OBJECTIVE MEASURES OF FATIGUE IN CHILDREN WITH AND WITHOUT HEARING LOSS

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INTRODUCTION

Fatigue is a common complaint of individuals with a wide range of chronic health conditions and a variety of populations. It is a subjective sensation of tiredness that is persistent and unremitting, often with unrefreshing sleep. Fatigue is often a negative effect on physical and mental performance. It is commonly faced by individuals with hearing loss as a result of cochlear implant use. This study aimed to examine listening effort and fatigue in school-age children with normal hearing and with hearing loss (CHL, referred to as CHL-aided and CHL-unaided).

METHODS

Sixty-eight participants (35 CHL-aided and 33 CHL-unaided) completed three measures: fatigue (PVT), visual/motor reaction time task (PVT), and dual task paradigm (Table 1). The CHL-aided group was significantly younger than the CHL-unaided group. The PVT task was completed in a quiet room with a timer and a voice-activated microphone. The dual task paradigm included a memory task and a primary task. The memory task required participants to remember a series of digits presented at a rate of 1 digit per second. The primary task was a series of rapid auditory stimuli presented at a rate of 2 stimuli per second. The dual task paradigm was designed to measure the effects of fatigue on attention and memory. The results showed that fatigue significantly decreased overall performance on the primary task, particularly in the CHL-unaided group. This indicates that fatigue may have a greater impact on individuals with hearing loss, as their overall performance was significantly lower compared to the CHL-aided group.

PRELIMINARY RESULTS

Adjective Measure of Fatigue (PVT):

Mean fatigue scores changed significantly over time (p < 0.01; Fig. 1). The CHL-aided group had significantly lower fatigue scores compared to the CHL-unaided group (p = 0.001). This suggests that fatigue may be a symptom of hearing loss, and that individuals with hearing loss may experience increased listening effort and fatigue during daily activities.

KEY FINDINGS

- CHL-unaided group had significantly higher fatigue scores compared to the CHL-aided group.
- Key findings include increased fatigue over time and decreased performance in tasks requiring attention and listening. This was consistent for both subjective (PVT) and objective (PVT) measures.
- The observed differences in fatigue between the two groups may be due to the varying levels of hearing loss and the impact of hearing aids on fatigue.

KEY REFERENCES


Figure 1. Median reaction time and SE for each task.

Figure 2. Mean amplitude for each group and condition.