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Effectiveness of computer-tailored training with U.S. Latino construction workers: Lessons learned

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Introduction

- Evidence supports effectiveness of workplace training on occupational health and safety behaviors
- No RCTs of training effectiveness with non-English speaking immigrants
- U.S. Hispanic working population projected to remain 60% foreign born

Robson,L. et al. (2010). A systematic review of the effectiveness of training & education for the protection of workers. Toronto: Institute for Work & Health; Cincinnati: National Institute for Occupational Safety and Health. DHHS (NIOSH) Publication No. 2010-127. (p. 77,82)

Problem

There is a knowledge gap in effective training methods to serve **all** U.S. construction workers.

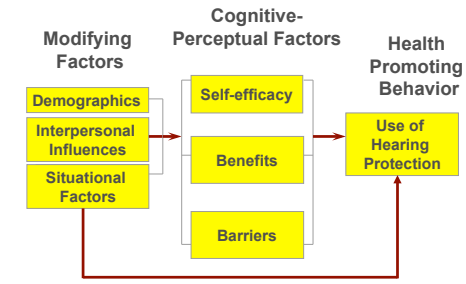
Purpose

To develop and evaluate a computer-tailored training intervention for Latino workers on use of hearing protection

Intervention development

- Adapted from an existing targeted/ tailored computer-based intervention
  - *Targeting is based on subgroup features*
  - *Tailoring is based on individual characteristics*
- Five iterations of field tests for feedback in focus groups and usability testing
- Be generous in planning the number of field tests.

Theoretical Framework



Derived from Pender's Health Promotion Model

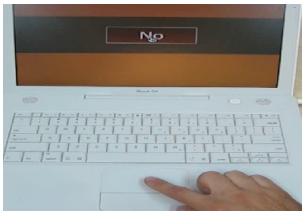
Delivery of Intervention

Delivered on laptop computers with audio headsets:

1. Introduction and consent
2. Questionnaire
3. Training
4. Feedback questions

Introduction & consent

Trackpad practice precedes the consent process.



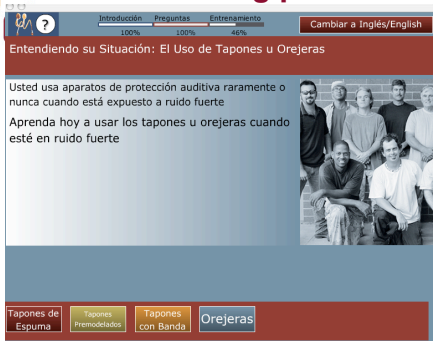
Questionnaire

- Point and click e.g. Likert response formats, map, percent scale.
- Choice of English or Spanish

Tailoring

- Health messages tailored to the individual based on their responses in the questionnaire
- Examples of tailoring on two measures follow:
  - Use of hearing protection
  - Barriers to use of hearing protection

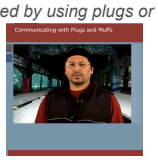
Use of hearing protection



Barriers to use

"In addition, you have difficulty hearing and talking while using plugs or muffs. Being able to communicate effectively while using hearing protection is an important skill- to your comfort and safety."

"Diego and Miguel talk about how some communications problems caused by noise can be solved by using plugs or muffs."



Method

- Construction workers (n=145) recruited through their union safety classes
- Random assignment by the computer program to tailored or targeted version
- Follow up survey 3-6 months after the intervention

Method

- Bilingual research staff were available to answer questions

Results

- The final pre/post test sample (n=83) was predominantly male (n=80) and Latino (n=63)
- Retention rate 83/145= 57%

Try a mobile solution using cell phone for survey follow-up

Caban-Martinez et al., (2011). Application of handheld devices to field research among underserved construction worker populations. Environmental Health, 10(27).

Results

- 32 yrs of age, 10 yrs education, 7 years in construction work.
- Carpenters (n=31), Laborers (n=34), other trades (n=18).
- Half were born in Mexico (n=42)
- Self-reported hearing ability:
  - 20% excellent
  - 66% very good or good
  - 10% fair or poor

Results: acceptability

- Over 90% agreed that the program kept their interest and was an effective way to learn about hearing protection.
- More Latinos than non-Latinos said the program was fun (90% vs. 60%), was not too long (93% vs. 54%) and not too slow (88% vs. 27%).
- Unintended consequences of efforts toward universal access?

Results: outcomes

•Overall, participants improved use of HPD from 42% at time 1 to 60% at time 2 (p<.001)

•Tailored messages were more effective than targeted messages in improving construction workers' hearing health behavior.

Results: outcomes

•Participants receiving tailored messages significantly improved use of hearing protection devices (35% to 62%).

• Tailored messages were effective for both Latinos (p=.026) and non-Latinos (p=.002).

Results: outcomes

•Participants receiving targeted messages improved the use of hearing protection devices (45% to 56%) but the change was not statistically significant (p=.280) for Latinos or non-Latinos.

Discussion

• This study established the acceptability and efficacy of the intervention.

•Use of hearing protection is still far from the desirable 100%

System-level interventions may be needed to increase effectiveness of individual training.

Future Research

•Replicate study with a larger sample.

•Dissemination research to identify the most effective organizational applications of computer-tailored education.

•Mobile technology for follow-up survey.

Questions?

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Thank you for your attention!