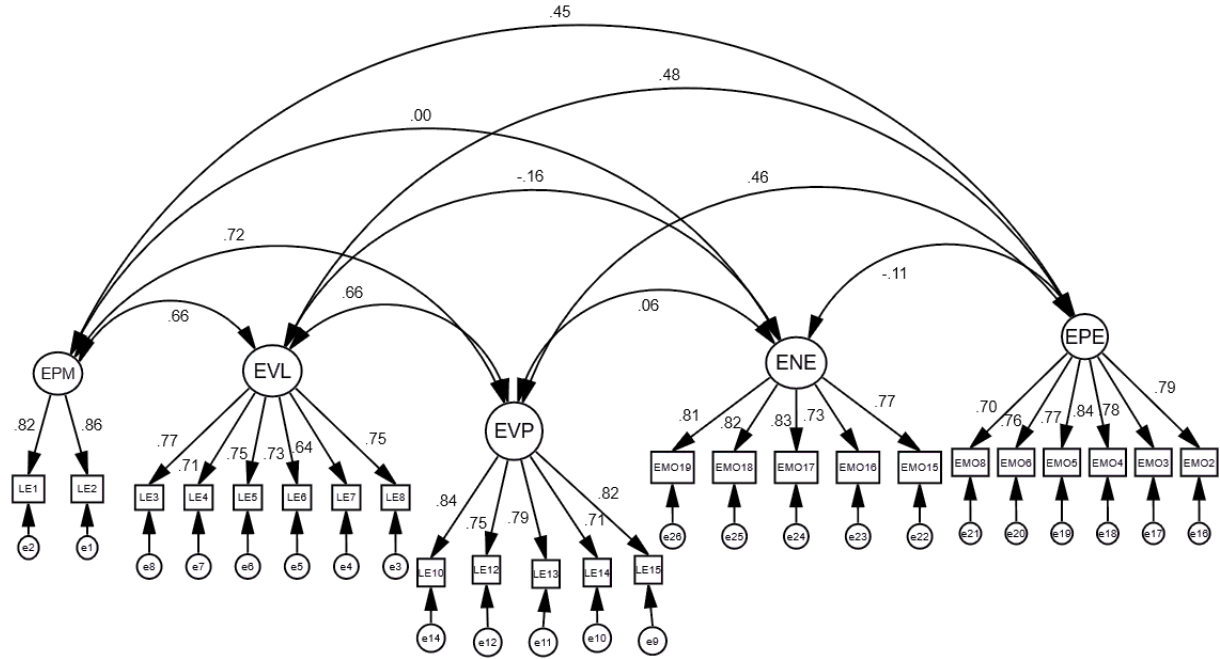
Figure. 1. Measurement model for the 24-item ELE scale

Furthermore, we checked for the invariance of the scale across gender. According to Byrne (2016), two analyses must be carried out. The first is the configural model, where the groups will be nested within one hypothesized model. Following this analysis is the constrained model, where the nested models will be forced to be equal. This analysis was done for both the factor loadings of the CFA and their covariances, leaving out their error variances, as recommended by Byrne (2016). The test of invariance is determined by the non-significant difference between the configural χ^2 and the constrained model.

The gender configural model yielded the following: $\chi^2_{(484)} = 874.122$, CFI = .926, RMSEA = .046 and SRMR = .0665. Whereas, the constrained model for the factor loadings produced the following: yielded the following result: $\chi^2_{(242)} = 894.605$, CFI = .926, RMSEA = .046 and SRMR = .0689. The chi-square difference test between the configural and the constrained model $\Delta\chi^2_{(19)} = 20.483$, p = .366, implying that the model is the same across gender for the factor loadings. The

constrained model for the covariances: $\chi^2_{(518)}$ = 916.827, CFI = .924, RMSEA = .045 and SRMR = .0794. The chi-square difference between the configural and the constrained covariances $\Delta\chi^2_{(15)}$ = 22.22, p = .102.

4.4 Convergent and discriminant validity and reliability

As shown in Table 4, the AVE of the ELE subscales ranged from .529 to .709 – above the minimum threshold of .50. Therefore, the convergent validity requirement is satisfied. Also, the square roots of the AVE (the values in parenthesis on the diagonal) are larger than the correlations on the off diagonals implying discriminant validity requirements are also satisfied.

Finally, Table 4 showed both the Cronbach's alpha and composite reliability values. Both exceeded the minimum standard of .70. Although composite reliability is better, the difference between them is negligible, supporting the conclusion of Peterson and Kim (2013).

Table 4. Latent variable correlation matrix, square roots of AVE and composite reliability

	α	ρc	AVE	MSV	EPM	EPE	ENE	EVP	EVL
EPM	.829	0.830	0.709	0.524	(0.842)				
EPE	.899	0.900	0.600	0.234	0.455	(0.774)			
ENE	.894	0.894	0.629	0.025	-0.004	-0.106	(0.793)		
EVP	.887	0.888	0.615	0.524	0.724	0.460	0.060	(0.784)	
EVL	.869	0.870	0.529	0.440	0.663	0.484	-0.159	0.661	(0.727)

AVE = Average Variance Extracted; Square roots of AVE are in parentheses; ρc = composite reliability; α = Cronbach's alpha; MSV = maximum shared variance (MSV).

5. Discussion

The main goal of this study is to develop an ELE scale that corresponds to the definition and conceptualization of learning experiences by Bandura (1997) and Lent et al. (1994) in an entrepreneurial context. This is necessary to further the application of SCCT in an entrepreneurial context. We did this using established scale development procedures. From the initial 49 items, the result produced a 24-item, theory consistent 5-factor model. The construct validity showed that each of the ELE (Except for ENE) subscales related positively to ESE and EOE scales and negatively related to neuroticism (although not significantly) as posited by the SCCT model. On the reverse side, only ENE positively related to neuroticism.

Several authors (e.g., Netemeyer et al. 2003; Worthington & Whittaker 2006) have argued that CFA should be done after the EFA. We followed the same process in this study. We found that CFA confirmed the theoretical factor structure of the ELE subscales found in EFA in a different sample. It also serves as a form of convergent validity, as none of the items had less than .60 on their primary factor. We also observe that there was no error covariance to suggest any theory modification during the CFA analysis. Besides, we found that the ELE scale was invariant across gender, both at the configural and more stringent level of analysis (i.e. equality constraint model). This finding is crucial because gender differences have been found to influence many entrepreneurial outcomes.

The result of this study on AVE, MSV and the square roots of AVE all are evidence of convergent and discriminant validity. The reliability coefficients (either Cronbach's alpha or composite reliability) also exceed the minimum benchmark for a reliable scale at phases 2 to 3 of the scale development. It is important to note that all of the negatively worded items in the initial item pool were screened out when conducting EFA. According to Usher and Pajares (2009), negatively

worded items are problematic when developing sources of self-efficacy scale. This problem manifested itself in the process of screening out items.

One subscale that was difficult to develop items for was EPM. In vocational and career studies, measuring personal mastery is relatively straightforward. Even so, it is not easy because the same level of performance can lead one individual to judge himself as a success and another to judge himself as a failure. The problem is even more amplified in an entrepreneurial context. Definition of success in entrepreneurship can either be economical (e.g., profit maximization) or psychological (e.g., derivation of personal fulfilment) or both (Staniewski & Awruk, 2019). A typical student has limited entrepreneurial experiences; therefore, judging his/her efforts as either successful or failure will be difficult.

Furthermore, notice that EPM has the highest correlation with EVP ($r = .62$). According to Lent et al. (2017), in a situation where objective performance standards are lacking, information about EPM and EVP will covary because people will rely on the assessment of significant others. Similarly, in an entrepreneurial context, undergraduates do not have objective performance standards for their entrepreneurial efforts. Therefore, their opinions of their EPM tend to come from the views of others (i.e., EVP). Furthermore, note that EPM did not have the highest correlation with ESE and EOE, contrary to the theoretical proposition of SCCT. In support of this result, Bike (2013) also found that personal mastery had a low influence on self-efficacy.

6. Research implication and limitation of the study

This paper proposes a new instrument based on the SCCT. ESE has been empirically found to influence many entrepreneurial outcomes (Newman et al., 2019). Nevertheless, research investigating its outcomes are far more than those of its antecedents (Javadian, Opie, & Parise, 2018). The first crucial implication of this study is that it offers an alternative theory to investigate

the antecedents of ESE through a robust and integrated framework of the SCCT. Second, entrepreneurial researchers can now combine the distal and proximal parts of SCCT in an entrepreneurial context, thereby deepening our understanding of entrepreneurial intention, behaviour, and success.

This research also has implications for entrepreneurial pedagogy in terms of bespoke curriculum design for various entrepreneurial outcomes and various stages in the entrepreneurial process and experience. For example, entrepreneurial education and training aimed at potential, aspiring and early-stage entrepreneurs should have certain distinct features and components from those aimed at "continuing" entrepreneurs. In the same vein, the paper has implications for entrepreneurship and education policy, for example, in Nigeria and many African countries, where national governments have launched policies of compulsory entrepreneurship education in the higher education sector (Kolade, 2018). Universities play a critical role in supplying high-quality entrepreneurs in developing countries (Olofinyehun, Adelowo and Egbetokun, 2018). However, educators and policymakers need to account better for other forms of entrepreneurial learning outside the traditional classroom- whether within or outside the university environment. These include opportunities for entrepreneurial learning, mentorship and co-creation in venture incubation and acceleration spaces spearheaded by a growing number of tech hubs and DIY labs across the African continent (Atiase et al., 2020; Kolade et al., 2021). They also include apprenticeships and industrial training programmes, which can be re-designed to reflect new realities and prepare participants for new entrepreneurial opportunities in the 21st century knowledge economy. Social cognitive career theory provides a framework to better understand and capture these additional elements of entrepreneurial learning. This can indirectly inform better evaluation processes for entrepreneurship education programmes.

Finally, most research on SCCT has been carried out in Europe and America; this research showed the model's applicability in an international sample. Brown and Lent (2016) already asked for the application of the theory to a new context and understudied culture. This research fills the gap by applying the model to a sample of undergraduate students in Nigeria, Africa's most populous country and biggest economy.

There are some limitations and future research potentials arising from this study. First, while the two items measuring EPM meet the minimum number of items, according to Worthington and Whittaker (2006), we recommend that future research add more to the items. Second, there is a need to apply this scale in a different population and culture other than the Nigerian context. Finally, related entrepreneurial scales could be included in a future study to see whether the scale has a better predictive ability.

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Appendix

	Generated items for EPM, EVP and EVL before being subjected to EFA
1	**I have been successful at selling things in the past**
2	**I have been good at trading/exchange of things in the past**
3	I have always been very good at identifying business opportunities
4	I haven't done well at managing a business in the past *
5	I know how to invest money in business and get good returns out of it
6	I have come up with fantastic business ideas in the past

7   I have successfully started a business of my own in the past

8   I have been to every country in the world**

9   I have been good at gathering business related information

10   I have always been a skilful business man

11   **I have role models who are good entrepreneurs**

12   I have observed people I admire who are successful entrepreneurs

13   In general, I don't admire entrepreneurs *

14   I have role models who are knowledgeable about entrepreneurship

15   **I have role models who have explained to me how to be a successful entrepreneur**

16   **I have seen friends doing well as entrepreneurs**

17   **I have family relations that I admire making good money as entrepreneurs**

18   I have read books about amazing people who are entrepreneur

19   I don't understand a word of English**

20   **I have followed very closely (on TV or internet) entrepreneurs that I admire a lot**

21   **When I read about successful entrepreneurs, I see myself becoming one**

22   In general, the people I look up to are entrepreneurs

23   People close to me have let me know that I can be an entrepreneur

24   **People close to me have let me know that I am good at entrepreneurship**

25   People close to me have let me know that I have what it takes to be a successful entrepreneur

26	**People have told me that I am a born entrepreneur**
27	**I have been praised for my entrepreneurial abilities in the past**
28	People have tried to financially support my entrepreneurial initiatives in the past
29	**My parents have encouraged me to develop my entrepreneurial skills**
30	People close to me have in many ways discouraged entrepreneurial tendencies in me *
31	I sleep less than one hour per night **
32	I have been verbally scolded for entrepreneurial behaviour *
33	**People close to me have verbally declared their faith in my abilities to succeed as an entrepreneur**

Note. ** means items included to identify and exclude mindless respondents, * means reverse-scored items, and those in boldface are the final retained items, as shown in Table 1.