# THE INFLUENCE OF PEER TUTORING ON IMPROVING PSYCHOLOGICAL HARDINESS AND ADAPTIVE BEHAVIOR IN CHILDREN WITH HEARING LOSS.

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**Abstract:**–
**Objectives of the work:** The main aim of this study was to examine the development of psychological hardness and adaptive behavior after the training program based on peer tutoring for children with hearing loss (CHL).
**Subjects & Methods**: 10 CHL aged 12 :15 years (M= 13 years, 6 months; SD= 1.2). They had unaided pure tone averages (PTA) greater than 50 dB HL bilaterally. All participants were in mainstreamed classroom at an appropriate grade level. The tools that is used are: Vineland Adaptive Behavior Scale Arabic Version-2nd Edition (VABS-R II) to assess adaptive behavior in three domains: Communication, Daily Living Skills, and Socialization; Psychological hardness scale; and the training program.
**Results**: There are significantly statistical differences between pre and post-test on Psychological hardness subscales: Commitment, control, and Challenge (t=9.24, 11, 14.7 respectively; P<0.001) for post-test. There are significantly statistical differences between pre and post-test on Vineland Adaptive Behavior Scale Arabic Version-2nd Edition (VABS-R II) subscales: Communication, Daily Living Skills, and Socialization (t= 10.99, 20.93, 13.69 respectively, p<0.001)
**Conclusion**: Peer tutoring is an effective method to teach CHL how to overcome problems and stressful situations in daily life and to develop adaptive behavior, especially if it is occurred in normal situations.

**Index Terms -** Adaptive behavior, Hearing loss, peer tutoring, psychological hardness.

## I. INTRODUCTION

Childhood Hearing Loss (CHL) is a chronic handicap that affects approximately 1–1.3 out of every 1000 live births[1]. They have lower outgrowth in different areas as language development, school performance, and behavior than the other peers with typical hearing ability [2]. Children with hearing problems have Emotional weakness.[3], [4].

CHL need more extensive training to increase their different abilities of spoken language, social and communication skills. Poor communication makes CHL at risk of low: social skills, self-esteem, daily living skills, personal, domestics, interpersonal relationships, that may significantly reduce the quality of life of deaf people[2], [5]- [7].

Consequently, the importance of early interventions for CHL has been demonstrated persuasively in many areas as speech perception, production and spoken language, communication development, cognitive skills, adaptive behavior, social and emotional outcomes, and daily life skills[8], but it is still unclear about the different outcomes of early interventions for CHL on the following areas: adaptive behaviors, social and emotional outcomes, and Psychological Hardness (PH).

In deaf children previous studies found a relation between cognitive abilities and behavioral adaptability [9], as well as behavioral adaptability, better communication and family support [9]. Recently, some studies reported that CHL can get normal progress rate of adaptive behavior after rehabilitation[11].

Although numerous studies focus on habilitation of these skills, they have examined subjects in clinical and laboratory facilities or under ideal conditions. However, habilitation of CHL should also facilitate children's use of their adaptive behavior in peer interaction outside clinic to encourage social competence and early peer acceptance.

It is assumed that the development of social competence in children with disabilities will be facilitated by creating opportunities for peer interaction with typically developing children [12].peer interaction in school children is important to their general development [13]. Peer interaction opportunities provide better learning experience that are totally different from their interactions with parents, siblings, and others in the children's surroundings [14].

School children are exposed to the ideas and feelings of their peers when they play together and learn to consider other perspectives that are different from their own [15]. Peer interactions provide children with the opportunity to discuss feelings and to assume various social roles [14].Children who are unable to establish positive peer relationships at young ages are more likely to demonstrate poor social adjustment in adolescence and childhood [16].

Children develop their social skills as they involved in conversational and play exchange with other children of the same age [17]. When children communicate during play, they observe, create, and learn together [18].

Peers showed to have comparablelanguage development and similar vocabularies which results in communicative interactions that are more regulated than the interactions that occur when a child interacts with an adult [14].In the aim of having successful conversation with peers during play, school children require basic vocabularies for the items being used in a play and sufficient language to make topic-related comments and to role play [19]. Children must assume interactive and changing roles, take turns, negotiate activities, communicate ideas and perform in order to participate in social pretend play with peers [20].

## II. METHODS

### Subjects:

Ten students with HL between 12 and 15 years of age (M= 13 years, 6 months; SD= 1.2) participated in the study. Each one of the participants had unaided pure tone averages (PTA) greater than 50 dB HL bilaterally. They are using hearing aids. All of them have normal intelligence and negative history of neurologic involvement, or significant developmental or cognitive disabilities, by parent report and SB5 practical test. All participants were in mainstreamed classroom at an appropriate grade level. Participants gave informed consent and approval.

The peer group consisted of 10 participants aged 12 to 15 years (M= 12 years, 5 months; SD= 1.4) within one chronological year to the children with hearing loss, and had normal hearing, with thresholds of 10 dB HL or better.

**Table 1. Characteristics of Participants from the HL Group**

| Subject | Age | Gender | ID | Fit | Bilateral/Unilateral |
|---|---|---|---|---|---|
| HL1 | 12y, 4m | M | 49 | 55 | Bilateral |
| HL2 | 13y, 5m | M | 28 | 33 | Bilateral |
| HL3 | 14y, 7m | F | 20 | 22 | Bilateral |
| HL4 | 12y, 6m | M | 44 | 50 | Bilateral |
| HL5 | 13y, 6m | M | 36 | 38 | Bilateral |
| HL6 | 12y, 4m | F | 46 | 47 | Bilateral |
| HL7 | 12y, 9m | F | 39 | 43 | Bilateral |
| HL8 | 15y, 5m | M | 40 | 43 | Bilateral |
| HL9 | 14y, 6m | M | 45 | 50 | Bilateral |
| HL10 | 13y, 8m | M | 24 | 30 | Bilateral |

**Note: Age Y= year, M= month; Gender M= Male, F= Female; ID = Age identified with hearing loss in months; Fit = Age first fit with hearing aids in months; Bilateral/Unilateral: Bilateral = Uses hearing aids in both ears, Unilateral = Uses hearing aids for one side, nothing on the other**

### TOOLS:

### The assessment tools were:

Vineland Adaptive Behavior Scale Arabic Version-2nd Edition (VABS-R II): It is used in this study to assess adaptive behavior in three domains: Communication (receptive, expressive, written), Daily Living Skills (personal, Domestic, Community), Socialization (interpersonal relationships, play and leisure, coping skills).

Psychological hardness scale: This scale was developed based on several relevant studies and theories[21]-[26]. It was submitted for review and was approved by ten professorial-level experts in the field to ensure both content and face validity. It consists of 35 items, each one has three choices only one is correct, with three sub-scales: challenge (14 items), control (11 items) and commitment (10 items). A sum of all scores yields a total score that ranges from 0 to 35. Higher scores indicate stronger PH,

The scale was administrated to a pilot sample and the Pearson correlation coefficient between each sub-scale scores and the total score were: 0.82, 0.79 and 0.91 respectively. The internal consistency coefficients for each sub-scale were: 0.77, 0.78 and 89, respectively. The test-re-test coefficients were: 0.72, 0.75 and 0.80 respectively.

The training Program:The initial plan of the program was presented to the expert reviews to ensure its validity, and some activities and procedures were accordingly modified in line with their comments.

The program consisted of 24 sessions, involving two sessions per week, each one almost 45 min. It includes several skills and situations that can be applied for students at the risk of sense of responsibility and ability to solve problems. They were planned to help students to acquire adaptive behaviors involved in: problem solving, following instructions, understanding social situations, understanding facial expressions and others feelings, decision making, co-operation, self-esteem, anger management, and behavior management.

The program sessions were divided into two main phases. The first phase, (Sessions 2–5 after an initial Introduction in Session 1) for normal peers presented as workshops to identify the characteristics of hearing loss individuals, the strengths and challenging points and effective communications skills, how to help HL children to develop challenging points, and identify their roles with the peers during the sessions.
The second phase (Sessions 6–23) for both HL children and peers. They include various techniques and situations, such as: proactive treatment, micro-level training, social and communication skills, role-playing, treatment by reading, self-control, cognitive rebuilding, social self-enhancementproblem-solving and homework.

The sessions based on daily-life situations, such as: at School(answering questions, talking to his/her classmates, homework, interaction in the school yard); at transportation (stop a taxi or a bus, give the fare, asking about unknown place); at street (crossing, go to the supermarket, know directions,); at leisure time (go to the club, play a game with someone, play a group game); at home (when he/she asked to do something, help Mother, watch TV.); in social events (Prepare for an occasion, speak with strangers, want to eat or drink something).

At the last session, the two scales were administered to HL individuals.

## III. RESULTS

Table (2) show the comparison between the mean scores of pre and post-test on thepsychological hardness scale for the HL.

| Subscale | Pre-test | | Post- test | | t | P | Sig. | Progress% |
|---|---|---|---|---|---|---|---|---|
| | Mean | SD | Mean | SD | | | | |
| Commitmen | 4.2 | 0.63 | 8.6 | 1.07 | 9.24 | <0.001 | *** | 51.16 |
| Control | 4.7 | 0.48 | 8 | 0.26 | 11 | <0.001 | *** | 41.25 |
| Challenge | 1.8 | 1.47 | 11 | 0.94 | 14.7 | <0.001 | *** | 83.64 |

N.B. *p<0.05 **P<0.01 ***P<0.001

**Table (3) show the comparison of mean scores of pre and posttest on the Vineland adaptive behavior scale for the CHL.**

| Scale | Subscale | Pre-test | | Post- test | | t | P | Sig. | Progress% |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD | | | | |
| Communication | Perceptual | 14.2 | 1.98 | 24.2 | 1.98 | 10.11 | <0.001 | *** | 41.3 |
| | Expressive | 46.2 | 4.04 | 59.6 | 2.06 | 8.06 | <0.001 | *** | 22.48 |
| | Written | 17 | 2.5 | 26.4 | 2.06 | 10.48 | <0.001 | *** | 35.6 |
| | **Total** | **77.4** | **7.18** | **110.2** | **5.37** | **10.99** | **<0.001** | *** | **29.76** |
| Daily Living Skills | Personal | 44 | 3.4 | 72.40 | 2.8 | 34.10 | <0.001 | *** | 39.2 |
| | Domestic | 18 | 2.5 | 27.2 | 2.7 | 10.17 | <0.001 | *** | 33.8 |
| | Communication | 5.2 | 1.4 | 11.2 | 1.93 | 6.71 | <0.001 | *** | 53.6 |
| | **Total** | **67.2** | **5.75** | **110.8** | **6.68** | **20.93** | **<0.001** | *** | **66.43** |
| Socialization | Interpersonal relationship | 30.2 | 3.8 | 45.2 | 2.53 | 6.71 | <0.001 | *** | 33.18 |
| | Play & leisure. | 17.4 | 2.7 | 26.8 | 1.93 | 12.48 | <0.001 | *** | 35.07 |
| | Coping skills | 13.8 | 2.4 | 22.6 | 1.90 | 11.87 | <0.001 | *** | 38.9 |
| | **Total** | **61.4** | **8.38** | **94.6** | **5.66** | **13.69** | **<0.001** | *** | **35.10** |

N.B. *p<0.05 **P<0.01 ***P<0.001

N.B. *p<0.05 **P<0.01 ***P<0.001

## DISCUSSION

The present study provided a unique opportunity to examinethe possible benefits of peer interaction intervention on improving PH and adaptive behavior of school aged CHL. The findings confirm that CHL have moremarked problems in PH which is represented in: commitment, such as: inability to demonstrate attention, effort, and imagination to manage challenging tasks; control: such as: feeling passive and powerless in face of difficulties, inability to solve problems; and challenge, such as, avoid or deny difficulties, unable to face stressful change, and can't resolve variable situations.

The results concerning the effects of peer interaction intervention on PH for CHL showed an increase inthe level of: Commitment, Control, and Challenge (percent of progress are 29.76%, 41.25%,83.64% respectively). The CHL showed more positive interaction with normal peers in the training sessions. They showed an increase of the level complexity during participating in socially engaged activities, indicating thatby the actions of peers, it is possible to create arepertoire that enablesthem to participate in the construction andleading of situations. One of the leading factors to this progress is that the situations and tasks took place in children'snatural environment are different from clinical and laboratory facilities.During training sessions with peers, the CHL demonstrate attention and imagination to manage tasks and situations, they had steadfast attentiveness towards their goals, they refused to withdraw when faced with adversity, which is related to commitment. They, also, showed positive attitudes, identified solutions to problems, exhibited determination to change situations, and accepted that some situations might be beyond their control and they have to accept them and have ability to deal with these situations, able to face stressful situations with new ways learned by peers, which led to improvement in Control. Moreover, The CHL were able to face stressful change with optimism, demonstrate efforts to understand and resolve variable situations, and do not fear hardships; this was reflected on Challenge. These results support the importance of peer tutoring on developing psychological aspects – PH specifically- for CHL, that is consistent with previous studies which assured the importance of peer interaction for CHL [27]-[32]. The majority of the CHL have language delays, making itdifficult to understand commands, instructions, or to be effectively socialized with others (e.g., initiate or join conversations). This inabilityto successfully interact with peers can lead tofrustration and withdrawal [33]-[35]. Impaired language development and social–emotional problems in deaf and CHL are linked to lower social skills and fewer friendships [5],[36],[37]. So, the second objective of this study was to compare improvement inadaptive behavior after the training program based on peer tutoring for CHL. The results showed that there is a highly statistical significant difference between pre and post-test on communication subscale of (VABS-R II): (t=10.99, p<0.001) ; for CHL in favor of post-test. The CHL Showed a high progress on the communications skills: receptive, expressive and written (41.3%, 22.48%, 35.6% respectively). This progress indicates that the CHL benefit from interacting with peers during sessions. They develop their receptive language because they have to listen and understand instructions and commands carefully during session from peers to accomplish the tasks and play. The results, also, show that there is a development in their expressive language; because they are able to express about what they want, they can

join in conversation, they can ask for information in different situations: at school, at street, at transportation, at club. The CHL showed progress in the written language because their peers interact with them during lessons and sessions and teach them how to write what they taught or what they listen in a way that is suitable for their age, using a lot of aids under the supervision of the researchers and teachers at school. These results are consistent with a lot of studies [5],[38], [39].

Besides communication problems, The CHL have also been shownto develop more social and emotional problems than hearing peers[40]-[44]. For example, they experienced a lower quality of life and daily life skills than their peers without hearing loss[45]-[47].

The results showed that there is a statistically significant difference between pre and post-test on Daily life skills subscale of (VABS-R II): ($t=20.93$, $p<0.001$); for CHL in favor of post-test.

The progress of daily life skills for CHL is due to exposing to social and daily life situations based on peers tutoring. Peers interact with CHL to teach them how to act with situation and how to learn daily life skills: personal skills, such as: dusting and vacuuming, brushing, kaizen, arrange books or clothes; Domestic skills, such as: asking about a location, knowing the way to school, crossing the street, shopping; Community skills such as: Prepare for an occasion, speak with strangers, Identify the content of the concert ,Talk to new people at the concert, play a group game). These results are in agreement with a lot of resultswhich asserted that the CHL became better adjusted whengreater attention was given to social-emotional aspects of the students' development[48], [49].

Deaf and CHL show difficulties with peer relationships andsocial interactions in general[50]. They often failed to establish meaningful andcloserelationships with their hearing peers in public schools. As a result, many CHL reported feelingsof isolation and loneliness in school, and they are not fully enjoying with their peers[51].Also, Social participation and emotional wellbeing became more problematic for some children as they reached adolescence and appeared to struggle with issues around being deaf or feeling self-conscious about the hearing aids they needed to wear and fitting in with hearing peers [52]. The results of this study indicated that there is a statistically significant difference between pre and post-test on socialization subscale of (VABS-R II): ($t=13.69$, $p<0.001$); for CHL in favor of post-test.It seems that peer interaction with HL during training sessions allowed HL children the to perform better in some aspects of socialization (interpersonal relationships, play and leisure, and coping skills). These findings were in agreement with literature data suggesting that CHL performed properly better on social function skills after rehabilitation[9], [53]- [56].

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