



Published in final edited form as:

*J Dev Phys Disabil.* 2017 February ; 29(1): 25–34. doi:10.1007/s10882-016-9501-5.

## Retrospective Basic Parent-Child Communication Difficulties and Risk of Depression in Deaf Adults

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### Abstract

This paper describes the relationship between retrospective communication difficulties and current depressive symptomatology. A total of 143 deaf/hard-of-hearing late adolescents and adults (64 % White; 55 % female) completed questionnaires related to parent communication, language history and current psychological functioning. Logistic regression models were used to estimate the likelihood of having depression that is associated with understanding parents' communication after controlling for gender, hearing level, and language history. Significant odds ratio indicated that the difficulties in understanding basic communication with parents increased the odds of depression symptomatology. The odds ratio indicates that when holding all other variables constant, the odds of reporting depression were at least 8 times higher for those who reported being able to understand some to none of what the same-sex parent said. For the different-gender parent, only the mother's communication with the male individual was associated with depression. Although our study findings suggest that DHH men and women with history of communication difficulties at home are at risk for depression in adulthood, they do not provide information on the causal mechanisms linking communication difficulties early in life and depression later in life. Greater attention should be given to promoting healthy communication between DHH girls and their mothers as well as DHH boys and their fathers, which might reduce the impact on later emergence of depression in the DHH individual.

### Keywords

Deaf; Hard of hearing; Depression; Communication

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#### Compliance with Ethical Standards

##### Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

##### Informed Consent

Informed consent was obtained from all individual participants included in the study.

##### Conflict of Interest

Author K declares that she has no conflict of interest. Author B declares that she has no conflict of interest. Author S declares that she has no conflict of interest. Author L declares that she has no conflict of interest.

In studies that involve hearing children with hearing parents, research has consistently indicated that the quality of the parent-child relationship influences adolescent mental health outcomes. Most of the early research focused on the relationship between the mother and child; however, the father-child relationship also plays an important role in determining adolescent mental health outcomes. When parent-child relationships have conflicts or lack of support, this can negatively affect the adolescents' outcomes. A cross-sectional study of 243 adolescents found that depressed adolescents experienced more conflict and less support in their relationship with their parents, and this effect is stronger in father-adolescent relationships (Sheeber et al. 2007).

A higher rate of delinquency is reported when fathers have a poor emotional connection to their sons, and when mothers have poor emotional connections to their daughters (Moitra and Mukherjee 2012). Hostile parent-child relationship can potentially increase the risk of depression in adolescents. In a study by Lewis and colleagues, findings show that hostility in mother-daughter relationships increased the risk for depression in the daughters only (Lewis et al. 2014). Hartman et al. (2008) looked at the effect of parental depression on the male and female offspring's presence of depression or anxiety, and whether the likelihood of the offspring having depression or anxiety varied by gender and the number of affected parents. Of the four groups, daughters who had affected mothers were at the highest risk for depression and anxiety. Sons with depressed fathers and unaffected mothers demonstrated the lowest risk of depression and anxiety (Hartman et al. 2008). In another study of 524 teens and young adults and 366 parents, greater communication problems with depressed parents were associated with greater symptoms of depression or anxiety in the offspring (Landman-Peeters et al. 2005). However, high perceived social support was reported to have a buffering effect on the mental health outcomes in the offspring. In the studies referring to hearing children and their hearing parents, parent-child communication is typically not impeded by language and modality barriers. The focus is typically on what messages are sent, what messages are heard, and what messages are understood, not on message communication integrity. Unfortunately, this is not always true for deaf and hard-of-hearing (DHH) children who do not share the same language as their parents.

DHH children and their parents' communication begins with being able to understand what each person is conveying at the word and sentence levels. Once these basic communication levels are met, then it is likely that the DHH child-parent can engage in high quality communication that is frequently associated with positive outcomes. Another issue to consider is the degree of language proficiency that may differ between the parent and child. For example, the parent might not be as proficient in sign language as the child, or the child might not be as proficient in spoken English as the parent. This communication discrepancy adds yet another layer of complexity in parent-child communication; simply trying to understand each other's basic communication can create stress within the parent-child relationship.

Difficulties with communication at home were mentioned as one of the risk factors for depression disorders among deaf children (Fellinger et al. 2009). In a clinical study of 38 DHH clients (ages 21–65) who had depression-related diagnoses, clients who had lower severity of depression were more likely to report positive perceptions of communication

with parents, although this relationship was not statistically significant due to small sample size (Leigh and Anthony 1999). A cross-sectional research with 231 DHH adolescents revealed a strong association between the adolescent's perception of how much she/he understands what the parent says and the adolescent's self-report of current depressive symptomatology (Kushalnagar et al. 2011). To date, these are the only studies that specifically included the deaf individual's perception of communication with parents as a variable and examined its association with level of depression symptoms. In a review of mental health literature on DHH people, many studies included common DHH-related demographics such as hearing levels, parent hearing status, and modality of communication used at home or in school (Fellinger et al. 2012). None of these demographic variables were found to be significantly associated with depressive symptomatology.

When the DHH adolescent is depressed and also does not perceive communication with hearing parents to be accessible, this adolescent is likely to experience a lack of belonging and perceive quality of life at home to be poor. This was a recurrent theme that emerged in qualitative interviews with DHH adolescents from diverse backgrounds (Skalicky et al. 2010). When the person is the only deaf member in the family and struggles to participate in everyday spoken conversations at the dinner table or family gathering, the DHH person might feel neglected and frustrated. When this stressful family-child communication experience is coupled with poor coping mechanisms (e.g., acting out; giving up; abruptly leaving the situation), this might be perceived as a form of early life stress. In the general literature, early life stressors, including those involving social rejection and neglect, are linked to depression (Slavich and Irwin 2014) and greater emotional sensitivity to stress (Dougherty et al. 2004; McLaughlin et al. 2010).

The association between retrospective adolescent-parent communication and current adulthood depression has not been examined empirically in a diverse sample of DHH late adolescents and young adults who have left home and are in college, and thus is the focus of this paper. We also examine the influence of gender in view of the mixed findings that DHH females are more likely than DHH males to suffer from depression. Within the Deaf Netherlands sample who used primarily sign language to communicate, there were no significant differences in the self-reported mood symptoms between Deaf Dutch women and men (Kvam et al. 2007). Contrary to this finding, a UK-based study of 298 Deaf signers reported a relatively higher percentage of self-reported depression among women than men (Emond et al. 2015). We aim to investigate if such findings also apply to our college-aged sample in USA. We also investigate if the depression symptoms can be made worse by poorer communication that occurred between the DHH college student and parents.

## Methods

### Participants

Following IRB approval by the local institution in Western New York, 143 DHH and 90 hearing college students similar in ages and college status were recruited through flyers, social media, and word-of-mouth. We did not exclude participants who self-reported that they had been diagnosed with depression, anxiety, and substance abuse. No attrition occurred in this study.

## Measures

**Demographics**—Both DHH and hearing participants answered standard background questionnaire, including age, gender, race/ethnicity, and history of mental health diagnoses. Only DHH participants answered questions that are specific to DHH demographics. These include: self-reported hearing level, parent’s hearing status, language preference, and neurological etiology of deafness. Neurological etiology of deafness is a term that defines the causes of deafness, which include three types of hearing losses: conductive, sensorineural, and mixed (combination of conductive and sensorineural).

**Adolescent-Parent Communication History**—We revised the communication questions from a previous study with 231 deaf and hard of hearing youth (Kushalnagar et al. 2011). In that study, the participants were living with their parents. They were asked to indicate how well they understood their parents. Because our sample were in college and away from their parents, participants were asked to provide an overall perception of how well they understood their mother and father (“When you were a child, how well did you understand what your mother said?”). Response options were: 1 = Most or all of what they said, 2 = Some of what they said, 3 = Little or none of what they said. Separate ratings were obtained for communication with the participant’s mother and father. Because we were interested in the basic level of communication as the primary communication variable, we did not probe further on the higher-level quality of communication.

**Depression**—We used the Beck Depression Inventory-2nd revision (BDI-II), which included 21 questions with a scale value of 0 (no symptom) to 3 (high symptom). We followed the standardized cutoffs from the BDI-II measure; a score of greater than 13 indicated presence of depressive symptomatology (Beck et al. 1996). Participants were grouped into the following categories: Not depressed (scores of 0 to 13) and Depressed (scores greater than 13). This measure has been evaluated for validity and reliability with DHH adults (Leigh and Anthony-Tolbert 2001).

## Procedure

Consent procedures and questionnaires were presented in ASL and English text by a DHH bilingual research assistant. After written consent was obtained, all DHH and hearing participants were administered the BDI-II. Research assistant informed the DHH participants that they could view the BDI-II questionnaire in English and ASL. If the DHH participant chose to see the BDI-II questionnaire in ASL, the research assistant signed the questions. Only the DHH participants were administered the family communication questionnaire.

## Statistical Methods

A logistic regression method was used to estimate the likelihood of having depression that is associated with communication difficulties after controlling for hearing level, and language preference.

## Results

Our study sample consisted of college-aged students with a range of hearing levels and language preferences. Table 1 presents the demographic data for the total sample and by gender. Using a classification cut-off rate of .19 to reflect the actual percentage of male participants with depression, the model for males correctly classified 75 % of those who were depressed (sensitivity) and 80.8 % of those who were not depressed (specificity), for an overall success rate of 79.7 %. In the model that included only females with a classification cut-off rate of .28, the sensitivity rate was 57.1 % and the specificity rate was 87.3 %, with an overall rate of 78.9 %. The confidence interval was set at 95 % for estimated odds ratio. Using the Hosmer-Lemeshow test of goodness of fit, our model with these predictors was not significantly different from a null model with no predictors and therefore fits the data at an acceptable level ( $x = 1.08$ ;  $p = \text{NS}$ ).

Twenty-four percent of DHH participants scored at a threshold cut-off score greater than 13 on the BDI-II measure. Among men within this sample, the percentage of self-reported depressive symptomatology at or above the cut-off was 18.8 %, whereas for women the percentage was 27.8 % ( $x^2 = 1.62$ ,  $df = 1$ ,  $p < .24$ ). For both DHH men and women, self-reported depression symptomatology was lowest among those reporting no history of communicative difficulties. Table 2 shows the frequency of depressive symptomatology by hearing status and gender. For both of DHH and hearing groups, no gender effect was found for depression ( $p = \text{NS}$ ). There was a greater tendency for DHH participants to report greater depressive symptomatology than the hearing participants although this group difference was not significant.

### Association between Communication Difficulties and Depressive Symptomatology

Approximately 27 % of our study sample had a history of communication difficulties where participants reported understanding some to little of what their mother or father said. Consistent with previous research with DHH youth (Kushalnagar et al. 2011), there were no significant differences in the depression scores between those who understood some and those who understood little to none of what their parents said. These participants were merged into one group and classified as having presence of communication difficulties. Participants who reported that they understood most or all of what their parents said were grouped under “absence of communication difficulties.” These two groups were then compared in the subsequent analyses.

Bivariate correlation analysis revealed negative association between communication difficulties and hearing levels. People who self-reported having mild to moderate hearing level were more likely to report greater communication difficulties with their parents compared to people who self-reported degrees of severe to profound hearing levels. Reports of depression symptomatology is positively associated with communication difficulty,  $r = .28$ ,  $p < .001$ . As shown in Table 3, significant odds ratio indicated that reports of communication difficulties increased the odds of depression symptomatology. There are gender-specific variations in the association between the individual’s gender and communication with mother and father. The odds ratio indicates that when holding all other variables constant, the odds of reporting depression were at least 8 times higher for those who reported being

able to understand some to none of what the same-sex parent said. As indicated in Table 3, the reverse occurs for the parent of the opposite sex. For example, if the male is not able to understand his mother well, the likelihood of the male developing symptoms for depression is lower compared to the odds of depression associated with perceived ability to understand what the father said.

## Discussion

The primary aim was to investigate the relationship between adolescent-parent communication difficulties and the risk of depression in a sample of DHH adults aged 18 to 50. According to Watzlawick et al.'s study of family communication (Watzlawick et al. 1967), successful communication includes both understanding the individual's nonverbal communication behavior and interpreting the content message that the parent or child receives from one or another. For DHH children who do not have full auditory access to the parent's spoken language, the parent-child communication must focus on capturing content words and sentences that the parent or child says to each other before advancing to the interpretation of the content message. For example, the hard-of-hearing child who has imperfect functional hearing ability through the use of hearing aids or cochlear implants must expend greater focus on accurately capturing the parent's dialogue at a noisy family dinner table. Similarly, a deaf child who is more proficient in a signed language than a spoken language might exert greater effort on lipreading or understanding the parent's choppy signed dialogue. In both cases, the child partially understands what the parents say and might miss out on critical content. The impact of these communication struggles can be negative in cases where the deaf or hard-of-hearing child asks the parent to slow down or repeat, and the parent responds with "never mind, it is not important" or "please wait... I will tell you after I finish talking with others." When such responses are repetitive throughout the child's life, this can make the child feel less important and neglected, which increases risks for depression and other psychological problems.

While epidemiological data from a large, representative sample is not available for the DHH population, a review of studies consistently suggested that the rate of depression appears to be higher among the DHH population in comparison to the general population (Fellinger et al. 2012). In our study, we treated depression as a categorical variable because this distinguished healthy individuals from depressed individuals based on BDI-II cutoff scores greater than 13. The percentage of self-reported depressive symptomatology in our sample was 24 %. This is much lower than the reported depression rate of 44 % in an U.S. deaf sample of community adults who use ASL as based on an ASL depression screener ( $n = 72$ ; Eckhardt et al. 2013). One possible explanation might be that educational level is a factor, considering that the U.S. deaf sample of community adults is not composed entirely of college graduates compared to our current sample. The fact that no gender effect was found for depression in this study while the literature confirms the greater reports of depressive symptomatology among women suggests that for our sample, deaf men may struggle more with societal expectations for men compared to the general population, thus heightening their risk for depression

Our findings are consistent with quantitative and qualitative studies suggesting that negative communication experiences during childhood are associated with depression in adulthood. Both men and women with a history of communication difficulties were at greater odds of experiencing depression in adulthood than those who reported that they understood most or all of what their parents said. Within each gender sample, the likelihood of depression occurring for males and females with a history of communication difficulties varied according to the gender match between the individual and the parent. In our study, DHH females were more affected by communication difficulties with their mother than their fathers. Likewise, the impact of poor understanding of what fathers said compared to mothers was greater for DHH males. These findings parallel several studies that reported gender-specific differences in mothers and fathers' association with the adolescent's outcomes.

Lewis et al. (2014) used the Iowa Family Interaction Rating Scale to code behavioral interactions between 543 adolescents and their families. Rating data based on dyadic relationship scales was used to assess parent-child hostility characteristic and its relationship with adolescent depression. Mother-daughter relationships that were characterized as hostile were found to be significantly associated with depression in girls. However, no significant relationship emerged between father-son hostility and depression in boys (Lewis et al. 2014). One possible explanation for the lack of significance in depression for boys may be that the hearing fathers are communicating with their hearing sons, even if the father-son relationship was characterized as hostile. In our study, males who reported that their father had difficulty understanding them were much more likely to report depressive symptomatology. This might mean that boys need to be able to understand what their fathers are saying at the basic level, anticipate that males are supposed to be "tough", and this perception can potentially serve as a buffer against depressive disorders. Of course, this is speculative and deserves further investigation.

Additional information about the parent's marital status and frequency of communication with the DHH individual will be useful to examine possible interactions with the DHH individual's perceived level of adolescent-parent communication difficulties and their impact on depression. Although our study findings suggest that men and women with history of communication difficulties are at risk for depression in adulthood, they do not provide information on the causal mechanisms linking communication difficulties early in life and current depressive symptomatology. An observational behavioral longitudinal study using a dyadic rating scale similar to one used in Lewis et al.'s study is needed to identify characteristics of child-parent communication that are associated with the DHH child's depression. This information will help identify the environmental risk factors in the pathway to the DHH child's depression, which in turn can be used to develop or improve communication interventions for deaf children and their parents.

### Study Limitations

This paper examines only difficulties that DHH adolescents experienced in understanding communications from their parents rather than addressing the problem more comprehensively. The study did not test the association between adolescent-parent

communication difficulties and depression in the hearing group. This could establish the specificity of the association between communication problems and subsequent distress in people who are deaf or hard of hearing. It is plausible, too, that communication difficulties as perceived by parents might relate to adolescents' and their own distress. The retrospective measurement of communication difficulties used in this study introduces some threats to validity such as selective memory and effects of distress on appraisal of parental communication. To address this limitation, longitudinal studies that follow affected and non-affected DHH children over time with inclusion of parents' reports and observations are needed to document communication experiences and reported depressive symptomatology from childhood through early adulthood. Additional documentation of the diagnoses would be useful to verify self-reported diagnostic status and treatment history.

### Future Directions

Communication barrier is a malleable factor that can be addressed with interventions and environmental changes. There are no empirically tested interventions that address communication issues that are unique to the experiences of DHH children, and none addresses these issues in the context of preventive depression. A randomized-controlled preventive depression study is needed to address both the parent and adolescent's ability to be flexible, considering that the ability to recognize and solve communication breakdowns can serve to improve the relationship and maintain healthy parent-adolescent connection as well as promote positive youth perceived quality of life and prevent depressive disorders. A longitudinal study that documents trajectory development associated with parent-child communication and depression will also prove to be fruitful. The identification of modifiable risk factors will inform parent-child communication interventions aimed at proactive management of stressors that occur at critical time points, with goals of reducing the risk for depression in DHH individuals and improving healthy communication outcomes earlier in life.

### Acknowledgments

#### Funding

This work was supported by National Institute on Deafness and Other Communication Disorders (NIDCD) of the National Institutes of Health [1R01DC014463-01 A1 to P.K. and 3R01DC014463-01A1S1 diversity supplement to support S.B.]. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

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**Table 1**

## Demographic Characteristics by Gender

Characteristic	Study respondents (N = 143)	Male (n = 65)	Female (n = 78)
Mean age (SD) in Years	22(3)	22(3)	21(4)
Hearing level (%)			
Mild to Mod-Severe	21.0	22.0	21.0
Severe to Profound	79.0	78.0	79.0
Etiology of Deafness (%)			
Neurological	24.2	30.0	19.6
Genetic or Unknown	75.8	70.0	80.4
Ethnicity (%)			
Caucasian	65.5	62.5	67.9
Asian	11.3	14.1	9.0
African American	14.8	15.6	14.1
Native American	0.7	0.0	1.3
Hispanic	7.7	7.8	7.7
Preferred Language (%)			
American Sign Language	57.7	57.8	57.7
English	42.3	42.2	42.3

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**Table 2**

Prevalence (%) of Depressive Symptomatology Among Male and Female Participants

	<b>Minimal</b>	<b>Mild</b>	<b>Moderate</b>	<b>Severe</b>
Hearing ( <i>n</i> = 90)				
Male	88.1	4.8	4.8	2.4
Female	81.3	12.5	6.3	0.0
Deaf ( <i>n</i> = 143)				
Male	81.3	7.8	7.8	3.1
Female	72.2	13.9	11.4	2.5

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Summary of logistic regression analysis for variables predicting depression by female and male, controlling for background variables

**Table 3**

Predictor	Female		Male	
	<i>B</i>	<i>SE B</i>	<i>B</i>	<i>SE B</i>
Hearing level	0.47	0.34	1.60	-0.64
Preferred language	0.42	0.59	1.52	-0.06
Communication difficulty (mother)	2.08**	0.80	7.96	-2.14*
Communication difficulty (father)	-0.13	0.76	0.88	2.47**
Constant			-6.27**	0.07
Model $\chi^2 =$			13.52**	13.26**
<i>df</i>			4	4

*e<sup>B</sup>* exponentiated *B*; Depression predictor coded as 1 for *presence (mild to severe)* and 0 for *absence (normal)*; Self-reported history of communication difficulties coded as 1 for *presence* and 0 for *absence*. Preferred Language coded as 1 for *ASL* and 2 for *English*. Hearing level coded as 1 for *mild* through 5 for *profound*

\* *p* < .05.

\*\* *p* < .01