

# A Comparison of Deaf/Hard of Hearing and Hearing Young Adults' Responses to a Health Risk Behavior Survey



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# Background



# Early-deafened Persons (EDP)

- Born deaf or deaf since childhood
- Comprise ~ 18% of total deaf population
- Variations in their:
  - Ability to hear & understand normal speech
  - Primary language use
  - English Literacy & Proficiency



# EDP Health and Health Behavior

- National data & research is limited
- Adults, adolescents, children
  - Less knowledgeable about health than general population
  - Variations in general health knowledge & experiences
- Adults report:
  - Worse health than general population
  - Fewer health visits than general population



# Problem

- Research requires data collection using instruments evaluated with EDP
- Written instruments good for research - no documented evaluation with EDP
- Failure to evaluate written instruments might contribute to:
  - collection of spurious data
  - erroneous research findings and conclusions



# Primary Study

- Researchers developed a survey by adapting existing health survey items
- Goal: Identify health disparities or differences in health risk behaviors between deaf/HOH & hearing young adults
- Administered survey to 778 freshmen
  - 610 Rochester Institute of Technology
  - 168 National Technical Institute for the Deaf



# Survey Development

- Adaptation strategies included:
  - Modifying words/phrases of borrowed items
  - Adapting structure of questions & response formats
  - Targeting 5<sup>th</sup> grade reading level

## Example Adaptation





# Example Adaptation

During the past 30 days, on how many days did you have 5 or more drinks within a couple of hours?

- a. 0
- b. 1 or 2
- c. 3 to 5
- d. 6 to 9
- e. 10 to 19
- f. 20 to 29
- g. All 30



# Example Adaptation

Did you ever have five or more alcoholic drinks in 2 or 3 hours?

a. Yes

b. No



If Yes: During the past 30 days, how many times did you have five or more alcoholic drinks in 2 or 3 hours?

\_\_\_\_\_ times



# Survey Evaluation

- Primary researchers used multiple strategies
  - Committee review
  - Independent review
  - Qualitative analysis
    - Cognitive Interviews



# Purpose of Current Study

- Examine reliability of HBS
- Examine differences between subjects' responses and response patterns
- Examine factors associated with response patterns
  - Subject factors - Hearing status, language use, reading skill
  - Survey factors - Item readability & response format, health topic



# Theoretical Underpinnings

- Cross-cultural Frameworks
  1. Back Translation & Monolingual & Bilingual Tests (Maneesriwongul & Dixon, 2004)
  2. 6-step Framework for Cross-Cultural Adaptation of Survey Instruments (Weech-Maldonado, Weidmer, Morales, & Hays, 2001)
- Health Determinants Frameworks
  1. Domains of Health Literacy (Baker, 2006)
  2. Determinants of Health (HP2010; DHHS, 2000)



# Back Translation & Monolingual & Bilingual Tests



- Monolinguals only use adapted instrument
- Bilinguals use adapted instrument at 1 point in time & pre-existing instrument at another point in time as comparison
- Must have enough bilinguals to use this strategy

(Maneesriwongul & Dixon, 2004)



# 6-Step Framework

## 6-step process for cross-cultural adaptation and evaluation of surveys

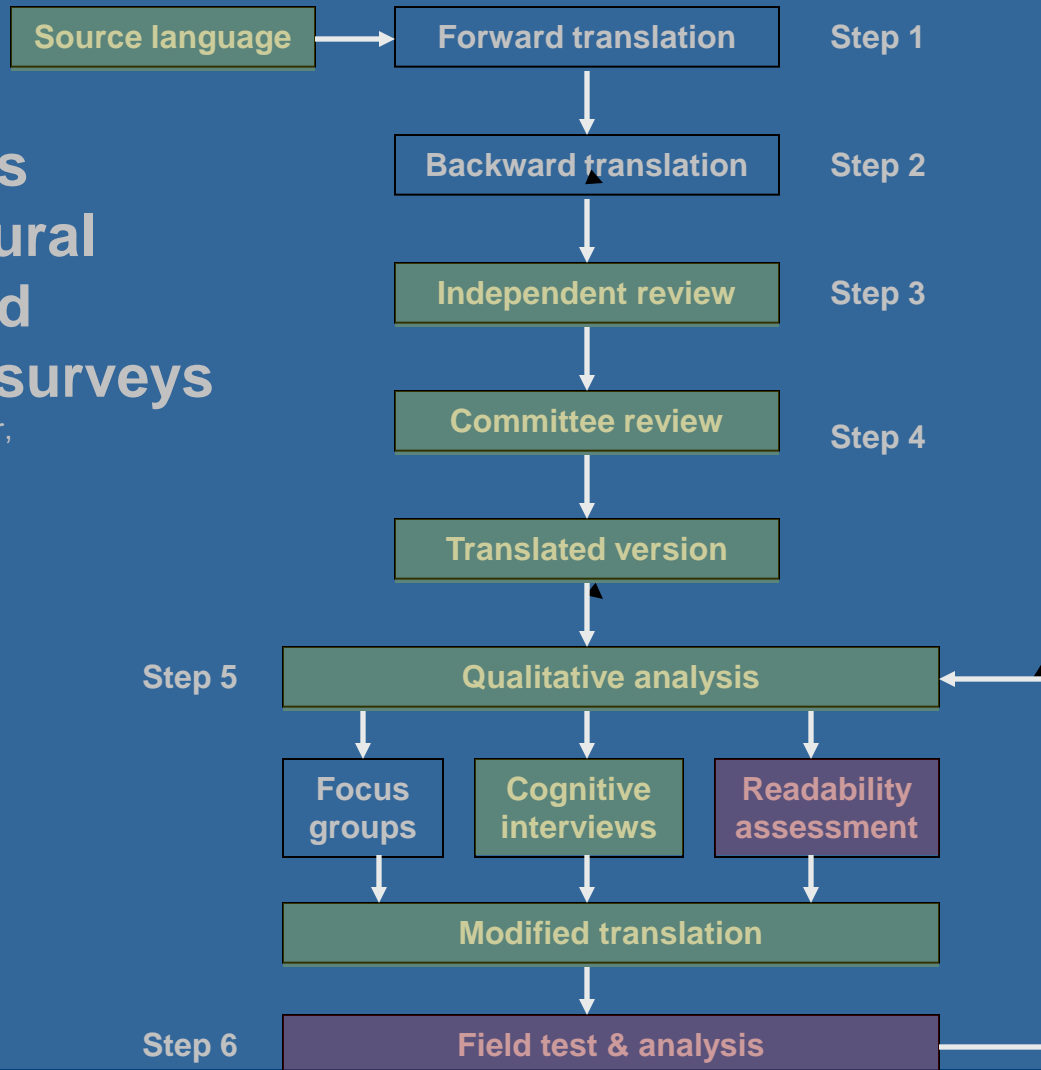
(Weech-Maldonado, Weidmer, Morales, & Hays, 2001)

### LEGEND:

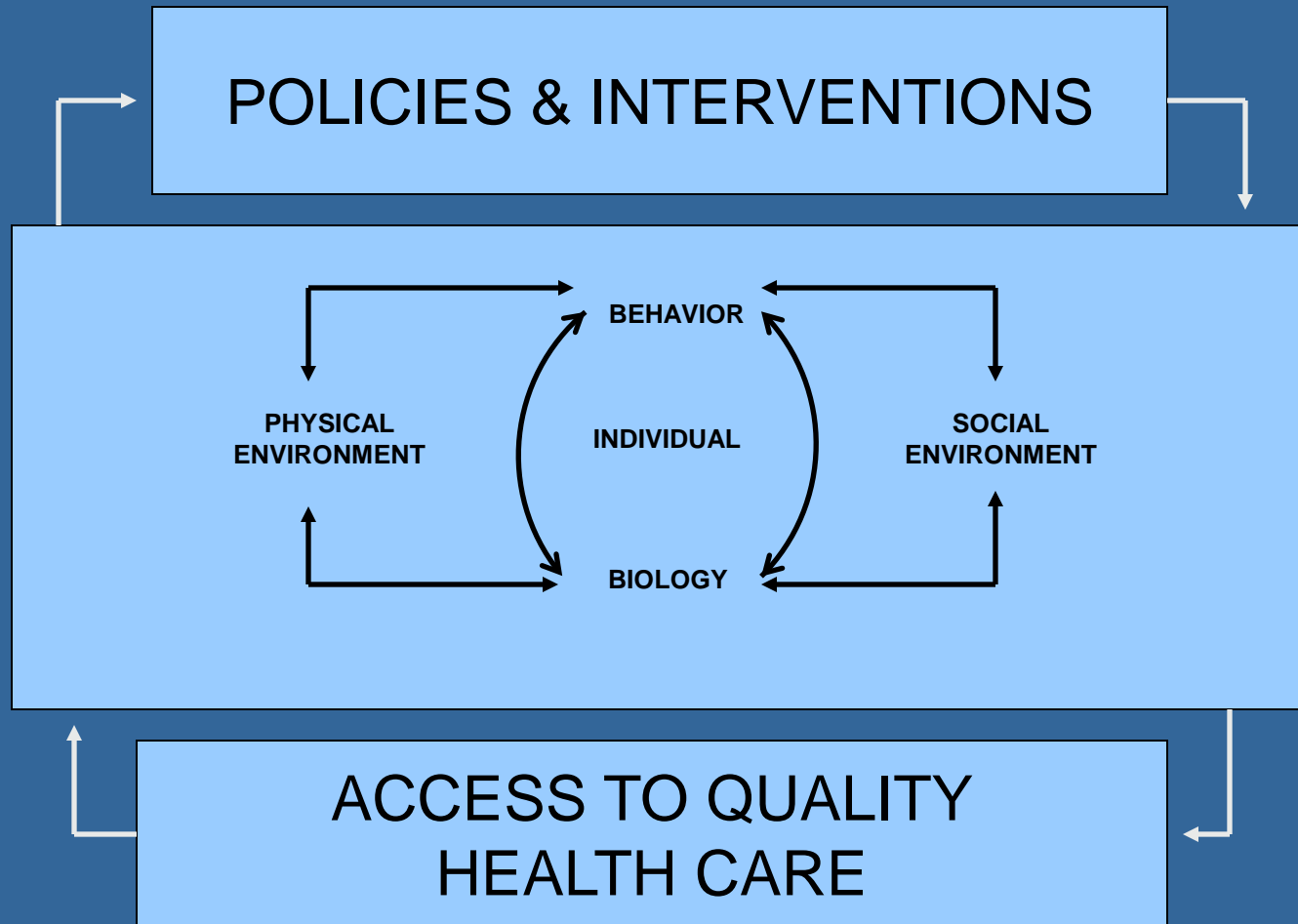
REFERS TO NCDHR STRATEGIES

REFERS TO CURRENT STUDY STRATEGIES

REFERS TO STRATEGIES NOT USED



# Determinants of Health

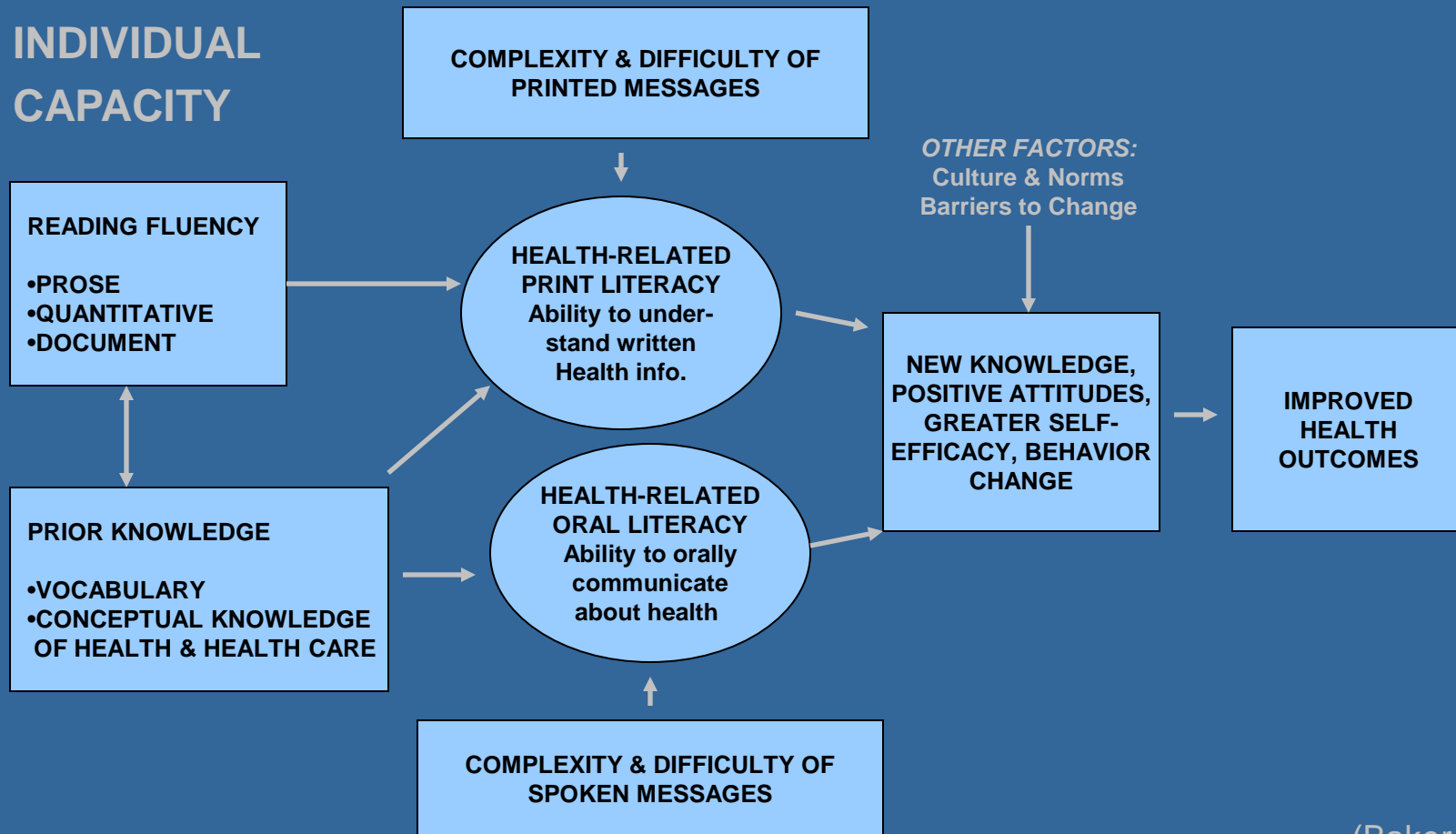


(HP2010; DHHS, 2000)





# Domains of Health Literacy



(Baker, 2006)



# Questions and Hypotheses

## *Questions*

- 18 Research Questions
  - 5 Instrument only
  - 13 Responses or response patterns and associated individual and/or instrument factors

## *Hypotheses*

- 6 Hypotheses
  - All Responses/response patterns and associated individual and/or instrument factors



# Methodology



# Preliminary Work

- To determine feasibility of study
- Preview subject factors
  - Sample characteristics
  - Response distributions
- Preview survey factors
  - Readability of adapted survey items



# Example Item:

## Tobacco & Alcohol Use

11. Did you ever have five or more alcoholic drinks in 2 or 3 hours?

A. Yes

B. No



**If Yes:** During the past 30 days, how many times did you have five or more alcoholic drinks in 2 or 3 hours?

\_\_\_\_\_ times.



# Example Item:

## Nutrition & Physical Activity

32. During the past 7 days, how many days did you exercise or do physical activity for 20 minutes or more and sweat and breathe hard (for example, basketball, soccer, running, swimming laps, fast bicycling, fast dancing, or similar aerobic activities)?



# Example: Survey Item

## Nutrition & Physical Activity

- a. 0 days
- b. 1 day
- c. 2 days
- d. 3 days
- e. 4 days
- f. 5 days
- g. 6 days
- h. 7 days



# Current Study

- Compared the responses and response patterns of 191 deaf/HOH and 541 hearing
- Independent Variable Measures
  - Subjects' hearing status
  - Subjects' best-known language
  - Subjects' estimated reading skill
  - Estimated readability of survey item





# Measures: Independent Variables

- Self-described hearing status
  - Dichotomized: Deaf/HOH vs Hearing
- Self-reported best-known language
  - Dichotomized: Sign language vs English
- Estimated reading skill
  - Dichotomized: At/below 8<sup>th</sup> vs above 8<sup>th</sup>
- ERGL Survey Item
  - Dichotomized: At/below 5<sup>th</sup> vs above 5<sup>th</sup>



# Measures: Dependent Variables

- Responses to survey items
  - Categorical/scale
  - Recoded to dichotomized: Response vs Non-response
- Response patterns
  - Inconsistent Response Score: Continuous
  - “Don’t Know” Response Score: Continuous
  - Non-response Score: Continuous



# Results



# Findings: Instrument

- Instrument readability
  - Total 71 items
    - 42 items (59%) had estimated readability < 5<sup>th</sup> grade
    - 7 items (10%) had estimated readability = 5<sup>th</sup> grade
    - 22 items (31%) had estimated readability > 5<sup>th</sup> grade



# Findings: Sample

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	Deaf/HOH (n=191)	Hearing (n=541)
Sign Language	106	4
English	75	507

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# Findings: Sample Cont.

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	Deaf (n=114)	HOH (n=67)
Sign Language	83	23
English	31	44

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# Findings: Sample Cont.

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	Sign Language (n=83)	English (n=46)
At or below 8 <sup>th</sup> grade	42	14
Above 8 <sup>th</sup> grade	41	32

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# Response Findings

- Distribution of Responses
  - Examined by hearing status for 68 of 71 survey items (excluding 3 fill-in-the-blank items)
  - Significant differences in responses between deaf/HOH and hearing groups found
    - Among 47 of 68 items
    - Among items in 9 of 10 topic categories
    - Among all response format types (not fill-in items)
    - Among “A” and “B” response selections for items with 6 or more multiple-choice response options





# Response Findings Cont.

- Inconsistent Responses
  - Inconsistent responses examined & compared by hearing status, best-known language, & estimated reading skill
    - Differences statistically significant by hearing status: D/HOH had more than hearing ( $t=4.677$ ,  $p=.000$ )
    - Differences not statistically significant by best-known language or estimated reading skill



# Response Findings Cont.

- “Don’t Know” Responses
  - Examined & compared by hearing status, best-known language, & estimated reading skill
    - Differences statistically significant by hearing status: D/HOH had more than hearing ( $t=8.349$ ,  $p=.000$ )
    - Differences not statistically significant by best-known language
    - Differences statistically significant by estimated reading skill: at/below 8<sup>th</sup> had more than above 8<sup>th</sup> ( $t=2.853$ ,  $p=.005$ )



# Response Findings Cont.

- Non-responses
  - Examined and compared by hearing status, best-known language, and estimated reading skill
    - Differences not statistically significant by hearing status
    - Differences not statistically significant by best language
    - Differences statistically significant by estimated reading skill: at/below 8<sup>th</sup> had more than above 8<sup>th</sup> ( $t=2.142$ ,  $p=.035$ )



# Discussion



# Discussion of Findings

- Instrument Findings
  - Not all items met targeted 5<sup>th</sup> grade reading level
  - Adaptation process helped some with achieving targeted reading grade level
  - Readability had impact on “don’t know” response and “non-response” patterns
  - Health topic categories associated with responses and response patterns



# Discussion of Findings Cont.

- Sample Findings
  - Differences in self-described hearing status
  - SD deaf more likely to be sign language users than SD HOH and SD hearing
  - Average estimated reading skills did not differ, significantly, by SD deaf/HOH status
  - Likelihood of having lower estimated reading grade level skills associated with being a sign language user



# Discussion of Findings Cont.

- Response Findings
  - Differences in distribution of responses
  - Differences in inconsistency responses
  - Differences in “Don’t know” response patterns
  - Differences in non-response patterns



# Strengths of Study

- Guided by extensive review of literature
- Derived from a primary study
  - With a large, diverse sample of deaf/HOH & hearing subjects
  - Conducted by experts in field of deaf health & deaf health research
- Procedures allowed for statistical analyses and examination of research questions & hypotheses





# Limitations of Study

- Secondary analysis
- Instrument not designed, specifically, for this type of investigation
- Some analysis procedures violated assumptions of statistical tests
- Representativeness of deaf/HOH sample



# Implications: Future Research

- The HBS has potential to be reliable/valid instrument for use with EDPs
- Additional investigation into differences in responses and response patterns & associated factors
- Investigation of strategies for designing instruments for health-related cross-cultural research



# Implications: Health Practice & Policy

- Issue of health-related print literacy among EDPs needs to be addressed
- Health-related sign language literacy among EDPs needs to be explored and/or enhanced
- Collaboration and policy support necessary to promote changes/improvements



# Conclusion

- Expands the literature on health-related research with deaf young adults
- Extends the science related to cross-cultural research
- Documents factors that impact EDPs use of a written health survey
- Proposed and produced new questions for research



# Questions??

