

Predictive Influence of Intrapersonal and Environmental Factors on the Psychosocial Adjustment of Adolescents with Post-Lingual Hearing Loss

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Abstract: Adolescence is characterized by rapid physiological, psychological, and social development which presents considerable challenge when joined with the burden of acquired hearing loss. This study adopted a descriptive survey research design of *expost-facto type*. Three instruments; Nottingham Adjustment Scale, Hunter Opinions and Personal Expectations Scale and structured interview questionnaire were used to answer the three research questions raised. It focused on influence of intrapersonal and environmental factors on the psychosocial adjustment of adolescents with post-lingual hearing loss in Osun State. Data were analyzed using percentages, Pearson's correlation and regression analysis. Psychosocial adjustment has a correlation with intrapersonal factors ($r=0.44$, $p<0.05$) and environmental factors ($r=0.47$, $p<0.05$). Intrapersonal and environmental factors showed significantly joint prediction of psychosocial adjustment of adolescents with post-lingual hearing loss. ($F(2, 47) = 13.09$; $R = 0.60$; $R^2 = 0.33$; $p<0.05$). Also, interpersonal factors ($B=0.47$; $t = 3.17$; $p<0.05$) and environmental factors ($B=0.44$; $t = 0.41$; $p<0.05$) revealed significantly independent prediction of psychosocial adjustment of adolescents with post-lingual hearing loss and environmental factors contributed more to the explained variation ($\beta = 0.41$) than intrapersonal factors ($\beta = 0.38$). Understanding the process of adjusting to acquired hearing loss and the sequelae of such a loss should be the first step in developing and implementing appropriate intervention strategies to facilitate adaptation to the loss. Orientation should be given through different media available to educate the society about hearing loss, causes, prevention and management of people with hearing loss, as well as the ills of discriminating against those with hearing loss. Efforts must be made to improve the psychosocial adjustment of individuals with post-lingual hearing loss in this age group.

Keywords: Environmental factors, Hearing loss, Intrapersonal factors, Adolescents with post-lingual hearing loss, Psychosocial adjustment.

INTRODUCTION

The psychosocial consequence of having hearing loss during the adolescent years influences the development of self-image, self-perception, self-concept, psychological and social adjustment, inter and intrapersonal relationships. These consequential developmental deficiencies are commonly observed among adolescents with hearing loss. At the same time, personal adjustment to hearing loss presents a considerable challenge to this group of individuals, in the sense that the personal changes associated with the loss of hearing are likely to affect their communication and psychosocial functions.

Psychosocial difficulties involve both psychological and social aspects of adolescents' life. There are several basic behavioral and emotional elements that characterize adolescents with

psychosocial difficulties. These include among other things feelings of guilt, low self-esteem, poor self-perception and self-concept, feeling uncomfortable around other people, inability to control tension and anxiety, and not being able to meet goals. Psychosocial factors refer to the interrelation of behavioral and social factors; it is associated to general well-being and quality of life of the adolescent which in turn characterized by rapid physiological, psychological, and social development. Adolescents undergoing these changes typically confront the challenges of having hearing loss in a sound-dominated environment not always attuned to their auditory and visual needs, particularly in their immediate environment.

It has been shown that personality traits are more malleable by environmental influences than researchers originally believed [1]. Personality

differences also predict the occurrence of life experiences [2]. The environment is a combination of many factors which include the family (the parents, siblings and relatives), socio-economic status, educational level, personality of the parents and biological factors. The attitude of hearing parents and siblings in adjusting to hearing loss influences the adolescent in different ways. The general reaction of the public when they come across such children is that of ridicule. However, adolescents with post-lingual hearing loss who belong to families with better socio-economic condition adjust better psychologically and socially. The individual characteristics of adolescents and their parents affect how the social structure in the family is organized [3].

Adjusting to hearing loss and accepting hearing loss can be difficult for adolescents with post-lingual hearing loss, as well as for their families. When language development is obstructed, there is a cascading effect on every aspect of a child's psychosocial development, self esteem, self efficacy, emotional development, family concern, social competence and overall perceived quality of life of the child [4]. Studies revealed that children with hearing loss present with more behavioral and social problems than their hearing peers [5, 6].

Adjustment depends largely upon how an individual interacts in his social environment in particular, in satisfying his needs and in meeting demands placed upon him. Adjustment is the means by which the individual attempts to maintain a level of psychological and physiological equilibrium [7]. It is the holistic adaptation of an individual to the environment. It involves adjustment within the environment (home/family, school, and workplace), self and the larger society. Isaiah posited that adjustment cuts across every area of human endeavors [8]. The child adjusts to the environment established accordingly; thus it contributes towards the development of his or her personality.

Hearing loss affects many aspects of life of the adolescent, with many psychological ramifications and various effects on how well the adolescent with such a loss functions within the society or the world at large. The limitation in hearing despite the use of amplification systems has significant effects on intrapersonal and interpersonal functioning and relationship with others. This varies considerably according to age of onset of hearing loss, social and family interaction, level of education among other factors [9].

Post-lingual hearing loss is a hearing loss which occurs after normal language patterns have been established, which can occur due to disease, trauma, or

ototoxicity such as gentamicin, genetic (autosomal dominant), it is always severe to the extent that understanding of conversational speech in most normal situations with or without a hearing aid becomes impossible. Adolescents with post-lingual hearing loss had developed an identity as a hearing person in a hearing world utilizing oral/aural language capabilities but to some degree, have lost the ability to hear. The loss of their capacity to hear invariably affects their psychosocial adjustment.

In Nigeria about 14 percent of school children have some kind of hearing loss [10]. General prevalence studies show higher rates of severe to profound hearing loss in this part of Africa than in other developing countries.

Globally, hearing loss affects about 10% of the population to some degree [11]. It caused moderate to severe disability in 124 million people as of 2004 (108 million of whom are in low and middle income countries [12]. Of these, 65 million developed the condition during childhood [13]. At the paediatric clinic or unit in the hospital, it is one of the most common medical conditions presenting to physicians [14]. In Nigeria a study found that 25 per cent of the cases of deafness can be linked to meningitis. Researchers have found a similar trend in Angola where 21 per cent of the cases can be attributed to meningitis, 10 per cent to measles and 10 per cent to febrile illness. Further, a group of researchers who conducted a study in Sierra Leone found that otitis media commonly causes mild to moderate hearing loss. Hearing loss caused by genetic disorders may also play a roll but very little information exists about these factors due to a lack of trained personnel [10, 15].

Hearing loss affects how well an individual is able to hear spoken language and respond to auditory-verbal stimuli in the environment; it brings about insensitivity to sound [16]. Hearing loss affects not only the language development of the child but also many aspects of the child's social, emotional, psychological adjustment and overall educational development. An adolescent who is not able to hear well like someone with normal hearing – hearing thresholds of 25dB or better in both ears is said to have hearing loss. Hearing loss can affect one ear or both ears, and leads to difficulty in hearing conversational speech or loud sounds. Some cases of hearing loss are avoidable through primary prevention. People with hearing loss can benefit from devices such as hearing aids, assistive devices, cochlear implants, captioning, sign language training, educational and social support.

Adolescence is characterized by rapid physiological, psychological, and social development [17]. Adolescence occurs between ages 10 and 19 years

with three stages of development: early adolescence (age 10-13), middle adolescence (age 14-16), and late adolescence (age 17-19). Early adolescence entails significant physical/sexual maturation, intense concerns with body image, concrete thinking and emerging independence in decision-making, increasing peer influence, feeling attracted to others, and experimenting with new ways of behaving. Middle adolescence involves continuing physical/sexual changes, less concern with body image, emerging ability for abstract thinking, development of a sense of identity, exploration of romantic interests, enormous influence of peers/school environment, increase in sexual interest, and experimentation with risk-taking behavior. Late adolescence usually means a cessation of physical/sexual changes, greater acceptance of physical appearance and increased capacity for abstract thought and realistic risk assessment. A sense of identity is established, family influence is balanced with peer influence and serious intimate relationships begin to develop afterwards. This study seeks to investigate predictive influence of intrapersonal and environmental factors on psychosocial adjustment of adolescents with post-lingual hearing loss.

MATERIALS AND METHODS

Research Design

This study adopted the descriptive survey research design. Since the variables of interest have already occurred, they were studied *ex-post-facto*. Thus, the variables were not manipulated in any way in the course of this study.

Population

The population for the study comprised all adolescents with post-lingual hearing loss in State of Osun Secondary School for Persons with Special Needs, Osogbo between the ages of 10 and 21 years, teachers of students with hearing loss and parents of adolescents with post-lingual hearing loss in Osun State.

Sample and Sampling Techniques

The sample consisted of 90 participants consisting of 50 male and female students with post-lingual hearing loss, 20 teachers of students with hearing loss and 20 parents of adolescents with post-lingual hearing loss in school of people with special needs in Osogbo, Osun State - Nigeira. The study used purposive sampling technique in the selection of the participants.

Instrumentation

The following instruments were adapted for the study;

1. Nottingham Adjustment scale (NAS)
2. Hunter Opinions and Personal Expectations scale (HOPES)

3. Self Structured Interview Questionnaire (for teachers and parents)

Description of Instruments

1. Nottingham Adjustment Scale (NAS) is an assessment of factors known to be involved in adjustment to disability. It was adapted to cover a range of different areas relating to psychosocial adjustment of persons with post-lingual hearing loss and to establish a broad picture of current needs of a person coping with adjustment. This instrument has been constructed on the basis of research and developed specifically for people encountering disabilities.
2. Hunter Opinions and Personal Expectations scale (HOPES) scale is an assessment test-tool designed to measure how people view their future in the light of their current disability. The items on the scale are analyzed to indicate specific psychological needs, and some of the areas are closely related to the ability of a person to satisfactorily adjust to the acquired disability. This scale was constructed on the basis of research and developed specifically for people encountering disabilities and shall be adapted for the purpose of this study. NAS and HOPES were adapted together to form two parts consisting of five (5) sections; section A consist of questions on demographical details of the participants, while sections B to E consisted questions on intrapersonal and environmental factors and were structured in five (5) Likert model; Strongly Agree, Agree, Disagree, Strongly Disagree, Not Sure, and section E; Extremely Well, Very Well, Moderately Well, Not Very Well, Not At All.
3. Structured interview questionnaire was designed for teachers of students with hearing loss and parents of adolescents with post-lingual hearing loss. The questionnaire consisted of three parts; parts one, two and three. Part one consisted questions on demographical details of the participants, part two consisted questions on social factors and part three consisted questions on psychosocial factors relating to hearing loss among adolescents with post-lingual hearing loss.

Validity and Reliability of the Instruments

The items on both scales were reconstructed in line with the objectives of this study. The items were checked for face, content and construct validity. The reliability of the items was measured using a test-retest method, using 30 participants comprising of 20 adolescents with post-lingual hearing loss, 5 parents of adolescents with post-lingual hearing loss, and 5 teachers of students with hearing loss. The reliability of the instrument was determined using Cronbach Alpha and the following reliability coefficient indexes were gotten:

Instrument 1: (for adolescents with post-lingual hearing loss)	
Section A (family background) =	0.90 Alpha
Section B (intrapersonal factors) =	1.00 Alpha
Section C& D (psychosocial adjustment) =	0.60 Alpha
Section E (environmental factors) =	0.70 Alpha
Instrument 2: (for teachers of students with hearing loss) =	0.70 Alpha
Instrument 3: Self Structured Interview Questionnaire (for parents of adolescents with post-lingual hearing loss) =	0.70 Alpha

Method of Data Analysis

The data collected were analyzed using descriptive statistics of simple percentage, frequency

count Pearson Product Moment Correlation (PPMC) and Multiple Regression Analysis.

RESULTS

Table 1: Frequency Distribution of gender of adolescent respondents

Gender	Frequency	Percentage
Male	18	36.0
Female	32	64.0
Total	50	100.0%

Table 1 shows the frequency distribution according to gender of the adolescents with a higher percentage 64.0% females while males were 36.0%.

This implies that a high number of female adolescents with post-lingual hearing loss participated in the study.

Table 2: Frequency distribution of age range of the respondents.

Age group in years	Frequency	Percentage
10 to 13	3	6.0
14 to 16	8	16.0
17 to 19	21	42.0
20 to 21	18	36.0
Total	50	100.0%

Table 2 reveals the frequency distribution according to the age range of respondents. The result shows that respondents in between ages 10 and 13years was 6.0%, age range between 14 and 16yrs was 16.0%,

age range between 17 and 19years was 42.0% and age range between 20 and 21years was 36.0%. This shows that respondents between age 17 and 19 years have the highest percentage.

Table 3: Degree of hearing loss of respondents

Degree of loss	Frequency	Percentage
Moderate(41 to 55dB)	8	16.0
Moderately severe (56 to 70dB)	10	20.0
Severe (70 to 90dB)	4	8.0
Profound (90dB +)	6	12.0
Others(Don't know)	22	44.0
Total	50	100.0

The analysis in table 3 reveals that 8 adolescents representing 16.0% of the adolescent respondents have moderate (41-55dB) hearing loss, 10 adolescents representing 20.0% have moderately severe (56-70dB) hearing loss, 4 adolescents representing 8.0% have severe hearing loss, 6 adolescents

representing 12.0% have profound (90dB +) hearing loss and 22 representing 44.0% of the total respondents do not know their degree of hearing loss. This shows that a higher percentage of the respondents have moderately severe (56-70dB) hearing loss.

Table 4: Frequency distribution of age of onset of loss of respondents.

Years in Group	Frequency	Percentage
Under 5	15	30.0
6 to 10yrs	35	70.0
Others	0	0.0
Total	50	100.0%

Table 4 shows the frequency distribution of age of onset of loss of adolescent participants. The result shows that 30% of the respondents acquired their hearing loss before the age of 5 years, while 70%

acquired their hearing loss after the age of 5 years. This result shows that greater percentage of respondents acquired their hearing loss between 6 and 10 years of age.

Table 5: Types of amplification used

Type of amplification	Frequency	Percentage
Hearing aid	22	44.0
Cochlea implant	0	0.0
None	28	56.0
Total	50	100.0

Analysis in table 5 reveals that 22 respondents, giving 44.0% had used hearing aid, none have had a cochlea implant, and 56.0% had used neither a hearing

aid nor had a cochlea implant. This shows that a higher percentage of the adolescents have not used a hearing aid or had an implant.

Table 6: Correlation between intrapersonal, environmental factors and the dependent variable psychosocial adjustment

Variables	\bar{X}	S.D	R	P	Remark
Psychosocial Adjustment	39.88	6.476	1.000		
Intrapersonal Factors	34.74	5.224	.438	0.001*	Sig.
Environmental Factors	33.62	6.043	.470	0.001*	Sig

* Correlation significant at 0.05 level

Table 6 shows that there is significant relationship between the independent variables (intrapersonal and environmental factors) and the dependent variable (psychosocial adjustment) of adolescents with post-lingual hearing loss. Intrapersonal factors ($r=0.438$, $P<0.05$) and environmental factors ($r=0.470$, $P<0.05$).

DISCUSSION

This findings indicated that intrapersonal factor, that is relationship taking place or existing within the mind and environmental factor constituting the surroundings or conditions in which a person lives or operates and a combination of many factors which includes the family (the parents, siblings and relatives), socio-economic status, educational level, personality of the parents and biological factors) have significant influence on psychosocial adjustment of adolescents with post-lingual hearing loss.

The findings of this study agreed with the findings of Stoneman and Brody, they found that the individual characteristics of adolescents and their parents affect their psychosocial adjustment [3]. The finding also corroborates the finding of Ademokoya and Oyewumi, who is of the view that hearing loss affects many aspects of life of the adolescent, with many psychological ramifications and various effects on how well the adolescent with such a loss functions in society or the world at large [19]. The limitation in hearing despite the use of amplification systems has significant effects on intrapersonal and interpersonal functioning and relationship with others. This varies considerably according to age of onset of hearing loss, social and family interaction, and level of education among other factors.

Table 7: Multiple regression analysis table showing intrapersonal and environmental factors as joint predictors of psychosocial adjustment of adolescents with post-lingual hearing loss.

Model	Sum of Squares	df	Mean Square	F	R	R ²	Std. Error	P	Remark
Regression	735.084	2	367.542	13.09	0.63	0.33	5.3	0.000*	Sig
Residual	1320.196	47	28.089						
Total	2055.280	49							

*significant at 0.05

The result in table 7 reveals that the predictor variables (i.e. intrapersonal and environmental factors) showed significantly joint prediction of psychosocial adjustment of adolescents with post-lingual hearing loss. (F (2, 47) = 13.09; R = 0.60; R² = 0.33; p<.05). The predictor variables jointly accounted for 33% variance of psychosocial adjustment. The remaining 67% could be due to the effect of extraneous variables. Therefore, the exogenous variables prediction of psychosocial adjustment of adolescents with post-lingual hearing loss was not due to chance or error.

The finding is strengthened by the findings of Bat-Chava and Martin, they reported that the self efficacy of the adolescents with post-lingual hearing loss is concerned with judgments of how well they can execute course of actions required to deal with prospective situations. Each person in the family has to deal with the adolescent's special needs and the manner

in which they do so defines how the family as a whole will accommodate the special needs of the child [20].

The finding also supports the findings of Panda's, that persons with hearing loss feel inferior, are helpless, have poor self-concept, temper tantrums, are submissive, have poor gross motor coordination, delayed hand preference, are hyperactive, have short attention span, are emotionally unstable, have slightly low intelligence quotient (IQ) than normal persons and poor language and communication skills. They experience difficulty in understanding abstract concepts and have difficulties in vocational adjustments [21].

In the view of Oyewumi, children with hearing loss may be very intelligent but without the ability to understand their peers and express their feeling and wants, they are likely to be frustrated or become withdrawn [22].

Table 8: Relative contribution of the independent variables to the dependent variables

Model	B	Std. Error	β	T	Sig.	Remark	Ranking
Intrapersonal Factors	0.44	.127	0.41	3.48	0.003*	significant	1 st
Environmental Factors	0.	.147	0.38	3.17	0.001*	significant	2 nd

*significant at 0.05

The result in table 8 reveals the independent contributions of intrapersonal factors (β = 0.38); environmental factors (β = 0.41) to psychosocial adjustment. The table also shows that interpersonal factors (B=0.47; t = 3.17; p<.05) and environmental factors (B=0.44; t = 0.41; p<.05) revealed significantly independent prediction of psychosocial adjustment of adolescents with post-lingual hearing loss in which environmental factors contributed more to the explained variation.

The result in the above table is confirmed in the study by Isaiah, he posited that adjustment cuts across every area of human endeavors [8]. A child adjusts to the environment established accordingly; thus it contributes towards the development of his or her personality. These relationships are important, because they can affect how a child interacts with others he or she will meet later in life. The adolescent with post-lingual hearing loss is best helped when he understands

the family's community and provides information that the family needs, is aware and understands family choice and decision making in the provision of services, shows respect and affirms the family's strengths in enhancing her responsibilities in the child's development.

It has been established by many researchers that self-concept is an important personality variable in the psychosocial adjustment of any individual [23]. For the adolescent with post-lingual hearing loss, developing a strong sense of self can facilitate independence and the capacity to have healthy relationships with friends and family.

The findings also corroborate the view of Hamacheck, he opined that there is a continuous flow between the self and the stream of experiences involved in the process of living and learning in school [24].

LIMITATIONS OF THE STUDY

The study was limited to only adolescents with post-lingual hearing loss. It was difficult getting a good number of adolescents with post-lingual hearing loss, as majority of those with hearing loss have congenital or pre-lingual hearing loss. It was also difficult having the respondents fill the questionnaire with little or no assistance, since many of them had language difficulties.

Another limitation was the non-cooperative attitude of one of the school's principal. Several appointments to administer the questionnaires were cancelled on flimsy grounds; this resulted in delay of completion of this work earlier than necessary.

RECOMMENDATIONS

Understanding the process of adjusting to acquired hearing loss and the sequelae of such a loss is the first step in developing and implementing appropriate intervention strategies to facilitate adaptation to the loss. On the basis of the inferences drawn from the findings, the researcher would like to make the following recommendations;

Understanding the different environmental factors affecting the psychosocial adjustment of adolescents with post-lingual hearing loss, professionals in the area should design intervention programmes so that people with post-lingual hearing loss can have better psychosocial adjustments.

Parents should be provided with the necessary assistance, to create conducive atmosphere for healthy psychosocial adjustments of their children with post-lingual hearing loss.

Orientation should be given through different media available to educate the society about hearing loss, causes, prevention and management of people with hearing loss.

Teachers of persons with hearing loss should be trained in-special education particularly in the use of sign language and management of special individuals.

Lastly, it is important for concerned bodies like policy makers, planners, professionals and interested groups to realize and assist persons with hearing loss to overcome barriers which operate against their psychosocial adjustment.

CONCLUSION

While there are limitations in this study, the results do provide strong support for the significant influence of intrapersonal and environmental factors on the psychosocial adjustment of adolescents with post-lingual hearing loss. The particular value of this study is

that it contributes to the understanding of the influence of intrapersonal and environmental factors on the psychosocial adjustment and the evidence offered by this study demonstrates that hearing is critical to speech and language development, communication and learning. The earlier the hearing loss occurs in a child's life, the more serious the effects on the child's development. Also, the earlier the problem is identified the less serious the impact.

Adolescents with post-lingual hearing loss need to be equipped with skills in listening, use of hearing aids, speech and language, encouraged to achieve their potentials and supported to enjoy to the fullest good quality of life.

SUGGESTIONS FOR FURTHER STUDIES

This study established that intrapersonal and environmental factors influence the psychosocial adjustment of adolescents with post-lingual hearing loss, therefore, it is suggested that further researches should include other variables not included in the study that could influence the psychosocial adjustment of adolescents with post-lingual hearing loss.

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