

The Effect of Early Family-Centered Psychological and Educational Interventions on the Expressive and Receptive Language Skills Development in Children with Hearing Loss

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Abstract

The main focus of early intervention programs for more children with hearing loss, is on learning language and communication skills. The purpose of this study is to examine the impact of early family - centered psychological and educational interventions on the expressive and receptive language in children with hearing loss. The method was experimental. For this purpose, thirty deaf children under the age of five were selected randomly, and were divided into experimental and control groups. Then, Newsha Development Evaluation Test was implemented on them. The intervention program was then presented to their mothers during five months, and the resulted data was analyzed using co-variance analysis. The findings indicated that there was significant difference between the control and experimental groups in expressive and receptive language skills. The intervention program had also different effects on expressive language skills development in children with various levels of hearing loss severity. Thus, early family- centered interventions have influenced the expressive and receptive language in deaf children under the age of five.

Keyword: Early Intervention, Expressive- Receptive Language, Family- centered, Deaf Children, Hearing Damage.

Introduction

Over the past 30 years there has been significant change in the philosophy underpinning early intervention(EI) practice in developed countries(Spencer & Marshark, 2006). More than 50 years of research support the effectiveness of intervention for infants and young children with disabilities (Gallagher, 2000; Guralnick, 2008; Kirk, 1958; Trohanis, 2008). Family-centered practice is variously described as a philosophy (Bruder, 2000), a set of guidelines for practice (Dunst, 1997), and a set of values (Bruder, 2000) that is now recognized as the most appropriate model of EI for children with special needs, including children with hearing loss. As Bruder notes, family-centered intervention places an emphasis on the strengths of families rather than their deficits, promotes choice and decision-making control, and values intervention that is based on collaboration between the family and professionals.

There is ample evidence to suggest the powerful effect families have on their children's development (Dunst, 2007; Dunst, Trivette, & Hamby, 2006; Lynch & Hanson, 2004; Shonkoff & Phillips, 2000). These effects are the direct result of both the characteristics of the family (such as family culture, background, composition, and living conditions), and the interactions, experiences, and beliefs of the family (Guralnick,

2005). As a result, an outcome of early childhood intervention should be the facilitation of a family's sense of confidence and competence about their child's current and future learning and development (Bailey et al., 2006). Infancy and early childhood are important times in any child's life. For children with disabilities, the early years are critical for a number of reasons. First, the earlier a child is identified as having a developmental delay or disability, the greater the likelihood the child will benefit from intervention strategies designed to compensate for the child's needs (e.g., Guralnick, 2005a). Second, families benefit from the support given to them through the intervention process (Dunst, 2007). Third, schools and communities benefit from a decrease in costs because more children arrive at school ready to learn (Carta & Kong, 2007).

The main focus of EI programs for children with hearing loss, are language and communication skills. Researchers have shown that positive parent-child interactions promote the child's social, communication, and language development that are the building blocks for literacy and academic achievement. Young children acquire language through intimate interactions with their parents and other caregivers. Babies are particularly sensitive and responsive to language interactions and acquire cognitive and communicative structures that promote language learning early in life. Through routine and caring interactions, young children acquire both the language and social mores that link them to their family, culture, and community. Thus, early detection, diagnosis and intervention are critical for minimizing the potentially serious consequences of hearing loss in children (Cole & Flexer, 2007). When deaf infants are raised by hearing parents, this need for EI is especially conspicuous in the communicational context. Deaf children display a prominent delay in language development accompanied by social and educational difficulties, despite normal intelligence (Lederberg and Prezbindowski, 2000; MacTurk et al., 1993; Mohay, 2000; Tolar et al., 2008).

Parents of deaf children need: support in constructing realistic expectations for their children, guidance in improving their interactions with their children and strategies to advance their children in the process of learning language (Dromi and Ingber, 1999; Dromi and Ringwald-Frimerman, 1996; Eleweke et al., 2008).

Within the developed world, the availability of early identification and specialized audio logical, language and educational interventions to ameliorate the consequences of congenital or early-onset hearing loss represents the expected standard of care. Without such interventions, children with hearing loss will experience significant delay or disruption to the development of their language and communication abilities, their social and emotional development and, ultimately, their educational achievement and life options (Leigh, Newall, & Newall, in press).

The notion that children will develop their language and communication, cognitive, and social skills more effectively if intervention is commenced very early is grounded in the premise that there is an optimal period for the development of certain cognitive and linguistic abilities.

Long with early detection, EI is critical for children identified with hearing loss. Evidence indicates that many children with sensorineural hearing loss experience improved language abilities if EI services were initiated at an "early" age. Studies have shown the benefits of EI to early language and vocabulary development (Mayne, 1998a, 1998b; Moeller, 2000; Robinshaw, 1995; Strong, Clark, & Walden, 1994; Vohr et al., 2008; Yoshinaga-Itano, Sedey, Coulter, & Mehl, 1998). Yoshinaga-Itano (2003) has pointed out that positive effects of early identification have been found only when accompanied by EI. This conclusion was echoed by Hogan et al (2008) who studied early language development of 37 children in England. In other studies, researchers have found that children whose primary communication was oral and relied on spoken language with hearing aids or cochlear implants have demonstrated, under specific conditions, the ability to acquire age appropriate language skills (Geers, 2002; Nicholas & Geers, 2007). Furthermore, early identification of hearing loss in the first 6 months of life has positive effects on language and vocabulary development (Mayne, 1998a, 1998b; Yoshinaga- Itano & Apuzzo, 1998; Yoshinaga- Itano et al., 1998).

In this regard, researchers have found that Children entering an EI program as early as 11 months of age have been shown to have higher language levels compared to children enrolled at later ages (Moeller, 2000). Moeller found that a measure of parental involvement with the child and the educational programme significantly predicted language development levels.

Bubbico and colleagues (2007) stated that EI enrollment within the first 12 months of life may help children attain good receptive vocabulary at 5 years of age.

Researchers have found that when a baby's hearing abilities are identified early and children and families receive excellent intervention services by one year of age, these children can attain language skills near the level of their hearing peers by the time they are five years old (Moeller, 2000; Yoshinaga-Itano, 2006 ;Sass-Lehre,2011). Infants and children with mild to profound hearing loss who are identified in the first 6 months of life and provided with immediate and appropriate intervention have significantly better language development than later-identified infants and children, and have the potential to develop language skills

within the normal range (Calderon & Naidu, 2000; Mayne, Yoshinaga-Itano, & Sedey, 1998; Mayne, Yoshinaga-Itano, Sedey, & Carey, 1998; Moeller, 2000; Pipp-Siegel, Sedey, VanLeeuwen, & Yoshinaga-Itano, 2003; Yoshinaga-Itano, 2004; Yoshinaga-Itano, Sedey, Coulter, & Mehl, 1998). Children who entered EI (6< months of age) had significantly higher ($p < .0001$) adjusted mean receptive and expressive Language Quotients (LQs) than children who entered late. This finding was fairly consistent across different levels of hearing loss severity. Children with mild or unilateral hearing loss showed a similar trend, with higher expressive skills among children entering the EI system early. (Meinzen-Derr, Wiley & Choo, 2011).

All children benefit, despite differences by gender, ethnicity, socioeconomic status, communication modality, degree of hearing loss, or presence of multiple disabilities. These children tend to have better language (both signed and spoken), as well as better emotional-behavioral adjustment and social development. Not only do children benefit, but families who receive support through EI appear to adjust more quickly to their child's hearing status than families whose children's hearing abilities were not identified until later (Pipp-Siegel, Sedey & Yoshinaga-Itano, 2002).

These improved outcomes following early identification and intervention are also found for speech production (Apuzzo & Yoshinaga-Itano, 1995; Yoshinaga-Itano & Apuzzo, 1998a,b; Yoshinaga-Itano, Coulter, & Thompson, 2000). Most importantly, it has been shown that early screening and identification alone do not lead to positive outcomes, and it is crucial that these are followed by immediate, early audiological and educational intervention (Yoshinaga-Itano, 2004). Calderon and Naidu's (1999) finding, in a longitudinal study, that age of first intervention services predicted deaf children's receptive and expressive language and speech scores as well as greater motherchild interaction.

DesJardin (2006) reported that parent involvement had an impact on language development of early-identified children.

Young children, who were not identified early, but have families who are highly involved, may be able to "catch up" according to research by Moeller (2000) and Calderon (2000). The first six months of life appear to be crucial for language acquisition; however, according to these researchers, young children who missed this early opportunity, but have families who are actively engaged in EI (e.g., actively participate in EI sessions and meetings, respond positively to their child, communicate effectively with them, are strong advocates for their children) have strong language and verbal reasoning skills. These studies indicate that EI and family involvement are powerful influences and strong predictors of success for children who are deaf or hard of hearing. Calderon (2000) studied relation between parent-child interaction and involvement in the child's education intervention program with the characteristics of maternal communication in 28 children with pre-lingual hearing loss. Calderon's research showed that maternal communication skills correlate with higher language, earlier reading skills, and fewer behavior problems. Involving parents in assessing their child is a way to cultivate parent involvement.

Meadow-Orlans and her colleagues (2004) in a longitudinal study of development from age six or nine months to 18 months, studied language development 20 deaf or hard-of-hearing children with hearing parents, a comparison group with deaf parents, and a group of hearing infants. All children with hearing loss had their losses identified before nine months. Results indicated that about a third of the children with hearing loss who had hearing parents matched the 18-month language levels of the average children in the other two groups. Convergent evidence from various research groups, therefore, has indicated positive effects on child language development from early identification of hearing loss followed immediately or soon after by intervention services, but a specific age has not been definitively identified. Given the heterogeneity of deaf and hard-of-hearing children, this situation is not surprising. In a longitudinal study Dornan and her colleagues (2007) conducted an auditory-verbal therapy program on a sample of 29 Australian children with a mean age of identification of 24.6 months. The children had, on average, severe to profound hearing loss and were 2 to 6 years old at the commencement of the study. Around half wore hearing aids and half had cochlear implants. A control group of children with normal hearing who were matched for initial language age, receptive vocabulary, gender, and socio-economic was used for comparison. Both groups of children were assessed on a range of speech and language measures at the start of the study and 9 months later. Results showed that both groups made statistically significant developmental progress in speech and language over the 9-month period and there was no statistically significant difference between groups in terms of rate of progress on all assessments. At the end of the study, 72.4% of children with hearing loss scored within or above the age appropriate range for total language age.

In another longitudinal study Dornan and her colleagues (2009) examined the speech perception, speech, and language developmental progress of 25 children with hearing loss (mean Pure-Tone Average [PTA] 79.37 dB HL) in an auditory verbal therapy program. Children were tested initially and then 21 months

later on a battery of assessments. The speech and language results over time were compared with those for a control group of children with typical hearing who were matched for initial language age, receptive vocabulary, gender, and socioeconomic level. Speech perception scores for the children with hearing loss showed significant improvement (p less than 0.05) for live-voice presentations, but not for recorded voice. For both groups there was significant improvement over 21 months in scores for auditory comprehension, oral expression, total language, and articulation of consonants (p less than 0.001); the amount of improvement was not significantly different between groups (p greater than 0.05). At the 21-month test point, 84% of the children with hearing loss scored within the typical range for total language age, compared to 58.6% at the initial assessment. Receptive vocabulary scores were an exception, with the children with typical hearing showing significantly more gain than the children with hearing loss (p less than 0.05). Nevertheless, the group with hearing loss scored within the typical range for receptive vocabulary. Overall, the results show that the children with hearing loss had improved speech perception skills over time and that their rate of progress for speech and language skills was similar to that of children with typical hearing. All education interventions have the aim of allowing children with hearing loss sufficient language to be able to communicate. However, as Ling (2002) suggests, no single intervention program is suitable for all children who have hearing loss. According to what was said, the purpose of this study is to examine the impact of family-based psychological and educational early interventions on the expressive and receptive language skills development of children hearing loss.

Method

The current research was designed on an experimental basis. The statistical population were all children under the age of five with hearing impairment (HI) in Isfahan's education centers enrolled from 2012 up to 2013. Multi-stage random sampling method was executed for this reason. In this way, two out of four deaf education centers in the city were selected randomly. Meanwhile, thirty children with HI under five years of age were selected and assigned to experimental and control groups. The method of the study was experimental. For this purpose, using multi-stage random sampling method, thirty children with hearing impairment (HI) under five years of age were selected and assigned to experimental and control groups.

Research instruments

The Research instruments used are based on Newsha Development Assessment Scale that is designed by Malaieri et al(2011) for Persian speaking children from the age of birth to six. This scale is made up of seven developmental areas and is provided in 13 growth tables. Each item has a score in this scale.

To determine the reliability and validity of content and structure, the test was conducted on 530 normal children. A correlation greater than 0/95 was obtained following studying both reliabilities: that of interviewers comments and of test-retest. In more than 90% of cases, the content validity was assessed as being full extent and very high in terms of construct validity based on Likert's Seven-Item Scale, showing the effect of age on test results. The reliability between interviewers comments in the area of receptive language is reported 82% and in the area of expressive language development 68% applying the SKI-HI Language Development Scale (LDS (Watkins,2004). However, Ashayeri's study(2008) have reported the test reliability for receptive language 70% and for expressive language 76% by using Test-Retest method.

The Content validity index is obtained ranging from 0/8 to 1 in various developmental skills which indicates that the test has very high content validity.

In order to collect the data, Newsha Development Assessment Scale was first implemented on deaf children in both groups (pre-test) in the areas of expressive and receptive language development. The early family-centered educational and psychological intervention program designed by researcher was then implemented.

Fifteen sessions of individual and group counseling were held during 5 months in order to increase the capacity of families in education and development of expressive and receptive language in deaf children and early intervention program content was presented by using film screenings, lectures, power point presentations and educational CDs. Then, Newsha Development Assessment Scale was again implemented on the experimental and control groups and the obtained data was studied by co-variance analysis.

Table 1: A brief description on content of Psychological and Educational Family-Centered Early Intervention Programs is given in the table below.

Session	subject	Issues discussed in the program
1	To get acquainted to characteristics of deaf children	Causes, cognitive, language, speech, motor, and emotional characteristics
2	Attitudes change in parents towards the deaf children	False beliefs modification, , motivation and hope creation and diminishing negative feelings to accept disabled children with hearing loss, self-confidence strengthen methods, the relationship between parents and siblings, becoming familiar with services available in the community's supportive institutions
3	To get acquainted to the Issues of deaf children's education and rehabilitatic	Features of education, educational programs, rehabilitation and treatment Issues, and hearing aids.
4	Relationship with Children	How to interact with a child in the first session, objectives and expectations from the deaf children and strengthening the parent - child interaction
5	Becoming Familiar with developmental skills	Cognitive, expressive – receptive language, hearing, and social skills.
6	The senses role in the deaf children's learning	Based on the oral - auditory and visual - auditory approaches.
7	Auditory training	Training of auditory training stages, the tasks of explore and distinguish speech and non-speech sounds and provided especial practical exercises in the games.
8	Auditory training	Teaching auditory training tasks related to identification and perception process of speech and non-speech sounds, auditory memory strengthening methods and providing especial practical exercises in the games.
9	Speech skills training	Features of voice, acoustic problems and improving their production, features of pronunciation and articulation, articulation problems and the methods of improving them.
10	Speech skills training	Features of fluency in speech and the types of problems and the methods of improving them.
11	Language skills training	Becoming familiar with language development stages, the factors affecting receptive and expressive language development, and ways to improve it, practical exercises in the games.
12	Language skills training	Becoming familiar with language development stages, the factors affecting receptive and expressive language development, and ways to improve it, practical exercises in the games.
13	Language skills training	Becoming familiar with language development stages, the factors affecting receptive and expressive language development, and ways to improve it, practical exercises in the games.
14	The importance of play in learning	Providing daily hearing and intellectual language games to develop perception of expressive - receptive language,.
15	Happiness in the family and coping skills with crisis and stress	Defining happiness in the family, level of happiness in the family, the importance of happiness, Characteristics of happy couples, happiness test, What are stress and crisis? What are the sources of stress? What is stress? The effect of stress on the individual and coping techniques (Using of Cognitive- Behavioral Approach)

Finding

This study examines the impact of Family-Centered Psychological and Educational Early Intervention Program on the development of expressive and receptive language skills in children with hearing loss.

The mean and standard deviation of expressive and receptive language skills in pre-test and post-test experimental and control groups are presented according to the study variables in Table 2.

Table 2: Statistical indicators of deaf children performance in the experimental and control groups in terms of receptive and expressive language skills.

	Indicators	N	Receptive language				Expressive language				
			Pretest		Posttest		Pretest		Posttest		
			M	SD	M	SD	M	SD	M	SD	
Group	Control	15	38/46	12/03	41/53	13/01	38/73	14/45	41/33	14/42	
	Experimental	15	38/46	11/49	53	11/63	38/93	9/19	52/93	10/31	
Severity of hearing los	Moderate	Con	1	53	0	58	0	48	0	50	0
		Exp	1	57	0	77	0	47	0	66	0
	Moderate t severe	Con	2	34	14/14	37	14/14	36/50	20/50	39/50	21/92
		Exp	2	36	2/82	53/50	3/53	34/50	0/707	53/50	0/700
	Severe	Con	6	39/83	13/33	42/66	14/08	42/50	15/59	45/16	15/21
		Exp	7	42/85	11/66	54/14	12/56	42/42	10/84	54/28	12/56
	Profound	Con	6	36/16	11/35	39/16	12/84	34/16	14/03	36/66	13/96
		Exp	5	29/60	5/94	46/40	5/72	34/20	6/61	48/20	7/82
0 -18 Mont	Con	5	26/20	3/70	28/40	3/57	21/80	3/96	24/20	3/49	
	Exp	1	25	0	34	0	24	0	33	0	
Group of age	19 - 36 Month	Con	4	38/50	6/35	41/75	7/50	38/50	4/65	41/50	4/65
		Exp	9	32/22	5/54	47/88	5/39	35	5/38	49/33	6/72
	37 - 54 Month	Con	6	48/66	9/75	52/33	10/83	53	5/36	55/50	5/04
		Exp	5	52/40	5/02	66	7/41	49	4/52	63/40	4/03

As can be seen in table 2, the average receptive and expressive language skills in control and experimental groups are different from each other and experimental group have language skills more than the control group. To examine the significance of these differences, after testing the assumptions of parametric tests, was used analysis of covariance. One of the assumptions in applying parametric tests is the assumption of distribution normality of group scores with sample groups in the community. Shapiro - Wilkie test was used to test this hypothesis. The results showed that the assumption of distribution normality of pre-test scores cannot be ruled out in both control and experimental groups. Also, for examine equality of variances; the data were analyzed with Levin variance homogeneity test. Findings of Levine test show that P is not significant in the level of $P < 0.05$. Thus, the variances of the experimental and control groups are equivalent at all the study variables.

Table 3: Correlation matrix of the linear relationship between pre-test and post-test scores in the study variables.

Scales			Expressive language		Receptive language	
	Pretest	R	Pretest	Pretest	Posttest	Posttest
Expressive language	Pretest	R	1			
	Pretest	R	0/889*	1		
Receptive language	Posttest	R	0/852*	0/761*	1	
	Posttest	R	0/760*	0/884*	0/879*	1

$P < 0/0001^*$

The correlation matrix shows that the correlation between pre-test and post-test scores of all variables is significant in level of $P < 0.0001$.

This means that there is the linear relationship between pre-test and post-test scores for all variables.

Covariance Analysis

The first hypothesis: The Psychological and Educational Family-Centered Early Interventions have positive effect on development of receptive language skills in deaf children.

Table 4 findings: Analysis of covariance effect of family-based early intervention on receptive language skills in deaf children under the age of five

Source changes	SS	df	MS	F	P	Eta	R ²
Covariate variable	737/908	1	737/90	284/00	0/0001*	0/953	1
Group	381/89	1	381/89	146/98	0/0001*	0/913	1
Severity of hearing loss	60/660	3	20/22	7/782	0/003**	0/625	0/953
Age	3/046	2	1/523	0/586	0/570	0/077	0/128
Group * Severity of hearing loss	35/796	2	17/89	6/888	0/008*	0/496	0/853
Group* Age	2/939	2	1/470	0/566	0/580	0/075	0/125
Age* Severity of hearing loss	7/279	3	2/426	0/934	0/450	0/167	0/204
Error	36/376	14	2/598				
Total	72274/0	30					

P<0/0001*

P<0/01**

Findings in table 4 show that in view of the pre-test scores as a covariate variable, the difference between of control and intervention groups performance in terms of receptive language skills is significant in level of $P < 0.0001$. In other words, the difference between the two groups scores indicates that psychological and educational family-centered early interventions have positive effect on development of receptive language skills in deaf children under 5 years of age. In view of the Eta square it can be said that 91% of these changes are due to interference effects. The results of the co-variance analysis (Table - 4)also show that psychological and educational family-centered early interventions programs have had a different effect on the development of receptive language skills in children with various severity of hearing loss, and there is a significant difference($p=0/02$) in the level of $P < 0.05$ among children with different severity of hearing loss.

According to the Eta square, it can be stated that 60% of these changes are due to the impact of hearing loss severity on deaf children’s level of impressionability from the intervention program. By referring to table 2 and in view of the experimental and control groups averages at pre-test and post-test, It can be concluded that although the intervention program has affected the development of receptive language skills in all children with different levels of hearing lose, the highest level of impressionability from the intervention program within the area of receptive language skills development can be seen in moderate, moderate to severe, severe and profound deaf children respectively.

The interactive effect of group and the hearing loss severity are significant according to the value of ($P=0/008$) in the level of $P < 0.01$. In view of the Eta square it can be said that 49% of these changes are due the interactive effect of group and the hearing loss severity. According to the results of co-variance analysis in relation to age variable and its interactive effect with group and hearing loss severity, there is no significant difference between children of age groups participating in the intervention program in terms of the level of impressionability from the program within the area of receptive language skills development. By the way, no interactive effect was observed among age, group, and the hearing loss severity.

The second hypothesis: Psychological and educational family-centered early interventions have positive effect on expressive language skills development in deaf children.

Table 5 findings: Analysis of covariance effect of family-based early intervention on expressive language skills in deaf children under the age of five.

Source changes	<u>SS</u>	<u>df</u>	<u>MS</u>	<u>F</u>	<u>P</u>	<u>Eta</u>	<u>R²</u>
Covariate variable	511/13	1	511/13	208/91	0/0001*	0/937	1
Group	362/374	1	362/37	148/11	0/0001*	0/914	1
Severity of hearing loss	39/723	3	13/241	5/412	0/011**	0/537	0/847
Age	0/651	2	0/325	0/133	0/877	0/019	0/067
Group * Severity of hearing loss	21/572	2	10/786	4/408	0/033**	0/386	0/661
Group* Age	13/109	2	6/555	2/679	0/103	0/277	0/444
Age* Severity of hearing loss	2/667	3	0/889	0/363	0/780	0/072	0/104
Error	34/253	14	2/447				
Total	72058	30					

P<0/0001* P<0/05**

Findings in table 5 show that in view of the pre-test scores as a covariate variable, the difference between of control and intervention groups' performance in terms of expressive language skills is significant in level of $P < 0.0001$. In other words, the difference between the two groups scores indicates that psychological and educational family-centered early interventions have positive effect on development of expressive language skills in deaf children under 5 years of age. In view of the Eta square it can be said that 91% of these changes are due to interference effects. The results of the covariance analysis (table- 5) also show that psychological and educational family-centered early interventions programs have had a different effect on the development of expressive language skills in children with various severity of hearing loss, and there is a significant difference ($p=0/01$) in the level of $P < 0.05$ among children with different severity of hearing loss.

According to the Eta square, it can be stated that 53% of these changes are due to the impact of hearing loss severity on deaf children's level of impressionability from the intervention program. By referring to table 2 and in view of the experimental and control groups averages at pre-test and post-test, It can be concluded that although the intervention program has affected the development of expressive language skills in all children with different levels of hearing lose, the highest level of impressionability from the intervention program within the area of expressive language skills development can be seen in moderate, moderate to severe, severe and profound deaf children respectively.

The interactive effect of group and the hearing loss severity are significant according to the value of ($P=0/033$) in the level of $P < 0.05$. In view of the Eta square it can be said that 38% of these changes are due the interactive effect of group and the hearing loss severity. According to the results of co-variance analysis in relation to age variable and its interactive effect with group and hearing loss severity, there is no significant difference between children of age groups participating in the intervention program in terms of the level of impressionability from the program within the area of expressive language skills development. By the way, no interactive effect was observed among age, group, and the hearing loss severity.

Discussion and conclusion

The primary focus in the implementation of EI services is on the capability of reducing negative effects in a given condition or risk factor and thus promoting optimal development over time. Combined with early detection, EI is critical for children identified with hearing loss. Both the theoretical models dealing with intervention programs for exceptional children as well as the professionals in the field who operate there have come to regard the family itself as the central agent and crucial partner in the child's rehabilitation process. In this regard, this article has evaluated the effectiveness of psychological and educational family-centered early interventions on receptive and expressive language skills development of deaf children under

5 years of age. The results support the efficiency of intervention for infants and young children with hearing loss. The findings showed that psychological and educational family-centered early interventions have positive effect on receptive and expressive language skills development of deaf children under the age of five. This finding is consistent with findings reached by Meinzen-Derr, Wiley & Choo 2011; Mayne, 1998; Moeller, 2000; Robinshaw, 1995; Strong, Clark & Walden, 1994; Vohr, & et al, 2008; Yoshinaga-Itano, Sedey, Coulter & Mehl, 1998; Bubbico & et al; 2007; Yoshinaga-Itano, 2004 & 2006; Meadow-Orlans & et al,2004.

One of the reasons to get to such a conclusion is that in family-centered approach, the early intervention is demonstrated by beliefs and practices that treat families with dignity and respect, and ensures the active involvement of family members in the mobilization of resources and supports necessary for them to care and rear their children in ways that have optimal child, parent, and family benefits. The families who receive support through early intervention appear to adjust more quickly to their child's hearing status and show more active involvement in the process of his/her developmental abilities improvement. In summary, the degree of parents' involvement in child's program and collaborative relationship between parent and professionals may be powerful ingredients in family-centered practice. This would result in a more progress of deaf children participating in the intervention program.

Another reason is that Most professionals, especially those directly involved in providing rehabilitation services for young children, are aware of the critical significance of intervention onset in infancy (Critical period of language development) to reduce the negative effects of hearing loss on the child and believe it is useful. Collectively, then, emerging views of child development and child language acquisition pointed to the importance of the parents as tutors and to the family and its activities as the primary learning context in early childhood. According to Vygotsky's theory of child development, the early development and learning best (optimal learning) take place within the context of the child's cultural group, usually the family and these learning experiences are supervised and mediated through interaction with a more expert individual, commonly an adult and especially the parent or primary caregiver. Activity settings involve the active participation of a child in learning, and they serve to strengthen existing capabilities as well as promote and enhance new competencies. The Family-based intervention program also provides the necessary context to create natural or least restrictive settings in which all learning opportunities for strengthening and growing child's developmental skills are within the access. It is in turn, an issue based on which the family-based intervention program has formed.

The results also show that educational and psychological family-centered early interventions programs had a different effect on receptive and expressive language skills development of children with various hearing loss severity. The results are consistent with Dorman's findings (2007) in which an auditory – verbal therapy interventional program was conducted on children 2 to 6 years old with moderate, severe and profound hearing loss. The intervention program was then evaluated as useful. In the present study, in view of the the experimental and control groups averages at pre-test and post-test, it can be concluded that although the intervention program on receptive and expressive language skills development in all children with different levels of hearing loss proved to be effective, the highest level of impressionability from the program in the area of receptive language skills is observed in moderate, moderate to severe, severe and profound subjects respectively. Although children with profound hearing loss - as is expected and obvious in this study - are lower than others in language development, took a higher level of impression ability from intervention program than children with severe hearing loss. This is probably due to attitudes change and very negative beliefs in families of children with profound deafness towards their children's abilities, and therefore more parental involvement and participation. or, it is a result of a more adjustment of the intervention program contents to this group of children's needs.

Various studies have shown that positive interactions between children – parent enhance their social, communicative and language development and form the basis of reading and writing skills and scientific progress. Young children acquire the language skills through primary interactions with their parents and other caregivers. Children are especially sensitive and responsive to the language interactions and acquire cognitive and communicative structures which promote language learning process in their life. Young children acquire both language and social customs that link them to their families, cultures and societies through daily interactions and care. In this regard, Moeller (2000) and DesJardin (2006) studies identified high levels of parental involvement as a strong predictor of language achievements than child's age at the entry stage into early intervention or hearing loss degree. According to research carried out by Moeller (2000) and Calderon (2000), there were young children who were not identified as sufferers at early stages of the problem, however, they had families who were highly involved. So, they might be able to "catch up".

As to the results, there is no significant difference among children of age groups participating in the intervention program in terms of program's influence on the area of receptive and expressive language skills development in relation with age and its interactive effect on the group and hearing loss severity. This issue, with regard to the heterogeneous age groups in terms participants number and sampling limitations, requires further study.

Given the relatively similar levels of impressionability from intervention program in different age groups, in most studies, early detection and intervention of hearing loss, however, have been recognized crucial before 12 months of age, and certainly bring about more usefulness for children and their families, it seems that family participation in educational intervention programs and the program's consistency with the needs of children and of their families are stronger factors in deaf children's language development. So that Moeller (2000) and Calderon (2000) have concluded that such families are most likely to "catch up". In their study on children 2-6 years old with hearing loss Dornan et al (2007 & 2009) showed that intervention programs have resulted in many speech and language improvements for these children. Given what has been said so far, it can be concluded that although there is evidence proving positive outcomes for children with hearing loss as a result of early identification and intervention, such services for families should be presented in a caring and teaching setting, e.g. child's natural environment, and the goals of family-centered intervention program relate not only to developmental outcomes for the child but also to parents and family benefits, and should facilitate the active participation of children and families.

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