

# **The Effect of Influential Variables on the Profound Congenital Deaf Student's Language :(A case study)**

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## **Abstract**

In this study, we studied the effect of rehabilitation variables on the profound congenital deaf student's language, rehabilitation interferences such as teaching at ordinary schools, reading short stories, narrating, writing memory, summarizing, simplifying stories and textbook lessons, performing play on the stage on how to use dictionaries, etc. through the longitudinal case study for eight years on the profound congenital deaf student as well as evaluating her language development by Test of Language Development Primary( 3rd Edition) and Leiter International Performance Scale eventually resulted in the fact that unlike being of normal IQ, profound deaf student was able to achieve considerable language development by receiving, in each period, rehabilitation services appropriate for her age ,and consequently, her language development in each language system and linguistic features were evaluated average and in some cases, above average.

*Keywords: Rehabilitation interferences, profound deaf, language development*

## **1-Introduction**

Human growth and changes proceed in various aspects from the very beginning to the end of life. Although these different aspects are scrutinized under independent rubrics such as sensory- motor growth, emotional growth, cognitive growth, social growth, language development, etc. they are in mutual relationship with one another and from a single whole. That is why linguistic growth can by no means be studied without considering its connection with other aspects of human growth; For instance, human growth is largely affected by hearing and vocal organs, brain cortex growth, sensory-motor growth, perceptual growth and cognitive growth. In addition Child language development is one of the most remarkable characteristics of human growth. That how infants acquire language through listening has not yet been determined evidently. What is mostly certain is that at the early stages of birth, infant has a fully developed cochlear and neural network which can transfer audio messages

to particular areas in the brain (Reeves, 2005). Language is a complicated process that only human is able to acquire. Acquiring this major skill is accomplished imperceptibly and at special stages; the noticeable point is that child's language system up to the age 5, would be approximately the same as that of the adults around. Thus, child language undergoes changes gradually and in each stage new words and structures compounded to his language repertoire so that the child is able to think via language and express his thought scrupulously. (Chapman, 2000). Sometimes this change doesn't follow its ordinary process for some reasons. Hearing loss is one of the root causes of disorder in acquiring verbal skills. Moreover, the main part of our knowledge on language development gained by observing special children and their linguistic forms. Children afflicted with hearing disorder due to being deprived of hearing sense are also a subset of the special ones who can't learn language the way their ordinary hearing peers.

During the conducted researches, it has been proved that the sight and the hearing sense include 80 percent and 12 percent of all our senses respectively. Nonetheless, what is of paramount significance is that in case the sight gets poor, 30 percent of our total perception of the environment fades away as well, but if the hearing sense is hurt or totally disappear, can reduce 70 percent of our general perception towards the environment. In addition, it can be stated that the most exclusive way of learning whatever an individual must learn is hearing sense, as well as an indispensable part of human learning is transferred to him via language and it is acquired and formed by hearing sense (Golpour, Neelipour, & Rowshan, 2007). Among all other human senses, hearing sense is of temporal priority. Human infant is able to hear sounds of environment from the very beginning of birth; Today it has been proved that human fetus in mother's womb can hear the loud voices of environment around mother (Valman, 1989). At the early stages of birth, sounds for infant have a straightforward and perhaps meaningless form, but with the passage of time, these sounds find their real meaning. Hearing child when coming across with objects around hears their name from the language of people around and gradually learns the labels of diverse things; this learning takes place during the daily life without any educational milieu, nevertheless, children suffering from hearing loss based upon the severeness of hearing loss require special training, repetition and a lot more practice in order to learn the name of objects (Locke & Bogin, 2006). The literature consistently suggests that the vocabulary knowledge of students who are deaf or hard of hearing is quantitatively reduced as compared to that of their typical hearing peers. More specifically, it has frequently been reported that students who are deaf or hard of hearing are delayed in their acquisition of vocabulary knowledge, have smaller lexicon, acquire new words at slower rates and have a narrower range of contexts that result in word learning (Luckner & Cooke, 2010). In addition to lexical restrictions, the less hearing have got difficulty in organizing words in the form of sentences. Such troubles cause to make their messages unclear and replete with ambiguity for their interlocutors, this matter creates problems in establishing social communication process and this disorder, in turn, gives rise to other difficulties such as: social, emotional and educational issues. Hence, these people's troubles are not confined to their restrictions and serious crisis in comprehending and organizing linguistic information and are associated with a set of problems like educational and social issues. (Leonard, 1995; Northen & Downs, 2002). One of

the other language difficulties of the less hearing children is concerned with their language grammatical errors. Various surveys conducted so far illustrate the fact that these individuals' sentences tend to be more simplified. They mostly use nouns, omit some grammatical categories in their speech, the length of their speech is shorter than those of their hearing peers, usually verb conjugation errors can be seen in their speech and their sentences lack subject-verb agreement. (Williams, 2006). Brenza, Kricos and Lasky (1981) in their descriptive research on the profound children deduced that children with a hearing loss may demonstrate difficulties with semantic concepts, which may hinder their academic performance. Teaching basic semantic concepts may be beneficial. Eighty percent of the children with hearing loss scored below the 10th Percentile. Sixty seven percent of the children scored at or below the 1st percentile. The researchers also noted that 4% of the sentences contained semantic errors, and 35% contained semantic and syntactic errors. Easterbrooks, Lederberg, Miller, Bergeron and Connor (2008) in their research on hard of hearing children argued that typical hearing children acquire a large portion of their vocabulary incidentally, which often is not the case for children who are deaf or hard of hearing. As a result most children who are deaf or hard of hearing require explicit instruction to improve their vocabulary performance. Numerous studies (Deal & Thornton, 1985; Jones & Quigley, 1979; Quigley, Power, & Steinkemp, 1977; Quigley, Smith & Wilbur, 1974; Wilbur & Quigley, 1975; See also Webster, 1986, as cited in Miler, 2000) have shown that, even after years of intensive schooling, such individuals fail to establish syntactic knowledge adequate for the processing of spoken or written language. As result, they are continuously forced to decipher text by means of a limited set of syntactic rules, which leads unavoidably to systematic misinterpretations. Nevertheless speech and language pathologists emphasize that although less hearing is a big obstacle against language acquisition, but one can get over this barrier considerably. Majority of children who are born with less hearing ability, are capable of acquiring their mother tongue via hearing aid devices in case they hear enough speech and the speech intensity be loud enough as well as they utilize speech therapy and hearing training (Golpour et al., 2007). Miller (2006) believes that language acquisition is a brain and mental work and such children have normal brain and mind even though lack hearing. Gilbertson and Kamhi (1995) in their research on hard of hearing children noted that the degree of hearing loss may not be a predictor of vocabulary development. In their research, half of the average deaf performed the same as those of their hearing peers. In the Willis and Edwards (1996) single-subject case study done on the profound deaf who had been implanted cochlear, they concluded that intensive oral/aural rehabilitation may lead to increased receptive and expressive vocabulary following cochlear implantation. The research by Moeller (2000), also has illustrated that the children who were enrolled in the early intervention program prior to 11 months of age demonstrated stronger vocabulary skills at 5 years of age than those who began early intervention after 11 months of age. Family involvement made a positive impact on the child's vocabulary skills.

Regarding the significance of hearing sense and premature rehabilitating intervention which were went earlier, in this study it was attempted to ameliorate the linguistic development of the profound deaf by conducting a variety of intervention programs. To do so, different types of interventions programs were carried out on the case study during eight years and

finally at the end of eight; her linguistic feature and general language systems were assessed through Told: P3; This test is one of the oldest, the most reliable as well as the most comprehensive tests on the children language development. Many various language-related tests have applied it, for instance Lewis et al. (2006) in their research manipulated this test. Besides, in another survey titled the effect of prenatal cocaine on language development at 10 year of age she and her colleague, benefited from this test.

Consequently, the purpose of present case study was to scrutinize whether we can by appropriate and on time rehabilitating interventions, make the language development of profound deaf person equal to those of her ordinary peers so that she can improve in some language systems in which the majority of profound deaf children were behind their ordinary peers.

## **2 Procedure**

The procedure, in terms of goal was qualitative, in terms of collecting data was case study and in terms of time, longitude.

The case under study: her name was Hasti, a profound congenital deaf (profound sensory hearing loss in both ears) with no cochlear implanted; she was born in a family with one brother and one sister older in 2003/1/21. This student, who is now 9 years and 3 months old, had been receiving rehabilitation services such as speech therapy and hearing training; from the age 6 months old the type of hearing aid used by her from 6 months to 4 years old, was pocket hearing aid; from 4 to 7 years old was behind-ear analogue and from 8 years old to now, has been behind-ear digital and she has been communicating orally.

## **3 Instrument**

### *3.1 Leiter International Performance Scale:*

Leiter international scale was created by Leiter as a non-verbal and culture free test for evaluating general intelligence in 1937. Due to being of a suitable content and having little verbal instruction, this scale is considered as an appropriate assessing and diagnostic instrument for psychologists in order to measure the deaf students' intelligence. This scale is of universal application and has been made to measure a wide range of intelligence functions such as arranging similar colors and geometrical shapes, generating various designs out of wooden pieces, finding resemblances as well as completing pictures. The Leiter scale is individually performed on age groups 2-18 without time restrictions (Behpajo & Salehi, 2001).

### *3.2 Children language development test Primary, 3rd Edition [Told-p: 3]*

This test which first was published in 1977 included 9 sub-tests, then during the next years, some changes were made in it; The test used here has been set for age groups 0-4 and 8-11 (month-year) this test is based on a two-dimensional model in one dimension of which there

are linguistic features along with semantic, syntactic and phonological features and in the other dimension, linguistic systems with features like listening, organizing and speaking are

Linguistic System	Listening	Organizing	Speaking
Linguistic Features	Perception skills	Homogeneity skills	Expression skills
Semantic	Picture vocabulary	Relational vocabulary	Oral vocabulary
Syntax	Grammatical completion understanding	Sentence imitation	Grammatical
Phonology	word Discrimination	Word analysis	word Articulation

placed.

### 3.2.1 Table1:two-dimension model of language structure

The main sub-tests include the ones related to semantics, syntax-Picture Vocabulary, Rational Vocabulary ,Oral Vocabulary, Grammatical Understanding , Sentence Imitation, Grammatical Completion and the three tests concerned with phonology- word discrimination, Word analysis and word articulation are regarded as complementary tests.

3.2.2 Table2: Feature of main sub-tests

Sub-test	kind of test	Number of test	Evaluation
Picture vocabulary	Main	30	Measure a child's understanding of the meaning of spoken Persian words (semantics, listening)
Relational vocabulary	Main	30	Measure a child's understanding and ability to orally express the relationships between two spoken stimulus words (semantics, organizing)
Oral vocabulary	Main	28	Measure a child's ability to give oral directions to common Persian words that are spoken by the examiner (semantics, speaking)
Grammatical Understanding	Main	25	Measure a child's ability to comprehend the meaning of sentences (grammar, listening)
Sentence imitation	Main	30	Measure a child's ability to imitate Persian sentences (grammar, organizing)
Grammatical completion	Main	28	Measure a child's ability to recognize, understand, and use Common Persian morphological forms (grammar, speaking)
Word discrimination	complementary	20	Measure a child's ability to recognize the differences in significant speech sounds (phonology, listening)
Word analysis	complementary	14	Measure a child's ability to segment words into smaller phonemic units (phonology, organizing)
Word articulation	complementary	20	Measure a child's ability to utter important Persian speech sounds (phonology, speaking)
Sum	9	225	

3.2.3 Combinations

Sub-tests can be divided into groups according to systems and common features and generate the following combinations:

Speaking:( Picture Vocabulary +Grammatic Understanding).  
Organizing:(Relational Vocabulary +Sentence Imitation).  
Speaking:(Oral Vocabulary +Grammatic Completion).  
Semantic:( Picture Vocabulary + Relational Vocabulary + Oral Vocabulary ).  
Syntactic:(Grammatic Understanding+ Sentence Imitation+ Grammatic Completion).  
Spoken Language:(Picture Vocabulary + Oral Vocabulary+ Relational Vocabulary+  
Grammatic Understanding+ Sentence Imitation+ Grammatic Completion).

Generally children over 6 or 7 have been successfully able to place most of phonological abilities in their language systems, therefore phonological sub-tests used to form a phonological combinations (Hasanzadeh &Minaye,2010).

#### **4. Validity and Reliability of instrument**

##### *4.1 Test of Language Development Primary,3rd Edition [TOLD:P3]*

4.1.1Validity(trustworthines):content validity generally includes studying the content of tests in order to answer the question that whether the test involves the introduced samples from the measured behavioristic domain or not (Anastazi ,1988) , In conforming the statements of the test regarding the lack of standard Persian language tests. According to the syntactic, semantic and phonological features of Persian language as well as cultural differences along with totally observing the theoretical principles and logical reasons that test makers have prepared in compiling the sub-tests and selecting statements for each of those sub-tests , statements which were of appropriate psychological criteria were selected.

In criterion validity, individual's performance is compared with a criterion which , in turn, is a type of direct or indirect indicator of what for which the test has been set, therefore if this test which is supposed to measure the language ability be of validity, should have suitable correlation with other known tests that measure the same ability . Shamim (1994) conducted both tests of TOLD :P3 and similarity tests as well as weksler's words for children of 6,7 and 8 finally coefficients 69 and 72 reported. The obtained coefficients were all meaningful at level.1 which indicates the criterion validity of the test TOLD:p3.

##### 4.1.2 Reliability (dependability):

The error of content sampling (the validity of internal homogeneity) was measured by Cronbach's Alpha coefficient. Alpha's coefficient for the sub-tests and combinations in five age groups was computed using the elicited data from the whole sample of Alpha's coefficients for combinations that were achieved by means of Gilford Formula (1954,p393) which has been designed to measure compound scores Alpha.

Alpha’s coefficients for the whole sample were gained by calculating the mean of Alpha coefficients of diverse age groups Z via converting producer. Alpha coefficients for sub-tests and combinations were all in a desirable level; The high rate of these coefficients suggests that the implemented test is a very reliable one and its results can be confidently applied (Hasanzadeh &Minaye,2010).

4.2 Leiter International Performance Scale:

4.2.1Validity: this test is as an international functional intelligence scale confirmed by Iranian special education organization.

4.2.2Reliability:Some correlation co-efficiencies have been reported between this scale with Stanford-Binet Intelligence tests and Wexler's Intelligence Scale Children- Revised form in diverse researches between 0.56-.92( Behpajo &Salehi , 2001).

5. Conducted rehabilitating interferences and services

5.1Table3:

Student’s age	Effective interference
6 months old- 4 years old	-Receiving free rehabilitating services such as speech therapy and hearing training at special and private school twice a week. -Receiving training in special school 3 days a week(with her mother).
4-5 years old	-Receiving rehabilitating services such as speech therapy and hearing training -Receiving training in kindergarten 3 days a week -Visiting various places and receiving educational concepts explicitly by the special school once a week. -Performing the play of short stories by the student herself in special school class.
5-6 years old	-Receiving rehabilitating services such as speech therapy and hearing training. -Receiving pre-school education in public school.



	-Performing play on stage and narrating once a week.
6-7years old	<ul style="list-style-type: none"> <li>-Receiving rehabilitating services such as speech therapy and hearing training.</li> <li>-Receiving first grade education in public school and benefiting from a liaison teacher one day a week</li> <li>-Teaching every Persian lesson with functional/ situational approach.</li> <li>-Receiving phonological awareness exercises fully.</li> <li>-Using short story for assigning sound exercises.</li> <li>-Applying magnetic plastic letters to teach sounds.</li> <li>-Using dictionaries by the student.</li> <li>-Making three sentences of each difficult word.</li> <li>-Making a story notebook and writing short stories of intricate words.</li> </ul>
7-8years old	<ul style="list-style-type: none"> <li>-Receiving rehabilitating services such as speech therapy and hearing training.</li> <li>-Receiving second grade education at public school and being of a liaison teacher one day a week.</li> <li>- Reading one story book a week</li> <li>-Making three sentences of each difficult word.</li> <li>-Teaching every Persian lesson with functional/situational approach.</li> <li>-Writing letters to people around</li> <li>-Sending short messages by cell phone to people by the student</li> </ul>
8-9years old	<ul style="list-style-type: none"> <li>-Receiving third grade education in public school and being of a liaison teacher one day a week.</li> <li>-Reading and summarizing the story book by the student.</li> <li>-Reading the Persian book text and summarizing it the by the student</li> <li>-Writing the summary of story and the text of each Persian lesson by the student.</li> <li>-Writing letters to people around</li> <li>-Sending short messages cell phone to people around by the student.</li> <li>-Writing compositions and daily memories.</li> <li>-Making narration of pictures.</li> </ul>

## 6. Data Analysis

*6.1Leiter International Performance Scale:* Intelligence score was achieved by means of leiter intelligence guide book. Then it was changed into standard score and after conforming it to the slope of scores,Hasti'sIntelligence Quotient was obtained which was in an ordinary level.

6.1.1Table4: Explanatory classification for the scores in leiter scale

Standard Deviation	Range of score	Class
2 SD	132-147	Very intelligent
1 SD	116-131	Intelligent
0 SD	85-115	Ordinary
1 SD	69-84	Late learner

2	SD	53-68	Minor mentally retarded
3	SD	37-52	Average mentally retarded
4	SD	21-36	Severe mentally retarded

× Standard Deviation=16

### 6.2 Children language development test Primary, 3rd Edition [Told-p: 3]

By using TOLD:p3 Interpretation Guide and eliciting pure scores, percentage grade, standard scores, quotions, sum of standard scores and matching them with the guide tables.

#### 6.2.1 Interpreting the standard scores of the sub-tests:

The most obvious sign of child’s performance in sub-tests is presented with standard scores. For each of the 9 sub-tests at every age group, average 10 and standard deviation 3 is considered. Therefore as it’s been presented in the following table, classes of standard scores suggest guidelines for interpreting student’s performance in sub-tests; Due to the sameness of average and standard deviation of these scores, the standard scores of various sub-tests can be compared together. Hence, standard scores are the best instruments to access the child’s weaknesses and strengths in 9 skill domains of this test; in fact by standard scores, the tester is able to evaluate the child’s internal linguistic competence.

Table 5: Guide for interpreting standard scores of the sub-tests

The percentage in normal distribution	description	Standard score
2.34	Very excellent	20-17
6.87	Excellent	16-15
16.12	Above average	14-13
49.51	Average	12-8
16.12	Below average	7-6
6.87	Weak	5-4
2.34	Very weak	3-1

#### 6.2.2 Interpreting Composite Quotations:

Although studying individual differences can be accomplished with the standard scores of the sub-tests, using, composite quotations for this purpose is preferred because the obtained results are more reliable. In fact, composite quotations are scores which are calculated based upon diverse combinations of subtests; These quotations are beneficial since they provide the tester with possibility of evaluating the individual’s ability in structures inserted in the test,

that's to say the tester, in addition to assessing the individual's performance at particular sub-tests, is able to evaluate his capability concerning systems, characteristics and general language. composite quotions can be achieved by summing up the related standard scores of sub-tests and converting the total sum into a single quotion according to the table below. In interpreting these quotions, their average 100 and standard deviation 15 should be taken into account. To interpret the quotions, the following table is used.

Table 6: Guide for Interpreting Composit Quotients

The percentage in normal distribution	Description	Standard score
2.34	Very excellent	131≤
6.87	Excellent	120-130
16.12	Above average	111-120
49.51	Average	90-110
16.12	Below average	80-89
6.87	Weak	70-79
2.34	Very weak	≥69

**7.Results:**

*7.1Table7:Conducted rehabilitating interferences and services*

Student's age	Effective interference	effect
6 months old- 4 years old	-Receiving free rehabilitating services such as speech therapy and hearing training at special and private school twice a week. -Receiving training in special school 3 days a week(with her mother).	- Acquiring discovering voice ability -Acquiring auditory stimuli distincting -Acquiring received language -Acquiring comprehension ability -Acquiring speaking ability(simple sentences)
4-5 years old	-Receiving rehabilitating services such as speech therapy and hearing training  -Receiving training in kindergarten 3 days a week  -Visiting various places and receiving educational concepts explicitly by the special school once a week.  -Performing the play of short stories by the student herself in special school class.	- Acquiring discovering voice ability -Acquiring auditory stimuli distincting -Acquiring auditory stimuli recognizing -Acquiring speaking ability To reinforce speech and phonological development due to the presence in an environment rich in words and speech particularly a childish speech. - Stabilizing the concepts taught by observing, motivating interest, child's curiosity to learn, understanding concepts around her, expanding general information, learning and generating new words.

		-Interesting children to read short story since childhood.
5-6 years old	<ul style="list-style-type: none"> <li>-Receiving rehabilitating services such as speech therapy and hearing training.</li> <li>-Receiving pre-school education in public school.</li> <li>-Performing play on stage and narrating once a week.</li> </ul>	<ul style="list-style-type: none"> <li>- Acquiring auditory stimuli distincting</li> <li>- Acquiring auditory stimuli recognizing</li> <li>-Acquiring speaking ability</li> <li>-Acquiring comprehension ability</li> <li>-To get familiar with ordinary environment, its discipline and rules as well as to receive an environment rich in speech even more than kindergarten via interacting with other students.</li> </ul>
6-7years old	<ul style="list-style-type: none"> <li>-Receiving rehabilitating services such as speech therapy and hearing training.</li> <li>-Receiving first grade education in public school and benefiting from a liaison teacher one day a week</li> <li>-Teaching every Persian lesson with functional/ situational approach.</li> <li>-Receiving phonological awareness exercises fully.</li> <li>-Using short story for assigning sound exercises.</li> <li>-Applying magnetic plastic letters to teach sounds.</li> <li>-Using dictionaries by the student.</li> <li>-Making three sentences of each difficult word.</li> <li>-Making a story notebook and writing short stories of intricate words.</li> </ul>	<ul style="list-style-type: none"> <li>- Acquiring auditory stimuli distincting</li> <li>- Acquiring auditory stimuli recognizing</li> <li>- Acquiring reading comprehension</li> <li>-Acquiring speaking ability</li> <li>-Counseling teacher reminds school staff, ordering class teacher, students of class, the student herself and her family to shoot the troubles , consult with and remind them of necessary points.</li> <li>-Practicalising and daily using of skills taught.</li> <li>-Interesting children to read stories.</li> <li>-Utilizing student's story teaching sense to learn sounds.</li> <li>-Using student's visual sense for learning sounds and conceptualizing words in a sentential context appropriate for student's age.</li> <li>-To reinforce writing skill and to solve grammatical errors, to familiarize them with various applications of words in different contexts and setting.</li> <li>-Stabilizing words and concepts taught and teaching how to make sentence according to each lesson by their parents.</li> </ul>
7-8years old	<ul style="list-style-type: none"> <li>-Receiving rehabilitating services such as speech therapy and hearing training.</li> <li>-Receiving second grade education at public school and being of a liaison teacher one day a week.</li> <li>- Reading one story book a week</li> </ul>	<ul style="list-style-type: none"> <li>-</li> <li>-Counseling teacher reminds school staff, ordinary class teacher, students of class, the student herself and her family to shoot the troubles, consult with and remind them of necessary points.</li> </ul>

	<ul style="list-style-type: none"> <li>-Making three sentences of each difficult word.</li> <li>-Teaching every Persian lesson with functional/situational approach.</li> <li>-Writing letters to people around</li> <li>-Sending short messages by cell phone to people by the student</li> </ul>	<ul style="list-style-type: none"> <li>-Reinforcing text comprehension, reading skill, learning more words, familiarizing students with different kinds of sentences, concepts in the form of reading the sentences of story.</li> <li>- To reinforce writing skill and to solve grammatical errors, to familiarize them with various applications of words in different contexts and settings.</li> <li>-Practicalising and daily using of skills taught.</li> <li>-To reinforce writing skill and to solve grammatical errors, to transfer learned concepts to daily life.</li> <li>-Practisilising and daily using of concepts taught and reinforcing the writing skill.</li> </ul>
<p>8-9years old</p>	<ul style="list-style-type: none"> <li>-Receiving third grade education in public school and being of a counseling teacher one day a week.</li> <li>-Reading and summarizing the story book by the student.</li> <li>-Reading the Persian book text and summarizing it by the student</li> <li>-Writing the summary of story and the text of each Persian lesson by the student.</li> <li>-Writing letters to people around</li> <li>-Sending short messages cell phone to people around by the student.</li> <li>-Writing compositions and daily memories.</li> <li>-Making narration of pictures.</li> </ul>	<ul style="list-style-type: none"> <li>-</li> <li>-Counseling teacher reminds school staff, ordinary class teacher, students of class, the student herself and her family to shoot the troubles, consult with and remind them of necessary points.</li> <li>- To reinforce reading and comprehension skill.</li> <li>- To reinforce writing skill and to shoot grammatical errors.</li> <li>-To reinforce writing skill, to shoot grammatical errors and to transfer the concepts learned to daily life.</li> <li>-Practicalising and daily using of concepts taught, reinforcing writing skill and shooting grammatical errors.</li> <li>-Reinforcing writing skill and solving grammatical errors.</li> <li>-Raising creativity and reinforcing comprehension.</li> </ul>

**7.2 Leiter International Performance Scale :**

According to the obtained intelligence standard score which equals 85 and comparing it with Table no.4 , Hasti’s intelligence is in ordinary level.

**7.3 Test of language development-primary, 3<sup>rd</sup> edition [Told-p:3]**

Date of test: 2011/12/29

Student’s date of birth: 2003/1/21

Age of subject: 8/11

Quotients	Composites							Registering Scores			sub-test	
	Sum of Standard Score	Grammatical Completion	Sentence Imitation	Grammatical Understanding	Oral Vocabulary	Relational Vocabulary	Picture Vocabulary	Standard Score	Percentage Grade	Age equivalent	Pure score	Mair
102	62	-	-	-	-	-	Spoken Language	14	91	9-9	27	Vocabulary Picture
108	23			-			Listening	12	75	9-3	21	Vocabulary Relational
106	22		-				Organising	11	63	9-0	20	Oral Vocabulary
92	17						Speaking	9	37	8-0	19	Grammatical Understanding
113	37						Semantic	10	50	9-0	23	Imitation Sentence
91	25						Syntax	6	9	6-0	14	Grammatical Completion
<b>Complementary</b>												
								7	16	6-6	18	Word Discrimination
								11	63	8-9	14	Phonemic Analysis
								11	63	8-6	20	Word Articulation

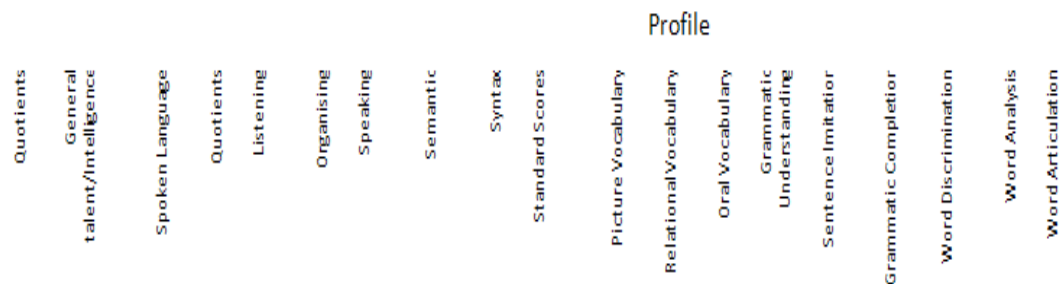
Regarding the achieved results from the TOLD–p3 and comparing them with the table 5 and 6, interpreting the scores of the sub-tests, it can be concluded that Hasti’s standard score results are depicted as follows:

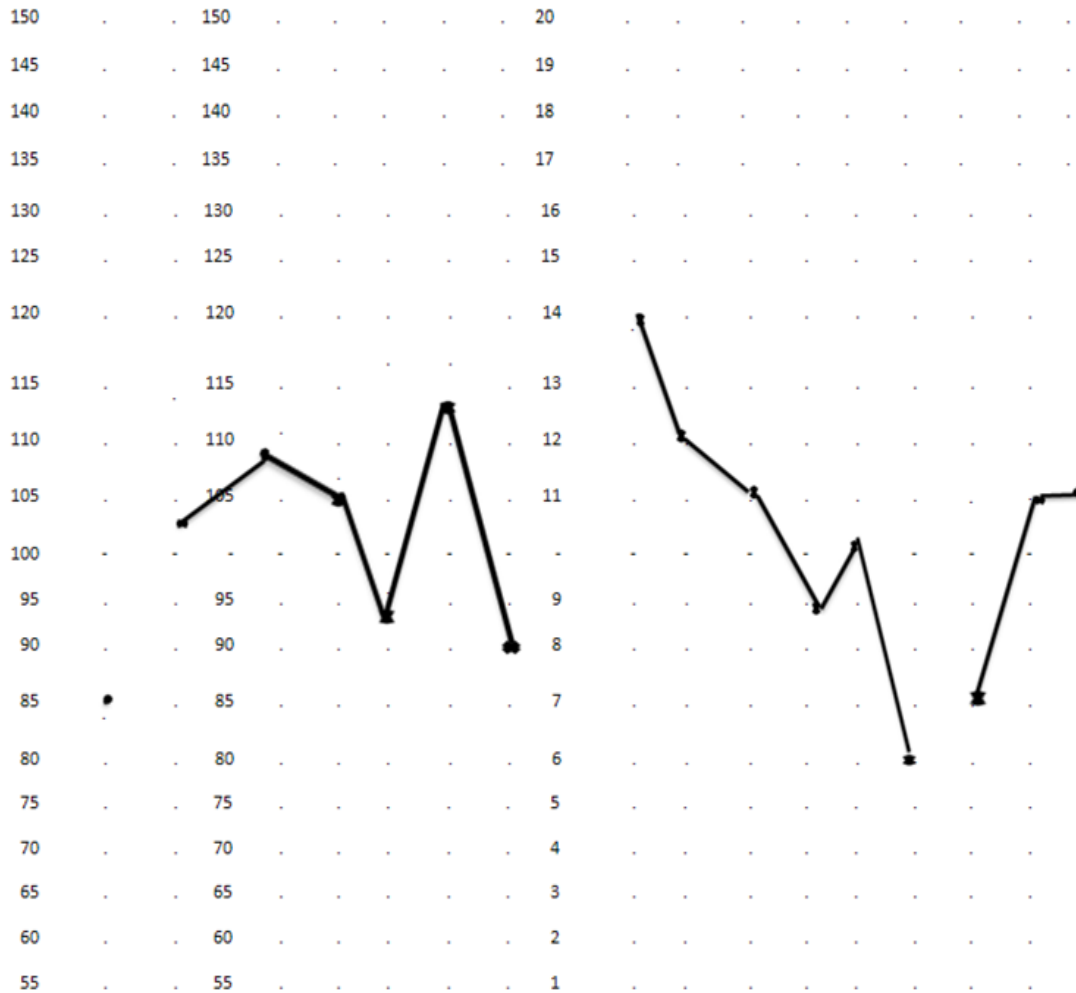
Table 8: Sub-tests      Scores      Results

Picture vocabulary	14	Above average(13-14)
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Relational vocabulary	12	Average(8-12)
Oral vocabulary	11	Average (8-12)
Word analysis	11	Average(8-12)
Word articulation	11	Average(8-12)
Sentence imitation	10	Average(8-12)
Grammatic understanding	9	Average(8-12)
Grammatic completion	6	Below average(6-7)
Word discrimination	7	Below average(6-7)

Table9: Composites	Quotiens	Results
Semantic	113	Above average(111-120)
Spoken language	102	Average (90-110)
Syntactic	91	Average(90-110)
Listening	108	Average(90-110)
Organizing	106	Average(90-110)
Speaking	92	Average(90-110)





With due attention to the profile of the obtained scores from the implemented test the achieved results are as follows:

Table10: Sub-tests	Scores	Results
Picture vocabulary	14	Above mean(10)
Relational vocabulary	12	Above mean(10)
Oral vocabulary	11	Above mean(10)
Word analysis	11	Above mean(10)
Word articulation	11	Above mean(10)
Sentence imitation	10	Equal mean(10)
Grammatical understanding	9	Below mean(10)
Grammatical completion	6	Below mean(10)
Word discrimination	7	Below mean(10)



Table11:Composits	Quotiens	Results
Semantic	113	Above mean(10)
Spoken language	102	Above mean(10)
Organizing	106	Above mean(10)
Listening	108	Above mean(10)
Syntactic	91	Below mean(10)
Speaking	92	Below mean(10)

## 8. Discussion and conclusion

The present study consisted of two major parts .on the one hand ,the impact of rehabilitating intervention on the profound deaf language development was scrutinized by carrying out a variety of rehabilitation interventions which led to vocabulary repertoire raise then along with augmenting the lexican ,her linguistic features such as reading comprehension improved remarkably that eventually culminated in her general language development .on the other hand ,after eight years that various rehabilitation interventions were implemented, her language development was assessed via children language development test Primary, 3rd edition[Told:p3],which is one of the most comprehensive tests for evaluating linguistic development ;in addition, it was proved that despite lacking cochlear implant and being of normal intelligence ,the studied case’s language performance was of considerable growth to such a degree that the scores of most of her linguistic features and systems were understandably in an average level and in some cases ,above average to be exact.

Different studies have been conducted about the effects of rehabilitation programs on the language skills of the deaf as well as those who are hard of hearing, in the end helpful and occasionally ineffective results were reported.

F.g: Numerous studies (Deal & Thornton, 1985; Jones & Quigley, 1979; Quigly, Power , & Steinkemp,1977; Quigley, Smith & Wilbur, 1974; Wilbur & Quigley, 1975; See also webster, 1986 as cited in Miler ,2000) have shown that, even after years of intensive schooling, such individuals fail to establish syntactic knowledge adequate for the processing of spoken or written language. As a result, they are continuously forced to decipher text by means of a limited set of syntactic rules, which lead unavoidably to systematic misinterpretations.

However, one of the most significant findings of the present case study was that premature and useful rehabilitation interferences can lead to the language development of the profound deaf even if that individual had not been implanted cochlear.Other researchers also confirmed this research findings. Howell (1984), for instance, in his research on four profound deaf children of three and four concluded that the children who participated in early intervention programs with their families showed significant improvement in vocabulary skills. Total communication was beneficial to all four children in developing vocabulary. The research Moeller (2000), also has illustrated that the children who were enrolled in the early intervention program prior to 11 months of age demonstrated stronger

vocabulary skills at 5 years of age that children who began early intervention after 11 months of age. Family involvement made a positive impact on the child's vocabulary skills. Several studies have also demonstrated that children's vocabulary knowledge early in school influences their reading comprehension skills later in life for example, Tabors, Snow, and Dickinson (2001) reported that receptive vocabulary knowledge in kindergarten was predictive of reading comprehension skills in the 4th and 7th grades. Concomitantly Cunningham and Stanovich (1997) found that receptive vocabulary in 1<sup>st</sup> grade had a substantial relationship with reading comprehension in 11th grade (Luckner & Cooke, 2010).

In the current survey, parents' intervention during rehabilitation programs and their early beginning were two important and influential Variants on the general language development of the case study. Therefore since the present case study has made suitable progress in acquiring linguistic skills, hence the finding of the current research agree with those of the above mentioned. In addition, another indispensable point that has to be taken into consideration is the way of teaching vocabulary to the deaf especially the profound ones as well as the effect of lexical level on their linguistic skills. de villiers and Pomerantz (1992) in their research they reported that vocabulary instruction may be more effective when educators introduce key words using meaningful passages with rich and explicit examples. Students may benefit from being taught strategies for learning vocabulary from context. Brenza, Kricos, and Lasky (1981) in their descriptive research on the profound children deduced that children with a hearing loss may demonstrate difficulties with semantic concepts, which may hinder their academic performance, teaching basic semantic concepts may be beneficial. In the current research also, teaching methodologies were the ones based on pragmatic and contextual approaches so as to teach vocabulary practically and meaningfully to the profound deaf, in addition to learning vocabulary, syntactic concepts related to them in the intended context are implicitly taught as well. Moreover, one of the rehabilitating interventions in order to augment the vocabulary of case study was to apply the particular dictionary in which the meaning of new word had been presented through meaningful and pragmatic sentences associated with childish pictures. Paatsch, Blamey, Sarant, and Bow (2006) in their research on the hard of hearing students pointed out that intensive daily vocabulary teaching that includes discussion of word meanings, picture representations of words, and constructing sentences that illustrate a word's correct semantic and syntactic use may be effective in vocabulary training. In the case of present survey, daily and weekly programs included practical and meaningful sentence making at the new and intricate words by the case study, fable making of the novel words by parents along with the case study and story making for the pictures through the case study. In the Willis and Edwards (1996) single- subject case study done on the profound deaf who had been implanted cochlear, they concluded that intensive oral/ aural rehabilitation may lead to increased receptive and expressive vocabulary following cochlear implantation. Which the current case study despite lacking cochlear via playing on the stage, reading story, telling fables, visiting and having common promenades out of home and school, has performed this characteristic on the case study, moreover it has been considered as one of the most crucial rehabilitating programs to enhance vocabulary repertoire and presumably in improving general linguistic capabilities of the case study. Pittman (2008) in his research on hard of

hearing students pointed out that students with hearing loss have significantly smaller range of vocabulary than those of their hearing peers and require more exposures in order to learn new words. Speech signals with extended high- frequency amplification (i.e., similar to normal hearing) permitted students to learn words faster. Hearing aids with frequency transposition may improve speech perception and word learning.

In this survey too, the case studied (Hasti) has been using strong digital hearing aid since she was eight ,which has definitely been effective in her rehabilitating programs. On the other hand, the research findings about the impact of lexical knowledge on language skills have suggested that there is a strong relationship between vocabulary knowledge and linguistic knowledge. For the past 65 years, it has been an established assumption that a strong correlation exists between vocabulary knowledge and reading comprehension e.g, Davis, 1944 (Luckner &Cooke,2010).

LaSasso and Davey (1987) in their research on profound subjects came to this conclusion that regardless of specific reading comprehension task used, vocabulary scores were highly predictive of reading comprehension performance. Vocabulary knowledge is highly correlated with reading comprehension performance.

The depth and breadth of individual's vocabulary is highly correlated with their overall language development and is a factor in their ability to use language in varied contexts and for multiple purposes (Luckner &Cooke,2010).

Fagan, Pisoni, Horn and Dillon (2007) in their research on the profound children with cochlear implant had stated that vocabulary and reading comprehension are highly correlated.

A student's ability to learn new words is influenced by the number of words that the student currently knows & exposures to the word that the student experiences (Stelmachowicz, Pittman, Hoover, & Lewis, 2004). Vocabulary knowledge and syntax knowledge were each highly correlated with reading comprehensions of the hard of hearing subjects; vocabulary knowledge is positively influenced by syntactic knowledge, which in turn overshadows reading comprehension (Kelly ,1996) .

In current research also, the case (Hasti) has achieved high scores in various vocabulary levels. ( her score in picture vocabulary was higher than average, while, in relational and oral vocabulary her score was average).

This amount of vocabulary developing has led to the improvement of linguistic features and systems .In other words, it can be concluded that different linguistic factors directly or indirectly are affected by the vocabulary range of the hard of hearing person, and the more such on individual's vocabulary rang be exposed to diverse, useful and of course premature rehabilitating interventions, the more his/ her other linguistic features promote as well, and consequently his general linguistic skills will more touch those of his/ her ordinary peers.

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