



**ROYAL ARCH RESEARCH ASSISTANCE
CENTRAL AUDITORY RESEARCH CENTER**

December 2009 through February 2010

1. Dr. Joan Burleigh has been invited to speak on central auditory disorders and autism spectrum challenges at a special meeting hosted by the Autism Society of Colorado in March 2010 in Denver, Colorado. Central auditory processing challenges have been observed in children and adults with an autism spectrum disorder. Behaviors such as difficulty understanding others, sensitivity to loud sounds, easily distracted, confused in noisy places, and delayed or lack of response to speech may be some of the behavioral characteristics listed when describing auditory related difficulties for individuals with an autism spectrum disorder. By understanding the impact of central auditory nervous system dysfunction on individual function and with appropriate diagnosis, management schemas can be implemented to assist in overall communication.

The presentation will focus on research involving behavioral manifestations, the auditory system including the central auditory nervous system, assessment measures and research relating to various management approaches for central auditory processing challenges. It also will include a discussion of the feasibility of testing and potential management outcomes for children and adults with autism. A review of various technologies available will be discussed. Research findings, derived from the Center's extensive database, will also be presented.

2. As was documented in the fourth quarter report of 2009, the Able Kids Foundation has been researching novel ways to enhance speech clarity in the presence of background noise. An investigational study was designed and implemented this past year to measure speech discrimination ability in noise while using high-fidelity, precision-based headphones and novel auditory technology.

A total of 83 native English-speaking male and female subjects from age eight years through adult were included in this study. Participants were recruited from the community and the Central Auditory Diagnostic Center at the Able Kids Foundation. These 83 participants were separated into the following groups, 1) normal hearing, 2) hearing loss, and 3) central auditory processing disorder. All participants were divided into these groups based upon their pure tone findings and, for those included in the central auditory processing disorder group, by central auditory processing testing. Participants with hearing loss had hearing thresholds that span levels of impairment from mild degree through profound.

Participants were evaluated using strict audiologic controls. All audiologic test procedures were conducted in a double-wall, IAC, sound-proof room. A Grason-Stadler (GSI-61) diagnostic audiometer was used to present test items to participants via TDH-50

electrodynamic earphones (10 ohms, mounted in MX/41 AR) cushions. The audiometer was calibrated in accordance with ANSI (1989, S3.6) specifications before the collection of data. Speech stimuli for monosyllabic word testing were played on a CD player and passed through the speech circuit of the GSI-61 diagnostic audiometer. Speech reception thresholds (SRT) were established using the W-1 CID Spondee Word Lists, and speech discrimination scores in quiet were obtained using Campbell's Word Lists (Campbell, 1965). Campbell's word lists are standardized and are commonly used in auditory studies. The pattern of each monosyllabic word is of the consonant-vowel-consonant type. Impedance audiometry was also performed using the Grason-Stadler, model TymStar impedance unit. Tympanometry was administered for both ears.

Significant improvement in speech intelligibility was shown with the novel auditory technology for all groups. Two different types of speech noise were used for this study.

3. Dr. Joan Burleigh and Jo Waldron were included in a select group of invitees to receive a premiere sneak preview of the HBO film "Temple Grandin." As noted in the press release, "*TEMPLE GRANDIN* brings to the screen the story of the best-selling author, animal scientist and autism advocate. The film chronicles Temple's early diagnosis; her turbulent growth and development during her school years; the enduring support she received from her mother, her aunt and her science teacher; and her emergence as a woman with an innate sensitivity and understanding of animal behavior."

Dr. Temple Grandin has chronicled her own central auditory processing research testing at the Central Auditory Research Center by Dr. Joan Burleigh in her book *Thinking in Pictures, My Life with Autism*, Vintage Books, New York, 1995. Over the years, we have received many calls from individuals who have read her book and are interested in the Center's research, diagnostic testing, and individualized management.

4. Two eight-panel brochures were sent to Jim Wall for RARA distribution. One brochure, Allen's Story, was reformatted so that it could be used in an eight-panel brochure format. A brochure on RARA and the Center Auditory Research Center includes information about RARA and central auditory processing disorders in adults and children.
5. Two telephonic Board of Trustees meetings were held this past quarter. The meeting held on December 8, 2009 was scheduled to hold officer elections and included a discussion on additional Board members. The regularly scheduled Board of Trustees teleconference meeting was held on February 16, 2010. As always, we greatly appreciate our Board of Trustees and their input throughout the year.

Joan M. Burleigh, Ph.D.
CEO and Co-Founder

March 1, 2010