Theory of Mind and Emotion Recognition in Children with Hearing Loss

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Introduction

Social behaviors, personal adjustment, emotion regulation, and emotion understanding can be adversely affected for children with hearing loss (Wake et al., 2004; Yoshinaga-Iwano & deCrettegou, 2001). These delays are influenced by speech and language ability, but other factors, such as emotion recognition and ToM, might influence development of social and emotional abilities in children with hearing loss as well.

Emotion recognition, including the ability to discriminate the various expressions of emotions in facial, gestural, and vocal display, is not well defined for children with hearing loss. ToM refers to the understanding that people have intentions, desires, knowledge, and beliefs, and that these mental states might be different from their own and influence one’s behavior. This understanding underlies the development of many abilities that involve social cognition, including symbolic play, role-taking ability, and referential communication (Rammel et al., 2001). Deaf children with hearing parents and those with cochlear implants are delayed in ToM development (Moeller, 2007; Moeller & Schick, 2006; Peterson, 2004; Peterson & Siegel, 2000; Schick et al., 2007).

Purpose

This study proposes that delays in emotion recognition and ToM are two aspects of human development that underlie the social deficits in children with hearing loss. The primary research objective of the current project is to control for variance in performance due to language ability and examine the following primary question:

• Is there a relationship between emotion recognition and ToM beyond that which can be explained by language ability?

Emotion recognition ability, one factor involved in social development, is not well defined in children with hearing loss. A second research question is:

• How does the emotion recognition abilities of children with hearing loss compare to children with normal hearing?

Historically, children who are deaf or hard of hearing have been shown to have delayed or impaired social development compared to children with normal hearing (Cambra, 2005; Most, 2007; Wake, et al., 2004; Yoshinaga-Iwano & Abdala de Uzcategui, 2001). Current data regarding the psychosocial development of children are needed. Therefore, additional research questions for this project are:

• What is the current state of social and emotional development in children with hearing loss?

Methods

Participants

Children with hearing loss (n=22, 10 females, mean age 6 years, 3 months, SD 1.9) and children with normal hearing (n=22, 10 females, mean age 6 years, 3 months, SD 1.9) were included in the study. The groups were matched on age, gender, and academic performance. The groups were comparable on the measure of age and gender.

Materials and Procedures

Emotion Recognition Test (ERAT): The ERAT is a 30-item picture card test that assesses children’s emotion recognition abilities in a standardized format. The test includes pictures of emotions that are displayed in different situations and contexts. The test also includes a control condition that assesses children’s ability to recognize emotions in the context of a story.

Theory of Mind (ToM) Test: The ToM test is a measure of children’s understanding of mental states and their ability to attribute mental states to others. The test includes scenarios that require children to understand that others have different beliefs, desires, and intentions than the child.

Social and Emotional Behaviors: The Strengths and Difficulties Questionnaire (SDQ) is a measure of children’s social and emotional behaviors. This measure includes five subscales: hyperactivity, attention deficit, emotional symptoms, peer problems, and conduct problems.

Preliminary Findings

Emotion Recognition

Children with hearing loss scored lower than children with normal hearing on the ERAT, t(43) = 4.84, p<0.05. Children with normal hearing identified fewer emotions correctly than children with normal hearing, t(21) = 2.65, p<0.05. Children with hearing loss identified fewer emotions correctly than children with normal hearing, t(13) = 2.61, p<0.05.

ToM

Children with hearing loss scored lower than children with normal hearing on the ToM test, t(43) = 2.26, p<0.05. Children with normal hearing scored lower than children with normal hearing for Total ToM score, t(12) = 2.05, p<0.05. Children with hearing loss scored lower than younger children with normal hearing for Total ToM score, t(13) = 5.96, p<0.05.

Conclusions

Preliminary findings suggest:

• Younger children score lower on a test of emotion recognition, Theory of Mind tasks, and a standardized language test than older children in both groups (i.e., hearing loss and normal hearing).

• Standardized language scores predict performance on tasks of emotion recognition and Theory of Mind. Further, emotion recognition predicts variance in Theory of Mind ability beyond that which can be explained by language ability alone.

• Younger children with hearing loss were reported to have greater emotional stress than younger children with normal hearing, t(12) = 2.62, p<0.05.

• Older children with hearing loss were reported to have greater overall stress and behavioral difficulty than older children with normal hearing, t(15) = 2.69, p<0.05, t(5) = 2.88, p<0.05.

• Data collection for this study is ongoing.

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