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## Language Behaviours in Children with Hearing Impairment vs. the Social Functioning of Their Mothers – Comparative Surveys

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### Abstract

The object and aim of the undertaken surveys was to assess the modifying impact of a child's language development (independent variable) on selected areas of their mother's functioning – the appearance of symptoms of depression, and concentration on the child's disability (dependent variable). Surveys in a group of the same 30 dyads (mother – child) connected with the Association of Family and Friends of Children with Hearing Impairment in Krosno were conducted in 2007 and repeated after 9 years. Analysis of the test data (n=60) confirmed the hypothesis that the appearance of symptoms of depression in mothers is less frequent and a mother's perception of a child's hearing impairment as burdensome decreases alongside the development of a child's language competence. The article is critical of the results of surveys conducted by other researchers. The authors also analyse other factors, including the Universal Neonatal Hearing Screening Programme, place of residence, quality of specialist treatment and therapy, and the passage of time, which may influence change in the functioning of mothers of children with hearing impairment.

**Keywords:** *hearing impairment, disability, language development, depression in mothers*

## **Introduction**

Mothers who learn about the hearing impairment of their children suffer from a psychological trauma, or shock. The diagnosis of a child's hearing impairment causes three psychological reactions: trauma, a mother's feeling that she has lost the child as he/she used to be, and a sense of verbal injury (Zalewska, 1998a, 1998b). This situation may result in the mother's depression, which negatively influences the child and causes a disruption of the quality and permanent character of the relationship in the dyad, which itself constitutes the prototype for emotional contact between the child and other persons (Rola, 2004). The disrupted emotional functioning of the mother may decrease effective communication with the child. It was also found that the higher the delay in the language development of the child with hearing impairment is, the more dysfunctional mother-child interactions are, and the more frequently the child is seen as difficult (Pipp-Siegel et al., 2002).

Kushalnagar, Krull, and Hannay (2007) note that depression in parents of children with hearing impairment is often related to communication problems between a parent and a child (in the sense of interpersonal relations, and not at the language development level), which leads to frustration and an inadequacy of feelings. According to Meadow-Orlans et al. (1995), these feelings significantly contribute to the primary caregiver's self-concept and ability to communicate with the child with hearing impairment. *"A child with hearing impairment is deprived of the possibility of hearing (or it is difficult for him/her to hear) what a human word carries – expressions of tenderness, love, despair, contentment, satisfaction, disregard or aggression. He/she cannot hear the verbal expression of emotional states, the emotional relations of other people – including the mother. However, the mother, aware of the limitation of the child, is not sure how to communicate with him/her"* (Zalewska, 1998a). This situation is described by Meadow-Orlans et al. (1995) as a "mismatch" in the dyad, which results from the difference in the hearing status of the mother and child and causes communication difficulties. This may become the cause of psychological distress for the mother (Kazak et al., 1987). However, the parents who accepted the fact that their child is different adapted better to the situation when compared to the parents who had problems accepting their disabled child. The parents who concentrate primarily on the deficits and difficulties of their child do not notice his/her strengths and perceive his/her disability as more burdensome. Such a negative perception of the child is inadequate and makes the acceptance of the new situation more difficult.

Communication difficulties between the mother with depression and the child with hearing impairment are obvious. The reduced emotional functioning of the mother may significantly lower the effectiveness of communication with her child. In extreme cases, communication may be fully interrupted, even in its residual form, and growing misunderstandings may become the source of additional frustration. This is especially problematic for the child who presents curiosity, interest, willingness to learn and a tendency to “accept everything” – something that presents a discrepancy with his/her relatively lower level of language development. In such a situation, without receiving explanations or being led by hearing parents, the child with hearing impairment will gain social skills that rely only on the observation of the behaviour of others, and lose the majority of verbal hints. Even if the child with hearing impairment has a high level of cognitive competences, is able to understand subtle behaviours, grasp cause-and-effect relationships of concrete events and adjust better to a situation, he/she will still struggle with an incomplete understanding of speech. This may result in major problems in his/her behaviour. When a mother is not able to control her child she may feel even more unhappy and helpless, which may deepen her depression and cause her to lose any motivation to do therapeutic work or to use other, alternative forms of communication. Parents who cope better with their emotional problems related to the disability of their child are more willing to look for additional solutions in order to ensure effective communication with their child, and they have a better attitude towards teachers and therapists who introduce alternative forms of communication (Meadow-Orlans et al., 1995). Quittner (1990) stresses the importance of a common language code within the family (verbal/sign), which is prognostic for the positive development of the child. *“Successful, adequate early communication constitutes an important element of social and emotional development of children with hearing impairment”* (Vacari, Marschark 1997; 799).

## **Objective**

The objective of the surveys was to answer the question of whether language development of the child with hearing impairment (independent variable) is related to the appearance of symptoms of depression in the mother and her concentration on the child’s disability (dependent variable).

## **Research Methodology**

### **Participants**

The level of the appearance of depression symptoms in mothers of children with hearing impairment and their concentration on their child's disability in correlation with children's language development was analysed. In order to conduct an individual analysis of children's communication behaviours, the Communication Behaviours Assessment Card was used (CBAC) (Krakowiak K., Panasiuk M., 1992). Direct observation comprised two individual meetings with a child and one group meeting (approx. 4 hours). The examined children's mothers were asked to fill in a set of survey tools (three forms): the Beck Depression Inventory (BDI) (Beck A., 1961), the Scale of Subjective Assessment of the Functioning of a Child with Symptoms of Disability (Minczakiewicz A., 1998) and a request/consent to examine their child combined with a short survey (questionnaire) concerning basic family information.

The surveys among a group of the same 30 dyads (mother – child; 14 – girls, 16 – boys), members of the Association of Family and Friends of Children with Hearing Impairment in Krosno, were conducted in June 2007 and repeated in March 2016. In the group (n=30), 23 children (77%) had profound hearing impairment, 4 children (13%) had severe hearing impairment, 3 children (10%) had moderate hearing impairment. All the examined children had hearing aids and had been undergoing auditory verbal therapy since the first year of their lives. 10 children (33%) had one cochlear implant; 9 (30%) had a cochlear implant and a hearing aid on the opposite side; and 11 (37%) had two hearing aids. Four children (13%) had received an implant during the 9 years between the surveys. In 2007 the average age of the children was 3.5 (min. 2.0 – max. 6.2). In 2016 this figure was 12.2 (min 11.0 – max 14.11). During the first survey, some of the children had started education in kindergartens and state schools, and some of them stayed at home with their mothers. In 2016 all the children attended schools (29 – a state school in the place of residence; 1 – an integration school). All the surveyed mothers were hearing mothers, with the average age of 32 (the range was from 20–43) in the first survey; in the second survey this figure was 38.7 (ranging from 28–52). The mothers had various levels of education: 7 (23%) had vocational training, 16 (53%) had a secondary education, and 8 (27%) had a higher education. On average, there were 2 children in a family (this ranged from 1–5 children throughout the survey) and 1/3 of them had no siblings.

## Results

The obtained results were subject to statistical analysis with the use of Statistica software. The first stage of the analysis was to estimate changes between, and to compare the results of, the first (2007) and second (2016) surveys. The comparison of CBAC results shows that in all the categories of the persons examined using the test there is a difference that is essential from the statistical perspective: there was a significant increase in the level of language knowledge in terms of communication, speech, sign language, as well as reading and writing competence; this was related to the change in the age of the examined children, therapy activities undertaken and compulsory education. As far as general communication competence is concerned (category A of the test), this was higher in the second measurement (2016) ( $M = 4.53$ ,  $OS = 0.63$ ).  $t(29) = 4.42$ ,  $p = 0.0001$ , Cohen's  $D = 0.7962835$  compared to the first measurement (2007) ( $M = 3.67$ ,  $OS = 1.3$ ). In the comparison of the results of the categories referring to verbal communication (categories B, C, D, E), the first measurement (2007) was  $M = 3.19$ ,  $OS = 1.21$  and in the second (2016) these competences were higher ( $M = 4.69$ ,  $OS = 0.59$ ).  $t(29) = 5.98$ ,  $p = 0$ . Cohen's  $D = 1.0778235$ . Although only two children from the examined group were taught sign language, this competence in the examined group increased (categories B1, C1, D1, E1) – in 2007  $M = 0.99$ ,  $OS = 0.55$ , in the 2016 measurement the competences were  $M = 1.63$ ,  $OS = 1.18$ .  $t(29) = 2.74$ ,  $p = 0.0105$ . Cohen's  $D = 0.4929927$ . An increase in the reading and writing competences, related to education undertaken (categories G, F), was an essential element. Compared to the the first measurement (2007) ( $M = 2.54$ ,  $OS = 1.52$ ), in the second measurement (2016) this competence increased ( $M = 4.57$ ,  $OS = 0.81$ ).  $t(29) = 8.34$ ,  $p = 0$ . Cohen's  $D = 1.5036821$ .

Then, the results of the Beck depression tests were compared. The results explicitly show that the mothers' symptoms of depression reduced (cf., Tables 1 and 2).

**Table 1.** Comparative analysis of Beck's depression test BDI from 2007 and 2016

Year	Mean	Deviation	Median	Trimmed mean	Coefficient of asymmetry	Standard error
2007	0.7508	0.8174	0.4524	0.6111	1.723	0.1492
2016	0.4382	0.3215	0.381	0.4068	0.7071	0.0587

**Table 2.** Test T results from 2007 and 2016 (BDI)

Test statistics	df	P	Cohen's D:
-2.214	29	0.03484	- 0.399000209956265

The analysis also verified how, over the years, the surveyed mothers perceived the disability of their children (as more or less burdensome). The obtained results in the first measurement ( $M = 2.31$ ,  $OS = 0.91$ ), and in the second measurement ( $M = 1.98$ ,  $OS = 0.58$ ).  $t(29) = -1.85$ ,  $p = 0.075$ ; Cohen's  $D = -0.3328611$ , show that the level of the perception of the child as disabled essentially lowered. Thus, the situation is perceived as less burdensome.

Then, the results of individual tests were correlated (cf., Figure 1)



Figure 1. Chart of areas and their correlation analysed in the survey.

Due to the fact that, as shown, the increase in the competences concerning verbal language was higher ( $M=3.19$ ) compared to the competences referring to sign language ( $M=0.990$ ), this category was chosen for an analysis concerning the degree to which the level of functioning of children in verbal language (CBAC, categories B, C, D, E) differentiates mothers' symptoms of depression. The 2007 results show that the correlation between the functioning of the verbal language of children and the level of the appearance of symptoms of depression in mothers was statistically insignificant ( $r - \text{Pearson} = -0.2755851$ ,  $p \text{ value} = 0.1404764$ ). Similarly, in 2016 this correlation was insignificant ( $r - \text{Pearson} = 0.102134$ ,  $p \text{ value} = 0.591234$ ). Additionally, the comparison of the differences between the measurements also shows that this correlation is insignificant ( $r - \text{Pearson} = -0.1934917$ ,  $p \text{ value} = 0.3056048$ ).

Table 3. Correlations between CBAC B C D E and BDI depression tests from 2007 and 2016

	BDI 2007	BDI 2016	BDI difference	CBAC BCDE 2007	CBAC BCDE 2016	CBAC BCDE difference
BDI 2007		0.33	-0.92***	-0.276	-0.241	0.178
BDI 2016			0.067	0.062	0.102	-0.013
BDI difference				0.317	0.297	-0.193
CBAC BCDE 2007					0.458	-0.873***
CBAC BCDE 2016						0.033
CBAC BCDE difference						

It was also observed that there is a relationship between the children's level of verbal language competence (CBAC – categories B,C,D,E) and the perception of the children's disability as more burdensome (concentration on disability). The relationship, understood as the interchange ability in time, is essential ( $r$  - Pearson = -0.5818575,  $p$  value = 0.0007441): the more the level of speech competences increased, the more the perception of the child's disability as burdensome decreased.

## **Discussion**

In their surveys, both J. Kobosko (1998, 2000) and J. Kosmalowa (1998) state that the appearance of depression symptoms in hearing mothers of children with hearing impairment is higher than in mothers of hearing children and grows with the child's age. Konstantareas and Lampropoulou (1995) found that the experienced maternal stress increases along with the age of the disabled child. The Greek surveys prove that the maternal stress in hearing mothers of children with hearing impairment (2–14 years old) increases with the age of the child, and that this may lead to depression. These surveys have not confirmed the above theses. It should be noted that the examined population functions in a different social environment. In 2002 a neonatal screening programme for hearing was launched in Poland and the age when hearing impairment is diagnosed in a child, and the possibility of them receiving an implant and, consequently, the time when therapy can begin, have changed (Szyfter 2013; Zaborniak et al., 2016). The parents participating in the surveys described in this paper have been under the care of the Specialist Clinic in Krosno, where they have been offered the opportunity to meet in both formal and informal support groups (Bieńkowska, Zaborniak-Sobczak, 2014). Additionally, they come from villages or small towns in the Podkarpackie region, they often live in extended families, and the 100% participation rate in the survey may be a sign of their engagement in their child's therapeutic process. If similar surveys were conducted among parents of children from other areas not covered with systematic help, the results might not be confirmed. Additionally, in 2016 these children attended primary integration schools or state schools. A lot of support and understanding of the problems of disabled children's families is characteristic of this level of education. Subsequent stages of education, a much broader curriculum, higher expectations and adolescence-related problems, a need for acceptance, self-identity, and peer group pressure may once again trigger any and all of the difficulties related to disability.

When assessing the functioning of the relationship between the child with hearing impairment and the hearing mother, we, unfortunately, examine an incomplete relationship. The marginalisation of the father's role in this constellation means we obtain incomplete data on the development and mutual interactions within this relationship and the individual participants thereof. To obtain a full picture of the situation it would be worth examining the functioning of the mother – father – child triad. Undoubtedly, it is absolutely necessary to include the father in the therapy (Kornas – Biela, 2006). A man making more demands on and setting limits for the child allows him/her to create their own internal map of the social world, and also shapes his/her self-confidence (Rola, 2004). The more frequent appearance of symptoms of depression in mothers than in fathers of children with hearing impairment (Meadow-Orlans 1991) indicates that fathers cope better with their child's disability; this ability to cope is a secondary source of the support to mothers. Parents who cope better with their emotional problems related to their child's disability are more willing to look for additional solutions to ensure effective communication with their child, and they have a better attitude towards doctors, teachers and therapists who introduce alternative forms of communication; this in turn correlates with the positive effects of their child's learning (Meadow-Orlans, 1995)

## **Conclusions**

The conducted surveys, which analysed changes in the functioning of the child with hearing impairment and his/her mother over the years, made it possible to offer a new analysis of the situation of families with children with hearing impairment. In the examined group of children, there occurred a significant increase in competence within verbal language and sign language (the latter increase occurred in two children), as well as reading and writing. It turns out that the mother's tendency towards depression decreases as the age of the child increases. However, this change is not only conditioned by the level at which the child masters the language, but most probably by other factors, such as, e.g., social support, which will be the subject matter of the next article by the authors. The tendency towards depression in the mothers examined in 2016 was indeed lower than 9 years ago. The analysis has also shown that the mothers of older children (in 2016) perceive their children's disability as significantly less burdensome when compared to their assessment from 9 years earlier. The structure of the tools used in the survey shows two variants concerning the concentration on the child. Low results indicate



concentration on the child and high results represent concentration mainly on his/her difficulties in functioning. In both surveys, the mothers showed a slight tendency to concentrate on the child's deficits. In 2016 this tendency was minimal.

All the obtained results indicate that the functioning of mothers of children with hearing impairment improves over the years. It seems that an important "protecting factor" is also a language match between the child and the mother, as all the examined dyads used the same language system. Additionally, the children examined in 2016 were older, more self-reliant, and they benefitted from inclusive forms of education. This is the unquestionable success of the examined families.

## **Summary**

The results of our research, presented in the survey, show an indirectly high level of the therapy that the children undergo, and that therapy oriented at the development of verbal language is the most relevant (in the context of hearing parents). The language development of children with hearing impairment should, undoubtedly, be monitored in order to grasp any possible difficulties, and adjust the time and methods of therapy for children with additional dysfunctions. It is important to pay attention to the preparation, the level and the effectiveness of therapy offered by educational facilities attended by deaf teenagers. This is especially important in the context of early satisfactory school experiences of children, and the wellbeing of their parents. Finding out whether the level of received social support is the factor that decreases the appearance of symptoms of depression will be the subject of subsequent studies by the authors.

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