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AGE OF INTERVENTION ON RECEPTIVE AND EXPRESSIVE LANGUAGE DEVELOPMENT AMONG CHILDREN WITH HEARING IMPAIRMENT IN RIVERS STATE, NIGERIA

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Abstract:
This study investigated the impact of age of intervention on receptive and expressive language development among children with hearing impairment in Rivers State. Specifically, the study examined the impact of the age of intervention on the expressive language development among children with hearing impairment in Rivers State, and the impact of the age of intervention on the receptive language development among children with hearing impairment in Rivers State. A descriptive design was used to carry out the study. The population of the study comprises four hundred and twenty-one (421) caregivers and parents from eight (8) Orphanage homes, rehabilitation centres, and Special Needs Schools in Port Harcourt metropolis with a sample size of three hundred (300) caregivers and parents drawn from Obio/Akpor, and Port Harcourt Local Government Areas through the accidental sampling technique. A researcher designed questionnaire titled; Hearing Impairment Intervention and Language Development Questionnaire (HIILDQ) was used for the data collection for the study. The instrument was validated and tested for reliability, with a reliability index of 0.840 determined through Pearson Product Moment Correlation. Mean score and standard Deviation were used to answer the research questions while Analysis of Variance (ANOVA) was used to test the hypotheses at the 0.05 level of significance. Findings from this study showed that there was significant impact of age of intervention on the development of expressive and receptive language ability among children with hearing impairment in Rivers State. Based on the findings of the study, the study recommended amongst others that Government should subsidy or offer free intervention services to children who may

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develop hearing impairment, so as to lessen the burden on parents or caregiver who wish to intervene at the early stage of the impairment.

Keywords: age of intervention, receptive and expressive language development, children with hearing impairment

1. Introduction

Receptive and expressive language development is a humanized skill which is acquired gradually during a defined step-by-step process. Language is acquired through daily life interactions without any training in normal-hearing children. Hearing loss hampers this process and causes language disorder. Difficulties in communication, as a result of a child's failure to develop receptive and expressive language ability have an adverse impact on all aspects of the child's life, starting with the fulfillment of basic needs and extending to the realms of education, and participation in family and community life.

The nature and severity of the difficulty, as well as the time of onset, have a crucial influence on the intensity of the impact. Difficulties in communication may arise from the presence of disabilities that are sensory, intellectual, emotional behavioral, or motor in nature. These disabilities may occur at birth or at early developmental stages, or even later in life. The impact is profound and enduring when they occur early in an individual's life. In such situations, early identification as well as timely intervention could go a long way in easing the adverse effects and enabling near- normal development (Downs &Yoshinaga-Itano, 1999; Ayjnihh, 2000; Yoshinaga-Itano, 2003; Vohr, 2008).

Age related hearing impairment is called presbyacusis. Presbycusis is defined as hearing loss associated with degenerative changes due to aging (DeStefano, 2003). The natural aging process also causes sensorineural hearing loss, in which the damage lies in the inner ear, the hearing nerve, or both. Beginning shortly after birth, we begin to lose hair cells and nerve endings within the cochlea. As this hair cell loss pattern progresses over a lifetime, sensorineural hearing loss develops. One in five adults over the age of 80 suffer from age-related hearing loss (Robinson, 2009). It had been shown that, more than half of the hearing-impaired population is of working age (Robinson, 2009). Age-related hearing loss can be hereditary, according to several studies (DeStefano, 2003). Environmental factors are also known to cause hearing loss and it may be mild or severe, but it is always permanent. There are four types of presbycusis; sensory presbycusis, Neural presbycusis, Striatal presbycusis and Mixed presbycusis (DeStefano, 2003).

Chomsky (1975) explained that all humans are born with a linguistic predisposition to acquire and express the language of their immediate linguistic community. However, acquiring a language is something very difficult with respect to children with permanent hearing loss. Early Intervention has evidently improved language expressive and receptive abilities in many children with hearing loss when applied at an early age.

The current standard for Early Hearing Detection and Intervention (EHDI) programs is to complete the hearing screening in all infants by one month of age followed by audiological assessment by three months of age in those identified as at-risk for hearing loss based on the physiologic auditory screening outcome (e.g., otoacoustic emissions or automated auditory brainstem response testing); for those with confirmed hearing impairment, intervention should begin by six months of age Joint Committee on Infant Hearing (JCIH, 2007).

Infants who pass newborn hearing screening but have one or more hearing risk factors, such as low birth weight, as listed in the JCIH (2007) guidelines, should have at least one diagnostic audiological assessment by 24 to 30 months of age (JCIH, 2007). Additionally, the JCIH recommends that all infants with certain risk factors for other speech or language impairments, like progressive or late onset hearing loss, as well as auditory neural conduction disorders, such as auditory neuropathy spectrum disorders (ANSD), should be followed using surveillance programs for long-term communication development (JCIH, 2007). These at-risk children are mandated to receive universal neonatal newborn hearing screening, and in addition, ongoing medical, speech and language, and audiological surveillance. This is recommended as per the JCIH (2007) as a standard even if the child passes the newborn hearing screening protocol (JCIH, 2007). Improved outcomes for children with congenital hearing impairment are associated with confirmation and intervention by six months of age (Fortnum, 2003).

Early intervention services are vitally important for parents and families of children with communication disorders. In several instances, families of these children experience emotional turmoil and face social isolation, along with the practical difficulties of managing their children. It is based on the forgoing that this study is considered imperative, thus investigated the impact of age of intervention on receptive and expressive language development among children with hearing impairment in Rivers State.

2. Statement of the Problem

Educational opportunities for learners with disabilities are a major challenge to the education sector. Many learners with Disabilities in Nigeria do not access educational services. Coupled with continuing global campaigns about improving and expanding the quality of education, the Nigerian government offers students with learning disability, like other developing countries, agreed to achieve internationally agreed targets; it is inevitable that the governments would rely on teachers in their effort to deliver quality public education to students with speaking and reading disability.

On an average, it can be estimated that about 2000 children with hearing impairment are born every day or obtained during the early months of infancy. Failure to detect hearing loss in its initial stages can negatively affect speech, language, cognitive and psychosocial development, and consequently, damage vocational attainment, particularly during the growth period. In addition, hearing loss leads to unpleasant

experiences in families and expose them to stress. The birth of a child with hearing loss has a feeling for parent which looks like an experience of bereavement. Therefore, among all sensory disabilities in early childhood, permanent hearing damage from birth or during infancy is an important issue. This study therefore, found it essential to investigate the impact of age of intervention on receptive and expressive language development among children with hearing impairment in Rivers State.

2.1 Purpose of the Study

The study surveyed the impact of age of intervention on receptive and expressive language development among children with hearing impairment in Rivers State. The specific objectives of the study include to:

1) Examine the impact of the age of intervention on the expressive language development among children with hearing impairment in Rivers State.
2) Determine the impact of the age intervention on the receptive language development among children with hearing impairment in Rivers State.

2.2 Research Questions

The study was guided by the following research questions:

1. What is the impact of the age of intervention on the expressive language development among children with hearing impairment in Rivers State?
2. What is the impact of the age intervention on the receptive language development among children with hearing impairment in Rivers State?

2.3 Hypotheses

The study null hypotheses are formulated and will be tested at the 0.05 level of significance.

1. There is no significant impact of age of intervention on the development of expressive language ability among children with hearing impairment in Rivers State.
2. There is no significant impact of age of intervention on the development of receptive language among children with hearing impairment in Rivers State.

2.4 Theoretical Review

2.4.1 Bronfenbrenner's Bioecological Theory of Development

The bioecological theory of development was formulated by Urie Bronfenbrenner in 1979. The theory posits that human development is a transactional process in which an individual's development is influenced by his or her interactions with various aspects and spheres of their environment.

The Bioecological Theory of Development includes three main propositions:

1) Development occurs through "proximal" (nearby in terms of developmental progress) processes of complex reciprocal interactions between an evolving individual and persons, objects, and symbols in the immediate environment. To

affect development, these interactions must occur on a fairly regular basis over extended periods of time. (Bronfenbrenner & Morris, 1998, p. 996)

2) Development results from the interaction of numerous entities: the form, intensity, and content of the proximal processes; the environmental context—both immediate and more remote—in which the processes are taking place; the characteristics of the developing person; the social contexts and changes occurring over time; the historical period during which development occurs; and the nature of the developmental outcomes considered (Bronfenbrenner & Evans, 2000, pp. 118-119)
3) To develop along cognitive, emotional, social, and moral dimensions, a person, regardless of age, requires active participation in progressively more complex reciprocal interaction with individuals for whom the child or adult develops a strong, mutual attachment, becoming committed over time to each other's well-being and development. (Bronfenbrenner & Evans, 2000, p. 122)

These theoretical explanations for child and language development make logical and intuitive sense. Yet, developers and implementers of intervention programs for children with hearing loss and researchers investigating the effectiveness of early identification of hearing loss and early intervention rarely describe the relationship between developmental theories, the development and implementation of interventions, the hypothesized relationships between specific intervention activities and outcomes, and the evaluation of impacts.

3. Methodology

The study adopted a descriptive survey in carrying out its investigations. The study was carried out in Senior Secondary Schools in Port Harcourt Local Government Area of Rivers State. The population of the study consisted of four hundred and twenty-one (421) caregivers and parents from eight (8) Orphanage homes, rehabilitation centres, and Special Needs Schools in Port Harcourt metropolis (Obio/Akpor, and Port Harcourt Local Government Areas) of Rivers State. However, a sample size of three hundred (300) caregivers and parents were selected for this study from Obio/Akpor, and Port Harcourt Local Government Areas through the purposive sampling technique. A 10-item questionnaire titled "Hearing Impairment Intervention and Language Development Questionnaire (HIILDQ)" designed by the researcher was used for the collection of data for the study. The instrument was rated on 4-point Likert scale as follows; Very High Extent (VHE) – 4, High Extent (HE) – 3, Low Extent (LE) – 2, Very Low Extent (VLE) – 1. The instrument was validated by two experts from the field of Guidance and Counseling and one from the Special Education unit to ensure that the items are in line with the objectives of research. They scrutinized the items of the questionnaire to ascertain that they measure what they ought to measure. The instrument was also tested for reliability through using the test-retest method by using teachers from selected Secondary Schools in Obio/Akpor Local Government Area of Rivers State that do not constitute the sample

of the study, and a reliability coefficient of r = 0.840 was obtained using Pearson Product Moment Correlation. The collected data was descriptively analyzed using the Statistical Package for Social Sciences (SPSS, Ver. 22). Three hundred (300) copies of the questionnaires were distributed to the respondents; however, 280 copies of the questionnaires were properly filled and retuned. Mean score and standard deviation were used to answer the research questions, while the hypotheses were tested using Analysis of Variance (ANOVA) at the 0.05 level of significance.

4. Data Analysis and Discussion

Research Question 1: What is the impact of the age of intervention on the expressive language development among children with hearing impairment in Rivers State?

Table 1: Mean score and standard deviation of the impact of the age of intervention on the expressive language development among children with hearing impairment

S/N	Items	Respondents (n=280)			
		WTS	$\bar{x}$	SD	Decision
1.	Early intervention on children with hearing impairment in the first 2 years of age enhances expressive language development	933	3.33	0.59	HE
2.	Early intervention on children with hearing loss in the first 4 years of age enhances expressive language development	798	2.85	1.19	HE
3.	Early intervention of children with hearing impairment in the first 2 years of age enhances their ability to write effectively later in their development	957	3.42	0.81	HE
4.	Early intervention of children with hearing impairment in the first 2 years of age enhances their ability to produce sound effectively later in their development	1050	3.75	0.50	VHE
5.	Early intervention of children with hearing impairment in the first 2 years of age enhances their ability to interpret gesture effectively later in their development	758	2.71	1.04	HE
	Grand Mean/SD		**3.21**	**0.83**	

Note: WTS – Weighted Score. Criterion Mean = 2.5, Mean: 1.0-1.99 = VLE, 2.0-2.49 = LE, 2.5-3.49 = HE, 3.5-4.0 = VHE.

Table 1 shows the impact of the age of intervention on the expressive language development among children with hearing impairment in Rivers State. The results show that majority of the respondents indicated "Very High Extent" to item 4, with the mean score greater than the criterion mean (2.5) and within the mean score range of 3.5-4.0. Also, majority of the respondents indicated "High Extent" to items 1, 2, 3, and 5, with mean scores greater than the criterion mean (2.5) and within the mean score range of 2.5-34.9. The implication of the Grand Mean of 3.21 is that to a high extent, the age of intervention has impact on the expressive language development among children with hearing impairment.

Research Question 2: What is the impact of the age of intervention on the receptive language development among children with hearing impairment in Rivers State?

Table 2: Mean score and standard deviation of the impact of the age intervention on the receptive language development among children with hearing impairment

S/N	Items	Respondents (n=280)			
		WTS	$\bar{x}$	SD	Decision
6	Early intervention on children with hearing impairment in the first 2 years of age enhances receptive language development	911	3.25	0.98	HE
7	Early intervention on children with hearing impairment in the first 4 years of age enhances receptive language development	604	2.16	1.32	LE
8	Early intervention of children with hearing impairment in the first 2 years of age enhances their ability to understand text, and picture effectively later in their development	898	3.21	0.88	HE
9	Early intervention of children with hearing impairment in the first 2 years of age enhances their ability to understand gesture effectively later in their development	899	3.21	0.89	HE
10	Early intervention of children with hearing impairment in the first 2 years of age enhances their ability to understand sound effectively later in their development	559	2.00	1.16	LE
	Grand Mean		**2.77**	**1.05**	

Note: WTS – Weighted Score, Criterion Mean = 2.5, Mean: 1.0-1.99 = VLE, 2.0-2.49 = LE, 2.5-3.49 = HE, 3.5-4.0 = VHE

Table 2 shows the impact of the age of intervention on the receptive language development among children with hearing impairment in Rivers State. The results show that majority of the respondents indicated "High Extent" to items 6, 8 and 9 with mean scores greater than the criterion mean (2.5) and within the mean score range of 2.5-34.9. Majority of the respondents also indicated "Low Extent" to items 7 and 10, with their mean scores less than the criterion mean (2.5) and within the mean score range of 2.0-2.49. The implication of the Grand Mean of 2.77 is that to a high extent, the age of intervention has impact on the receptive language development among children with hearing impairment.

Hypothesis 1: There is no significant impact of age of intervention on the development of expressive language ability among children with hearing impairment in Rivers State.

Table 3: Analysis of Variance (ANOVA) on the impact of Age of Intervention (AOI) on the development of expressive language ability among children with hearing impairment

ANOVA					
Sources	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	48.96	2	24.48	6.31	0.00
Within Groups	1075.13	277	3.88		
Total	1077.09	279			

Note: AOI: 0-2 yrs, 3-4 yrs, 5 yrs - above

Table 3 shows that there is significant impact of age of intervention on the development of expressive language ability among children with hearing impairment in Rivers State ($F = 6.31$, $df=2;277$; $p < 0.05$). The null hypothesis one is therefore rejected at the 0.05 level of significance.

Hypothesis 2: There is no significant impact of age of intervention on the development of receptive language among children with hearing impairment in Rivers State.

Table 4: Analysis of Variance (ANOVA) on the impact of Age of Intervention (AOI) on the development of receptive language among children with hearing impairment

ANOVA					
Sources	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Between Groups	45.86	2	22.93	4.09	0.02
Within Groups	11578.56	277	5.70		
Total	1580.43	279			

Note: AOI: 0-2 yrs, 3-4 yrs, 5 yrs – above.

Table 4 shows that there is significant impact of age of intervention on the development of receptive language among children with hearing impairment in Rivers State ($F = 4.09$, $df=2, 277$, $p < 0.05$). The null hypothesis two is therefore rejected at the 0.05 level of significance.

5. Discussion of Findings

The result in Table 1 shows that the age of intervention, to high extent, has impact on the expressive language development among children with hearing impairment. Also, the result of Table 3 shows that there is significant impact of age of intervention on the development of expressive language ability among children with hearing impairment in Rivers State. This finding is consistent with the findings of Shojaei, Jafari, and Gholami (2016) which revealed that early intervention of hearing loss develops the hearing-impaired child's lingual gains in visual vocabulary, grammatical completion, word differentiation, phonologic analysis, and word production.

Table 2 shows that the age of intervention, to high extent, has impact on the receptive language development among children with hearing impairment. Furthermore, the result of Table 4 shows that there is significant impact of age of intervention on the development of receptive language ability among children with hearing impairment in Rivers State. This finding is consistent with the findings of Shojaei, Jafari, and Gholami (2016) which revealed that early identification/intervention of hearing loss before the age of 6 months has a significant positive effect on a child's language development in terms of picture/relational/oral vocabulary, grammatical comprehension, sentence combining, grammatical completion, phonologic analysis, word differentiation, word production, semantics, and syntax.

6. Conclusion

The study investigated the impact of age of intervention on receptive and expressive language development among children with hearing impairment in Rivers State. Consequently, based on the findings of the study, it can be concluded that early intervention by way of detecting early enough if a child has hearing impairment has been made easier by technological innovations. However, key to detecting the possibility of the development of hearing impairment among children, and adequate intervention programme is, the age of intervention. If these conditions are considered, then there is high tendency that appropriate invention programmes will yield positive results.

6.1 Recommendations

Considering the findings, discussion and conclusions of this study, the following recommendations are made:

1) Government should fund the establishment of training center for parents and caregivers on how to cope with intervention opportunities for their children who may develop expressive hearing impairment.
2) Teachers and school administrators should be adequately trained on cope with intervention service for their pupils who show receptive hearing impairment, and as such have difficulty understanding what is taught.

Conflict of Interest Statement

The authors declare no conflicts of interests.

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