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DEPRESSIVE SYMPTOMS AND COPING STRATEGIES AMONG ENGLISH LANGUAGE STUDENTS WITH HEARING IMPAIRMENT

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Abstract

Background of the study: English language students with hearing impairment (ELSHI) who employed bicultural skills to regulate their emotions had less depressive symptoms than those who employed withdrawal and covering strategies. The objective of this study was to ascertain the factors that predispose ELSHI to depressive symptoms and types of coping strategies employed to regulate their depressions in the special schools for the deaf in Enugu, Enugu State- Nigeria

Methods: The research design employed for this study was exploratory design with a total of 78 participants with depressive symptoms involved in the study. The measures employed for collection of data included means of communication in use at home scale (MCHS), type of schools attended scale (TSAS), age of onset of hearing impairment scale (AOHIS) and the degree of hearing impairment scale (DHIS). Repeated measure analysis of variance was employed for statiscal analysis.

Result: The result obtained showed that students with hearing impairment who employed bicultural skills to regulate their depressive behaviors had less depressive symptoms than those who employed withdrawal and covering strategies.

Conclusion: The researchers conclude that the bicultural skills offered to students with hearing impairment to regulate their depressive behaviors significantly reduced their depressive symptoms.

Abbreviations: MCHS=means of communication in use at home scale, TSAS= types of school attended scale, AOHIS= age of onset of hearing impairment scale, DHIS=degree of hearing impairment scale, ELSHI = English Language Students with hearing Impairment.

Keywords: Coping strategies, depressive symptoms, hearing impairment.

Introduction

In Nigeria the issues of depression and other mental health problems are on the increase most particularly among persons with hearing impairment, who are often confronted with challenges posed by communication difficulties, poverty, unemployment as well as mental disorders (Adigun, 2017). In Nigeria, the English language is the official language, a subject in its own right and the medium of instruction. The language is not indigenous to Nigeria. Therefore, learners of English have to put in conscious effort to master the four language skills of listening, speaking, reading and writing. Many students find this language difficult to master even among the students who have no form of impairment in their faculties. However, among English language students with hearing impairment, the problem seems to be widened as they are deprived of the key channel through which language is learned, that is, hearing and listening. Many of them have difficulty in reading and processing social cues, and difficulty in expressing emotions in social situations. These factors have been identified as potential contributors to the increased vulnerability and propensity for depression (Moellor, 2007; Fellenger et al, 2009). This may be one of the factors underlying the fact that English language students with hearing impairment have more depressive symptoms than normal hearing peers.

Depression is a mental disorder or illness characterized by profound and persistent feeling of sadness or despair and anhedonia (American Psychiatric Association (APA, 2013). It is a serious mental illness that can result from a number of infectious diseases, nutritional deficiencies, neurological conditions and physiological problems including hypoandrogenism in men (Murray; Buttner; Pride, 2012). Evidence from literature indicates that depression is an unexpected and subtle disease that affects the whole universe, including those with hearing impairment (Mota et al, 2015; Karl, et al, 2010; WHO, 2010).

Previous studies (Sehli, Arslan & Belgin 2009; Davey, Yucel & Allen, 2008; Rashid & Heider, 2008; Preiss & Remschundt, 2007) have shown that English language students with hearing impairment (ELSHI) are at risk of depressive disorders due to hearing difficulty, because hearing provides essential information about environment, about human relations, including the capability of interpreting another person's emotions through the intonation in their language. Hearing also helps one to sense the presence of danger and therefore engage in self protection. However, the inability to hear intricately predisposes one to depression. Furthermore, studies have also shown that an estimated 0.4% to 2.5% of children with hearing impairment reported symptoms of depressive disorders compared to 0.4% to 8.3% of adults (Birmaher; Ryan, Williamson, Brent, Kauffman, Dahl et al, 1996). Although, the risk of major depressive disorders in childhood is relatively small, it substantially increases in adolescence because sometimes, neglect, mental, physical and sexual abuse, and differential parental treatment of siblings from childhood can contribute to depressive disorders or dysthymia in adulthood (Stephanie et al 2011).

In addition, the studies by Jambore and Elliott, (2005), Warner-czyz, Loy, Evans, Wetzel and Tobey (2015) showed that ELSHI do not have genetic quality of life at par with hearing peers because they experience challenges in certain aspects of life such as peer relationship, socio-emotional adjustment and depression relative to hearing peers. This makes ELSHI look inferior before others and withdraw into their fellow deaf community because they find it difficult to fit into the majority group. Fitting into the majority group can be possible through hearing and healthy interaction which ELSHI do not have. In addition, the ability to relate to others, share ideas, participate in activities

and experience one's surroundings that reduce stress depends greatly on the capacity to hear and decode language input and ELSHI are deficient in this regard due to communication gap.

Depressive symptoms according to the International Classification of Disease, Version 10 (ICD-10) are shown by melancholic feelings of grief or unhappiness, sadness, loss of energy and difficulty dealing with normal daily activities (WHO, 2010). The version 10 of the WHO's ICD indicates that depression is a disorder marked by dysphoric mood which includes sadness, anxiety or irritability, inactivity, lack of interest, insomnia, feeling of worthlessness, diminished ability to think and thought of suicide. These deleterious effects are more in ELSHI due to their inability to discuss their social and emotional problems with anybody as a result of communication difficulties. The inability to discuss their social and emotional problems with anybody may result in anxiety and depression which have significant relationships with suicidal ideation (Ogunwale, 2016).

In US, depression affects approximately 12.5% of English language students with hearing impairment (Centre for Behavioral Health Statistics and Quality, 2016). In Nigeria, depressive disorders are common among English language students with hearing impairment (Gureje, Uwakwe, Okadeji, Makanjuola & Esan, 2010; Ogunwale, 2016, Adigun, 2017). For instance Ogunwale (2016) who conducted a study on a sample of 200 depressed students with hearing impairment in Oyo to determine its influence on the suicidal ideation revealed that the students who showed depressive disorders that ranged from unhappiness to anxiety were ultimately inclined to commit suicide. Adigun (2017) in his study on depression also revealed that anxiety and stress had significant relationship with suicidal ideation among students with hearing impairment. All these can be attributed to their difficulties in understanding everyday conversation for their social and emotional growth.

Depressive symptoms in ELSHI are not always seen as crying and overwhelming despair. Their depressive symptoms may gradually progress from mild, such as choosing to stay lonely instead of going out with friends, to more severe, such as thoughts of committing suicide. It particularly becomes worrisome if they show more than one depressive symptoms or persist for more than two weeks unknowing to anyone except to somebody close to them.

There are however, certain factors that are related to deafness and depression. Those factors can protect and prevent ELSHI from becoming depressed. They are means of communication in use at home (MCH), types of school ELSHI attend (TSA), the age of onset of hearing impairment (AOHI) and the degree of hearing impairment (DHI).

The means of communication system in use at home (MCH) is important in preventing ELSHI from becoming depressed. Evidence from literature is that students who grow up in an environment where communication is naturally dependent on visual (sign language) not oral or cues often have advantages in their social and emotional development over those who grow up where oral language is used (Boyle, 2013; Blood, Boyle, Blood & Nalesnik, 2010; Huben, 2005). This might be because many of them are born deaf and introduced to sign language at the early stage. Research evidence also indicates that ELSHI from deaf parents who use sign language early to interact with their children are more likely to understand each other's needs and feelings than those from hearing parents (Desselle & Pearlmutter, 1996; Lane et al, 1996; Hillburn, Marini & State, 1997; McIntosh, 2000; Schirmer, 2001; Crow, 2003). But in contrast, those ELSHI who are raised up by deaf parents may find it difficult to use their voice in an intelligible manner and have limited opportunities to develop the social skills needed to interact broadly in the society (Lane, et al, 1996). These deficits in social skills could potentially harm ELSHI level of self-esteem that may result in depression.

Another factor that may either lead to or prevent ELSHI from becoming depressed is the type of schools they attend (TSA). In addition to means of communication in use at home, the schools

ELSHI attend have a great influence on their behaviors. Literature evidence shows that attending schools alongside with hearing students where either sign language or oral interpreters with speech therapists are engaged, is beneficial to ELSHI since it gives deaf students the chance to learn to function in the hearing world and are prepared to face negative comments from the hearing students (Warner-czyz et al, 2015; Jambore & Elliott, 2005; Kluwin, 1999; Luckuer, 1999). Although, this might injure their self-esteem which may ultimately lead to depression, it is a means of preparing them to learn social norms and values of the hearing society. On the other hand, ELSHI who attend schools alongside other deaf students do not face negative comments from hearing students during their everyday life which may protect their self-esteem and also prevent them from becoming depressed (Bat-chava, 1994, 2000; Schirmer, 2001).

The age of onset of hearing impairment (AOHI) is an important factor that contributes to the tendency by ELSHI to show depressive symptoms. Research evidence shows that ELSHI who developed hearing impairments in the womb or lost their hearing during their early years of life present problems that differ from those who acquired hearing impairments later in life. This might be because those who were born deaf tend to have more linguistic problems since they have never heard or learned any spoken language before hearing impairment occurred, though it might lead to social rejection, little education, low-status jobs and low-income and not depression (Warner-czyz et al, 2015). On the other hand, those who developed or lost their hearing later in life are likely going to show depressive symptoms because they lost their hearing after they had heard or learned spoken language and the values and norms of the hearing community (Crowe, 2003). These problems can have impact on the self-esteem of ELSHI because their hearing impairment would significantly change their lives because they have to learn to adjust and adapt to new communication strategies and live an entirely different lifestyle (Lewinsolin et al, 2005). This can take a toll on their self-esteem that may make ELSHI to become depressed.

The degree of hearing impairment (DHI) is another significant factor that affects the self-esteem of ELSHL. Hearing loss is in degrees which range from mild, severe to profound. ELSHI with severe to profound hearing loss and whose hearing threshold is between 71 and 90Db and above tend to accept their condition and learn to live with it more than those with mild to moderate hearing loss. ELSHI whose hearing threshold is between 60 and 70dB tend to conceal their hearing loss and comfortably migrate back and forth between the deaf community and hearing community (Jambore & Elliott, 2005; Warner-czyz et al, 2015). Though ELSHI may have some hearing left that enables them to hear and understand some of the sounds and voices around them, their hearing loss is often severe enough to hinder them from smoothly conducting a conversation in spoken language where hearing and speaking are the required communication mediums (Warner-czyz, et al, 2015). These repeated experiences of ineffective communication may make ELSHI to become frustrated, have a feeling of deficiency, and have fewer friends and loneliness that could depress them.

ELSHI with moderate to severe hearing impairment show depressive symptoms because they belong to a devalued minority group and tend to internalize the negative attitudes of hearing majority through coping strategies (Lane, 1992). When people experience depression, they can use certain strategies to cope with their depression to regulate their emotions (Folkman & Lazarus 1980). Coping strategies can be adaptive, that is, leading to less depressive symptoms, or maladaptive, that is, leading to more depressive symptoms, and can be executed behaviorally such as seeking emotional support or cognitively such as affecting positive thoughts to a depressive situation. It is a specific effort, both behavioral and psychological strategies, people employ to master, tolerate, reduce or minimize stressful events (Folkman & Lazarus, 1980).

It is however not clear what kind of coping strategies ELSHI use to protect and prevent themselves from becoming depressed while carrying out their everyday life in a world that is not set up to accommodate them. Evidence from literature has indicated that copying strategies developed by

Jambore and Elliott (2005) could help in this regard. Jambore & Elliott who used coping strategies in developing self esteem in students with hearing loss revealed positive self esteem in the children. But, Stephanie et al (2011) who conducted a study using coping strategies on depressive symptoms on 200 students with hearing impairment (83) and hearing students (117) in Netherlands reveal that students with hearing impairment reported significantly more depressive symptoms than hearing students in the control group $t(198)=2.04, p=.043$. It is expected that the result of this study will either agree or disagree with the findings of Stephanie et al in assisting English language students with hearing impairment who have depressive symptoms in Nigeria.

Coping represents attempts on the part of the individual to lessen the physical and psychological pains that are associated with negative life events and ongoing stressors. Peterson (2012) describes coping as a strategy or skill that helps people deal with their mental health problems and well-being. Coping strategy is a fusion of cognitive behavioral therapy (CBT) that would helps ELSHI make adjustments and develop means of building a strong relationship with others in the hearing world. ELSHI are exceedingly vulnerable to poor psychosocial development. In hearing individuals, problems in the domain of emotional regulation are frequently identified as contributors to development of depressive symptoms, but a comprehensive understanding of factors influencing depressive symptoms in ELSHI has so far been lacking. In the present study, providing productive coping strategies by psychologically trained persons to a client or clients in a stressful or painful situation by incorporating talking therapy using sign language, as well as facilitating the clients towards building strong relationship with others is termed coping strategies. There is no literature available that deals with coping strategies and their effect on depressive symptoms of ELSHI in Nigeria. However, there are a number of coping strategies ELSHI may employ with or without being aware of doing so. The common characteristic of any coping strategy ELSHI may use is that it is used to help them deal with their stressful situation.

Empirical evidence in literature has shown that withdrawal, covering and developing bicultural skills may help ELSHI manage their everyday life situation. Withdrawal skill is a situation whereby ELSHI withdraw from the hearing society into a society of similar others (Jambore & Elliott, 2005). This approach is to help ELSHI protect their self-esteem leading to quality of life and avoidance of being depressed. In addition, this skill helps ELSHI not to experience depressed mood since they can communicate intricately and understand one another in the same community. The withdrawal skill incorporates the psychological and practical aspects of goal achievement because of the assumption that ELSHI who have fellow deaf friends, and are highly committed in their community do not usually develop depression (Linderman, 1997; Jambore & Elliott, 2005; Peterson, 2012).

Covering is another coping strategy that allows ELSHI to pass as hearing individuals. Coffman (1963); Jambore & Elliott (2005) argue that covering leads to a lot of stress since ELSHI constantly have to live with fear of being disclosed and face the consequences. Those who choose this strategy can have a great psychological price since they have to live a life that may collapse at any moment because they do not have chance to cover their hearing loss as they must have to interact with hearing people (Jambore & Elliott, 2005). However, covering can be successful if the ELSHI have enough residual hearing.

A bicultural skill is another coping strategy ELSHI can use to regulate their depressive behaviors. ELSHI who develop bicultural skill are able to function adequately in both deaf and hearing communities. In addition, they are often able to succeed professionally in the hearing world as well as identify themselves with deaf community and fight for social change (Bat-chava, 2000). Those who are able to find a balance between their association with the deaf community and the hearing community tend to have positive self-esteem (Brubaker, 1994) that paves way to live a satisfied life. The reverse is the case. If the association is negative, undignified behaviors set in.

This bicultural coping skill has become widely used by ELSHI especially younger generations because they are proud of their cultural heritage and also comfortably pursuing their own interests in the majority group. Many of the ELSHI are coming from hearing parents, and therefore, have intelligible voices that enable them to become familiar with the norms and values of the majority group, and to move comfortably back and forth between the majority and minority groups (Emerton, 1996).

Evidence from research on coping strategies shows that influence of withdrawal and covering is rather not clear since they have negative consequences that can lead to social isolation (Jones et al, 1994; Jambore & Elliott, 2005; Warner Czyz et al, 2015). Social isolation no doubt subjects ELSHI to develop depressive disorders that may ultimately impact all facets of their lives, health, relationship, work, and leisure (Peterson, 2012). On the other hand, ELSHI who have bicultural skill develop optimal self-esteem which places them beyond what the majority group expected them to be. In addition, developing optimal self-esteem helps ELSHI to succeed in maintaining a bond that brings about social support that may ultimately help them to do away with their depressive behaviors.

This study, therefore, examines depressive symptoms among ELSHI who are currently enrolled in the special schools for the deaf in Enugu. The central aim of this study is to explore factors that might predispose ELSHI to develop depressive behaviors such as means of communication system in use at home, types of schools they attend, age of onset, and the degree of the hearing loss. Based on the literature review, the following hypotheses were tested at 0.05 level of significance.

Ho_1: ELSHI whose parents use sign language as means of communication at home do not show depressive symptoms as those whose parents do not use signs language.

Ho_2: ELSHI who attend residential schools do not develop depressive symptoms as those who attend schools from homes.

Ho_3: ELSHI who developed hearing loss early in life are not likely to become depressed as those who lost their hearing later in life.

Ho_4: The more severe the hearing loss, the higher the chance that ELSHI will become depressed.

Ho_5: The more ELSHI withdraw from the hearing majority group, the more they show depressive symptoms.

Ho_6: The more ELSHI cover their hearing loss the more they show depressive symptoms.

Ho_7: The more ELSHI develop bicultural skills, the lower they become depressed.

Method

Ethical Approval

The researchers obtained approval from the Ministry of Health Enugu and also from the Department of Educational Foundations, University of Nigeria, Nsukka, Enugu State-Nigeria to conduct this study, strictly for academic purpose and as part of their clinical experience. Permission from their own institutions and then the principals, students and parents of the participants were obtained. The students who were interested in participating in the study were given informed consent forms to fill after they had been briefed on the nature and purpose of the study. Participation in the study was optional. In order to guard against selection bias, the researchers hid the assignment sequence. The hiding prevented the participants in the study, principals and parents from predicting and manipulating the assignment sequence.

Study Area

The study was conducted in two special schools in Enugu Urban of Enugu State. Enugu State is in Southeast of Nigeria

Design

The design of the study was exploratory design

Participants

Participants included 78 students with hearing impairment drawn from the deaf student population from two special schools in Enugu State, Nigeria. Seventy-eight (ELSHI) participants were recruited from a pool of 207 members attending schools in the state. The two special schools were selected for their sizeable deaf student body. They are the only two special secondary schools with largest population in the state. The 70 out of 78 participants completed the self-administered survey, leading to a response rate of 67%. The other eight (ELSHI) participants were contacted through friends and acquaintances. Participants were assured of confidentiality. Sixty-four percent of the sample was female while thirty-six percent was male. All the participants were registered to attend classes in the first term of 2018. Fifty-two (ELSHI) participants defined themselves as deaf while twenty-six others reported minor hearing difficulty. It should be noted that no objective measure of degree of hearing was used. According to the participants' reports, their hearing ability ranged from deafness to mild hearing losses and we therefore, referred to all the members of this group as English language students with hearing impairment (ELSHI). Out of seventy-eight (ELSHI) participants, forty had hearing losses at early age of life while thirty-eight had hearing losses at later age. Fifty-four had hearing parents with oral communication while twenty-four had deaf parents with sign language as a means of communication. Forty-eight were in residential schools while thirty were out of the residential schools. The age of the participants ranged from 16 to 25 years (1 participant was 15); the mean age was 16.8(SD=0.72) and in senior class as majority started school at old age. No report on difficulties in reading and understanding the questionnaire was made as two of the researchers are good in sign language.

Measures

Background information was gathered via a questionnaire concerning a number of variables including deafness associated factors, depression, coping strategies and demographic variables. The means of communication in use at home (MCH) was ascertained by asking the participants whether their means of communication at home was oral or signs only or with oral communication and some signs. The variable on types of school the participants attended (TSA) was also measured by asking ELSHI whether they attend residential schools or go to school from their homes.

The construct on age of onset of hearing impairment (AOHI) was assessed by asking the participants at what time they developed hearing loss. Two variables were constructed for the analyses: hearing impairment before birth has a value of "I" for all who were born with hearing impairment and "D" for all who acquired hearing impairment later in life. The age of onset varies from 1 (deaf by age 1) up to age 18. The degree of hearing impairment (DHI) was assessed by a single item that enquired about the degree of hearing impairment of the participants. Those participants' responses were rated on a construct scale ranging from mild hearing (1) to profound hearing loss (5). The participants identified themselves with their hearing levels without specific guidelines indicating measurement in decibels (dB).

For coping strategies, no available instruments exist to measure the coping strategies among ELSHI; we, therefore, adopted the three scales of coping strategies developed by Jamboree & Elliott (2005) such as withdrawal from the hearing world into deaf community. It has five items such as "I cannot hear loud noise so I have to leave", "I am comfortable when I am in the midst of follow deaf" (2) covering with five items such as "when I cannot hear loud noise", I pretend that I hear everything," " I am in the midst of hearing friends discussing, I pretend that I understand what they are discussing" and (3) developing bicultural skills with five items such as "I can move on well in both the hearing and deaf communities", "I can interact meaningfully with my colleagues with or without hearing impairment". All the items were scored on a four-point scale that ranged from "never" (1), to "often" (4); ''strongly disagree'' (1) to ''strongly agree'' (4) respectively.

Age and gender were used as control variables. Each of them was assessed by a simple item asking about the participants' demographic background. The participants' age was calculated by subtracting their year of birth from the current year, 2018. The construct of gender had two categories: male (1) and female (2).

Results

Descriptive statistics

Table 1:

Variable	Mean	Standard Deviation	Variable Range
Demographic Variables			
Age	19.89	4.81	15 to 25 years
Gender	.61	.49	1 = male, 2 = female
Deafness Associated Variables		**Percentages (%)**	
Congenital deaf	51%	49%	0 = orders to 1 = yes
Age of onset	4.05%	7.22%	1 = age 1 to 25 years
Degree of hearing loss	2.55%	.88%	1 = mild to 5 profound
Types of School Attended			
In- school	68%	49%	0 = no and 1 = yes
Off school	32%	51%	0 = no and 1 = yes
Means of Communication			
Using signs only	39%	55%	0 = no and 1 = yes
Using oral only	61%	45%	0 = no and 1 = yes
Coping Strategies			
Withdrawal	.64	2.05	.59 1 to5,5complete withdrawal
Covering	.52	2.76	.64 1 to 5, 5 extreme covering
Bicultural skills	.72	3.31	.43 1 to 5, 1 = no skills

Table 1 above indicates the alpha levels, mean, standard deviation and range of variables of this study. The majority of the participants were born deaf (51%). The mean age of those who were not born deaf was about 4 years. The standard deviation for age of onset of hearing loss was 7.22 which is an artifact of an outlying value of age 25 in the data. Over 48% of those who were not born deaf were deaf by the age of 4 and the remainder by age 11, with the exception of the outlying case.

Most of the participants had mild to severe hearing loss (88%). This means that they may not be able to engage in verbal conversation except through the use of sign language. In this 88%, 70% had moderate hearing loss while 18% had severe hearing loss.

Most of the participants attended residential schools for the deaf (68%) which is not surprising giving the fact that they are in the world where spoken language is used, 32% of the participants attended schools for the deaf from their respective homes.

The majority of the participants use oral language only at home (61%) while 39% use signs only at home especially those whose parents are deaf. A great number of the participants seemed to have developed bicultural skills (M = 3.31, SD = .43) on a scale ranging from 1 to 5, where 1 shows less depressive symptoms. This means that they had lived their lives with the hearing community but were not exposed to deaf culture in schools.

The alpha reliability coefficients of the two coping strategies, withdrawal (.64) and covering (.52) are below .70 targets which may be attributed to the exploratory nature of the instruments. Most of the participants scored relatively high on depressive measures (M = 3.31, SD = .43) x on scale from 1 to 5, while 1 equals less depressive symptoms. This was expected because the participants attended schools from their homes where they develop the skills to belong to both hearing and deaf world.

Table 2: Zero-order Correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Respondents (N = 78)																		
Born deaf	-	-.43**	-.22	.27*	.02	.02	-.08	-.01	-.06	.12	.17	-.01	-.03	.13	.06	-.03	.10	-.25*
Age of onset		-	.10	-.15	.03	-.09	.02	.14	-.13	.12	.09	.05	.16	-.17	-.07	.38**	.10	.13
Severity of hearing			-	.17	.13	.14	-.33**	-.39**	.06	.44**	.14	-.21	.31**	.25*	.25*	.13	.19	.12
Attended residential school for the deaf				-	-.07	.15	-.3**	-.43**	-.03	.48**	.25*	-.03	.27*	.26*	.02	-.05	.02	-.15
Attended school from home							-	.47**	-.-28*	-.22	-.52*	.04	-.37**	-.53**	-.12	.12	-.12	.14
Oral communication at home only								-	-.59**	-.53**	-.41**	.12	.38**	-.48**	-.26*	.19	-.19	-.03
Sign language use at home only								-	-	-	.28*	-.16	-.36**	.31**	.21	-.08	.08	-.05
Bicultural skills								-	-	-	.72*	-	.16	-.08	.17	-.12	-.09	-.10
Covering deafness								-	-	-	.64		-	-.33**	-.17	-.20	.05	.08
Withdrawal into the deaf community								-	-	-	.52			-	.26*	.03	.18	-.21
Depression								-	-	-	.23*				-	.12	.37**	-.01

In Table 2, the correlation analysis in all the variables of the study was carried out. To analyse the bivariate correlations with the two nominal variables, that is means of communication and the school attended, the researchers constructed dummy variables to represent each category of the two variables. For instance, the researchers created a dummy variable representative of sign language being the means of communication at home that has a value of one for those who use signs at home and a value of zero for those who use oral language only. The same technique was used for each nominal variable.

The bivariate analysis indicates a number of correlations between the different deafness associated factors. The analysis revealed that the participants who developed deafness later in life and had moderate to severe hearing impairment were more likely to be off residential schools where both oral and sign languages were used.

Similarly, the participants who are at residential schools for the deaf and use sign language with severe to profound hearing loss are strongly identified with their fellow deaf. Regarding the coping strategies, the result of the analysis indicates that the participants with severe to profound hearing loss were found likely to use covering strategy since they cannot hear and understand the spoken language of others around them. Secondly, these participants use sign language for interaction and communication, and this uncovers their hearing impairment, and therefore, cannot hide their deafness. Those participants who tried to cover or pass as hearing are less likely to associate with the deaf group. Withdrawal into the deaf group is positively associated with less depression, may be because of the expected protection if they associate themselves with deaf group in the same community.

In addition, the dependent variable, depression, significantly correlated with severity of hearing loss and oral language at home. Depression was positively associated with the severity of the hearing loss and those who are more profoundly deaf tend to show depressive symptoms, and negatively correlated to oral language at home because those who cannot use or understand signs or lip read may feel isolated which has a serious negative implication for their tendencies to show depressive symptoms.

Table 3: Regression Analysis Depression N = 78

Variable	b	se	P
Step 1			
Congenital deaf	.08	.09	.001
Hearing loss	.09	.06	.159
In-school	-.13	.12	.272
Signs at home	.11	.14	.419
Identifying with deaf	.18	.09	.043
Step 2			
Congenital deaf	**.07**	**.08**	**.427**
Hearing loss	**.08**	.05	**.143**
In-school	.15	.13	**.152**
Communication	.06	.15	**.499**
Identification with deaf Step 3	.18	.08	.042
Congenital deaf	.07	.10	.481
Hearing loss	.10	.06	.081
In-school	-.18	.12	.130
Identifying with deaf	.18	.09	.038
Bicultural skills	.23	.10	.10

Note: Adjusted R^2 = .175 for step 1 and R^2 = .214 for step 2 and R2= 260 foe step 3.

Order of regression analysis

Table 3 reveals the order of regression analysis that was estimated to measure the effects of deaf - associated variables and coping strategies on depression. Since the family means of communication and type of schooling were too small to be reliable in multivariate analysis, it was therefore, assessed as a dummy variable where 1 = sign language and 0 = other variables where it is equal to residential and zero equals to others.

In the first step, hypotheses one, two, and three were tested by entering the deafness associated with factors such as being born deaf, means of communication at home and school attended. The demographic variables such as age and gender were not entered since they are not significantly associated with depression. The means of communication at home and types of school attended and their relationship to depression tested separately was not found to be significant.

In the second step, hypothesis four was tested by entering the severity of the hearing loss. The inclusion of the hypothesis raised the model fit since the factor included explains the severity of hearing loss 20% of the total variance as opposed 17% in step one. Hypothesis four was supported and identification with the deaf was seen as a strong predictor of depression of ELSHI (B=.18, P [.05) showing that those who identify with the fellow deaf tend to have less depressive diaorders.

In the third step, hypotheses, five, six and seven were tested by entering the three coping strategies – withdrawal, covering and bicultural skills. The bicultural skills appeared to be statistically significant, so it was retained in the final model. The factor not only raised the model fit, but the variable severity of hearing loss marginally statistically significant (B = .10, P < .10), in addition to identifying with deaf (B = .18, P < .05) and bicultural skills itself (B = .23, P < .05). The final model therefore, shows that those students with hearing loss have relatively more severe to profound hearing losses were identified with the deaf group and hearing group showed less depressive symptoms. The findings supported hypothesis seven, and partially supported hypotheses five and six.

In the final analysis, the various interactions between each combination of deafness- associated factors and coping strategies were tested. For instance, the family means of communication and

biculturalism were tested. It was assumed that if even there was no means of interaction in sign language between ELSHI and their parents, a sense of biculturalism could develop that would have a positive influence on their well-being. But none of the interaction terms tested was found to be statistically significant.

Discussion

The main aim of this study was to investigate the factors that cause ELSHI to show depressive symptoms and the coping strategies among students with hearing loss in Enugu special schools for the deaf, Enugu State, Nigeria. The study indicates that ELSHI who developed bicultural skills showed no depressive symptoms. The four out of the seven hypotheses were confirmed by the analysis that the identification with the fellow deaf proved to be positively associated with depression. The finding of the study is in agreement with Jambore and Elliott (2005) study that revealed that ELSHL who identify strongly with the fellow deaf tend to show less depressive symptoms. The development of bicultural skills significantly reduced the depressive symptoms of ELSHI in Enugu compared with ELSHI who used withdrawal and covering strategies. This finding of the study disagree with Stephanie et al, (2011) who revealed that the use of bicultural skills does not reduce the depressive symptoms of students with hearing impairment

The findings of this study agree with the idea that ELSHI, having developed bicultural skills can be helped to function well in both the hearing and deaf communities, that using the bicultural skills, ELSHI were able to change their negative thoughts and beliefs, and develop adequate social skills and positive self-regard. The findings of this study support previous studies by Jambore and Elliott (2005) which showed that bicultural skill is effective in developing positive self-esteem among deaf individuals.

Limitations and Implications of the Study

The first limitation was the difficulty involved in getting the participants for the study, given that the population was made up of participants who cannot hear and understand speech. Second limitation is the difficulty in ascertaining the representative sample of those who are depressed from the special schools for the deaf in Enugu State. It might be that they were not sufficiently encouraged to fill out the survey or they might be frustrated out due to the language of the questionnaire which was administered only in English language which can be considered as the second language for many ELSHI in Nigeria. By present standards, the participants cannot be considered representative of the deaf population at large.

The third limitation is that the academic environment for which the sample of the study was drawn also cannot be considered representative of special schools for the deaf in general. The researchers suggest that future study be conducted in other states using larger samples to ascertain the validity of the findings of this study.

Furthermore, several constructs the researchers formulated to guide the study were associated with depression in the expected direction but few reached statistical significance, especially in multivariate case. The cause of lack of significance might be due to low sample size, which was also due to the size of the population surveyed and the low response rate obtained. Therefore, this should not be taken as definitive.

Despite the limitations that were observed the study indicates importance. The school should owe it as its duty to assist in teaching bicultural skills that would enable ELSHI to function well in any community they find themselves. Thus, the Nigerian behavioral therapists are expected to assist ELSHI manage their emotions through effective intervention that would target good thoughts, feelings and behaviors. The Nigerian school counselors and language educators are expected to

develop the skills that are necessary to help ELSHI get along with peers in the hearing world while still identify with the non-hearing world.

Conclusion

Based on the findings of the study, the researchers conclude that bicultural skills offered to ELSHI in special schools for the deaf in Enugu State, Nigeria significantly reduced their depressive symptoms. The current study is beneficial to different groups of people including parents, teachers and the ELSHI themselves. For ELSHI, bicultural skills may provide them with insights of the need of a visual communication as necessary tools to provide positive self-evaluation especially those with prelingual hearing impairment on how to manage their depressive moods and to enable them develop adequate emotional skills.

The Nigerian special education teachers should conduct follow up studies for ELSHI to assess the efficacy of bicultural skills using different designs. Special education teachers are trained and charged with the responsibility of rehabilitating ELSHI, given that bicultural skills intervention helps in attaining this goal. Parents of ELSHI are in a better position to provide necessary support to bicultural skills strategy for their children's well-being by involving effective communication between them and their children for successful implementation of the strategy.

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Declaration of Interests

The authors of this work declare that they have no conflict of interests with regard to the research, authorship, and/or publication of this article to disclose.

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