Hearing Loss and Fatigue: Assessment and Intervention
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What is Fatigue?

- Fatigue is a complex construct that can occur in both the physical and mental domains.
  - Our focus is on mental fatigue
- Subjectively, defined as a mood or feeling of tiredness, exhaustion or lack of “energy”
- Often associated with a lack of, or decline in,
  - Focus, concentration, alertness and/or mental energy and efficiency
  - Kennedy, 1988; O’Conner, 2006; Lieberman, 2007; Boksem and Tops, 2008

Consequences of Fatigue

- Decreased attention, concentration, mental processing, and decision-making
  - van der Linden et al. 2003; DeLuca, 2005
- Less productive and more prone to accidents
  - Ricci et al. 2007
- Less active, more isolated, less able to monitor own self-care, and more prone to depression
  - Amato, et al. 2001; Eddy and Cruz, 2007

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- Amato, et al. 2001; Eddy and Cruz, 2007
- van der Linden et al. 2003; DeLuca, 2005
- Kennedy, 1988; O’Conner, 2006; Lieberman, 2007; Boksem and Tops, 2008
Who has Fatigue?

- Everybody!
  - Complaints of transient fatigue are common even in healthy populations
- Recurrent fatigue is common in many chronic health conditions
  - Cancer, HIV AIDS, Parkinson’s, Multiple Sclerosis
  - Very little work specifically looking at hearing loss and fatigue

Hearing Loss and Fatigue

- Fatigue is a common accompaniment of hearing loss with severe consequences on quality of life
  - Listening is exhausting!!!
    - Post on hearingaidforums.com
  - “…since I lost most of my hearing…, I’ve had periodic bouts of tiredness that are deeper and of a different quality than I ever experienced before.”
    - Copithorne, 2006
  - “I go to bed most nights with nothing left. It takes so much energy to participate in conversations all day, that I’m often asleep within minutes.”
    - Blog post http://hearingelmo.wordpress.com/2008/06/17/fatigue‐fear‐‐‐and‐‐‐coping/

Quantifying Fatigue Subjectively

- Fatigue can be measured many ways
  - Subjectively using surveys, rating scales and questionnaires that ask about mood or feelings
    - Many options, none specific to hearing loss
- Fatigue scales may be
  - Uni-dimensional: Assess “general” fatigue
    - a composite fatigue measure
  - Multidimensional: Assess various fatigue constructs
    - E.g., General, physical, mental, emotional, sleep, etc...
    - Can also assess frequency and severity

Subjective Measures of Fatigue

- Profile of Mood States (POMS)
  - 65 items used to derive six mood scores including fatigue and vigor (uni-dimensional)
  - Sensitive to effects of multiple variables on fatigue

Below is a list of words that describe feelings that people have. Please read each word carefully. Then circle the number that best describes how you have been feeling during the PAST WEEK, including today.

- McNair et al, 1971
Subjective Measures of Fatigue

- Multidimensional Fatigue Symptom Inventory (MFSI-short form; Stein et al., 2004)
  - 30 items; four fatigue scores (General, Physical, Emotional, Mental), a vigor and total score

  Below is a list of statements that describe how people sometimes feel. Please read each item carefully, then circle the one number next to each item which best describes how true each statement has been for you in the past 7 days.

<table>
<thead>
<tr>
<th>Item</th>
<th>Statement</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>My muscle ache</td>
<td>Physical</td>
</tr>
<tr>
<td>2</td>
<td>I feel upset</td>
<td>Emotional</td>
</tr>
<tr>
<td>3</td>
<td>I feel lively</td>
<td>Vigor</td>
</tr>
<tr>
<td>4</td>
<td>I am worn out</td>
<td>General</td>
</tr>
<tr>
<td>5</td>
<td>I have trouble paying attention</td>
<td>Mental</td>
</tr>
</tbody>
</table>

Subjective fatigue in adults seeking hearing help

- Participants: Subset of individuals scheduled for a hearing test or hearing aid evaluation.
  - ≥ 55 years old (mean: 72.3 years; s.d. 10.2 years)
  - range 55-94 years.
  - N=116 adults (63% males).

  Participants were mailed two self-report measures of fatigue and a measure of hearing handicap
  - POMS (fatigue and vigor subscales)
  - Multidimensional fatigue scale (MFSI)
  - Hearing handicap inventory (HHIE/HHIA)

Severe fatigue and vigor deficits

- 1.5 st. dev above normative mean is a common “cutpoint” for identifying cases needing additional attention
  - Expect ~7% of cases based on normative data

  Our group was much more likely to report severe fatigue and vigor deficits

*p<0.01
Degree of loss and subjective fatigue

- Surprisingly, no relationship between degree of hearing loss and subjective fatigue or vigor
- Suggests factors other than “increased effort” affect fatigue in adults with HL

Hearing handicap and fatigue

- As fatigue increases, hearing handicap increases
- Suggests consequences of hearing loss and fatigue are associated

Subjective fatigue in children with HL

- CHL report significantly more fatigue. Pervasive across domains

Summary

- Fatigue is a complex multidimensional construct that can be defined subjectively as a mood or feeling and quantified using various subjective measures
  - E.g., POMS, MFSI, PedsQL-MFS
- Results using validated, generic, measures confirm
  - fatigue is increased in adults and children with HL,
  - risk for more severe fatigue is increased in these groups,
  - Psychosocial consequences of hearing loss and fatigue are related
Objective Measures of Fatigue

- Fatigue has also been defined behaviorally
  - A **decline in cognitive performance** due to sustained mental demands
    - Kennedy 1988; DeLuca 2005
- Measures of attention, concentration, processing speed, and decision-making have been used as objective markers of fatigue
  - van der Linden et al. 2003; DeLuca, 2005
- Very limited work in this area in HI persons

Subjective Ratings

- Demanding listening IS fatiguing especially unaided!
- I.e., Aids help consistently across participants

References