INTRODUCTION

- Anecdotal reports suggest that CHL may experience physical, cognitive and/or emotional fatigue as a result of difficult listening.1,2 The higher levels of mental effort exhibited by CHL may lead to a listening-related fatigue which may have a negative impact on daily activities. Fatigue in children with other chronic conditions has been linked to school absences, reduced academic performance, sleep disturbances and negative changes in quality of life.
- This paper describes our ongoing work to develop a pediatric fatigue scales with listening related items specific to hearing loss. 

METHODS PHASE I

- **Defining the Issues:** Review literature and conduct focus groups/interviews to define the problem of listening-related fatigue from the perspective of the CHL, their parent’s and the service provider’s (teachers, SLPs, audiologists).

RESULTS PHASE I (FOCUS GROUP)

- **Focus group analyses:** Transcripts were coded and used to identify common themes and domains of listening-related fatigue. Examples are displayed below.

  **School Providers:**

  - “In the cafeteria, …my student sits and sometimes just takes her implant off and even turns his volume down on her hearing aid and that’s like her time to just sit and not have to listen.” 
    - Elementary school SLP

  **Parents:**

  - “She struggles with her last class period each day. …she’s come home with more of a headache, she won’t admit, it’s just too hard to drown out the volume else and listen”
    - Parent of a middle-schooler with bilateral CIs

  **Children:**

  - CHL, especially younger CHL, often struggled to communicate their experiences with listening-related fatigue.
  - They did not always recognize a relationship between trying to hear and understand in difficult listening situations and their fatigue.

RESULTS PHASE II (ITEM DEVELOPMENT)

- **Item Development:** An iterative evaluation process was used to develop an initial pool of 60 test items per group based on quotes transcribed from focus groups. Examples of items are shown to the right.
- **These items targeted listening-related fatigue in three domains Social-Emotional, Cognitive, Physical:** displayed in figure 1 below (20 items/domain)

RESULTS PHASE I (LISTENING DOMAINS)

- **Common factors influencing listening-related fatigue included:**
  - The listening environment (e.g., background noise)
  - The talker (e.g., loudness, speed, accent)
  - The listening situation (e.g., duration of listening)
  - Situational importance/motivation (e.g., importance of understanding)
- **Results suggest listening-related fatigue has a multidimensional structure consisting of:** Social-Emotional, Cognitive, and Physical Fatigue (see figure 1)

RESULTS-PHASE II (ITEM DEVELOPMENT)

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RESULTS PHASE II

- **Conclusions-Next Steps**

  - **listening-related fatigue was originally hypothesized to be a multidimensional construct consisting of Social-Emotional, Cognitive and Physical Domains based on data from focus group data from CHL, parents and teachers/service providers.**
  - **Preliminary analyses based on a 60 item scale suggests the factor structure varies based on respondent (Child, Parent, Teacher).**
  - **A multidimensional structure based on child report and multidimensional based on parent and teacher report.**
  - **Data collection continues additional data are required to:**
    - confirm the tentative factor structure,
    - analyze item quality using Item Response Theory (IRT), and
    - select high quality, unique, items to create a scale, or scales, for research and clinical purposes.

REFERENCES