Cognitive-Communication Difficulties and Listening-Related Stress: Deficits and Detection
SIG 7

INTRODUCTION

The consequences of hearing loss go beyond challenges in speech understanding. Individuals with hearing loss often report listening-related stress and cognitive-communication difficulties. These issues primarily arise from the increased cognitive demands required to perceive and decode speech in complex listening environments. This SIG 7 activity synthesizes findings from two research studies evaluating these listening stress and cognitive-communication difficulties. One study addresses the presence of greater cognitive-communication difficulties in individuals with mild TBI and the other provides ways to use wearable sensors in evaluating listening-related stress. Lander and Roup (2024)'s work demonstrates that adults with mild traumatic brain injury (mTBI) who also report hearing difficulties experience significantly greater cognitive-communication challenges and perform worse on speech-in-noise tasks compared to both healthy controls and those with mTBI alone. The findings point towards a compounded burden of cognitive and auditory strain that may not be evident in standard clinical assessments. This reinforces the need for patient-reported measures to better inform targeted intervention strategies. In parallel, Sarangi and Johnson (2024)'s study discuss the feasibility of using wearable sensors to objectively assess listening-related stress in healthy young adults with normal hearing. Their study reveals that difficult listening conditions, characterized by low signal-to-noise ratios, unpredictable sentences, and negative feedback (conditions often associated with increased listening stress among individuals with mTBI and/or hearing loss), lead to measurable changes in heart rate and respiration, indicating increased stress. However, low or lack of agreement between wearable and lab-grade sensors highlights the importance of methodological rigor in capturing physiological markers of listening effort. Together, these studies converge on the key insight that hearing loss can present with complex communication-related difficulties. For individuals with auditory or neurological vulnerabilities, such as mTBI or subclinical hearing difficulties, a compounded listening load may exacerbate fatigue, anxiety, and social withdrawal. Therefore, advancing both subjective screening tools and real-time physiological monitoring, especially with wearable technologies, holds promise for developing more holistic, personalized approaches to auditory rehabilitation and cognitive-communication support.

LEARNING OUTCOMES

You will be able to:

- Identify the cognitive-communication difficulties commonly reported by individuals with mild traumatic brain injury and hearing difficulties, especially in challenging listening environments.
- Evaluate the potential of wearable sensors to objectively measure listening-related stress through physiological markers such as heart rate and respiration.

Assessment Type

Self-assessment—Think about what you learned and report on the Completion Form how you will use your new knowledge.

CONTENTS

PROGRAM HISTORY and IMPORTANT INFORMATION

Start date: August 27, 2025
End date: August 27, 2030

To earn continuing education credit, you must complete the learning assessment on or before **August 27, 2030.**

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