

Implications of entrepreneurial education, self-efficacy and personality traits on the entrepreneurial intentions of deaf/hard of hearing students post COVID-19 lockdown

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Abstract.

BACKGROUND: Implications of entrepreneurial education (EE), entrepreneurial self-efficacy (ESE) and personality traits (PT) on the entrepreneurial intentions of the deaf is yet unknown in existing literature.

OBJECTIVE: To examine the influence of EE, ESE and PT on the entrepreneurial intentions among some 250 Deaf and Hard of hearing (DHH) students from two post-secondary institutions in Oyo state, Nigeria.

METHODS: A descriptive research design was adopted, while a structured paper questionnaire was used for data collection. The data generated were analysed using descriptive statistics and the inferential statistics of Pearson Product Moment Correlation and hierarchical multiple regression at a 0.05 level of significance.

RESULTS: The entrepreneurial intentions of DHH college students had a significant positive correlation with EE ($r=0.18$, $p<0.05$), agreeableness ($r=0.23$, $p<0.05$), and conscientiousness ($r=0.19$, $p<0.05$); but had a negative correlation with ESE, neuroticism and openness. Furthermore, personality traits and ESE were the highest predictors of entrepreneurial intention among DHH college students.

CONCLUSIONS: Personality traits were the greatest predictor of the entrepreneurial intention of DHH college students post the COVID-19 lockdowns in Nigeria. Therefore, higher education institutions should intensify their efforts in entrepreneurial education and parents of DHH students should encourage them to seek entrepreneurial opportunities.

Keywords: COVID-19, deaf and hard of hearing, entrepreneurial intention, entrepreneurial education, entrepreneurial self-efficacy, personality traits

1. Introduction

The coronavirus 2019 (COVID-19) has contributed to job loss, drastic reduction in family

income and aggravated psychosocial trauma particularly among families of school-going Deaf and hard of hearing (DHH) children and adolescents [1, 2]. Individuals who are deaf and hard of hearing (DHH) are individuals with limited or no ability to process and respond to verbal stimuli through auditory channels without assistive listening devices [1]. DHH individuals have limited opportunities to engage in

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social discussions and engagements when significant verbal communication is involved [3]. Regrettably, deafness does not only affect the linguistic abilities and comprehension of an individual; it also has a negative impact on the self and socio-economic independence of the individual involved, which cannot be underestimated [3]. Adigun [3] argued that deafness has varying effects on different individuals based on their environment, educational exposure, onset of deafness and/or their socio-economic status, among others.

Interestingly, research evidence from Nigeria in the last decade has echoed the need for less reliance on white-collar jobs and the need to reorient the Nigerian populace to the significance of entrepreneurial skills, irrespective of their hearing acuity [4]. Several studies have expressed concern though about the call for entrepreneurial skills among students, without first ascertaining their readiness to take on entrepreneurial roles [4-7]. Hence, research gaps still exist regarding the role played by entrepreneurial education (EE), entrepreneurial self-efficacy (ESE) and personality traits on EI, particularly among the DHH population [8, 9]. This current study was designed to fill this research gap. Specifically, the objectives of this study were to:

- i. Determine the influence of entrepreneurial education, entrepreneurial self-efficacy and personality traits on the entrepreneurial intentions of DHH college students post the COVID-19 lockdowns.
- ii. Ascertain the predictive capacities of gender, the preferred mode of communication, entrepreneurial education, entrepreneurial self-efficacy, and personality traits on the entrepreneurial intentions of DHH college students post the COVID-19 lockdowns.

2. Research questions

The following research questions were posed.

1. Is there a significant correlation between entrepreneurial education, entrepreneurial self-efficacy, and personality traits and the entrepreneurial intentions of DHH college students post the COVID-19 lockdowns?
2. What are the predictive capacities of gender, the preferred mode of communication, entrepreneurial education, entrepreneurial self-efficacy, and personality traits on the

entrepreneurial intentions of DHH college students post the COVID-19 lockdowns?

Descriptively, entrepreneurship refers to the act of establishing and managing business ventures and the creation of jobs for the purpose of providing goods and services towards profit generation [4]. Entrepreneurship thus requires skills that foster the competency to create and lead new ventures (*vis-à-vis* creativity), critical thinking abilities, and ambition for socio-economic independent living. The foregoing requires an intention geared towards the creation of wealth. According to Neneh [10], entrepreneurial ventures and engagements are influenced by an individual's entrepreneurial conviction. In other words, an individual's psychological disposition is proportional to their entrepreneurial intention geared towards the creation of an entrepreneurial venture. Therefore, entrepreneurial intention in this study was conceptualised to refer to an inclination of DHH college students to initiate new business ideas, which could start either immediately or in the future.

Past studies [4-7, 9, 11] established that EI is motivated by various factors, which include but are not limited to instruction and preparations, family dynamics and foundation, perceived passion and attitude, EE and some psychological variables such as self-efficacy, self-image and/or personality dimensions. Lamentably, there is a paucity of research evidence on EI among DHH and other individuals with disabilities [12]. Hence, De Clercq and Honig [12] called for a research endeavour on entrepreneurship among persons with disabilities. This study answered that call and hypothesised that EE, ESE, and the personality traits of DHH college students would influence their EI. Due to the paucity of literature on EI among DHH, we based the literature search in this current study on findings from the non-DHH population. We therefore believe that this current study will open a new vista of research endeavours for the DHH population across the globe and contribute immensely to bridging existing literature gaps.

Entrepreneurial education at all levels of education, especially in the higher-educational institutions, is a process of knowledge and skill building for the purpose of creating business ventures and generating profit. It is a major factor towards the reduction of unemployment and a conscious attempt at cultivating entrepreneurial activities and attitudes [7, 11]. Past studies note that higher-educational institutions have the potential to boost entrepreneurial capacities and improve attitude, behaviour, desire, and

the perceived feasibility of entrepreneurship potential among young adults [13, 14]. In their study, Abbas and Md [13] assert that EE for students with disabilities in higher-educational institutions has the potential to inform and expose these individuals to strategies for financial freedom and self-reliance for sustainable economic independence. However, the success of these entrepreneurial programmes geared towards the creation of entrepreneurial ventures among persons with disabilities is proportional to the desire and willingness of these students to pursue entrepreneurship as a pathway to socio-economic empowerment and independence [13]. While Prakoso et al. [14] agreed that EE advances EI, and promotes the required knowledge and skills of individuals, Jasniak et al. [15] stated that the exact pattern of interaction between EE and intention is yet unknown.

Self-efficacy is described by Bandura [16] as the perception of one's ability to accomplish a set of actions and/or tasks with the sole aim of the achievement of a desired goal, and this has been widely assessed among students who are deaf and hard of hearing [3, 17]. Findings from past studies affirmed that self-efficacy does not emphasise the skill of the DHH but rather how such individuals perceived their ability in achieving a set of goals. Some recent reports indicate that an individuals' self-efficacy has the potential to regulate an action and/or intention, vis-a-vis an individuals' affective, cognitive, decisional, and motivational processes [3, 18]. Although self-efficacy as a construct has been examined in various studies among the population of the DHH [3], there is little understanding about the implication of self-efficacy on EI among DHH college students [8,15,19], especially in a developing country like Nigeria.

Identified as a strong personal factor that influences intention, self-efficacy may impact an individuals' intentions to engage in entrepreneurship activities [8, 20]. Thus, Pihie and Bagheri [20] argued that ESE is the personal belief in one's abilities to accomplish the tasks required for creating and successfully managing a new business venture for optimal profits. In recent times the critical influence of ESE on various dimensions of entrepreneurship has been highlighted by scholars [8, 18]. According to many studies, ESE is largely believed to be a construct that influences the intentions of an individual towards the creation of a business venture. For instance, some studies among students of institutions of higher learning indicated a positive relationship between ESE and EI [20, 21]. Specifically, perceived increase in the intention to

start a new business and maintain such business is directly proportional to the dynamic of such individuals' sense of ESE [20, 21]. Some studies assert that entrepreneurial behaviour is motivated by ESE [5, 20, 21]. Chen et al. [21], in a study among some undergraduates, found a direct correlation between some entrepreneurial skills such as innovation, financial management, marketing, risk-taking potentials and ESE.

Previous research has established that an individuals' capability to overcome the difficulties associated with starting a new business or venture and the ability to recognise such challenges as an opportunity to marshal resources and improve performance is dependent on ESE [18, 20]. Specifically, among students, ESE influences the competence and motivation to start challenging the difficulties associated with the entrepreneurial process and to an extent, how such students are prepared to expand their businesses in the future [16]. Entrepreneurial intention among students is directly and indirectly influenced by their perceptions of their capabilities and skills [16, 20]. The results of past studies on ESE and EI have influenced professional practices with regards to the provision of varied entrepreneurial opportunities and trainings to students without disabilities [4, 6, 8]. However, despite the plethora of research evidence in this regard, the implications of ESE on entrepreneurial intention among DHH college students is unknown. The paucity of this research among the DHH population might be due to various factors, which include but are not limited to the perceived communication challenges between researchers and DHH participants [14].

Despite the various support programmes of the government and numerous authorities available in Nigeria to start new businesses [4], many DHH individuals are yet to pioneer and sustain a business venture [19, 22]. Past studies [15, 19, 22] have identified communication difficulties and a lack of the entrepreneurial training, financial grounding, and social support required for the DHH as factors that influence the creation of business ventures by them. Some recent studies [23, 24] note that the intention to initiate, nurture and sustain an entrepreneurial idea is linked to an individual's personality traits. Personality traits, as described by Şahin et al. [24], are dispositions to exhibit a certain kind of response across various situations that are highly stable over time. In recent times the contributory role of personality traits on entrepreneurial intentions, particularly among students without disabilities, has

continued to gather momentum in scholarly articles but the implication of personality dimensions on the entrepreneurial intentions among the DHH is unknown. Past studies [15, 22] have established that few populations of DHH have entrepreneurial skills or have successfully owned and managed a business. Hence we wondered if the entrepreneurial intentions among DHH college students could be influenced by their personality traits. In this study, we considered the impact of the big five personality traits (agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience) on the entrepreneurial intentions among the DHH.

Our decision to choose the big five personality traits was based on their widespread acceptability and use, as well as the research evidence available on their predictive effect on behaviour [24-27]. In recent times, studies have described and presented diverse reports on the contributions of each of the big five personality factors on entrepreneurial intention. Agreeableness is a term used to describe an individual's perception or orientation towards interpersonal interactions, trust and distrust, competitiveness and/or co-operation with others. As indicated by Şahin et al. [24], individuals with higher levels of agreeableness have a greater altruistic potential, and are more caring, forgiving and trusting. Hence such individuals might possess a higher degree of cooperativeness, friendliness and patience which is needed to establish trusting relationships with stakeholders and business associates. Empirical evidence from the study of Wooten et al. [28] revealed a negative relationship between agreeableness and EI, whereas Murugesan and Jayavelu [23] found a positive relationship between agreeableness and EI. Other studies, however, did not show any significant correlation between agreeableness and EI [27, 29].

Individuals who tend to be dependable, hardworking, and organised are said to fit the description of conscientiousness [30]. Adigun et al. [25]; Sur and Ng [31] stated that conscientiousness is associated with high levels of goal-oriented skills, achievement motivation and orientation, organisational skills, persistence, orderliness, and performance. Thus individuals possessing conscientiousness may have the intention of pursuing entrepreneurship [24]. However, according to Ahmed et al. [29], the prediction of interaction between conscientiousness and EI is still inconclusive, because some studies reported a correlation between conscientiousness and EI [27, 30, 32], while others reported

that no relationship exists between the two constructs [23], especially among students. In a similar manner, some studies affirm that reports from studies on extraversion and EI are inconclusive [27, 30], while other studies have reported a significant and positive relationship between extraversion and EI [24, 27].

In terms of neuroticism, Ahmed et al. [29] found a significant relationship between neuroticism and EI, while Brice [32] found an insignificant relationship between neuroticism and EI. Amongst the components of the big five personality traits, openness to experience is a dimension understood to involve cognitive curiosity, imaginative capacity, and an individual's tendency to source and positively evaluate experience. In other words, openness to experiences is characterised by creativity and critical and divergent thinking, which is needed for the creation of a new business venture and the capacity to maintain such a business. Şahin et al. [24] allude that an individual with a high level of perceived openness to experience may have unique characteristics and attributes which are crucial for the establishment of personal businesses.

Studies have shown that openness to experience is one of the most significant constructs that influence entrepreneurship [24, 27, 32]. Recent research evidence has consistently noted that openness to experience is highly associated with the intention of becoming an entrepreneur [29, 30, 34]. Unfortunately, due to the specific behavioural and communication characteristics of the DHH population [22, 34], this research evidence with respect to entrepreneurial intentions in the non-DHH population may not be sufficiently applicable and generalisability to the DHH population in the period post the COVID-19 lockdowns. Hence, the need for this study with specific focus on the entrepreneurial intentions of DHH college students post the COVID-19 lockdowns.

3. Theoretical framework

The Theory of Planned Behaviour (TPB) [35] was used as a theoretical lens to understand and establish a link between EE, ESE, personality traits and EI, as well as the contributions of EE, ESE and personality traits to entrepreneurial intentions among DHH college students. This theory is based on the assumption that human beings are rational and capable of making deliberate and systematic use of available informa-

tion. In other words, attitudes, subjective norms and behaviour controls can determine the intention, which ultimately transforms into the behaviour [36]. As indicated by Adigun and Nzima [17] the TPB is robust in predicting behaviour and intentions. The theory has been widely used to predict behaviour and intentions among DHH individuals [17, 37] but its use on EI among the DHH is unknown.

A study which have applied the TPB to examine EI among non-DHH remark that the TPB specifies the antecedents of intention, which reflect the perceived desirability, personal attitude, perceived social norms and perceived behavioural control which informs the perception of an individual's competence to execute a task [38]. Fundamentally, the TPB reflects the components of bio-psychological and social attributes that may display the intentions of an individual (DHH) to create and start a new business venture. Based on the assumption and robustness of the TPB, the authors of this study adopted it because it shed light on how intentions successfully predict behaviour. Thus, given the focus of this study, the authors were of the belief that EI among DHH college students would not only be influenced majorly by their communication difficulties, but also by other personal experiences and/or psychological factors.

4. Methods and materials

4.1. Study design and setting

A descriptive survey research design was employed in this study. The study purposively selected a two post-secondary institutions (Institution A and B) in Oyo state, Nigeria as the study site. These two institutions purposively selected because of the accommodation and instructional provisions made available for DHH students. Hence, identification and use of these post-secondary institutions were based on the concentration and cluster of DHH students. DHH students across years two and three of the institutions were purposively selected for the study during the first semester of the 2020/2021 academic session, immediately after the 2020 lockdown in Nigeria. Also, a total of 266 participants met the inclusion criterion for this study based on the fact that they were established in their programmes and had undergone some classes on entrepreneurship education.

4.2. Measures

Entrepreneurial education (EE): A six-item questionnaire was adopted to measure entrepreneurial education in this study. The questions were based on the DHH students' learning and behaviour characteristics, social-cognitive and organisational perspectives. Questions asked in this section focused on business start-up modules, which provide the knowledge needed for starting a business. A validation of this section of the questionnaire showed a reliability coefficient of 0.63.

Entrepreneurial self-efficacy (ESE) scale: Our study adapted the five sub-scaled twenty-two item ESE scale developed by Chen et al. [21]. Due to the communication and language characteristics of the study participants, some of the items in the scale were re-worded. For instance, "New markets and geographic territories" was refined as "I have the ability to enter new markets and sell my ideas in various locations". The scale was designed on a 5-point Likert rating ranging from 1 - Not at all true to 5 - Completely true. Past studies have reported Cronbach's alphas which ranged from .65 and .92 for ESE [20]. Similarly, after a revalidation of the ESE among some DHH in another higher educational institution in Ibadan, Nigeria, we obtained a Cronbach's alpha value of 0.89 for ESE.

Entrepreneurial intention questionnaire (EIQ): The EIQ developed by Liñán and Chen [39] was adopted for this study. The six-item EIQ is based on Ajzen's [36] Theory of Planned Behaviour (Ahmed et al., 2020). Originally, the EIQ was designed in a 7-point Likert scale of 1 - Total disagreement to 7 - Total agreement, but we adopted a 5-point Likert response format of 1 - Strongly agree to 5 - Strongly disagree. Past studies have reported Cronbach's alphas which ranged from .70 and .95 for EIQ [39, 40]. Similarly, the revalidation of the EIQ among some DHH in another higher educational institution in Ibadan, Nigeria, revealed a Cronbach's alpha of 0.88.

Personality traits: The Big Five Factor Inventory (BFI) [41] was adopted to assess the personality traits of the study participants. The 44-item BFI with its 5 subdivisions (agreeableness, extraversion, conscientiousness, neuroticism, and openness) was also designed on a 4-point Likert scale of 1 = Strongly disagree and 4 = Strongly agree. The BFI has been widely used in research studies and has high internal consistencies [42]. A revalidation of BFI conducted in this current study reported a Cronbach's alpha of 0.87.

4.3. Data collection procedures and ethical consideration

Data was purposively collected from year two and year three DHH students from two post-secondary institutions at different times during their lecture periods. A total of 250 DHH students were purposively selected from years two (Institution A: 91; Institution B: 34) and three (Institution A: 103; Institution B: 23). A paper-pencil questionnaire was distributed to all purposively selected DHH students. We sought permission to conduct the study from the managements of the two institutions and other members of staff, based on the approval given for the study by our institution's Ethics and Research Committee. One of the researchers who is proficient in sign language duly informed the study participants about the objectives of the study using sign language as the means of communication. Sign language interpreters who were in class at the time of data collection also provided assistance with making sure that the participants understood the objective of the study. Participants were informed that participation in the study was voluntary. Participants gave their consent to participate in the study. Participants provided a response to the questionnaire within an average time of about 23 minutes.

5. Statistical analysis

A total of 226 (90.4%) copies of the 250 questionnaires distributed were properly completed and returned. This was considered satisfactory for the statistical analysis [43]. The data collected was coded, inputted and analysed using the IBM-SPSS statistical package, version 23, at a 0.05 level of significance. Frequency counts and simple percentages were used to provide descriptions for the demographical data collected and described. Pearson Products Moment Correlation was used to provide answers to research question one, while research question two was answered using hierarchical multiple regression. The researchers adopted the hierarchical multiple regression analysis because of its potential to show if variables of interest (gender, participants' preferred mode of communication, entrepreneurial education, entrepreneurial self-efficacy, and personality traits) in this study explains a statistically significant amount of variance in the dependent variable (entrepreneurial intention) after accounting for all other variables [44].

Prior to running the hierarchical multiple regression, we checked that the relevant assumptions were tested, as indicated by Tabachnick and Fidell [44]. In this study, the assumption of singularity and collinearity statistics [45] was met. Also, bivariate correlation analysis showed that none of the independent variables were highly correlated. A four-stage hierarchical multiple regression was conducted with the entrepreneurial intention of the DHH students as the dependent variable. In stage one, we entered two categorical variables (gender and the participants' preferred mode of communication), entrepreneurial education (EE) was entered at stage two of the regression, entrepreneurial self-efficacy at stage three, and the dimensions of the personality traits (agreeableness, conscientiousness, extraversion, neuroticism and openness) at stage four.

6. Results

The participants in this study were 226 DDH college students (male = 55.3%; female = 44.7%) aged between 16 and 25 years ($M_{age} = 20.5$; $SD = 4.5$). Of the 226 study participants, 153 (which represented about 67.7%), preferred to communicate using sign language. A total of 83 DHH students who participated in this study were wearing assistive listening devices, such as hearing aids and cochlear implants at the time of the data collection. A total of 121 (53.5%) participants of this study further indicated that their parents/guardians/siblings currently owned or operated a business venture. We employed bivariate correlation to present an answer to research question one, which sought to determine any significant relationship between EE, ESE and the dimensions of personality traits (agreeableness, extraversion, conscientiousness, neuroticism and openness) and the entrepreneurial intentions of DHH college students in the post COVID-19 lockdown period. Table 1 shows that EE ($r = 0.18$, $p < 0.05$), agreeableness ($r = 0.23$, $p < 0.05$), and conscientiousness ($r = 0.19$, $p < 0.05$) had a positive significant correlation with entrepreneurial intention among DHH college students; while ESE ($r = -0.38$, $p < 0.05$), neuroticism ($r = -0.22$, $p < 0.05$) and openness ($r = -0.26$, $p < 0.05$) had an inverse but significant correlation with entrepreneurial intention among DHH college students. This implied that an increase in proportions of EE, agreeableness, and conscientiousness respectively, could positively foster DHH college students' intention to create and/or start a new business venture.

Table 1

Inter-correlation between EE, ESE and the dimensions of personality traits (agreeableness, extraversion, conscientiousness, neuroticism and openness) on entrepreneurial intentions

Variables	1	2	3	4	5	6	7	8	Mean	Standard Deviation
1. Entrepreneurial intention	1								12.93	3.08
<i>p</i> -value										
N	226									
2. Entrepreneurial education	.176**	1							13.52	1.37
<i>p</i> -value	.008									
N	226	226								
3. Entrepreneurial self-efficacy	-.384**	-.074	1						59.89	16.75
<i>p</i> -value	.000	.267								
N	226	226	226							
4. Extraversion	.182**	-.015	.201**	1					33.96	4.79
<i>p</i> -value	.006	.822	.002							
N	226	226	226	226						
5. Agreeableness	.229**	.079	-.009	.028	1				33.58	3.54
<i>p</i> -value	.001	.240	.895	.678						
N	226	226	226	226	226					
6. Conscientiousness	.185**	-.085	-.012	.250**	.074	1			37.23	3.15
<i>p</i> -value	.005	.201	.856	.000	.268					
N	226	226	226	226	226	226				
7. Neuroticism	-.221**	.004	.462**	.534**	-.067	.139*	1		33.93	6.44
<i>p</i> -value	.001	.947	.000	.000	.316	.037				
N	226	226	226	226	226	226	226			
8. Openness	.263**	-.028	.097	.257**	-.299**	.368**	.262**	1	31.31	4.17
<i>p</i> -value	.000	.671	.147	.000	.000	.000	.000			
N	226	226	226	226	226	226	226	226		

**Correlation is significant at the 0.01 level (2-tailed); *Correlation is significant at the 0.05 level (2-tailed).

However, a decline in proportions of ESE, neuroticism, and openness respectively could be directly proportional to EI among DHH college students.

Furthermore, hierarchical multiple regression analyses were used to ascertain the predictive capacities of gender, preferred mode of communication, entrepreneurial education, entrepreneurial self-efficacy and personality traits on the entrepreneurial intentions of DHH college students post the COVID-19 lockdown.

The findings in Table 2 showed at the first stage that both gender and the participants' preferred mode of communication contributed significantly to the regression model ($F_{(2,223)}=6.312$, $p < 0.05$) and accounted for 5.4 per cent of the variation in EI among the DHH college students. At stage two, EE explained an additional 3.1 per cent of the variance in EI ($F_{(1,222)}=6.791$, $p < 0.05$) among the DHH college students. Adding entrepreneurial self-efficacy to the regression model explained an additional 12.1 per cent of the variance in EI ($F(1, 221)=33.665$, $p < 0.05$) among the DHH college students.

Lastly, at stage four the addition of the big five personality dimensions (agreeableness, extraversion, conscientiousness, neuroticism and openness) to the regression model explained a significant additional

29.7 per cent of the variance in EI ($F_{(5,216)}=25.606$, $p < 0.05$). The addition of organisational support to the regression model further explained a significant addition of 29.7 per cent variance in the job satisfaction of the respondents ($F(1, 87)=4.532$, $p < 0.05$). This finding showed that personality was the most important predictor of EI among DHH college students, which uniquely explained 29.7 per cent of the variation in EI among the participants. This was followed by ESE, which explained 12.1 per cent of the variance in EI. Collectively, the independent variables added to the regression model accounted for 50.0 per cent of the variance in entrepreneurial intention among the DHH college students.

7. Discussion

In response to research question one, findings showed that EE, ESE, and all of the dimensions of the big five personality traits had a significant correlation with EI among the DHH college students. This implied that all the independent variables (EE, ESE, and personality traits) had the capacity to influence the participants' intention to establish a private business for the sole purpose of self and eco-

Table 2
Hierarchical multiple regression with entrepreneurial intention as a dependent variable

Model	Variable	R ²	Adjusted R ²	F change	Unstandardized coefficients	Standardized coefficients	t
1	<i>Step 1</i> Gender	0.054	0.045	6.312**	-1.050	-0.170	-2.561**
2	Preferred mode of communication	0.082	0.069	6.791**	-0.851	-0.129	-1.952**
	<i>Step 2</i> Gender				-1.004	-0.162	-2.478**
3	Preferred mode of communication	0.203	0.189	33.665**	-0.853	-0.130	-1.983**
	Entrepreneurial education				0.377	0.168	2.606**
	<i>Step 3</i> Gender				-0.422	-0.068	-1.079
4	Preferred mode of communication	0.500	0.479	25.606**	-1.053	-0.160	-2.611**
	Entrepreneurial education				0.325	0.145	2.405**
	Entrepreneurial self-efficacy				-0.067	-0.362	-5.802**
	<i>Step 4</i> Gender				-0.235	-0.038	-0.668**
	Preferred mode of communication				-1.452	-0.221	-4.338**
	Entrepreneurial education				0.306	0.136	2.791**
	Entrepreneurial self-efficacy				-0.062	-0.338	-6.039**
	Extraversion				0.217	0.338	5.362**
Agreeableness	0.293	0.337	6.238**				
Conscientiousness	-0.029	-0.030	-0.542				
Neuroticism	-0.143	-0.298	-4.457**				
Openness	0.294	0.398	6.070**				

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

conomic independence in the post COVID-19 lockdown period. The plausible reason for this current finding could be that participants could have gained personal insight from the financial and socioeconomic difficulties experienced by people during the COVID-19 lockdown. Hence, based on their experiences of how jobs were lost during the lockdown, DHH students could have developed a substantial desire for self- and economic independency through entrepreneurship and establishment of a personal business venture.

Hence, COVID-19 lockdowns, education, past and current personal experiences, as well as other psychological variables such as the dimensions of personalities had greater potential to inform and foster entrepreneurial intentions among DHH college students post the COVID-19 lockdowns in the country. Our finding corroborated the findings of past studies which established a relationship between personality dimensions, self-efficacy, and entrepreneurial education and their impact on perceived intention towards the establishment of business ventures [4-12, 18, 20]. The large pool of past studies on such relationships was conducted among the non-DHH population, and our study made inferences based on the evidence from the non-DHH population due to the paucity of relevant studies among the DHH population. An inference made from the non-DHH population was that, irrespec-

tive of disabling conditions, the motive for venturing into entrepreneurship was largely similar across and among all citizens [19, 27, 46]. While the DHH and their non-DHH counterparts lived in similar environments, auditory-verbal communicative ability remained the significant difference that differentiates them, and the need to survive and economic potential was a common phenomenon.

Specifically, a plethora of past studies among non-DHH individuals revealed that an individual's capacity and intent to start a business or venture and to overcome associated business challenges was highly dependent on their sense of self-efficacy [11, 18, 20] and exposure to business ideas and strategies informed by their entrepreneurial education [13]. Contrary to the finding of Chen et al. [21], who found a direct and positive correlation between ESE and EI among some undergraduates, our study found an inverse but significant correlation between ESE and EI among DHH college students. Although, as earlier indicated, no study has established a connection between ESE and EI among DHH students, Crowe [46] showed that DHH students with low self-efficacy would not necessarily do well in a given task, including the establishment and management of business ventures.

Based on the results presented in Table 2, the hierarchical multiple regression model showed that

gender and participants' preferred mode of communication, EE, ESE and the five dimensions of personality traits respectively could predict the intent of DHH college students to start an entrepreneurship endeavour. Our findings showed that gender and communication patterns had little contribution to the entrepreneurial intent of DHH college students as compared to their personality traits. This implied that entrepreneurial intention among DHH college students was not informed by gender differences nor preferred communication modes, but rather by other socio-environmental and psychological variables. This finding was not unusual because regardless of gender (male/female) roles and communication patterns, individuals who are Deaf and/or Hard of hearing are distinct beings with different attributes which are motivated by socio-cultural, environmental and/or psychological phenomena [3, 46, 47]. Interestingly, such attributes have been identified as motivating factors that influence behaviour and the intention to execute certain tasks, such as the intention to establish a business venture. The foregoing was in line with the assertions of Alam et al. [38], who asserted that personal attributes, attitudes and desirability, perceived social norms and perceived behavioural controls as components of the TBP had the capability to influence the intention of individuals and their potential for achieving entrepreneurial goals. Hence, irrespective of gender and communication patterns, studies have shown that DHH people are driven by experience, education and/or internal/external psychological factors [22]. The findings in this current study provided support for evidence reported in other studies [4, 8, 10, 13, 15, 18, 31, 47].

In support of Jasniak et al. [15]; Lazarus et al. [18] and Oyewumi & Ogunwale [22], our study showed that EI among DHH students could be shaped by their communication challenges, especially when the mode of communication did not favour the use of total communication. A lack of or inadequate entrepreneurial capacity building among the DHH and challenges associated with social support also affected their EI. Communication is central to a successful business venture. In other words, for success in a business enterprise, an entrepreneur must be able to communicate with potential customers and clients. Regrettably, the DHH who intended to start a business venture could have reservations about engaging in such a venture based on their perceived communication difficulties with potential clients. EE, on the other hand, has been recorded as a promoter

of success in entrepreneurial endeavours [14] and could enhance the adoption, awareness and motivation towards starting or implementing a business idea. Against the finding of our study that personality traits were the strongest predictor of EI, Pihie and Bagheri [20] further recorded ESE as a strong predictor of EI. While our study acknowledged that ESE could inform ones' intent to create and start a business venture, we largely found that personality traits were a stronger predictor of EI, particularly among DHH college students.

Our findings on the predictions of agreeableness, extraversion, neuroticism, and openness on EI lent support to earlier findings [24, 29, 33]. However, we found no significant prediction of conscientiousness having an effect on the EI of DHH college students post the COVID-19 lockdowns in Nigeria. This implied that DHH students who identified with conscientiousness would not necessarily have the intent to engage in entrepreneurial activities. Although studies averred that conscientious people tended to be dependable, hardworking, and organised, they were probably also goal oriented and motivated to perform well [25, 30, 31]. Unfortunately, the assertions of Adigun et al. [25] and Zhao and Seibert [30] did not correspond with the findings of this current study. The plausible reason for this could largely be related to DHH students with the conscientious personality trait, who could have found comfort in working for others. In fact, employers could find them very useful for their venture because of this trait [25, 31].

8. Conclusion

This study examined the predictive influence of EE, ESE and personality traits on EI among DHH college students after the COVID-19 lockdowns in Nigeria. Findings of this study showed that:

1. a relationship existed between EE, ESE, personality traits and EI among DHH college students;
2. gender and communication mode, EE and ESE were found to contribute to the prediction of EI among the study participants.

This study concluded that personality traits were the greatest predictor of the entrepreneurial intention of DHH college students post the COVID-19 lockdowns in Nigeria.

9. Implications of the study

This outcome of this study has implications for young deaf adults, educational stakeholders, parents and the government. While this study has contributed to knowledge and bridged research gaps on the associated factors influencing entrepreneurial intention among DHH college students after the lockdowns occasioned by COVID-19 in Nigeria, its findings have revealed an urgent need for concerted encouragement and support by all, including governmental and nongovernmental agencies, parents and guardians, career counsellors, and social workers, among others, towards the need for the creation of business ventures by DHH college students. Such efforts will help to reduce unemployment and dependency on others by individuals who are Deaf and/or Hard of hearing. Slimmer opportunities for gainful employment for DHH college students after graduation should motivate the collaborative efforts for adequate training on the use of alternative communication modes which could be useful for establishment and smooth running of created business enterprises. It is important for all stakeholders, especially counselling and career psychologists, to assist DHH college students to develop positive personalities that will influence their efficacy levels for entrepreneurship activities.

Furthermore, it is recommended that higher education institutions should intensify their efforts in entrepreneurial education in schools. During their studentships, DHH students may be encouraged by and participate in programmes that foster individualised and collective business idea creation and start-ups. Parents should endeavour to support and encourage their children who are DHH to tap into the opportunities available that may assist in the creation of business enterprises for DHH students. Essentially, parents are encouraged to seek the services of vocational and career guidance counsellors for professional advice for their DHH students.

10. Limitations of the study and suggestion for further studies

One major limitation observed in this study was communication difficulties. Participants had varied language abilities and comprehensibility. Variation in language abilities and comprehension was due to the stage of onset of hearing loss which characterised each participant. While some were prelingually

deaf, others were postlingually deaf. Hence the researchers, with the assistance of sign language interpreters, had to further explain questionnaire items to the participants when it was necessary. The instrument for data collection was a self-reported, closed-ended questionnaire for DHH college students. This may not have revealed other factors that might influence the intention of the study participants to create or start a business enterprise. In other words, an interview with parents or guardians of the study participants may have further revealed in-depth information about the perceived entrepreneurial characteristics of the participants. As our study focused solely on DHH college students, generalisability should be done with caution. We also recognise the fact that an individual's intent to engage in entrepreneurial activities may change at or after graduation.

Due to logistics and time constraints, our study employed a descriptive survey research design, whereas other research designs such as longitudinal, qualitative, and quasi-experimental research designs could have produced more robust results. We thus recommend the application of longitudinal, qualitative, and quasi-experimental research designs to future studies of EI among DHH students. Future studies may also assess the implications of school and home environmental factors in addition to the EE, ESE and personality traits that we examined in this study.

Ethical approval

The study was conducted based on the ethical approval received from the Ethics and Research Committee of the University of Zululand, South Africa (reference no. UZREC 171110-030 Dept. 2019/16).

Informed consent

Written informed consent was taken from all participants prior to the study.

Conflict of interest

None of the authors declare any conflict of interest.

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