

**TITLE:** Hear Here Alabama

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Social Sciences Division



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### **ABSTRACT**

Currently, the extent of hearing loss among adults living in Alabama is unknown. Recent evidence has suggested that over 20 million adults in the US over the age of 50 have a significant hearing loss, but within the state of Alabama we have no data providing us with information about hearing loss and hearing health. Recent evidence has suggested that hearing loss can lead to other health issues, including cognitive decline which, in turn, can lead to other complicating physical conditions, such as depression and cognitive decline. The objectives of this project are to identify the prevalence of hearing loss and to identify how hearing loss impacts the general physical and emotional health of adults living in Alabama. Our goals will be accomplished by traveling to sites within the state and measuring hearing thresholds, documenting general and emotional health, and assessing working memory skills. The preliminary data collected from this project will be used to apply for a USDA Community and Economic Development grant that will fund an Audiology industrial van containing the necessary equipment to perform hearing evaluations and provide effective and appropriate intervention for Alabama residents who suffer from hearing disorders.

## Hear Here Alabama Project

**Significance and Background:** Identifying adults with hearing loss and providing appropriate intervention could potentially improve the lives of many adults living in the state of Alabama. Within the United States it has been estimated that approximately 26.7 million adults over the age of 50 have a clinically significant hearing loss and roughly 14% of these individuals use hearing aids (Chien & Lin, 2012). Without some form of amplification for these hearing-impaired adults communication among friends and family can be significantly impaired. New evidence has suggested that when social engagement declines, physiological pathologies can occur in later life. That is, hearing loss has been linked to poorer cognitive functioning and to dementia (Lin et al., 2011; Salthouse, 1996). According to the numbers above, there could be approximately 86% of adults in the United States living with hearing losses who are either unaware that they have a hearing loss and or have few, if any, resources to address the effects of the hearing loss.

In Alabama, approximately 22% of the population is 55 years old or older. Additionally, the state ranks 42<sup>nd</sup> in poverty levels (U.S. Census Bureau). There could be, therefore, a large percentage of the population that has both a hearing loss and have no resources to address the hearing loss. In addition, hearing loss has been associated with an increased cost to society and to lower wages at the individual level (Jung & Bhattacharyya, 2012; Mohr et al., 2000). To help improve the lives of adults living in Alabama, therefore, we need to understand the extent of hearing loss among this population and provide effective and appropriate assessment and intervention for these individuals. Currently, however, it is unknown how many people within Alabama have hearing losses and also have no access to hearing health care. Within the larger centers of the state (e.g., Tuscaloosa, Birmingham, Huntsville, Montgomery, Mobile) there are resources available to those with hearing loss but in the rural areas there are few or no resources.

In fact, there is little evidence about the hearing health of individuals living in rural counties across the United States. One study from Virginia revealed that of the 86 adults examined using a hearing screening test, roughly half of them failed (Patterson & Renaud, 2012). Due to the limited number of individuals participating in this study and to the fact that the data were collected from primary care facilities in rural areas, the results cannot be generalized to all adults living in rural areas of the United States. Within the state of Alabama we know very little about the extent of hearing loss, and consequently, there are potentially thousands of people within our state who are suffering from the devastating impact of hearing loss and have no resources to help them. *To help improve the lives of all Alabamians we must address their hearing health needs. To understand the extent of hearing loss in Alabama and provide essential services, therefore, we must travel to sites all across the state.*

**Specific Aims:** The project outlined in this proposal will be the first in a series of studies that will identify hearing loss prevalence and hearing health in Alabama. Specifically, this project will provide data that will allow us to determine the prevalence of hearing loss, along with any associated physical and emotional issues, in Alabama. Future studies will identify issues associated with hearing health care including access to health care and hearing health care education. The specific aims are:

1. To identify the prevalence of hearing loss of adults living in Alabama.
2. To identify how hearing loss impacts the general physical and emotional health of individuals living in Alabama.

Since July of 2013, a group of 7 undergraduate and graduate students from the Departments of Psychology and Communicative Disorders and the PI have tested 170 adults living in Tuscaloosa and surrounding counties (i.e., Greene, Pickens, Fayette and Bibb). We need to continue our testing efforts during the next couple of years if we want to adequately identify the extent of hearing loss within the state and assess the hearing health of all Alabamians. *Ultimately, the goal of this*

*project is to purchase an industrial van that holds the necessary testing equipment that can travel to rural areas and be used to identify hearing loss and provide appropriate*

*intervention measures.* In the fall of 2014 we will be applying for a USDA Community and Economic Development grant which will provide the initial funding for the Hear Here Alabama van. More preliminary data is required before we can apply for this grant.

**Procedures:** One hundred and twenty adults living in Alabama who are age 19 years old or older without a documented intellectual disability (e.g., Down Syndrome) will be included in the study.

The following list of tests will take approximately 1 hour to complete and will be conducted in rooms within County Health Departments and Community Buildings (e.g., churches and community centers) in counties surrounding the Tuscaloosa region (i.e., Pickens, Fayette, Bibb, Hale).

1. A hearing evaluation will be conducted using a portable audiometer, a device that tests hearing thresholds at different frequencies.
2. Visual working memory will be assessed using the Continuous Visual Memory Test (Larrabee & Trahan, 1992). Individuals are shown a number of images and report if the image is “New” or “Old.”
3. Individuals will complete questionnaires that assess their Hearing Handicap (i.e., Hearing Handicap Inventory for Adults), their General Health (i.e., SF-36 Questionnaire), their Emotional Well-being (i.e., Patient Health Questionnaire-9), and their Social Support (i.e., Medical Outcomes Social Support Survey).

**Measures of Success:** The project will be successful based upon our ability to 1) provide us with sufficient preliminary data to apply to the USDA grant (i.e., total N = 290); 2) allow us to begin to identify the prevalence of hearing loss within Alabama, 3) determine if hearing loss is associated with other complicating physical conditions, and 4) compare our data to that observed at the national level.

## Budget and Projected Study Timeline

1. Participants will receive a \$25 Walmart Gift Card.
  - a. 120 participants at \$25 each = **\$3000**
2. Three student research assistants
  - a. Each student will work at the 6 seven-hour scheduled testing days (one in May, two in June, two in July, and one in August) for a total of 42 hours. On each testing day we plan to test at least 20 adults who are scheduled every 15 minutes and rotated through each of the tests as described in the procedures section.
  - b. Each student will receive \$15 an hour.
  - c. The total cost for student research assistants will be **\$1890** (\$15 X 42 hours).
3. The **TOTAL** budget for the project is **\$4890**.

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## BIOGRAPHICAL SKETCH

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NAME Marcia Hay-McCutcheon	POSITION TITLE Associate Professor and Chair		
Department of Communicative Disorders Box 870242, Tuscaloosa, AL 35487-0242			
EDUCATION/TRAINING			
INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Queen's University, Kingston, Ontario, Canada	B.A.	1986	Social Behaviour
Queen's University, Kingston, Ontario, Canada	B. Ed.	1987	Primary Education
University of Tennessee, Knoxville, TN	M.A.	1997	Audiology
University of Iowa, Iowa City, IA	Ph.D.	2004	Hearing Science
Indiana University, Indianapolis, IN	Postdoctoral	2004-2005	Speech Perception

### Positions and Honors

#### Positions and Employment

1987-1989	<b>Primary School Teacher</b> , Durham Board of Education, Ontario, Canada
1990-1993	<b>Itinerant Teacher for Deaf and Hard of Hearing Students</b> , Ontario, Canada
1997-1999	<b>Clinical Audiologist/Research Associate</b> , Indiana University School of Medicine, Indianapolis, IN
1997-2000	<b>Clinical Consultant</b> , Cochlear Corporation, Englewood, CO
2005-2008	<b>Assistant Professor</b> , Department of Otolaryngology-Head and Neck Surgery, Indiana University School of Medicine, Indianapolis, IN
2005-2008	<b>Psi Iota Xi Endowed Scholar</b> , Department of Otolaryngology-Head and Neck Surgery, Indiana University School of Medicine, Indianapolis, IN
2008-present	<b>Associate Professor</b> , Department of Communicative Disorders, The University of Alabama, Tuscaloosa, AL
2009-present	<b>Associate</b> , Center for Mental Health and Aging, The University of Alabama, Tuscaloosa, AL
2009-present	<b>Adjunct Associate Professor</b> , Department of Surgery, Division of Otolaryngology, The University of Alabama at Birmingham, Birmingham, AL

#### Honors

Young Investigator Award, Poster Presentation, CIAP 2005  
 University of Iowa Presidential Fellow  
 University of Tennessee Distinguished Academic Award

#### Peer-reviewed publications (in chronological order)

Kirk, KI, Eisenberg, LS, Martinez, AS, & Hay-McCutcheon, M. (1999). The Lexical Neighborhood Test: Test-retest reliability and inter-list equivalency. *Journal of the American Academy of Audiology*, 10, 113-123.

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- Hay-McCutcheon, M. J., Peterson, N. R., Rosado, C. A., & Pisoni, D. B. (2013). Identification of Acoustically Similar and Dissimilar Vowels in Profoundly Deaf Adults who use Cochlear Implants: Some Preliminary Findings. *American Journal of Audiology*, 2013 Jul 3. [Epub ahead of print].

## Research Support

### Completed Research Support

R03 DC008383; Hay-McCutcheon (PI)  
NIH NIDCD

08/01/06-07/31/10

Speech Perception and Phonological Memory with Combined Electric Acoustic Hearing

The importance hearing aid and cochlear implant use for speech understanding is examined in this project.

Role: PI

F31 DC006532; Hay-McCutcheon (PI)  
NIH NIDCD

08/15/03-08/14/04

Neural Adaptation and Temporal Integration

This project examined the degree to which auditory nerve adaptation influenced behavioral measures of temporal integration.

Role: PI