

## Introduction

Many individuals are exposed to noise levels occupationally, recreationally, and environmentally for durations that could place them at risk for developing a noise-induced hearing loss (NIHL; World Health Organization, 2015). In fact, about 26 million adults in the United States have a hearing loss that is potentially caused by exposure to unsafe levels of noise (National Institutes of Health, 2014). Despite knowing the damaging effects noise can have on hearing, many individuals do not use hearing protection (Ivory, Kane, & Diaz, 2014) and/or other preventative strategies (Vogel, Hosli, Van Der Ploeg, & Raat, 2008). For this reason public health campaigns, such as the Dangerous Decibels® (DD) program, have been developed in an effort to decrease the occurrence of NIHL. Currently, the DD program targets children and adolescents. It aims to increase knowledge, attitudes, and intended behaviors towards hearing and hearing-loss prevention in an entertaining, interactive, and inventive manner (Griest, 2008). The program has been shown to be effective in 4<sup>th</sup> and 7<sup>th</sup> grade populations (Griest, Folmer, & Martin, 2007). In this study we aim to determine how the DD program should be adapted for an adult audience because health messages are more effective when tailored or targeted to a specific audience (Kreuter & Wray, 2003).

## Study Aim

To determine which activities and components of a hearing conservation program (DD) are relevant and appropriate for an adult audience and which components and activities require modification.

## Methods

### Procedures

- I. Participants completed a demographic questionnaire
- II. The purpose of the study, the rules of the focus group, and the structure of the session were described
- III. The DD Classroom Presentation program was demonstrated by the moderator
- IV. A group discussion followed the presentation during which semi-structured questions were asked with a view to determining how the DD program could be adapted to be more relevant and appropriate for an adult audience
- V. The discussion was led by the moderator. All responses were written down in note form by transcribers and on a large note-pad visible to all participants

### Focus Groups

- Five sessions were led at the NCRAR, VA Portland Health Care System
- Each group consisted of a moderator, one to two transcribers, and two to six participants

### Analysis

- Themes and sub-themes were identified among responses

### Participant Demographics

- 12 female, 7 male
- Age range: 35-79 years (mean=56.2 years, SD=12.3)

## Dangerous Decibels® Classroom Presentation

- The DD classroom presentation consists of nine components
- The following chart depicts the educational goals and activities associated with each component:

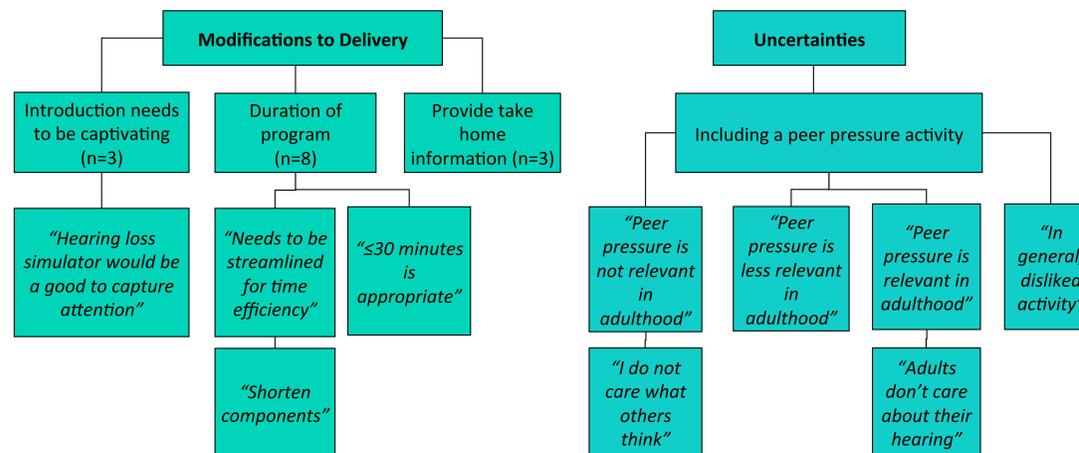
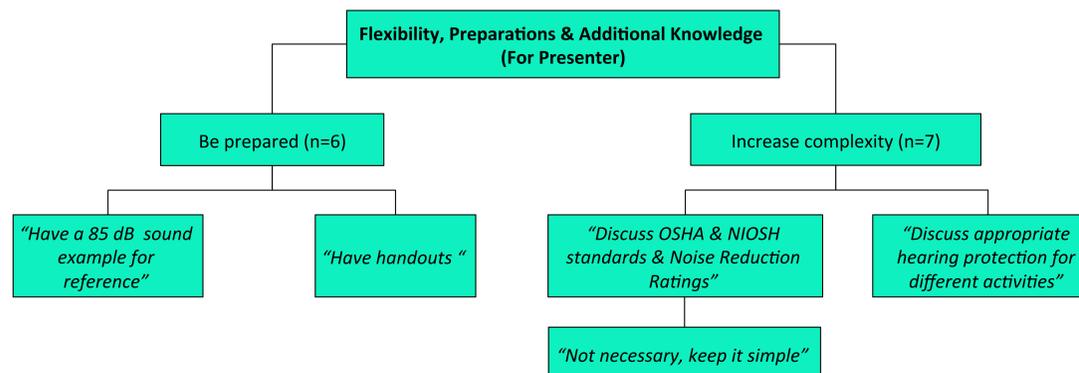
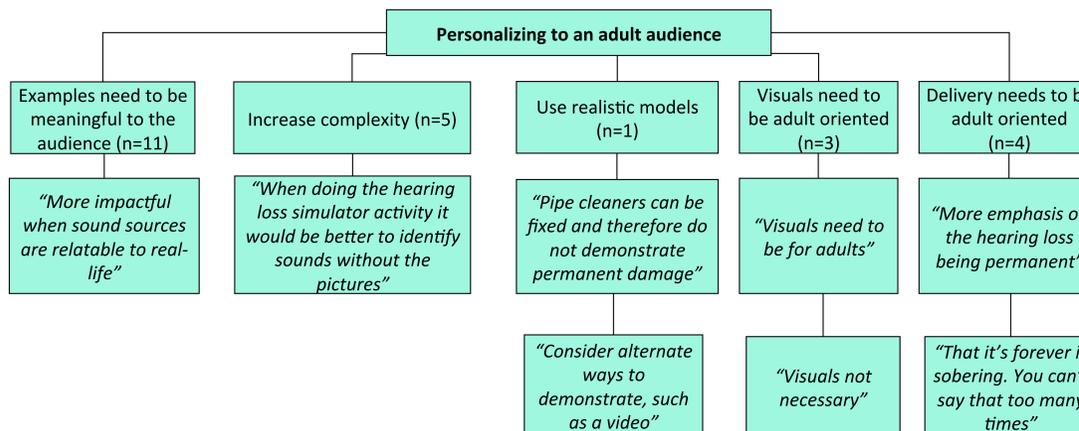
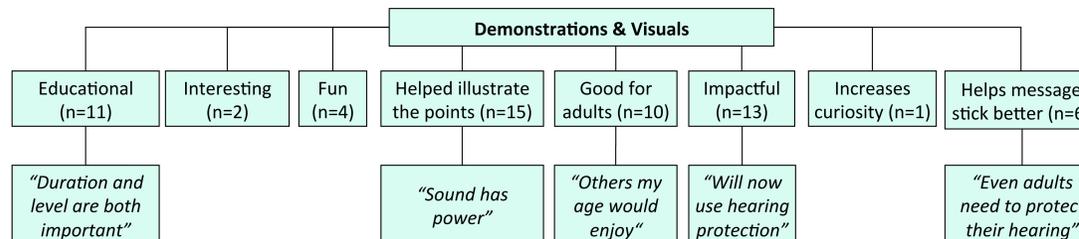
Component	Educational Goals	Activity
1. Introduction	<ul style="list-style-type: none"> <li>• Program overview</li> <li>• Define decibel (dB)</li> <li>• Introduce ways to protect hearing</li> </ul>	<ul style="list-style-type: none"> <li>• Visuals placed on display board</li> </ul>
2. What is Sound?	<ul style="list-style-type: none"> <li>• Sound is vibration</li> <li>• Sound energy has power</li> </ul>	<ul style="list-style-type: none"> <li>• Tuning fork</li> <li>• Ping pong ball</li> </ul>
3. How do we hear?	<ul style="list-style-type: none"> <li>• Learn how sound travels through the auditory system</li> </ul>	<ul style="list-style-type: none"> <li>• Anatomy poster</li> </ul>
4. How do we damage our hearing?	<ul style="list-style-type: none"> <li>• Learn how loud sounds cause permanent damage to hair cells</li> </ul>	<ul style="list-style-type: none"> <li>• Pipe cleaners</li> <li>• Images placed on display board</li> </ul>
5. What's that sound?	<ul style="list-style-type: none"> <li>• Learn the impacts of hearing loss on hearing</li> </ul>	<ul style="list-style-type: none"> <li>• Virtual Exhibit</li> </ul>
6. How loud is too loud?	<ul style="list-style-type: none"> <li>• Decibel levels of different sound sources introduced</li> </ul>	<ul style="list-style-type: none"> <li>• Flash Cards</li> </ul>
7. Measuring dBs with SLMs	<ul style="list-style-type: none"> <li>• Demonstrate how sound energy decreases with distance</li> </ul>	<ul style="list-style-type: none"> <li>• Blender</li> <li>• SLM</li> </ul>
8. How to use earplugs	<ul style="list-style-type: none"> <li>• How to insert (or wear) earplugs</li> <li>• Learn where to purchase earplugs</li> </ul>	<ul style="list-style-type: none"> <li>• Earplugs</li> </ul>
9. Rock your world: Time to act	<ul style="list-style-type: none"> <li>• Discuss peer-pressure and use of hearing protection</li> <li>• Practice decision making</li> </ul>	<ul style="list-style-type: none"> <li>• Multiple choice peer pressure discussion card</li> </ul>

## Results

Primary Boxes: General themes

Secondary Boxes: Sub-themes; n indicates number of responses associated with sub-theme

Tertiary & Quaternary Boxes: Illustrative comments



## Discussion

### Agreements

- Overall, DD program is relevant to adults
- Demonstrations**
- Well-received, engaging, and a fun way to make the education goals understandable and impactful to an adult audience
- Need to be personalized so materials are relevant and meaningful to the audience (e.g. select sound sources often encountered by adults)

### Mixed Opinions

- Relevancy of Peer Activity**
- Some felt peer pressure was 'not relevant' or 'only slightly relevant' in adulthood while others believed it was 'highly relevant'
  - Studies in fact show peer pressure exerts influence throughout the lifespan, although adults are more resistant to it than adolescents (Gardner & Steinberg, 2005)
    - Many factors impact vulnerability to peer influence including gender, ethnicity, peer familiarity, and prior experiences
  - It could be the participants in this study who consider peer pressure relevant in adulthood have these traits
    - Therefore it is concluded hearing conservation programs for adults should include a peer pressure activity to target those adults who are more vulnerable, but that the current activity should be adapted
  - Potential adaptations could include:
    - Additional scenarios (e.g. seeking out hearing protection)
    - Open-ended discussion rather than closed-set options
    - Role-playing (i.e. act out) a peer pressure scenario

### Program Length & Depth of Information

- Some participants thought the program should be shorter (<30 min.) while others thought the current program length (~ 50 min.) was appropriate
- Some participants wanted more details (e.g. Noise Reduction Ratings of ear plugs) while others were satisfied with the current content
  - It was informally observed that participants who desired a shorter but more detailed program and wanted take-home materials, had higher levels of education and previous knowledge about hearing loss and noise

### Considerations

- Place more emphasis on the permanence of a hearing loss caused by noise exposure
  - Adults have the maturity to think about the future and therefore health messages targeting adult audiences will be more effective if they are framed positively, highlighting the potential benefits of using protective and preventative strategies than the negative aspect of losing hearing (de Bruijn, Spans, Jansen, & van't Riet, 2016)

### Overall

- When presenting the DD or similar program to an adult audience:
  - Be prepared
  - Be flexible
  - Be knowledgeable
  - Have informational materials
  - Decrease program length

## Summary/Conclusions

Overall, adults enjoy hands-on demonstrations and visuals, but it is important to modify activities to suit the audience, and the presenter be knowledgeable, flexible, and prepared with additional content as desired by the audience. This suggests that using a strict script or providing limited options is not useful for adult audiences.

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